APPENDICES

APPENDIX 1.1: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR THE POWERLINE

THE ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN 33kV POWER TRANSMISSION LINE

The Environmental and Social Management Plan (ESMP) is a tool designed to ensure the implementation of mitigation measures and monitoring by outlining roles and responsibilities of key stakeholders in respect to environmental management. The ESMP seeks to address all the possible negative environmental impacts at the various project phases. Environmental Management and monitoring are carried out in all stages of the project (Construction, Operation and Decommissioning). This document will form part of the Contractors working brief for contract management. The Contractor and Site Manager will be responsible for implementing the ESMP.

Total cost of ESMP implementation is estimated at USD 53,000

Table 1: Environmental and Social Management Plan (ESMP) - Construction Phase									
Ref	**Aspect / Issue**	**Potential Impact / Risk**	**Mitigation Measures**	**Performance Indicator (Target)**	**Frequency and Monitoring Action**	**Time frame**	**Responsible Person**	**Cost (US$)**	**Best Practice Guidance (Legal /Project Proponent/ IFC)**
Air Quality									
C1	Site clearing, levelling for places where there are depressions and construction of internal access roads and other construction works.	Dust generated can affect workers' health and safety on site and sensitive receptors in nearby settlements and private farms	• Dust generation on unpaved access roads and work areas should be controlled by application of water as need arises. • Appropriate speed limits should be set to minimise dust generation from vehicles moving on unpaved site access roads. • The workers should be trained on handling construction materials and debris to reduce fugitive dust emissions. • Construction workers at risk of being exposed to significant dust emissions should be provided with adequate personal protective equipment (PPE).	No visible dust plumes along access roads and construction sites. Reduced fugitive dust emissions along areas accessed by sensitive receptors and Reduced risks to health and safety of personnel and other sensitive receptors. Construction workers provided with approved dust protection devises.	Daily visual monitoring of dust emissions along access roads and during earthworks and construction activities. Daily safety checklist	Pre and during Construction phase	CEC and its Contractor(s)	3000	World Bank General EHS Guidelines: Occupational Health and Safety; Occupational Health and Safety Act 2010 of the Laws of Zambia; IFC PS 2 - Labour and Working Conditions.
C2	Operation of construction equipment and machinery and transportation of transmission line materails	Exhaust emissions from the construction equipment and machinery	• Construction equipment and vehicles used for transportation of plant equipment should be adequately maintained and inspected to minimise exhaust emissions	Well maintained vehicles used during construction and transportation of plant equipment. Reduced risks to health of personnel due to exposure to	Daily visual monitoring of exhaust emissions during earthworks and other construction activities.	During Construction phase	CEC / Contractor(s)	2000	World Bank General EHS Guidelines: Occupational Health and Safety; Occupational Health and Safety

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				exhaust emissions. Record of vehicle maintenance.	Vehicle maintenance records.				Act 2010 of the Laws of Zambia; IFC PS 2 - Labor and Working Conditions.
Archaeology and cultural heritage									
C3	Construction activities leading to exposure, unearthing or removal of unknown subterranean and chance surface archaeological finds.	Potential damage to archaeological finds that may be exposed or unearthed (below ground archaeological deposits) during construction works	• A 'chance find' procedure will be developed and implemented to address and protect cultural heritage finds that may be discovered during the construction and operation phases of the project. • Construction activities in the immediate vicinity of the discovery shall be stopped if any archaeological or ancient prehistoric materials are chance found during construction works. • In an event that archaeological or ancient prehistoric materials are discovered, Regional offices of the National Heritage Conservation Commission (NHCC) should be contacted for professional advice and rescue excavations.	• Preservation of any discovered artifacts on site.	• At least one site inspection immediately after chance find. • Creating awareness among personnel on site about chance find procedures should they encounter archaeological or prehistoric materials. Quarterly during construction and operation phases.	Construction and Operation phase	CEC / Contractor / NHCC	2000	IFC Performance Standard 8: Cultural Heritage; National Heritage and Conservation Act, CAP 173 of the Laws of Zambia.

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C4	Construction and operations of the project.	Loss of irreplaceable heritage material (cultural and natural heritage resources) in the Project area	• In an event that irreplaceable heritage material is found, an Information Centre should be constructed in consultation with NHCC to exhibit the cultural and natural heritage, storylines and exhibition for education, research, adventure and posterity within or outside Project Area. Collection and display / exhibition of heritage artifacts and fossils.	Preservation of any discovered artifacts on site	Maintenance of an information centre where any discovered artifacts will be preserved. Construction of information centre at occurrence and frequency of maintenance of centre to be done annually.	Construction and Operation phase	Contractor / CEC	2000	IFC Performance Standard 8: Cultural Heritage; National Heritage and Conservation Act, CAP 173 of the Laws of Zambia.
Biodiversity									
C5	Clearing of areas for installation of the powerline infrastructure may impact on the existing modified habitat.	Loss of vegetation (tree species) and natural habitats for small mammals, birds and insects.	• Clearing of vegetation should only be confined to areas where the infrastructure will be installed to minimise loss of vegetation and wildlife habitats. • The construction workers should be provided with guides and extents of areas to be cleared and site clearing works should be monitored. • Burrowing animals likely to be noted on site during the construction and operation phases of the project will be removed from the site and	No clearing of vegetation beyond the confines of the project footprint.	Daily visual inspection of clearing activities during the construction phase.	Construction phase	Contractor for clearing works	2000	IFC Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources. Zambian Forest Act, 1973.

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			the burrows filled. • A deliberate reforestation program will be initiated on and around the site to offset for the loss of vegetation						
Community, Health Safety and Security									
C6	Construction and operation of the powerline.	Risk of accidents involving members of the public through unauthorized access to the project site.	• The project site should be enclosed within a security perimeter and no unauthorized persons should be allowed access to the site. • Caution signs should also be placed around the site to prevent occurrence of accidents and injuries. • The community should be sensitized on the dangers of trespassing at the project site so as to avoid potential accidents that might arise from unauthorized access to the site. • Reasonable steps should be taken in the provision of security and in particular the use of force and establish appropriate conduct towards workers and affected communities.	Zero accidents or injuries on site involving members of the general public.	Security surveillance and community engagement to sensitize affected members of the community on their health, safety and security. Daily for security surveillance and patrol. Community engagement - quarterly	Construction and Operation phase.	CEC / Contractor(s)	2000	World Bank EHS Guidelines: Community Health and Safety; IFC PS 4: Community Health Safety and Security; Occupational Health and Safety Act, No. 36 of 2010 of the Laws of Zambia.

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C7	Lack of or inadequate good water supply and sanitation facilities on site.	Risk of water borne diseases due to lack of potable water and sanitation facilities	• Safe and clean water and good sanitation facilities should be provided to construction workers to prevent an outbreak of waterborne diseases among them which can also affect the surrounding communities.	Zero occurrence of water borne diseases among the workers.	Safe and clean drinking water provided on site daily. Operable sanitation facilities provided on site.	Construction phase	CEC and its Contractor(s)	2000	IFC Performance Standard 4: Community Health, Safety and Security; Public Health Act, Cap 295
Landscape and Visual Amenity									
C8	Clearing of vegetation and installation of powerline.	Visual intrusion and disruption of the aesthetics.	• A perimeter buffer of trees and grass vegetation (where possible) along the project site boundaries and streamlines should be left to screen sensitive viewing areas such as areas along the Nakayombo ring road which is used by the general public. • General cleanliness and good housekeeping at the site should be promoted at all times.	Visual intrusion and disruption to aesthetics reduced.	Annual monitoring of existing vegetation screening at the site and ensuring that it is appropriately maintained	Construction phase	CEC and its Contractor(s)	2000	-
Noise and vibration									
C9	Construction activities on (site clearance and levelling, internal roads construction), transportation of the plant	Potential noise disturbance from heavy equipment, may affect workers on site.	• Regular maintenance on all equipment, vehicles and machinery should be performed to minimise noise; • Provision of adequate PPE such as ear plugs to site workers likely to be exposed	Zero noise disturbance complaints received. Reduced risk to health and safety of personnel due to exposure to high noise levels.	Noise monitoring during the construction using a portable noise level meter to demonstrate compliance. Daily safety	Construction Phase	CEC and its Contractor(s)	1000	World Bank General EHS Guidelines: Occupational Health and Safety; Occupational Health and Safety

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	components to site.		to high noise levels. • Appropriate transportation routes should be selected.	Compliance with IFC Noise Level Guidelines for industrial receptors. Workers at risk of being exposed to occasional high noise levels provided with approved ear protection devises.	checklist to ensure workers have approved PPE.				Act 2010 of the Laws of Zambia; IFC PS 2 - Labour and Working Conditions.
Occupation Health and Safety									
C10	Occupational health and safety of workers working on site.	Reduced occupational health and safety among workers	A Health and Safety Policy shall be developed and implemented by the contractor to guide construction and operations of the facility. • All construction activities should be conducted in accordance with provisions of the local legislation and international best practices (General EHS Guidelines: Occupational Health and Safety); • Safety rules should be enforced and complied with by workers, contractors and those coming to site: • Personal Protective Clothing (PPE) should be issued and	Risks of preventable accidents that can potentially result in injuries and/or fatalities substantially reduced.	Daily risks identification and implementation of management measures conducted prior to commencement works.	Construction and Operation Phase	CEC and its Contractor(s)	1000	World Bank EHS Guidelines: Occupational Health and Safety; IFC PS 4: Community Health Safety and Security; IFC PS1; IFC PS 2; IFC PS 5; Occupational Health and Safety Act, No. 36 of 2010 of the Laws of Zambia.

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			used as required by the various classes of the workers on project site; • Barrier tapes and caution signs should be erected in all potential hazardous areas to prevent injury or loss of life among construction workers; • No unauthorized person should be allowed on site including workers without appropriate PPE						
C11	Construction works at the project site	Safety risk to workers and equipment caused by slippery ground during wet months.	• Resuming work immediately after rains should be avoided. Work risk analysis should be undertaken before resuming. Blast should be applied on road networks.	Safe working procedures for wet slippery surfaces developed and implemented.	Permit to resume works to be implemented after a storm event and work risk analysis records. Frequency: As and when required.	Construction and Operation Phase	CEC and its Contractor(s)	1000	World Bank EHS Guidelines: Occupational Health and Safety; Occupational Health and Safety Act 2010 of the Laws of Zambia; IFC PS 2 - Labor and Working Conditions.
Socio-economic									
C12	Employment opportunities at the project site arising from construction works.	Influx of population of job seekers on site posing health and security risks and leading to unplanned housing / structures and commercial	• Enforcement of relevant by-laws laid down by the respective Local authorities with the help of CEC to prevent mushrooming of unplanned structures and activities.	Development of any unplanned structures and / or activities within the project site and immediate surroundings prevented.	Quarterly Security surveillance and Community Engagement to sensitize on matters relating to development of unplanned structures and activities.	Construction and Operation Phase	CEC / Local authorities.	1000	IFC PS 4: Community Health Safety and Security; Urban and Regional Planning Act, 2015

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		activities around the project area.							
C13	Construction sites have been known to promote risky sexual behavior	Risky sexual behavior among the population Leading to escalation of new STIs including HIV/AIDS in the local population and among the workforce.	• Developing an HIV/AIDS Policy by the Developer to be adhered to during the construction and operation phases of the project. • Sensitization programs on preventing the spread of STIs and HIV/AIDS for project workers including contractors and suppliers. • Provision of condoms (including Female Condoms) in places where they can be easily accessed such as toilets. • Education programs on • fighting stigma of those infected with HIV/AIDS	HIV/AIDS Policy developed and implemented. Sensitization / Educational programmes on HIV/AIDS conducted for contractors and suppliers; Accessibility to condoms.	Record of sensitization / educational programmes undertaken including the number of people sensitized / trained on STI and HIV/AIDS. Frequency: Bi- annually	Construction phase	CEC / Contractor(s)	1000	IFC Performance Standard 4: on Community Health, Safety and Security. Public Health Act, Cap 295.
C14	Construction of the powerline	Capacity building and technology transfer to local contractors, skilled manpower and unskilled workers.	• Local contractors, skilled specialists and unskilled workers should be used to benefit from technology and skills transfer during construction of the transmission line. • Appropriate training should be provided to all local contractors, skilled	Skills transferred to local expert.	Bi-annual skills training for locals with assistance from local learning and construction institutions. Number of local people trained.	Construction phase	Contractor / CEC	2000	IFC Performance Standard 2: Labour and Working Conditions.

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			manpower and unskilled workers to enhance expected project benefits						
C15	Construction of the powerline	Employment opportunities created forboth skilled And non-skilled labour and. multiplier opportunities for employment in support sectors.	• The contractor, where possible, should employ members of the local communities and local experts to maximize on the benefits of employment opportunities. The jobs for which local people qualify (including non- technical and technical) will be as much as possible be offered to the local people.	Increased employment opportunities leveraged to the local community	Record of employment, annual reports on powerline employees. Frequency: Bi-annually.	Construction and operation phase	Contractor / CEC	1500	IFC Performance Standard 2 - Labour and Working Conditions; Zambian Employment (Amendment) Act No. 15 of 2015.
C16	Construction of the powerline	Project contribution to the local and national economy through its multiplier effect	• Procurement of services and locally produced raw materials from local contractors and local companies should be done during the construction phase, where possible, to maximize on the benefits.	Increased participation of the local entrepreneurs and companies in the provision of services.	Annual reports on CEC / powerline workers	Construction and operation phase	Contractor / CEC	2500	IFC Performance Standard 2: on Labour and Working Conditions.
Land and Soil									
C17	Site clearing and movement of construction equipment on unpaved surfaces.	Fugitive dust generation impacting on the health of workers and the	• Unpaved surfaces should be maintained through application of water, capping and grading to minimise fugitive dust	No visible fugitive dust plumes originating from the unpaved surfaces.	Daily visual inspections of all unpaved areas during construction phase and weekly	Prior to construction phase	CEC / Contractor(s)	1000	IFC Performance Standard 3: Resource efficiency and pollution prevention.

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		environment.	generation. • Water bowsers should be used to spray water on unpaved access road surfaces to suppress fugitive dust emissions during construction phase.		during operation phase.				
C18	Construction works and operation of the powerline	Soil erosion	• minimise soil erosion over exposed surface and will minimise the risk of erosion of the support structures and foundations. It will also reduce the risk of flooding the project site.	Effective storm water drainage network constructed.	Check construction and effectiveness of all drainage structures on site. Frequency: weekly during construction and bi-annually thereafter.	Construction and Operation phase	CEC / Contractor	1500	World Bank Group General EHS Guidelines: Construction and Decommissioning
Traffic and road infrastructure									
C19	Haulage vehicles carrying materials to site have a potential to increase traffic and decrease road safety especially on access routes	Reduced safety on public access roads and onsite due to increase in vehicle traffic (potential increase in traffic-related accidents and injuries)	• Developing and implementing a site-specific Traffic Management Plan for transportation purposes during construction that the transportation service provider will adhere to. • Enhancing traffic safety management within the economic zone; • Ensuring that only licensed operators and drivers use equipment and vehicles accessing the project site. • Putting up appropriate signage (road markings, road traffic signs)	Zero incidence of any road related accidents with the project site. Workers trained on road safety.	Undertaking weekly traffic surveillance inspections and road condition surveys. Record of inspections and number of workers trained in road safety.	Construction phase	CEC / Contractor(s)	1500	World Bank General EHS Guidelines: Community Health and Safety; IFC PS 4: Community Health Safety and Security; Road and Traffic Control Act, Cap 464 of the Laws of Zambia.

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			including speed limits 1and applying speed control structures; • Separating site access routes for construction vehicles and pedestrians. • Bulk storage of materials on site to lessen constant vehicular traffic. • Employing speed calming devices. • Induction of drivers on safe conduct of vehicles on construction sites. • Providing reflective vests and coveralls for workers of site.						
C20	Surface Water	Siltation and sedimentation of surface water may occur during construction.	• Land clearing should be limited to the surface before the bank of the river and streams	Zero incident of siltation into the stream	Daily visual inspections of all streams and riverbanks during construction.	Construction phase	CEC / Contractor	1000	IFC Performance Standard 3: Resource efficiency and pollution prevention.
		Accidental Spills	• During construction, oil or fuel spillages may occur from mobile equipment on site	Zero incident of oil spillage	Incident register	Construction phase	CEC / Contractor	1000	IFC Performance Standard 3: Resource efficiency and pollution prevention.
C21	Ground Water	Accidental spillage	• During construction, spills from mobile equipment may occur and seep into underground water to cause pollution	Zero incident of oil spillage	Incident register	Construction phase	CEC / Contractor	1000	IFC Performance Standard 3: Resource efficiency and pollution prevention.

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			• Bulk fuel storage to be done outside site						

	Table 2: Environmental and Social Management Plan - Operations phase								
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Air Quality									
OP1	Regular operational works on site with the potential to generate dust.	Exposure of workers to dust potentially posing health effects to them.	• Operators at risk of being exposed to significant dust emissions will be provided with adequate personal protective equipment (PPE).	Reduced risk to health and safety of personnel due to exposure to high dust levels. All workers provided with approved dust protection devises.	Daily safety checklist to ensure workers have approved PPE. Frequency: as and when potential dust generating activities are being done.	Construction phase	Site Manager	1000	World Bank General EHS Guidelines: Occupational Health and Safety; Occupational Health and Safety Act 2010 of the Laws of Zambia; IFC PS 2 - Labour and Working Conditions.
Noise and Vibrations									
OP2	clearing of vegetation from under and around the Powerline	Noise disturbance arising from the operation of Powerline plant potentially affecting workers on site.	• Operations workers likely to be exposed to high noise levels will be provided with adequate PPE such as ear plugs.	All workers at risk of being exposed to occasional high levels of noise provided with approved ear protection devises.	Monitoring noise levels to ascertain level of noise generated by inverters and to check compliance with IFC Noise Levels Guidelines for industrial receptors. Frequency: at commissioning and daily during	Operation phase	Site Manager	1000	World Bank General EHS Guidelines; IFC PS 4 - Community Health, Safety and Security; Occupational Health and Safety Act 2010 of the Laws of Zambia; IFC PS 2 - Labour and Working Conditions.

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					operation phase.				
Community Health, Safety and Security									
OP3	Operations of the Power transmission line	Risks of electric shock, thermal burn, exposure to EMF and several other hazards through unauthorized personnel trespassing the site.	• Adequate warning signs should be installed to caution the community against starting bush fires near the site and loitering near facilities with high voltage. Regular sensitizations about the danger of fire, explosions and potential electrocution should be done with the surrounding communities	Number of warning signs	Daily inspection of the premises and installed fencing around the project site.	Operation phase	Site Manager	2000	World Bank EHS Guidelines: Community Health and safety (General site Hazards); IFC PS 4: Community Health Safety and Security.
OP4	Operation of the Power transmission line.	Risk of accidents involving members of the public through unauthorized access to the project site.	• The project site should be enclosed within a security perimeter and no unauthorized persons should be allowed access to the site. • Caution signs should also be placed around the site to prevent occurrence of accidents.	Zero accidents on site involving members of the general public.	Security surveillance and community engagement to sensitize affected members of the community on their health, safety and security. Frequency: Daily for	Operation phase	Site Manager	2000	World Bank EHS Guidelines: Community Health and Safety; IFC PS 4: Community Health Safety and Security; Occupational Health and Safety Act, No. 36 of 2010 of the Laws of Zambia.

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			• The community should be sensitized on the dangers of trespassing at the project site and vandalizing of the transmission line so as to avoid potential accidents that might arise. • Reasonable steps should be taken in the provision of security and in particular the use of force and establish appropriate conduct towards workers and affected communities. • A grievance mechanism should be put in place for the Affected Communities to express concerns about the security arrangements and acts of security personnel.		security surveillance and patrol. Community engagement – quarterly.				
Landscape and Visual Amenity									

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OP5	Installation of the Powerline	Visual intrusion and disruption of the aesthetics.	• Maintaining a perimeter buffer of trees and grass vegetation along the boundaries to screen sensitive viewing areas in the vicinity of the site.	Visual intrusion and disruption to aesthetics reduced.	Annually monitoring existing vegetation screening at the site and	Operation phase	Site Manager	2000	-
Occupation Health and Safety									
OP6	Occupational health and safety of workers working on site.	Reduced occupational health and safety among workers	• A Health and Safety Policy shall be established to guide operations of the facility. • All operation activities should be conducted in accordance with provisions of the local legislation and international best practices (General EHS Guidelines: Occupational Health and Safety); • Safety rules should be enforced and complied with by workers, and those coming to	Risks of preventable accidents that can potentially result in injuries and/or fatalities substantially reduced.	Daily risks identification and implementation of management measures conducted prior to commencement of works.	Operation phase	Site Manager	1000	World Bank EHS Guidelines: Occupational Health and Safety; IFC PS 4: Community Health Safety and Security; IFC PS1; IFC PS 2; IFC PS 5; Occupational Health and Safety Act, No. 36 of 2010 of the Laws of Zambia.

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			site; • Personal Protective Clothing (PPE) should be issued and used as required by the classes of the workers on project site; • Barrier tapes and caution signs should be erected in all potential hazardous areas to prevent injury or loss of life among workers and visitors; • No unauthorized person should be allowed on site • Adequate warning signs should be installed to caution the community against starting bush fires near the site and loitering near facilities with high voltage. Regular sensitizations about the danger of fire, explosions and potential electrocution should be done with the surrounding communities						

	Table 2: Environmental and Social Management Plan - Operations phase								
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OP7	Occupational Health and Safety	Risks to workers health and safety during the operation and maintenance activities of the project as they are exposed to electromagnetic fields.	• Regular measurement of electrical and magnetic radiation levels and taking appropriate measures when exposure exceeds acceptable levels. • Only trained and certified workers should be allowed to install, maintain or repair electrical equipment.	Maintaining exposure levels within the statutory and best practice limits.	Certified and approved monitoring protocols to be carried out for all electrical and magnetic radiation. Approved and authorized work permits to qualified competent persons only. Frequency: as per operations and monitoring guidelines.	Operation phase	Site Manager	1000	World Bank General EHS Guidelines: Occupational Health and Safety; World Bank EHS Guidelines for Electric Power Transmission and Distribution; Occupational Health and Safety Act 2010 of the Laws of Zambia; Electricity Act CAP 433 of the Laws of Zambia.
OP8	Employment opportunities at the project site arising from construction works.	Influx of population of job seekers on site posing health and security risks and leading to unplanned housing / structures and commercial activities around the project area.	• Enforcement of relevant by-laws laid down by the Local authority with the help of CEC to prevent mushrooming of unplanned structures and activities.	Development of any unplanned structures and / or activities within the project site and immediate surroundings prevented.	Security surveillance and Community Engagement to sensitize on matters relating to development of unplanned structures and activities. Frequency: Daily for security surveillance and quarterly for	Construction and Operation phase	CEC / Local authorities	1000	IFC PS 4: Community Health Safety and Security; Urban and Regional Planning Act, 2015

	Table 2: Environmental and Social Management Plan - Operations phase								
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					Community Engagement				
Soils and geology									
OP9	Operation of the powerline.	Damage to powerline support structures and foundations due to soil erosion on site.	• A good wayleave road should be maintained in the powerline catchment areas to minimise soil erosion on the wayleave road and will minimise the risk of erosion of the support structures and foundations. It will also reduce the risk of flooding the project sites.	No damage the powerline support structures arising from soil erosion. Well maintained wayleave road to accommodate storm water will be maintained.	Bi-annual monitoring of effectiveness of all wayleave structures at the project site.	Construction / Operation phases	Site Manager	2000	World Bank Group General EHS Guidelines: Construction and Decommissioning

Table 3: Environmental and Social Management Plan during Decommissioning Phase (all the aspects and mitigation measures similar to construction phase)								
Aspect / Issue	**Potential Impact / Risk**	**Mitigation Measures**	**Performance Indicator / Target**	**Frequency and Monitoring Action**	**Time Frame**	**Responsible Person**	**Cost**	**Best Practice Guidance (Legal /Project Proponent / IFC)**
Air Quality								
Removal of powerline infrastructure	Potential health effects on workers involved in demolition of site buildings and removal of site infrastructure arising from dust generation.	• Workers who will be involved in carrying out decommissioning works should be provided with adequate PPE such as dust masks.	Dust emissions reduced and reduced risk to health of personnel due to exposure to high dust levels during decommissioning of the transmission line. All workers provided with approved dust protection devises.	Daily safety checklists to ensure workers have approved PPE.	Decommissioning phase	Contractor	2000	World Bank General EHS Guidelines: Occupational Health and Safety; Occupational Health and Safety Act 2010 of the Laws of Zambia; IFC PS 2 – Labour and Working Conditions.
Noise and vibration								
Removal from site of Poles and conductors.	Noise disturbance associated with decommissioning activities may potentially affect workers on site.	• Workers likely to be exposed to high noise levels should be provided with adequate PPE such as ear plugs. Decommissioning works should be done during daytime to reduce on exposing the surrounding community to any potential noise disturbance.	Noise levels not exceeding IFC Noise Levels Guidelines for industrial receptors. All workers at risk of being exposed to high levels of noise provided with approved ear protection	Daily safety checklists during decommissioning works.	Decommissioning phase	Contractor	2000	World Bank General EHS Guidelines: Construction and Decommissioning; IFC PS 4 – Community Health, Safety and Security; Occupational Health and Safety Act 2010 of the Laws of Zambia; IFC PS 2 – Labour and Working Conditions.

			devises.					

A Site-Specific Waste Management Plan for the Transmission Line

1.1 Solid Waste/Used Containers (Garbage and Inert Materials)

There is one portion on the transmission line where residents of Zambia compound dump municipal waste on the proposed route for the transmission line. CEC and InnoVent shall apply the following principles in handling of general garbage (wood, plastics, paper, and food wastes):

- Segregate components such as wood, plastic and paper, for recycling or reuse.
- Reduce packaging wastes such as paper and plastic by the use of bulk handling systems.
- Dispose all wastes at local the local Chingola road domestic waste dumpsite.

1.2 Sanitary Waste

Appropriate mobile septic tanks shall be provided during installation/pre-construction and construction phases. Sewage during the pre-construction, construction and operation phases shall be treated with residual chlorine level of 0.8-2.0 mg/l before disposal at appropriate sites.

In order to manage the waste generated on site, the following guideline and principle will be applied:

1.3 Waste Handling Guidelines

Wastes handling and disposal procedures shall be well defined at source and a waste inventory register kept. The general information required, as a minimum, for adequate definition of wastes include:

- Waste stream identification;
- Proper waste categorization;
- Waste segregation;
- Appropriate handling and disposal practice; and
- Recommended Management practices.

1.4 Waste Minimization Guidelines

The four principles of waste minimization process; recycle, reduce, reuse and recovery shall be adopted as applicable, to ensure reduction to the possible extent, of the volume or relative toxicity of liquid or solid wastes.

1.5 Waste Segregation Guidelines

All wastes to be generated from the project shall be segregated at source, into clearly designated bins at strategic locations. Color code shall be used to differentiate the different waste bins.

1.6 Waste Disposal Guidelines

All debris, spoilt materials, rubbish and other waste, shall be cleared from the site during construction and disposed off accordingly at local designated dump/landfill sites for such wastes.

All wastes in transit shall be tracked by waste consignment note. The waste consignment note records shall be kept and would include as a minimum the following information:

- Date of dispatch;
- Description of waste;
- Waste quantity/container type;
- Designated disposal site and method;
- Consignee/driver name and means of transportation; and
- Confirmation of actual disposal (time and date)

APPENDIX 1.2: IMPACT ASSESSMENT METHODOLOGY

1.0 Method of Assessing Impact Significance

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

1.1 Identification and Description of Impacts

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

1.2 Evaluation of Impacts and Mitigation Measures

1.2.1 Introduction

All impacts identified for the project were subjected to a standard convention for assessing the significance of impacts, a summary of which is provided below.

In assigning significance ratings to potential impacts before and after mitigation the approach presented below is to be followed.

1. **Determine the impact consequence rating:** This is a function of the "intensity", "duration" and "extent" of the impact (see Section 0). The consequence ratings for combinations of these three criteria are given in Section 0.

2. **Determine impact significance rating:** The significance of an impact is a function of the consequence of the impact occurring and the probability of occurrence (see Section 0). Significance is determined using the table in Section 1.2.4.

3. **Modify significance rating (if necessary):** Significance ratings are based on largely professional judgement and transparent defined criteria. In some instances, therefore, whilst the significance rating of potential impacts might be "low", the importance of these impacts to local communities or individuals might be extremely high. The importance/value which interested and affected parties attach to impacts will be highlighted, and recommendations should be made as to ways of avoiding or minimising these perceived negative impacts through project design, selection of appropriate alternatives and / or management.

4. **Determine degree of confidence of the significance assessment:** Once the significance of the impact has been determined, the degree of confidence in the assessment will be qualified (see Section 0). Confidence in the prediction is associated with any uncertainties, for example, where information is insufficient to assess the impact.

1.2.2 Criteria for Impact Assessment

The criteria for impact assessment are provided below.

Criteria	Rating	Description
Criteria for ranking of the INTENSITY (SEVERITY) of environmental impacts	**ZERO TO VERY LOW**	Negligible change, disturbance or nuisance. The impact affects the environment in such a way that natural functions and processes are not affected. People / communities are able to adapt with relative ease and maintain pre-impact livelihoods.
	LOW	Minor (Slight) change, disturbance or nuisance. The impact on the environment is not detectable or there is no perceptible change to people's livelihood.
	MEDIUM	Moderate change, disturbance or discomfort. Where the affected environment is altered, but natural functions and processes continue, albeit in a modified way. People/communities are able to adapt with some difficulty and maintain pre-impact livelihoods but only with a degree of support.
	HIGH	Prominent change, disturbance or degradation. Where natural functions or processes are altered to the extent that they will temporarily or permanently cease. Affected people/communities will not be able to adapt to changes or continue to maintain-pre impact livelihoods.
Criteria for ranking the DURATION of impacts	**SHORT TERM**	< 5 years.
	MEDIUM TERM	5 to < 15 years.
	LONG TERM	> 15 years, but where the impact will eventually cease either because of natural processes or by human intervention.
	PERMANENT	Where mitigation either by natural processes or by human intervention will not occur in such a way or in such time span that the impact can be considered transient.
Criteria for ranking the EXTENT / SPATIAL SCALE of impacts	**LOCAL**	Impact is confined to project or study area or part thereof, e.g. limited to the area of interest and its immediate surroundings.
	REGIONAL	Impact is confined to the region, e.g. coast, basin, catchment, municipal region, etc.
	NATIONAL	Impact is confined to the country as a whole, e.g. South Africa, etc.
	INTERNATIONAL	Impact extends beyond the national scale.
Criteria for determining the PROBABILITY of impacts	**IMPROBABLE**	Where the possibility of the impact to materialise is very low either because of design or historic experience, i.e. ≤ 30% chance of occurring.

Criteria	Rating	Description
	POSSIBLE	Where there is a distinct possibility that the impact would occur, i.e. > 30 to ≤ 60% chance of occurring.
	PROBABLE	Where it is most likely that the impact would occur, i.e. > 60 to ≤ 80% chance of occurring.
	DEFINITE	Where the impact would occur regardless of any prevention measures, i.e. > 80% chance of occurring.
Criteria for determining the DEGREE OF CONFIDENCE of the assessment	**LOW**	≤ 35% sure of impact prediction.
	MEDIUM	> 35% and ≤ 70% sure of impact prediction.
	HIGH	> 70% sure of impact prediction.
Criteria for the DEGREE TO WHICH IMPACT CAN BE MITIGATED - the degree to which an impact can be reduced / enhanced	**NONE**	No change in impact after mitigation.
	VERY LOW	Where the significance rating stays the same, but where mitigation will reduce the intensity of the impact.
	LOW	Where the significance rating drops by one level, after mitigation.
	MEDIUM	Where the significance rating drops by two to three levels, after mitigation.
	HIGH	Where the significance rating drops by more than three levels, after mitigation.
Criteria for LOSS OF RESOURCES - the degree to which a resource is permanently affected by the activity, i.e. the degree to which a resource is irreplaceable	**LOW**	Where the activity results in a loss of a particular resource but where the natural, cultural and social functions and processes are not affected.
	MEDIUM	Where the loss of a resource occurs, but natural, cultural and social functions and processes continue, albeit in a modified way.
	HIGH	Where the activity results in an irreplaceable loss of a resource.

1.2.3 Determining Consequence

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

Rating	Description
VERY HIGH	Impacts could be EITHER: of ***high intensity*** at a ***regional level*** and endure in the ***long term***; OR of ***high intensity*** at a ***national level*** in the ***medium term***; OR of ***medium intensity*** at a ***national level*** in the ***long term.***
HIGH	Impacts could be EITHER: of ***high intensity*** at a ***regional level*** and endure in the ***medium term***; OR of ***high intensity*** at a ***national level*** in the ***short term***; OR of ***medium intensity*** at a ***national level*** in the ***medium term****;* OR of ***low intensity*** at a ***national level*** in the ***long term***; OR of ***high intensity*** at a ***local level*** in the ***long term***; OR of ***medium intensity*** at a ***regional level*** in the ***long term.***
MEDIUM	Impacts could be EITHER: of ***high intensity*** at a ***local level*** and endure in the ***medium term***; OR of ***medium intensity*** at a ***regional level*** in the ***medium term***; OR of ***high intensity*** at a ***regional level*** in the ***short term***; OR of ***medium intensity*** at a ***national level*** in the ***short term***; OR of ***medium intensity*** at a ***local level*** in the ***long term***; OR of ***low intensity*** at a ***national level*** in the ***medium term****;* OR of ***low intensity*** at a ***regional level*** in the ***long term.***
LOW	Impacts could be EITHER of ***low intensity*** at a ***regional level*** and endure in the ***medium term***; OR of ***low intensity*** at a ***national level*** in the ***short term***; OR of ***high intensity*** at a ***local level*** and endure in the ***short term***; OR of ***medium intensity*** at a ***regional level*** in the ***short term***; OR of ***low intensity*** at a ***local level*** in the ***long term***;

Rating	Description
	OR of ***medium intensity*** at a ***local level*** and endure in the ***medium term.***
VERY LOW	Impacts could be EITHER of ***low intensity*** at a ***local level*** and endure in the ***medium term***; OR of ***low intensity*** at a ***regional level*** and endure in the ***short term***; OR of ***low to medium intensity*** at a ***local level*** and endure in the ***short term.*** OR **Zero to very low intensity** with any combination of extent and duration.

1.2.4 Determining Significance

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

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

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

APPENDIX 1.3: ENVIRONMENTAL MONITORING PLAN FOR POWER TRANSMISSION LINE

ENVIRONMENTAL MONITORING PLAN FOR POWER TRANSMISSION LINE

Key monitoring requirements have been identified through the ESIA process to monitor the environmental and social performance of the Project. The overall objectives of monitoring are to:

- Ensure regulatory requirements are met;
- Verify predictions made in the ESIA by obtaining real time measurements;
- Verify that mitigation measures are effective; and
- Provide early warning of potential unplanned for or unmitigated impacts.

Monitoring will be carried out by the Project team and Contractor(s) pursuant to their contractual obligations to undertake inspections, monitoring and reporting. The following four types of inspections and monitoring will be employed:

- **Inspections** planned and conducted on a regular basis to ensure that mitigation measures and commitments are properly maintained and implemented, and that specific management procedures are being followed (e.g. practices on temporary waste storage and transport).
- **Receptor monitoring** undertaken to verify predictions made in the ESIA and to confirm that the activities at the site are not resulting in unacceptable impacts on the environment and assessing disturbance to affected communities through a grievance mechanism.
- **Compliance monitoring** involving periodic sampling or continuous recording of specific environmental quality indicators to ensure compliance of emissions with Project standards (e.g. air quality and noise monitoring).
- **Auditing** to assess compliance of the Project activities with both regulatory and site management system requirements.

The results of the inspection and monitoring activities will be reported to the Senior Manager-HSES and Risk on a monthly, basis, or as required. The total budget for Environmental Monitoring stands at US$16,000.

Table 1: Environmental Monitoring Plan for selected Environmental and Social Aspects

Aspect, Potential impact/issue	ESIA Ref.	Specific Actions	Responsible Person for ensuring commitment implementation	Means of verification that commitment has been met (KPI)	Timing and frequency of monitoring	Responsibility for implementation of monitoring	Reporting Requirements	Budget for Monitoring Cost (US$)
Biophysical Impacts								
Air Quality Management								
Ambient Air Quality	6.2.1.1	Monitoring of ambient PM10, SO_2 and NO_x levels at pre-defined receptor locations to establish conformance to the ambient air quality guidelines.	Project Manager	Results of air quality samples	Every 3 months	Senior Manager-HSES and Risk	HSE Audit Report	3000
Soils Management								
Soil Erosion and Contamination	6.2.1.3 and ESMP	Monitoring of volumes of runoff entering the Luanshimba stream. The Total Suspended Solids is likely to vary over a season based on the amount of rainfall and runoff.	Project Manager	HSE Manager report, Visual inspection	Monthly	Senior Manager-HSES and Risk	HSE Manager audit report	1000
Ecological Management								
Monitoring of riverline vegetation and aquatic life in Luanshimba stream	6.2.2.2	• Visual inspections to ensure that vegetation along the streamlines remain undisturbed as per Developers environmental commitment.	Project Manager	Monitoring records	Every 3 months	Senior Manager-HSES and Risk	HSE Manager audit report	1000

Aspect, Potential impact/issue	ESIA Ref.	Specific Actions	Responsible Person for ensuring commitment implementation	Means of verification that commitment has been met (KPI)	Timing and frequency of monitoring	Responsibility for implementation of monitoring	Reporting Requirements	Budget for Monitoring Cost (US$)
Introduction of Invasive Aquatic Plant Species through Flooding of streamlines	6.2.2.2	Development and implementation of an Invasive Species Management Plan, which will incorporate a monitoring programme and resource requirements.	Project Manager	Recorded training	Every 6 months	Senior Manager-HSES and Risk	Record of training	1000
Introduction of Invasive Aquatic Plant Species through Flooding of streamlines.	6.2.2.1 and ESMP	Vegetative wastes of invasive species of plants, e.g. *Tithonia diversiforlia* will be collected and disposed at a local approved landfill site	Project Manager	Records of waste disposal	Logs to be audited every 3 months throughout constructio n	Senior Manager-HSES and Risk	HSE Manager audit report	1000
Surface Water Quality	ESMP	Water quality needs to be monitored on a regular basis in order to highlight potential issues during the operational phase. The main variables include: Nitrogen, Phosphorus, turbidity, pH, electrical conductivity, suspended solids and DO. It is also recommended that water quality monitoring include the analyses of lead, zinc and methyl- mercury. Monitoring points should be located upstream of the	Project Manager	Water quality tests	Every 6 months	Senior Manager-HSES and Risk	HSE Manager audit report	3000

Aspect, Potential impact/issue	ESIA Ref.	Specific Actions	Responsible Person for ensuring commitment implementation	Means of verification that commitment has been met (KPI)	Timing and frequency of monitoring	Responsibility for implementation of monitoring	Reporting Requirements	Budget for Monitoring Cost (US$)
		Luanshimba stream, within the stretch falling within the project land and downstream.						
Socio-economic Impacts								
Over-arching Plans and Programmes								
Discussion Points	-	In case CSR activities will be established they will be monitored on same basis as mitigation programmes/activities.	Project Manager	Corporate Social Responsibility Strategy	Every 6 months	Senior Manager-HSES and Risk	Updated Corporate Social Responsibility Strategy	1000
Visual and aesthetics	6.2.3.1	Implement the Stakeholder Engagement Plan (SEP) monitoring as part of project implementation.	Project Manager	Stakeholder Engagement Plan, Documented community communications	Every 3 months	Senior Manager-HSES and Risk	Updated SEP	1000
Management of Malaria	6.2.3.5 and 6.2.3.6	Monitor the incidence of malaria using available data, most notably the number of workforce cases that occur.	Project Manager	Collection of data	Throughout construction monthly	Senior Manager-HSES and Risk	HSE Manager audit report	1000

Aspect, Potential impact/issue	ESIA Ref.	Specific Actions	Responsible Person for ensuring commitment implementation	Means of verification that commitment has been met (KPI)	Timing and frequency of monitoring	Responsibility for implementation of monitoring	Reporting Requirements	Budget for Monitoring Cost (US$)
Management of Employment Creation	6.1.1	Record the number and provenance of persons employed on site	Project Manager	Records of employees	Throughout construction and operation Monthly	Senior Manager-HSES and Risk	HSE Manager audit report	1000
Livelihood restoration and livelihood restoration programs	6.2.3.3	Monitor the implementation of all livelihood restoration activities as stated in the Livelihood Restoration Plan	Project Manager	Monitoring and evaluation reports	Quarterly (every 3 months)	Senior Manager-HSES and Risk	HSE Manager audit report	2000

APPENDIX 2.1: MINUTES OF CONSULTATIVE MEETINGS

MINUTES OF CONSULTATIVE MEETINGS

Innovent-CEC Garneton North & South GET FiT Solar Projects

Disclosure Meeting

Minutes of the Meeting Held on 30 April 2019 between Innovent-CEC and Kitwe City Council

Present:

Mr.M Seke	Town Clerk	Kitwe City Council
Mr. G Akayombokkwa	Director Engineering Services	Kitwe City Council
Mr. P M Nyirenda	Director Administration	Kitwe City Council
Mr. J Mbashila	Assistant Director Housing & Social	Kitwe City Council
Mr. M Nyirenda	Director Planning	Kitwe City Council
Ms L T Chilinda	Council Advocate	Kitwe City Council
Mr. P N Mapulanga	Acting Director Finance	Kitwe City Council
Mr. C Nthala	Acting Managing Director	CEC
Mr. V C Nyirenda	Acting Chief Projects Officer	CEC
Mrs. D M Phiri	Senior Manager Socioeconomic Development	CEC
Mr. C Chongo	Project Manager GET Fit	CEC
Mr. F Kasongo	HSE Manager	CEC
Mr. J Mutanuka	Security Manager	CEC
Ms M Sibalwa	Advisor Public Relations	CEC

1.0 Introduction

The meeting commenced at 1545 hrs and the Head of the CEC Delegation (Mr. Nthala) requested all present to introduce themselves. After the introductions, the chairman explained that Copperbelt Energy Corporation Plc (CEC), in partnership with InnoVent SAS, was on 5 April 2019 awarded two solar photovoltaic (PV) projects of 20MW each under the GET FiT Zambia programme. He explained that the purpose of the meeting was to brief Kitwe City Council ("the Council") on the scope, benefits and impacts of the projects which were not only important to the nation as a whole, but also to Kitwe City Council in particular.

2.0 Project Brief

After the introduction, the CEC Acting Chief Projects Officer expounded on the following

- In October 2017 Get Fit Zambia advertised an RFP for the development of solar projects of 20 MW each in different locations in Zambia.
- CEC partnered with Innovent SAS (IVT) and submitted a bid for development of 2 x 20MW photovoltaics power plants in Garneton South and Garneton North
- In April 2019, the Innovent-CEC consortium was awarded both Garneton South and Garneton North in response to the 2017 RFP
- The nearest settlements are Garneton, Garneton East, Zambia Compound, Sand Sales Village, and some farms on the eastern boundary of the project land.

3.0 Project Scope and Location

The Project Manager Mr. Chongo took the meeting through the project scope and explained that the project area is situated on the east of the Garneton Township extending from the Nakayombo stream going northwards up to about Sandsales Village. The Sand Sales Village itself was not affected.

Garneton South

- Extends from Nakayombo Stream up to Mwambashi River.
- The project will take up a land mass of about 60 ha.
- The plant capacity will be 20MW
- The project Will involve laying of solar panels on the said land
- The transmission line will terminate at the 33 KV Bus bar at Mwambashi substation

Garneton North

- Extends from Mwambashi Stream to Sand Sales Village
- Will take up a land mass of about 50 ha
- The plant capacity will be 20 MW
- Will involve laying of solar panels on the said land
- The transmission line will connect to the Mwambashi- Kafironda ZESCO 33KV line.

4.0 Environmental and Social Issues

The following were said to be the key environmental and social issues

Garneton South

- The land for the proposed projects is owned by CEC and is on title
- The nearest settlement is Garneton Township, East Garneton Township, Zambia Compound and some farms on the eastern end of the boundary.
- The project land is not settled.
- Some small scale farmers are illegally cultivating on the proposed project land, each farmer has less than 1 ha. They will be given time to harvest their crops so as to minimize their loss.
- There is illegal dumping of refuse on the site. CEC has the responsibility to test the waste material and determine whether it's safe and will need to work with the council to safely dispose of it.
- There are excavations by some unknown individuals. CEC will need to back-fill in order to make the project land even and stable.The site has some foot paths used by the locals. Alternative routes will be paved in consultation with the locals.
- The site has no cultural, heritage, education, or health issues
- The land has vegetation, which will be affected by the project. Innovent- CEC will work with the Forestry Dept to quantify and draw up mitigation measures.

Some encroachments on some parts of the project land. CEC shall work in collaboration with Kitwe City council to reduce the risk associated with this and engage whoever is found encroaching.

Garneton North

- The land for the proposed project is owned by CEC and is on title
- The nearest settlement is Sandsales Village and some farms on the eastern boundary
- The project land is not settled.
- Some farmers are illegally cultivating on the proposed project land. Each cultivated area is less than 1 ha. The affected farmers will be given time to harvest their crops in order to minimize their loss.
- There are foot paths leading to Mr. Wright's farm. Alternative routes will be mapped working with the affected community
- The site has no cultural, heritage, education, or health issues
- The land has some vegetation of vegetation, CEC will work with the Forestry Dept to quantify and draw up mitigation measures.
- Persistent encroachments on the project land

5.0 Project Benefits

The following were explained to be the project benefits:

- Contribution to the diversification of the national power supply mix
- During operation, the power plants will supply 54,000 MWh energy per year which will result in 50,000 tons of carbon savings
- Availability of temporary, seasonal and permanent jobs. Temporary jobs will mainly be general work such as bush clearing and planting of loan. Seasonal jobs will include cleaning of solar panels and weeding of the loan. Permanent jobs will be security guards and other professional jobs (engineering and business).
- Provision of valuable local content and maximizing economic/social benefits, technology transfer and overall human capacity development.

6.0 Major Challenges

The following were presented as the major challenges to the project:

- Persistent encroachments by various people who hope to benefit by compensation from the project.
- Illegal dumping of refuse by the general public. Some of the refuse may be toxic to the environment and human life, so CEC was faced with the responsibility of clearing and cleaning up.
- Illegal excavations made the ground unstable and uneven leaving the responsibility of backfilling and stabilizing the ground with CEC

The Acting Chief Projects Officer implored the Council to render all possible support to the projects and emphasized that the project timelines were tight. The projects were expected to commence in January 2019 and be commissioned by October 2020. He said if the encroachments were not arrested the projects could be potentially delayed.

7.0 Response from the Town Clerk

The Town Clerk (TC) responded that:

- He was aware of the threat of climate change and government efforts to diversify energy sources in the country.
- The Kitwe City executive will support any initiatives such as the one being shown by CEC and was happy with what CEC was undertaking as a contribution towards the climate challenges.
- The contents of the presentation will be discussed in the next full council meeting.
- CEC was requested to follow up by writing a letter to TC's office highlighting all major challenges so that councilors are made aware of the same and render the necessary input. The council will be on the lookout for any applications for land in the project area and reject those that may infringe on the project land.
- Since the project land is on title, the Council will ensure that it (CEC) is allowed all the property rights without disturbance. CEC was encouraged to use the law to the greatest extent possible against encroachers since the council has no mandate to police private land.
- A suggestion was made for the two parties to be having regular update meetings.
- In Zambia, there's no law for compensating people who construct/cultivate/encroach on private property, but CEC is free to follow its own standards.
- All necessary support will be rendered to ensure project timelines are met.

8.0 **Questions/contributions suggestions**:

Justin Mbashila: Is CEC doing a full ESIA or an EPB for the project?

Response: CEC is doing an EPB

Mapopa Nyirenda: Will CEC be applying for change of land use? If so, can you commence the process quickly since the entire process may take long?

Response: Yes, CEC will be applying for change of land use and application forms have already been obtained.

Justin Mbashila: Will CEC be planting trees to make-up for the ones that will be cut down to pave way for the project?

Response: yes, CEC will work with the Forestry Department to ensure other trees are planted in replacement of the ones that will be cut down in the project area. CEC has an existing program of planting trees.

9.0 **Close of Meeting**

There being no further issues for discussion, the meeting closed at 1730 hrs.

Copperbelt Energy Corporation

Get Fit Project

Minutes of the Public Meeting Held on 6 February 2019 at Sand Sales Village for the CEC Garneton North and Garneton South Projects

Present:

Kelvin Samuntu	-	Garneton
Stanley]Tembo		Sandsales Village
Kabwe Digashome		Kamatipa
Evans Kabwe		Sandsales
Enock Kambiko		Sandsales
Alion Sakala		SDA Farms
Gift Musumba		Garneton
Rivan Bwalya		Sandsales
Kelvin Tembo		Sandsales
Abel Chibale		Sandsales
Kasongo Sakala		SDA Farm
Boniface Sakala		Sandsales
William Chibale		Sandsales
Edward Chibale		Sandsales
Mubiana Pires		Sandsales
Jason Chingungu		Garneton
Mubanga Emmanuel		Garneton
Richard Kabindi		Garneton
Frank Nkosha		Garneton
Mwanza Kennedy		Sandsales
Fredrick Tembo		Sandsales
Beauty Saladi		Zambia Compund
Alice Kabwe		Kamatipa
Dorophina Chingungu		Garneton

Violet Samu	Sandsales
Justina Mukonku	Garneton East
Julius Mumba	Sandsales
Chileshe Kaoma	Sandsales
Alexi Phiri	Town Clerk Farm
Liness Namulungu	Garneton East
Matilda Katebe	Sandsales
Mulenga Kabaso	Garneton
Joseph Mulenga	Sandsales
Evelyn Kabwe	Sandsales
Eliza Chama	Sandsales
James Musango	Sandsales
Benson Sakala	Sandsales
Brian Zulu	Sandsales
Grace Bwalya	Sandsales
Chandwe Musonda	Chairman Sandsales Village
Silas Lungu	Secretary Sandsales Ward
Beauty Chibale	Sandsales
Joseph Mulenga	Publicity Secretary Sandsales Ward
Anthony Musonda	Ward Development Chairman
Worries Sinkala	CEC
Marvis Muyamwa	CEC
Cherrystar Chansa	CEC
Hilton Fulele	CEC
Francis Kasongo	CEC
Dorcas Mbula-Phiri	CEC
Theresa Bwalya	Sandsales.

Apologies

Mpasa Mwaya	-	Area Councillor

Janet Kasongo

Introduction: The meeting commenced at 1130 hrs with an opening prayer. After personal introductions of all people present, Mrs. Phiri introduced the purpose of the meeting which was to further discuss the Get Fit project, its impacts and declaration of the cut- off date. She said this was a follow-up to the meeting held on 18 December 2018.

After the introductions and introductory remarks, Mr. Fulele gave a brief description of the project follows:

- **Project Location:** The locations are called Ganerton South and Ganerton North. He used a map to show the two locations and explained the whole area extends from the Northern Side of the Nakayombo stream through to a point near Sandsales. Garneton South started from the Northern Bank of the Nkayombo stream un to the Mwambashi River while Garneton North Extended from the Northern Bank of the Mwambashi River up to the Sandsales Plant area. Mr Fulele further explained the boundaries as the area starting from about 30m from the eastern line of the CEC power lines eastwards to the area that was graded by the grader. The graded area extended from the Northern side of Nakayombo Stream up to Sandsales Village. He added that the whole area will be used for the two projects
- **Capacity** : On capacity Mr. Fulele said the total capacity of the project will be 40 MW, divided as 20 MW for Garneton South and 20 MW for Ganeton North. He said construction was likely to commence end of May/beginning of June.
  -The point of connection will be Mwambashi 33 kv ZESCO substation for Garnaton South (8 km distance) and Mwambashi- Kafironda 33 kv ZESCO line for Garneton North (6km line)
  -Size of modules will be 360 Wp for each of the project sites
  -There will be 69, 480 modules for each of the project sites
  -Inverter size will be 125 kWac for each of the project sites
  -size of inverter for each site will be 193 for each site
- **Construction Phase:** Mr. Fulele explained that construction will involve clearing the whole area and installing of solar panels. This will require clearing of trees and grass, digging of trenches, backfilling, planting of loan, cleaning of solar panels and a few security guards. He further said the cleaning of solar panels and weeding/trimming of loan will be a seasonal requirement.

After the technical presentations, the environmental manager presented the environmental aspects as follows

- Total land required was about 128 ha and that part of the area was currently covered with vegetation and harbors some insects and small animals such as rats, lizards e.t.c..
- The energy or electricity will be drawn from the sun by the solar panels so the project will have no impact on air water or soil quality. There will be no emissions or effluent, neither will there be noise impact.
- The Zambia Environmental Management Agency will come and assess any potential impacts on the environment prior to approving the project.

The Manager Socioeconomic Development presented the social aspects of the project as follow.

- Get Fit project was initiated by the government and CEC formed a consortium with Innovent SAS (IVT) for purposes of preparing and submitting a tender. The consortium has been prequalified.

- The project area was quite linear and extended from the northern side of the Nakayombo Stream northwards up to Sandsales village and the width was from the point 30m from the right end power line up to the graded area on the eastern side, and borders the following on the right side – Nakayombo graveyard, Mr. Sichinga's farm, Mr. Gondwe's farm, Mr. Wright's Farm, Proclamation Institute Zambia (PIZ) Christian college and Sandsales area.
- The subject land was owned by CEC as part of the existing transmission wayleave.

The area was crisscrossed by foot paths, though there was one gazzeted road (Zircon Ave.) from Garneton to Nakayombo Graveyard.

- There are no cultural/heritage issues, nor is there any education or health facility affected.
- There are no resettlement issues, the Sandsales village does not fall within the portion of land earmarked for the project .
- There are a few cultivated areas by subsistence farmers from the surrounding settlements, a total of 19 have been counted.
- The project was likely to commence beginning of May and will be under construction for 1 year.
- **The 6th of February 2019 was declared as the cut-off date so anyone who needed a social cultural issue to be tackled must inform the CEC team by the end of the day.**
- The project was going to bring about opportunities for temporally and seasonal employment. Temporally employment will include clearing of project land, digging of trenches, backfilling and planting of loans. Seasonal and maintenance jobs will mainly be cleaning of panels and trimming of the loans (numbers have not yet been worked out).
- For Employment the affected people will be given first priority as much as possible.
- The construction period will provide opportunity for trading in foodstaff (groundnuts, cassava, mushrooms e.t.c)
- There will be no cash compensation for the , however compensation will be in form of the temporary and seasonal jobs and permanent jobs for those who will have the skill. Other none cash payments will be considered
- The farmers were given up to end of April 2019 to harvest their crops and pave way for the project. This meant there will be no loss to the farmers.

After the presentations, the meeting proceeded into the question and answer session and the following questions were asked.

Question - Evans Kabwe: What is the company going to do about our land?

Response: The land in question belongs to the company CEC and there's no other land to be given out.

Question – Frank Nkosha: We have already planted, will the company give us time to harvest?

Response: Yes you have up to May to harvest your crops.

Question - Rivan Bwalya: We have already planted in our fields and spent money on seed, labour and fertilizer, what is the company going to do about this?

Response: The company has extended the time allowing for people to harvest their crop. Instead of February, this has been extended to end of April/May.

Question -Alex Phiri: Will jobs available on the project be seasonal or permanent. **Response:**There will be temporally jobs during construction but during the operation period there will be permanent skilled jobs and seasonal jobs for the unskilled.

Question - Emmanuel Mubanga: I wish to thank the company for extending the period for us to harvest the crops. This will enable us to re-coup our investment.

Response: The contribution was noted

Since there were no more issues for discussion, the meeting closed at 1330 hrs.

Copperbelt Energy Corporation

Get Fit Project

Minutes of the Meeting held between Copperbelt Energy Corporation (CEC) and the Ganerton and Sand sales Community on 18 December 2018 at the Sand Sales Church.

Present:

Enock Kambiko	Kambiko Farm
Andrew Mukosa	Near Kafue River
Alexander Phiri	Phiri Farm
Adriano Kapolobwe	Chalwe Farm
Ronald Kalunga	Powerline Village
Richard Tembo	Kwa Goliati
Evans Kabwe	Power line Village
Lewis Chama	"
Emmanuel Mulenga	Ganerton
Eliza Chama	Power line Village
Grace Chibale	Sand Sales
Ruth Mukosa	Near Kafue River
Evelyn Mwansa	Zambia Compound - Ganerton
Janet Kasongo	"
Beauty Salati	"
Rose Mbaka	"
Florence Titima	"
Ronald Mulundu	"
Chandwe Musonda	Sand Sales (Chairman Powerline Village)
Edward Chibale	Sand Sales (Vice Chairman Powerline Village)
Timothy Kachinga	Kuma ploti
Sydney Tembo	"
Albert Tembo	"

Violet Chandwe	Power line Village
Kelvin Tembo	kuma ploti
Abram Katongo	Powerline Village
Fredrick Tembo	Kuma ploti
Boyd Kasonde	"
Daniel Mukupa	Power line Village
Julius Mumba	"
William Chibale	Sand Sales
Alice Kabwe	Kamatipa
Kelvin Samuntu	Ganerton
Francis Tembo	Zambia Compound – Ganerton
Yvonne Samuntu	"
Emmanuel Mubanga	"
John Chanda	"
Willian Kalenga	"
Edward Chibale	Powerline Village
Kabwe Digashome	Kamatipa
Josephine Kayombo	Zambia Compound – Ganerton
Rebecca Chipango	"
Silas Lungu	- Ward Secretary (Sand Sales)
Dorcas M Phiri	CEC
Hilton Fulele	CEC
Chester Chansa	CEC

The meeting commenced at 1145. The Ward secretary Mr. Silas Lungu introduced the meeting and explained that the purpose of the meeting was to discus the Get fit Project by CEC, what it's about, where the CEC boundary is, where and what the encroachments are and the way forward. After these remarks, Mr. Phiri handed over to Mrs Dorcas Phiri to Commence the discussions in detail.

Mrs Phiri explained that this was the second meeting for some of the people present. She further explained that on the 23rd of November, a team of CEC, the Ganerton Councillor Ms Mpasa and some Ward Development leaders had met some of the people present in smaller groups and introduced the project. The boundary of the project was explained, and emphasis was placed in telling the community not to cultivate on CEC land. In

the smaller groups several people asked some questions and it was felt that it was important to have another meeting to go through the same subject yet again, hence the convening of the current meeting.

Mrs Phiri then went on to introduce the project saying, Copperbelt Energy Corporation Plc (CEC) in partnership with InnoVent SAS of France was participating in the Global Energy Transfer (GET FIT) tender Program. This was a program initiated by the Government of the Republic of Zambia (GRZ) driven through the Zambian Ministry of Energy to drive the development and installation of at least 100MW of solar power throughout the country. CEC and InnoVent have been jointly shortlisted to participate in the Project. The selected project locations in question being called; Ganerton North and Ganerton South respectively. Ganerton North was proposed for a capacity of 20MW and will loop into the ZESCO Mwambashi-Kafironda 33kV transmission line for a stretch of about 3km to the existing line, while Ganerton south was also being proposed with a capacity of 20MW, it will feed into the Mwambashi Zesco Substation along Kalulushi road for a stretch over 8km. Details of the location would be covered by the engineer Mr. Hilton Fulele.

Mrs. Phiri went on to say overall objective of the project was to add renewable and sustainably generated power to the national grid. CEC was going to implement the project in line with the relevant Zambian legal provisions such as Environmental Management Act No. 21 of 2011, Forestry Act, Energy Regulation Act and Electricity Act among others.

The importance of the project to the nation was emphasized, explaining that this was an important national project that was going to contribute to the existing grid power and would help to minimize the power shortages currently being experienced in the country. It was further explained that the project would involve installation of solar panels on the existing CEC way leaf, which was CEC land extending from the Northern bank of the Nakayombo stream up to the Sand Sales area, near where the meeting was being held. This area had a few cultivation fields scattered along it which paused potential social problems which could delay the project. Mrs. Phiri said this land belongs to CEC and all those cultivating or who had built in the area had to vacate by January and leave the land free for the project. She emphasized the importance of the community observing the boundaries of the existing way leaves as CEC could use it for any project any time. She encouraged those who had constructed huts within this land to relocate without being forcefully removed. She further explained that there would be no compensation for encroachers because they were using the land without authority from CEC. She implored all present to cooperate and support the project.

On environmental Mrs. Phiri said that CEC will conduct an ESIA which will be submitted to ZEMA for approval. The report will discuss the impact of the project on the flora and fauna, health and safety aspects, and its impacts on air and water quality. She went on to say that from preliminary assessments there will be no significant impacts on health and safety of the community or on air and water quality. She added that after receiving the report, ZEMA will then undertake a site visit to assess correctness of the report and could stop the project if they find serious issues on any of these aspects.

On employment, Mrs Phiri explained that electricity would be generated from solar panels so all the land in the said area was going to be cleared. She stated that there will be opportunities for temporary manual labour during project construction and that priority would be given to the people present in the meeting. Jobs would include clearing of land before laying of solar panels.

Mr. Fulele went through the main components of the project i.e. The capacity and the points for connecting to the National. He used a map to point out the location (from Nakayombo stream up to sand Sales area and said the right side (when facing North) of the outer boundary was marked by the clearing that was done by the grader all the way from the Nakayombo stream up to the Sand sales area and stated there were also pegs or red and white ribbons along this same boundary. He said in this area, solar panels were going to be laid out for the generation of electricity, so all the land was going to be cleared of everything, leaving only bear ground before the installing of the solar panels. The left side extended between 50 to 60 metres outwards from the last line and pointed out the gravel road that people used to get to the meeting was within the CEC land as well the ZESCO electricity line.

Mr. Fulele said Temporary jobs such as land clearing would be created during construction and added that after completion and commissioning there would be other seasonal jobs such as grass cutting under the panels as well as cleaning of dust from the panels.

On the timeline, Mr. Fulele said the construction phase of the project would take about 7 months from time of award.

Finally, Mr. Fulele discussed the importance of community safety during project construction and community safety Vs the existing power lines which he said carry high capacity energy which could char humans should anything go wrong. He encouraged the community to keep away both from the construction site and observe the boundaries of the existing power lines.

After presentations, the meeting was then opened for a question and answer session and the following questions were asked.

Florence Titima: What about those of us who have planted groundnuts, should we also remove them? Response: All crops must be cleared from CEC land by January 2019.

Alexander Phiri: Should those of us living here in the power line village vacate? Is there going to be compensation? Mr. Chandwe Musonda added that the council had given alternative land to all those living in the power line village, but no documentation had yet been issued. So, will the company help to ensure the documentation for land is issued.

Response: Yes, all those living in the power line village are on CEC land must vacate. They must move to the land that had been allocated to them by the council and start chasing their documentation from there before the council issue the land to other people. It was further clarified that there will be no compensation for all people that are using CEC land illegally and that the company cannot get involved in chasing their documentation. The area councillor should help to make follow-up.

Enock Kambiko: We shall ask the Councillor to chase the documentation for our land from the Council.

Response: That is your prerogative and right. Please go ahead and take it up with your Councillor.

Rebecca Chipango: We cultivate at the Gondwe's farm, is that area going to be affected by the project?

Response: The boundary marker is the cleared or graded area. If you field is on the right side (when facing north) of the graded portion then it is not affected by the project but if it is on the left side, then it is within CEC land and all activities must stop and the area vacated by January.

Kabwe Digashome: We risked and planted on CEC land rented by Mr. Gondwe's. When CEC went around sensitizing people not to cultivate on their land, we informed Mr. Gondwe and he gave us a portion of land

within his farm. Later some people came to tell us it was their land as they had bought it off Mr. Gondwe, we have gone back to CEC land and started planting again, can the CEC please consider our plight?

Response: CEC will not consider your plight. You must go back to Mr. Gondwe and ask him to either give you alternative land or give you back your money.

Janet Kasongo: We planted maize just before the rains started in November, we expect our maize to be ready by February, should we cut our maize?

Response. The project is likely to commence by January/February. By this time, all crops should have been cleared to pave way for the project.

Evans Kabwe: Will the company consider us for jobs?

Response: All the people currently with activities in the project area will be given priority for all manual work.

As there were no further questions, the meeting closed at 15:30 hrs. In closing, Mrs. Phiri said that this was not the end of the interactions between the company and the community. There will be further meetings and the community would be informed as and when need arose. She said CEC was considering renting a small place within the community where a company official would sit once or twice a week to hear and record any concerns which the people may have on the project.

Copperbelt Energy Corporation

Get Fit Project

Minutes of the scoping Meeting Held on 23rd November 2018 in the Garneton way leave.

Present:

Mpasa Mwaya	Areas Councillor & Chairperson – Garneton Development Committee (WDC)
Anthony Musonda	Committee member (WDC)
Zacheyo Mbewe	Committee Member (WDC)
Lyson Mubanga	Chairman (WDC Itimpi)
Francis Katongo	Committee Member (WDC)
Joseph Mulenga	Publicity Secretary Itimpi Ward
Silas Lungu	Secretary - Sand Sales
Patrick Mwalimu	Town Planner -Kitwe City Council
Muchimba Hamusikile	Community Development Officer -Kitwe City Council
Dorcas Phiri	CEC
Potashi Kalemba	CEC
Mavis Muyamwa	CEC
Abel Mukuma	CEC

The meeting commenced at 11 hrs and Mrs D M Phiri explained the purposed of the meeting which was to introduce the GETFIT project to the meeting attendees as summarised below:

Copperbelt Energy Corporation Plc (CEC) in partnership with InnoVent SAS of France is participating in the Global Energy Transfer (GETFIT) tender Program. This is a program initiated by the Government of the Republic of Zambia (GRZ) driven through the Zambian Ministry of Energy to drive the development and installation of at least 100MW of solar power throughout the country. CEC and InnoVent have been jointly shortlisted to participate in the Project. The selected project locations in question being called; Garneton north and Garneton south respectively. Garneton north that is being proposed with a capacity of 20MW will loop into the ZESCO Mwambashi-Kafironda 33kV transmission line for a stretch of about 3km to the existing line. While Garneton south that is also being proposed with a capacity of 20MW will feed into the Mwambashi Zesco Substation along Kalulushi road for a stretch over 8km.

The overall objective of the project is to add renewable and sustainably generated power to the national grid. CEC will implement the project in line with the relevant Zambian legal provisions such as Environmental Management Act No. 21 of 2011, Forestry Act, Energy Regulation Act and Electricity Act among others.

It was emphasized that this was an important national project that was going to contribute to the existing grid power and would help to minimize the power shortages currently being experienced in the country. It was further explained that the project would involve installation of solar panels on the existing CEC way leaf, which was CEC land extending from the point adjacent to Mr. Gondwe's farm (where the group was meeting) going northwards up to Sand Sales area. This area had a few cultivation fields scattered along it which paused potential social problems which could delay the project. Mrs. Phiri employed the councillors and members of the Development Committees (WDC) to support the project by working with the company and they responded that they would render the necessary support. They stated that they did understand that the country was currently having energy challenges.

Ms Mwaya requested the company to continue working with them on all issues involving the community. She further stated that she and the rest of the group would go into the communities to conduct further sensitizations about the project and the need for the entire community to support the project. She further stated that they would provide a list of all community members cultivating in the way leaf and present it to the company. She further requested the company to put clear wayleave boundary markers or a road clearly defining the wayleave extent as they have done for the project site areas to make it easy for her and her team to ensure that there are no further encroachments on the CEC land in the future.

The team then walked along the gravelled boundary of the way leaf towards the sand sells area in order show the councillors the extent of the land for the project and to sensitize the farmers cultivating within the boundary.

The following people were met along the way

- Ms. Juliet Ehemba (the area near Mr. Gondwe's farm).
- Ms. Evelyn Mwansa (the area near Mr. Wright's farm)
- Ms. Bupe Muse Kansongo (the area near Mr. Wright's farm) . She was also representing her two children Janet Kasongo and Beatrice Kasongo.
- Ms. Delphino Chingungu "
- Ms Florence Mbaka Titima (area near Mr. Gondwe's farm). She was also representing Gift Titima and Rose Mbaka.
- Ms. Gift Napanje Sichamba (near Mr. Gondwe's farm). She was also representing the following people:
  -Jameson Chingungu

  -Mathews Kaposa

  -Memory Chansa.

Mrs Phiri introduced the project and its objectives to the above people and explained that the project would use all the CEC land where the people had their cultivation fields. The people were requested not to cultivate

while those who had already commenced should end right on those portions and should not cultivate any further.

Questions Raised

Ms. Mwaya asked whether the company was going to compensate the people who had fields in the way leaf? Mrs. Phiri clarified that there was a difference between land acquisition and owned land that has been encroached upon. The way leaf earmarked for the project was land owned by CEC that had been encroached-on by the community members. This land does not qualify for compensation under the law. However, any land being acquired by the company for any purpose would qualify for full compensation.

Ms. Bupe Muse Kasongo expressed concern about the seed already planted, whether the company was going compensate? Mrs. Phiri responded that the company would not compensate for anything planted on it's land illegally or without authority.

Mrs. Kasongo also asked where CEC has been all this time and why they were allowed to cultivate for as long as 20 years without letting us know it was your land. What we know as your land is the cleared area under the power lines. Mrs. Phiri responded that a lot of community sensitizations have been undertaken several times by various radio programs informing people about the power lines and the immediate land, and that people must not use the land without the authorization of the company. Most people have acknowledged they have heard that information on the radio.

Ms. Delphino Chingungu requested whether the company was going to assist with any money for them to rent other fields. Mrs. Phiri responded that the company was not going to assist in any way.

Ms. Gift Napanje requested whether the company would refund them on what they had paid for labour, inputs and also whether the company would find them alternative land? Mrs. Phiri responded that the company was not going to pay for any activity that was being carried out illegally on its land whether, labour or inputs. She added that the company did not have any land to give out.

The site visit ended about 1530 hrs. In closing Ms Mwaya implored the company to find it within their heart to do something for the community, even something small. Mrs. Phiri responded that the only way would be to consider the farmers as priority for any piece work that may become available, such as clearing or cutting of trees. Ms Mwaya said that would be appreciated.

Minutes of one on one meetings with interested and affected parties to the Garneton South Solar PV site.

The following was the general structure of the meetings;

Introductions: - the consultant team introduces themselves and the reason why they are conducting consultation, i.e. legal requirement.

Project Background: The consultant team gives a non-technical background information about the project to enable the consulted individuals discern the benefits and negatives of the project.

1. Meeting with Mr. Kambani Banda - Plant operator, Mwambashi Water Treatment Plant (cell +260965135157).

Introductions

We are coming from a consulting firm called DH Engineering Consultants Ltd. Our company has been engaged by the Copperbelt Energy Corporation to undertake Environmental Impact Assessment (EIA) studies for a solar PV park which they proposed to construct on land adjacent to the 220 kV lines north of where we are. The EIA studies are a legal requirement by the Zambian government. We are here to give you full information about the project and hoping to hear and record your views about the same project.

Project background Information given.

Response from Mr. Kambani Banda

Our treatment plant is located on the upstream of Mwambashi River, I am very certain that the project activities would not impact on our operations. However, since you mentioned something about vegetation clearing using plant machinery, maybe the only concern would be dust, although not so much on us, but on the people who uses the wayleave route and other routes to get to their farms. In general, the solar PV project is a welcome move. Maybe in future, even our water treatment plant maybe directly connected to this proposed solar park and minimize on load shedding which we normally experience at times.

Remarks from DHEC

We are very grateful Mr. Banda for according us time to talk to you about the project and we are certain that your organization (Nkana Water Supply Company Ltd) will be among the key stakeholders to be availed a copy of the Environmental Project Brief by ZEMA for comments. We look forward to further consultations with you and your organization at large.

2. Meeting with Mr. Mackwell Sichinga – Owner of Private Farm forming part of the northern boundary of the site (cell; +260967460980).

Introductions

We are coming from a consulting firm called DH Engineering Consultants Ltd. Our company has been engaged by the Copperbelt Energy Corporation (CEC) to undertake Environmental Impact Assessment (EIA) studies for a solar PV park which they proposed to construct on land in between the existing 220 kV transmission lines and your property. We have noticed that the access route to your property crosses through the proposed project site and that is why we are here to consult with you about possible displacement of the access route. The EIA studies are a legal requirement by the Zambian government. We are here to give you full information about the project and hope to hear and record your views about the same project.

Project background Information given.

Response from Mr. Sichinga

I have had several talks with employees of the Copperbelt Energy Corporation concerning the project. My take is that I wouldn't like my access route to be shifted. I am aware that my access route crosses over the wayleave route, but shifting it will be very costly for me. However, I fully understand the kind of development which they are proposing and I am certain that it is good and beneficial, not only to them, but to the nation. I am aware of the agent need for more power generation options in the country and other than not wanting to shift the access route, I am in full support of the project.

Remarks from DHEC

We thank you Sir for sparing time to talk to us about the Project. We hope to consult you further about the project should the need arise in future. We also value your concerns about the project and we have recorded everything that you have said and we will present it to CEC, so that they can consider it in the project design and layouts.

3. Meeting with Mr. Benard Banda - Farm Manager, Eureka Dairy Ltd, (cell +260961683429).

Introductions

We are coming from a consulting firm called DH Engineering Consultants Ltd. Our company has been engaged by the Copperbelt Energy Corporation (CEC) to undertake Environmental Impact Assessment (EIA) studies for a solar PV park which they proposed to construct on land in between the existing 220 kV transmission lines and your property. We understand that the only access to your property (Eureka farm) is through Nakayombo road, which cuts through the proposed project site. Although, the road is not expected to be displaced, you will definitely notice and experience increased traffic in terms of construction vehicles and machinery. That is why we have come to inform you, so that if there is anything that you would like to say or offer advice, we can take that report to the Developer for them to consider it during project implementation. The EIA studies are a legal requirement by the Zambian government. We are here to give you full information about the project and hoping to hear and record your views about the same project.

Project background Information given.

Response from Mr. Banda

It's interesting to find out that the neighbours can also be consulted when a new development is coming up. On behalf of my employers (Eureka farm), I am certain that we cannot have an issue with the proposed project, provided that our access route is not tempered with as you have indicated. I personally like the idea of having a solar plant in the vicinity. This area is not very safe, especially at night and the proposed development would indirectly enhance security in the area.

Remarks from DHEC

We are very grateful Mr. Banda for according us time to talk to you about the project. We have taken note of your views and they form an important component of the report to be submitted to the authorising agencies.

4. Meeting with Mr. Kelvin Mabinda - Farm Manager, Litana Farm

Introductions

We are coming from a consulting firm called DH Engineering Consultants Ltd. Our company has been engaged by the Copperbelt Energy Corporation (CEC) to undertake Environmental Impact Assessment (EIA) studies for a solar PV park which they proposed to construct on land across the powerlines located north of your property. CEC will also extend a 33 kV transmission line which is expected to run along a road reserve that is found right outside the boundary fence of your farm. That is the main reason why we have come to consult with you and hear what you have to say about this new development. The EIA studies are a legal requirement by the Zambian government. We are here to give you full information about the project and hoping to hear and record your views about the same project.

Project background Information given.

Response from Mr. Mabinda

You are welcome to talk to me. What I know for sure is that our farm and area of concern lies inside our boundary fence. I don't think our director would object to anything proposed outside the boundary fence. Besides, we understand very well that the area beyond our boundary fence is a road reserve. That is why even the people who seasonally plant some crops outside our fence are free to do so without asking for permission from us. Maybe, the Council (Kitwe City Council) would have something to say, but not us.

Remarks from DHEC

We are very grateful Mr. Mabinda for your time and kindness. We have taken note of your response and it forms an important component of the report to be submitted to the authorising agencies.

5. Consultation with the area Councillor, Ms. Mpasa (Cell +260966 951196)

Introductions

We are coming from a consulting firm called DH Engineering Consultants Ltd. Our company has been engaged by the Copperbelt Energy Corporation (CEC) to undertake Environmental Impact Assessment (EIA) studies for a solar PV park which they proposed to construct on land across the powerlines located north of your property. As you may already be aware, the EIA studies are a legal requirement by the Zambian government when undertaking a project of magnitude like the one being proposed by CEC. As a civic leader and a representative of people in Garneton and Itimpi ward, we wish to consult and hear your views about the project.

Project background Information given.

Response from Ms. Mpasa

I have already been consulted by the Project Management Team from CEC, and hence fully aware about the project. I am eager to see the project getting started so that the employment opportunities can be fully realized and people from my ward can benefit. Our initial discussions with CEC indicated that the project could have started by now, I have just been wondering about what is causing it to delay.

Remarks from DHEC

Thank you very much madam for your kind response. Project construction works will begin as soon as all formalities are fulfilled. It is a requirement by the government that full consultations and field surveys are undertaken for the project. A report is yet to be compiled and submitted to ZEMA for approval, and after which the works can commence.

6. Minutes - Focus Group Discussion with traders at Mukuba University Makeshift Market.

The following are the names of traders who participated in the focus group discussion;

1. Rhoda Thole (cell +260960737246)
2. Estella Mwaba
3. Gift Kasanda
4. Prisca Mambwe (Cell +260967744232)
5. Sharon Katongo

Introductions

We are coming from a consulting firm called DH Engineering Consultants Ltd. Our company has been engaged by the Copperbelt Energy Corporation (CEC) to undertake Environmental Impact Assessment (EIA) studies for a solar PV park which they proposed to construct on land across the powerlines near Nakayombo. CEC will also extend a 33 kV transmission line which is expected to pass through your present trading area. That is the main

reason why we have come to consult with you and hear what you have to say about this new development. The EIA studies are a legal requirement by the Zambian government.

Project background Information given.

Responses / Discussions

All of us who trade from here stay in Zambia compound. We have traded from this place for close to two years now. Initially, we used to sell our commodities from inside the premises of Mukuba university, until we were forced outside. We buy all the produce that we sell here from farmers from all over Kitwe. We don't produce it ourselves. The trading that you see here is our main source of living. Some of us are married, but our husbands are not in employment. Others within ourselves are divorced and widowed and also supporting orphans. Therefore, you have to find an alternative trading place for us if we are to relocate. Already, we are told that we are trading at a place referred to us a blind spot (located at a curve) and people threaten us that maybe one day, one of us might be hit by a car. But we have no other choice than to remain here.

Remarks from DHEC

We have heard and recorded your narrations. We can assure you that CEC is a very responsible corporate body. If they surly want the transmission line to pass through your current trading place, they will definitely find you and alternative trading area. Thank you for your time and patience.

CEC-Innovent Garneton South Solar Limited

Minutes of the Project Disclosure Meeting Held on 3 May 2019 at the Mukuba University Makeshift Market

Present

Present:

Silas Lungu	Ward Development Leader
Gift Costa	
Mary Kampamba	Marketeer
Sharon Chama	Marketeer
Maureen Mumbi	Marketeer
Chola Matipa	Marketeer
Ronald Nkole	Marketeer
Musonda Kakobanya	Marketeer
Rhoda Mwansa	Marketeer (Chairperson of the Market)
Mary Zulu	Marketeer
Estela Mwamba	Marketeer
Mary Mwansa	Marketeer
Dorcas M Phiri	CEC

The meeting commenced at 1100 hrs. and Mrs. Phiri from CEC explained that the purpose of the meeting was to give a project brief to the Marketeers. This was going to focus on the nature of the project, the affected land, the boundaries for the project the impacts, mitigations and input from the people attending this meeting.

Mrs Phiri introduced the project and said Copperbelt Energy Corporation Plc (CEC) in partnership with InnoVent SAS of France participated in the GET FIT tender Program and jointly submitted a bid to construct 2 x 20 MW solar project. This program was initiated by the Government of Zambia (GRZ) driven through the Zambian Ministry of Energy to drive the development and installation of at least 100MW of solar power throughout the country. CEC and InnoVent were shortlisted to participate in the Project. The selected project locations were Ganerton North and Ganerton South. She explained the land extent of Garneton South as from the Northern bank of the Nakayombo stream up to the Southern bank of the Mwambashi River. This was the

core project area on which solar panels will be laid to produce electricity. She added a proposed transmission line will run from the corner of the CEC way leaf road and the Zambia compound road on the right side of the road (facing west) and follow the road reserve through market place where the marketeers were currently selling from, then cross the road to the left side of the road and run all the un the Mwambashi substation belonging to ZESCO. She said market will need to shift from the current location and CEC will need to work with the people currently selling at the Market to find a suitable alternative marketplace for the marketeers.

The outer boundary for the main project area started from last line of the transmission line northern bank of the Nakayombo stream extending 200m eastwards up the area that has been graded which looked like a road then extending northwards up to the Southern bank of the Mwambashi River. She emphasized that this land belonged to CEC and was part of the existing way leaf. For that reason, there should not be activities of any kind and the project was likely to commence April/May be completed by October 2020. All those who had cultivated in the area were given a grace period of up to May to harvest their crops.

Mrs. Phiri further explained that the objective of the project was to add renewable and sustainably generated power to the national grid. CEC was going to implement the project in line with the relevant Zambian legal provisions such as Environmental Management Act No. 21 of 2011, Forestry Act, Energy Regulation Act and Electricity Act among others. She emphasized the importance of the project to the nation. The project was going to contribute to the existing grid power and would help to minimize power shortages in the country.

It was further explained that the project would involve installation of solar panels on the said existing CEC way leaf, from Nakayombo area up to the area 50 m before the Mwambashi River.

Mrs Phiri added that this area had a few cultivation fields scattered along it and had a lot of illegal dumping and excavations. She added that there were also some vegetation on the idle side of the way leaf. She added that for the vegetation CEC will work with the Forestry Department to take an inventory of it (the forestry) before coming up with suitable mitigation measures. Mrs. Phiri emphasized the importance of the community observing the boundaries.

On environmental issues Mrs. Phiri said that CEC will conduct an ESIA under the supervision of ZEMA for approval. The report will discuss the impact of the project on the flora and fauna, health and safety aspects, and its impacts on air and water quality. She went on to say that from preliminary assessments there will be no significant impacts on health and safety of the community or on air and water quality. She added that after receiving the report, ZEMA will then undertake a site visit to assess correctness of the report and could stop the project if they find serious issues on any of these aspects.

On Employment, Mrs. Phiri stated that there will be opportunities for temporary and seasonal manual labour during project construction and operation phase, that priority would be given to the people directly affected by the project. The jobs will include cleaning of solar panels, digging trenches, land clearing, planting of loans under the solar panels, back-filling, and security guard.

The aspect on community health and safety during project construction and community safety Vs the existing power lines which he said carry high capacity energy which could char humans should anything go wrong. The marketeers were encouraged to keep away both from the construction site and observe the boundaries of both the project sit and the existing power lines.

After presentations, the meeting was then opened for a question and answer session and the following questions were asked.

Question by Rhoda Mwansa: Why do you want to chase us from this place? We have been selling here for a long time and we have been feeding our children from the selling. At first, we used to sell from inside the premises of the university but the new boss at the university chased us from inside in January 2019. We found this place and now you are also chasing us? Our market are the students and we cannot go far from here.

Response: We did not say we are going to chase you, what we said was that we shall work together to find a suitable trading place for yourselves.

Question: Mary Kampamba: Are you really sure that you are going to employ us. Are you not just going to be employing people from town?

Response: We are very sure that we shall we shall give you people affected directly when employing.

Question: Chola Matipa; How are you going to recognize us when employing?

Response: We have recorded your names and we also have your identity card numbers.

There being no further issues for discussion, Mrs. Phiri thanked everyone in attendance and informed the people that they would be communicated to for the next date of the meeting which shall focus on discussing and finding an alternative location for the project. The meeting closed at 1400 hrs.

Copperbelt Energy Corporation

Get Fit Project

MINUTES OF THE GETFIT PROJECT HELD ON THE 6TH OF AUGUST 2019 For Garneton North and South

Attendance (Appendix i)

The meeting commenced at 11:30 hrs with a prayer by Modiness Mwila, opening remarks and greetings.

Meeting Objective:
Mrs. Dorcas Phiri explained that the objective of the meeting was explain the grievance mechanism and t to elect a committee of representatives of people directly and indirectly affected by the Get Fit Project both in Garneton North and Garneton South. She explained that the aim of the grievance mechanism was to provide the project community with a means of expressing their concerns to the company while the aim of the aim of the community representative committee was to represent those directly or indirectly affected by the project in decision making on matters of project implementation, compensation, how project benefits can reach the affected community and monitoring of project impacts. It will further include the monitoring of the livelihood restoration plan, inviting people from their areas for general meetings and to be a medium of communication from the people they represent to the company and from the company to the people they represent.

Project Brief. Summary of the project was given as follows:
Project Location: The locations are called Ganerton South and Ganerton North. Ganerton South extends from the Northern bank of the Nakayombo stream up to the Mwambashi River while Ganerton North extends from the Northern Bank of the Mwambashi River up to the Sandsales Plant area. The boundary has been marked by grading of the eastern end which makes it look like a road. The opposite boundary was about 30m from the eastern line of the existing CEC power lines eastwards to the area that was graded by the grader. Everyone acknowledged having seen the graded area marking the boundary.
Capacity: It was explained that the total capacity of the projects will be 40 MW, divided as 20 MW for Garneton South and 20 MW for Ganerton North and construction was expected to commence by end of October. The energy or electricity will be drawn from the sun by the solar panels so the project will have no impact on air water or soil quality. There will be no emissions or effluent, neither will there be noise impact beyond normal.

-The point of connection will be Mwambashi 33 KV ZESCO substation for both Ganerton North and South.
-Size of modules will be 360 Wp for each of the project sites
-There will be 69, 480 modules for each of the project sites
-Inverter size will be 125 kWac for each of the project sites
-size of inverter for each site will be 193 for each site

Evacuation of Power: The power will be evacuated via a transmission line which will run parallel to the Zambia Compound road on the existing ZESCO way leave, e across the stream, cross over to the Mbachi farm side of the road on the road reserve and proceed to the Mwambashi substation belonging to ZESCO through the existing ZESCO wayleave.

The following were explained to be the expected project impacts

The project impacts are expected to be as follows

- dust and noise to the nearby communities during the process of grading. The nearest community is at least less than 400m away. Mitigation measures will include dust suppression by sprinkling of water in affected areas. Monitoring measures will be worked with the community through the community representative committee to be formed.
- Loss of some cultivation fields belonging to small scale farmers who have been cultivating illegally both in Ganerton North and South. There will be no cash compensation for the land as the land is owned by CEC. However, consideration for the vulnerable groups was being evaluated and information will be communicated as soon confirmation was done. The farmers were given up to end of April 2019 to harvest their crops and pave way for the project. This means there will be no loss to the farmers. Further it was expected that the project was going to generate temporal as well as seasonal jobs. It is expected that these jobs will more than compensate for the loss of income from the cultivated fields.

- It is also possible that oils may leak from the bulldozers, graders and other equipment which will be deployed during the construction process. Operations of plant and equipment will be monitored very closely, and any possible leaks will be dealt with according to procedures that have been established within the company. These include emergency response plans. The community through the community representative committee is expected to participate in the monitoring.
- loss of the vegetation on the idle side of the way leaf. The forestry department will be compensated for the forest while surveys did not observe any activities by community related to dependence on the natural resources by the cut-off date. Moreover, forests of similar nature exist adjacent to the CEC land on Garneton South and on the right side of the road in Ganerton North.
- Some access roads/ footpaths to the nearby farms will be impacted by the project as the land will be taken up by the project. Alternative footpaths have already been agreed with the community in both Ganerton South and North.

- The makeshift seasonal market near Mukuba university may be affected by the transmission line. This market is expected to be relocated on the other side of the road.

- Interactions between non-local construction workforce and the local communities may lead to community health, safety and security risks resulting in risky sexual behaviour, spread of HIV and other sexually transmitted diseases, violence and conflict, alcohol abuse amongst other social problems. There will be strict access control to the project site. Health, safety and security awareness campaigns will the embarked on. The community representative committee to be formed will be expected to participate in the formulation and monitoring of the programs.

- Construction and operational traffic will expose communities to potential traffic incidents or accidents with Project vehicles. For mitigation separate health, safety and security

awareness campaigns will be embarked on and more details will be discussed then.

- The key positive impacts include additional electricity to the country as well employment opportunities (to include digging of cable trenches and drainages, laying of cables, planting and weeding of loan, security guard and seasonal cleaning pf solar panels).
- Additional market for selling of food stuff to construction workers such as groundnuts, cassava, maize, vegetables, and wild fruits and vegetables
- The project was likely to commence by end of October

The 6th of February 2019 was declared as the cut-off date so all social/cultural issues including interactions with the forest were declared the project by the date.

- The project was going to bring about opportunities for temporally and seasonal employment. Temporally employment will include clearing of project land, digging of trenches, backfilling and planting of loans and security guardship. Seasonal and maintenance jobs will mainly be cleaning of panels and trimming of the loan (numbers have not yet been worked out). All unskilled/semi-skilled jobs were reserved for the project community. However, first priority will be given to the PAPs whose cultivation fields are affected by the project.

Community Representative Committee: Mrs. Phiri explained the purpose of the committee to be formed as below:

- For the developer's consultation in the livelihood restoration and project related programs such as health, safety campaigns and also in community employment programs.
- For monitoring of project impacts especially during the construction phase. This may extend to the operation phase depending on outcomes.
- Participate and monitor stakeholder engagement activities and feedback.
- Participate in analysing and resolutions of grievances.

After this people were asked to group themselves in the categories stated below and elect one person to represent them; Youths, disabled, aged (above 65 years), East Garneton, Race Course, Sand Sales, Twatasha, Zambia Compound and Mukuba university makeshift market. After deliberations in these groups, the following people were submitted as having been duly elected from their respective groups.

Representation	Name
Youths	Warren Mumba
Disabled	Alexander Chama
Zambia Compound	Nselemani Chilufya
Ganerton	Rita Sakashimbi
East Ganerton	Digashome Kabwe
East Garneton	Beauty Musonda
Race Course	Veronica Bwembya
Kamatipa	Elina Nambaya
Sand Sales	Fredah Chanda
Sand Sales	Fredrick Tembo
Twatasha	Fales Mwape
Mukuba University Market	Rhoda Mwansa.

After the meeting Mr Chandwe Musonda explained to the attendees the importance of the project and he emphasised they should be guard it jealously.

Mr. Sailas Lungu explained to the meeting attendees that the first people to be employed will be those who were cultivating in the project area, those along Litana farm and those at Mukuba University market. He further urged all to support the project because it will help to minimize power shortages currently being experienced in the country.

Mr Kasongo talked about safety and said once the project commences, it will be important to observe safety. The roads will get busier as there will be increased traffic. He asked the attendees to start talking to their children about road safety and ask them to not play on the roads. RATSA will be expected to conduct regular monitoring of public roads. He also stated that People should keep away from the wayleave area and observe the safety clearance as the power flowing through the conductors was very high voltage.

Mr. Kasongo further discussed the health aspect of the project and said the influx of people to the project area may lead to an increase in diseases and said CEC will work with the department of health and local authorities to regularly monitor for any increase in the diseases.

It was noted that there was no representative from the Mukuba University Makeshift market. A decision was made to engage the chairlady and ask her to hold elections in her group and submit the name of their representative on the committee. Two weeks later, the Name Rhoda Mwansa was submitted as the representative.

At the end of the meeting it was agreed that another meeting would be called for the committee to come and have elections for the executive after which a programme/schedule of meetings will be drawn. These elections are scheduled for the **week ending 20 September 2019**

Grievance Mechanism: Mrs. Phiri explained the Grievance Mechanism Process to the attendees
She explained that during the implementation of the project or even in the operation phase, individuals or groups of people may have concerns on matters to do with the project such as project road safety issues (vehicles over-speeding putting the lives of the public and community at risk), or CEC employees or contractors abusing the man rights of the public or community etc. All those who felt infringed by the project or its employees or contractors were free to raise a grievance. These could be in writing or verbal. These grievances needed to be handed to Mr. Silas Lungu who was a member of their community. CEC would then pick these and analyse the issue raised and come up with options of resolving it which will be presented to you and the matter will not be signed off until a resolution agreed with yourselves is agreed. If anyone was not satisfied with the manner the grievance was addressed by the company, they were free to appeal to the courts of law. In case Mr. Lungu was not available, people could submit grievances to Mr. Chandwe Musonda.

Questions and Answers
A question was raised from Alexander Chama who wanted to know when project will commence.

Mr Phiri answered that the project was likely to start towards the end of October 2019 after the Government gives the final award.

The meeting ended with a prayer by Felix Simwanza at 13:37hrs.

Appendix i: List of Attendants

Get Fit Meeting held on 6 August 20!9

Present:

Maggie Mbale	Zambia Compound (ZC)	Dorothy Situla	ZC
Digashome Kabwe	Kamatipa	Laura Chijuka	ZC
Oksilia Chisha	"	Pamela Chela	ZC
Paxina Bwalya	Racecourse (RC)	Josephine Kayombo	ZC
Jane Mpanga	ZC	Harriet Zulu	ZC
Carol Kasonde	Ganerton East (GE)	Rosemary Musonda	ZC
Chinfwembe Dorcas	ZC	Rose Mbandu	ZC
Elizabeth Kawangu	ZC	Rosemary Nanyondo	ZC
Modness Mwila	ZC	Gift Chomba	ZC
Jeniffer Mumba	ZC	Joana Chanda	ZC
Helen Mulongo	ZC	Exhilda Mulusa	ZC
Violet Niame	ZC	Carol Tembo	SS
Bethebar Kabaso	ZC	Abygail Chingangu	Twatasha
Florence Mvula	ZC	Florence Sautana	ZC
Helen Milanzi	ZC	Josephine Mwewa	ZC
Mary Mvula	ZC	Edna Ngoshe	ZC
Silvia Sakatu	ZC	Christin Chisanga	ZC
Grace Bwalya	SandSales (SS)	Joyce Chisha	ZC
Matilda Chileshe	SS	Priscilla Mbaka	ZC
Evelyn Chama	SS	Beauty Chibale	SS
Regina Mbutu	ZC	Cecilia Kusemwa	ZC
Violet Nsofwa	ZC	Tina Kawangu	ZC
Gift Titima	ZC	Mailesi Nangongo	ZC
Rabecca Gondwe	ZC	Charity Mpundu	ZC
Brenda Manseli	ZC	Mary Nasilomba	ZC

Naomi Phiri	ZC
Angela kumwenda	ZC
Anna Mbingo	ZC
Dorofina Chingungu	ZC
Dorothy Kavuka	ZC
Falesi Mwape	Twatasha
Veronica Bwembya	RC
Rita Sikashimbi	ZC
Ochilia Chichoni	ZC
Precious Mailoshi	ZC
Stephania Kasonde	ZC
Arnold Chibuyye	ZC
Chipoya Francis	ZC
Sara Kapenda	Twatasha
Goodwell Sekwila	ZC
Felix Simwanza	ZC
Douglas Masongo	ZC
Ketras Nguni	ZC
Rhoda Mutale	ZC
Ruth Chishimba	ZC
Daina Kasongo	ZC
Abram Kambele	ZC
Yvonne Samutu	ZC
Harriet Samutu	ZC
Annie Zulu	ZC
Justina Mukonko	ZC
Monica Kawe	GE
Eness Namulubgu	GE
Beauty Musonda	GE
Moses Chabu	Luongo
Lenesi Sichone	ZC
Faidesi Kasesele	ZC
Burden Nkonde	Sandsale
Robson Musonda	ZC
Yotam Kaulu	ZC
Piresi Mubiana	ZC
Warren Mumba	ZC
Geofrey Mupila	ZC
Jimmy Mupila	ZC
Amos Mwila	ZC
David Musonda	ZC
Vinta Banda	ZC
Mary Musonda	ZC
Beauty Salati	ZC
Chilufya Menya	RC
Rachel Chalwe	ZC
Margaret Phiri	GE
Hilda Sichone	ZC
Isaac Ilunga	ZC
Sophia Musebaulo	ZC
Margret Chipulu	ZC
Mary Ntaimo	RC
Catherine Mecha	ZC
Alice Bwalya	ZC
Christabel Kapembwa	SS
Gladys Kakoma	Luongo
Josephine Chilekwa	ZC
Sharon Chama	ZC
Catherine Musukwa	ZC
Royda Katambi	ZC

Panta Banda	Luongo
Sibajene Sinyangwe	Luongo
Jeff Melu	Luongo
Memory Mutale	ZC
Eliza Tembo	ZC
Annie Bwembya	RC
Regina Musonda	Luongo
Richard Mbimbi	ZC
Given Soloka	ZC
Fenny Lolozhi	ZC
Beatrice Banda	ZC
Florence Chingungu	ZC
Priscila Mutale	ZC
Howard Mwila	ZC
Loveness Chibuye	ZC
Peter Musonda	ZC
Sydney Tembo	SS
Theresa Bwalya	SS
Kelvin Samutu	ZC
Thomas Mukosa	ZC
Alexanda Chama	ZC
Paison Chishala	ZC
Bright Ngosa	ZC
Chileshe Kaoma	ZC
Milupi Milupi	ZC
Lewis Chama	SS
Lever Bwalya	SS
Michael Lengwe	ZC
Martin Shachinda	ZC
Wicks Nyondo	ZC

Sarah Nkonde	ZC
Agness Kapambwe	ZC
Veronica Mbewe	ZC
Graham Titima	ZC
Ephrame Titima	ZC
Mwape Mwansa Luza	ZC
Beatrice Mulenga	ZC
Elina Nambaya	ZC
Ragson Kapemba	ZC
Veronica Kani	ZC
Alexanda Phiri	SS
Sara Kapenda	RC
Simon Mwewa	RC
James N'gonga	SS
Justine Chipili	ZC
Agness Mfunda	Luongo
Mulambe Justina	Luongo
John Chama	ZC
Mathews Lungo	ZC
Bornface Tembo	ZC
Maybin Chipili	ZC
kelvin Simasiku	ZC
Robinson Musonda	ZC
Mathews Chisoloa	ZC
Phison Chishala	ZC
Brighton Ngosa	ZC
Oswald Chibale	ZC
Luka Mwape	ZC
Patson Kabwe	ZC
Fidelis Mwansa	ZC

Luka Saputu	ZC
Prince Mfula	ZC
Michael Mumbi	ZC
Peter Kapepa	ZC
Mumbi Mpundu	ZC
Judith Chilongo	ZC
Susan Chikonda	ZC
Astridah Mkandawire	ZC
Phiri Compound	ZC
Alex Kainga	ZC
Amos Mwila	ZC
Bwalya Fabian	ZC
Fundulu Patrick	ZC
Cornelius Kalonge	ZC
Bornface Mwila	ZC
Gift Kalunga	ZC
Joseph Songa	GE
Grace Chibale	SS
Aaron Kabanza	Luongo
Mwewa Elario	ZC
Frank Chansa	ZC
Elizabeth Bupe	Luongo
Juliet Chisandi	Luongo
Melody Nyondo	ZC
Frank Nkhosha	Luongo
Ben Malichi	Luongo
Jainek Chilombo	SS
Charles Lumai	Luongo
Chiweka Malae	Luongo
Norah Chibuye	Luongo
Belina Mulenga	ZC
Beauty Katuta	ZC
Maurine Kasonge	ZC
Esther Chilufya	ZC
Naomi Tembo	Luongo
Machalo Phias	Luongo
Peggy Muswilwa	Luongo
Brighton Limbungululu	Luongo
Mumba Musonda	Luongo
Loveness Mumba	Luongo
Kalengo Austin	Luongo
Fredrick Tembo	SS
Frank Mwelwa	SS
Abraham Kasongo	SS
Joseph Chipulu	ZC
Brian Zulu	ZC

Miriam Chama	Luongo
Anthony Jinga	Luongo
Rachel Samoya	Luongo
Mary Nonde	Luongo
Anna Bole	Luongo
Silas Lungu	SS
Chandwe Musonda	SS
Dorcas M Phiri	CEC
Francis Kasongo	CEC

Copperbelt Energy Corporation

GETFIT Solar PV Project

MINUTES OF THE GETFIT SOLAR PV PROJECT HELD ON THE 19th September 2019 FOR GARNETON NORTH AND SOUTH

Subject: Election of Committee Executive for the Community Representatives

AGENDA

1. Opening prayer
2. Opening remarks
3. Introduction
4. Elections
5. Closing Remarks

ATTENDANCE

1. Dorcas Phiri – Chairperson – CEC
2. Potashi Kalemba- Secretary- CEC
3. Sailas Lungu – Member
4. Chandwe Musonda – Member
5. Dingashome Kabwe- Member
6. Elina Nambaya- Member
7. Beauty Musanda- Member
8. Fale Mwape- Member
9. Veronica Bwembya - Member
10. Mary Ntaimo- Member
11. Fredrick Tembo – Member
12. Alexander Chama – Member
13. Nselani Chilufya – Member
14. Waren Mumba – Member
15. Rita Sakashimbi – Member
16. Paison Chishala – Member

APOLOGIES

Brendah Chanda – Member

1. PRAYER

The Meeting was opened by prayer from Mr. Chandwe Musonda at 11:15 hours

2. OPENING REMARKS

The Chairperson (Mrs. Phiri) welcomed all members and explained the purpose of the meeting. She mentioned that the major purpose of meeting was to elect the executive of the community representative which was ushered in during the meeting of 6 August.. She further said that the Committee will be the link between the Get Fit Project and the project community.

3. INTRODUCTIONS

All members present introduced themselves by name.

4. ROLE OF THE COMMUNITY REPRESENTATIVE COMMITTEE

It was explained that the role of the community representative committee was as follows

- For the developer's consultation in the livelihood restoration and project related programs such as health, safety awareness campaigns and in community employment programs.
- For monitoring of project impacts especially during the construction phase. This may extend to the operation phase depending on outcomes.
- Participate and monitor stakeholder engagement activities and feedback.
- Participate in analysing and resolutions of grievances

Mrs. Phiri emphasized that this was a voluntary role and not a job and people should not expect a salary. It is a way of helping to ensure that the company meets all its obligations to them

5. ELECTIONS

After the brief on the role of the committee, elections were held, and the following were the results

Chairperson	-	Nselani Chilufya
Vice Chairperson	-	Mary Ntaimo
Secretary	-	Sailas Lungu
Vice Secretary	-	Fales Mwape
Publicity Secretary	-	Chishala Paison
Vice Publicity Secretary	-	Vero Bwembya

Health Representative	-	Elina Nambeya	
Crime prevention Representative	-	Fredrick Tembo	
Environmental Representative	-	Rita Sakashimbi	
Community Safety Representative	-	Waren Mumba	
Agriculture Representative	-	Beauty Musonda	- GETFIT SOUTH
		Digashome Kabwe	- GETFIT NORTH

5.1 GUIDE INFORMATION ON THE ROLES OF REPRESENTATIVES AS EXPLAINED TO THEM:

- The role of the publicity representative was defined as the one responsible for dissemination of information, in consultation with the committee.
- The role of the Health representative was defined as the one responsible for reporting on various unusual health problems affecting the project catchment area.
- Crime prevention representative was defined as the one responsible to detect and report criminal activities happening in the project catchment area to the committee which will work hand-in hand with Zambia Police and CEC Security.
- The role of the Environmental representative was defined as the one responsible for reporting on deforestation, Air, Water and land Pollution as a result of project activities.
- The role of the i-Community Safety representative was defined as the one to be responsible for public safety, reporting to the committee any safety risks arising from project activities like traffic.
- The role of the Agriculture representative was defined as the one responsible for coordinating the farming activities.

5.2 PROVISIONAL OF PERSONAL PROTECTIVE CLOTHING

The Chairperson informed the committee, that the company will provide personal protective clothing to each one of them in case of participation in project activities. The list for personal protective clothing was obtained as follows:

1.	Digashome Kabwe	-	Work suit size 40	Safety shoes size 6
2.	Elina Nambaya	-	Work suit size 40	Safety shoes size 7
3.	Beauty Musonda	-	Work suit size 40	Safety Shoes size 5
4.	Fale Mwape	-	Work suit size 38	Safety shoes size 6
5.	Veronica Bwembya	-	Work suit size 38	Safety shoes size 6
6.	Mary Ntaimo	-	Work suit size 40	Safety shoes size 5
7.	Fredrick Tembo	-	Work suit size 42	Safety shoes size 8
8.	Alexander Chama	-	Work suit size 42	Special shoes (confined to wheelchair)
9.	Nselani Chilufya	-	Work suit size 40	Safety shoes size 8
10.	Waren Mumba	-	Work suit size 40	Safety shoes size 7

11. Rita Sakashimbi - Work suit size 42 Safety shoes size 7
12. Paison Chishala - Work suit size 36 Safety shoes size 7
13. Sailas Lungu - Work suit size 38 Safety shoes size 8 (Issued during the meeting)
14. Chandwe Musonda - Work suit size 40 Safety shoes size 8 (Issued during the meeting)

5.3 EXGRATIA

The Chairlady informed the committee members that they shall be getting something in form of cash for attending the meeting to appreciate their effort. She further explained that, a person who does not attend the meeting, shall not get the exgratia and no proxy can attend on behalf of a member who fails to attend the meeting

6. CLOSING REMARKS

The chairperson Mrs. Phiri thanked all for actively participating and cautioned members not to spread false information in the community.

Copperbelt Energy Corporation

Minutes of the Stakeholder Engagement Meeting held between Copperbelt Energy Corporation Plc and the Kitwe City Council in relation to the Innovent-CEC Garneton North & South GETFiT Solar Projects on 17 July 2019 in the Town Clerk's Office

Present:

Mr. M Seke	Kitwe City Council
Mr. M Mugala	Kitwe City Council
Mr. G Ngoma	Kitwe City Council
Mr. N Mwanza	Kitwe City Council
Mr. V Nyirenda	CEC
Mrs. D M Phiri	CEC
Mr. F Kasongo	CEC

1.0 Introduction

In the introductory remarks, Mr. Nyirenda (CEC) stated that the purpose of the meeting was to provide an update of the development of the GETFiT projects since the Parties last meet during Project Disclosure meeting held on 30th April 2019.

2.0 Project Update

Mr. Nyirenda (CEC) informed the meeting that significant progress had been made by the Consortium to achieve Effectiveness of Award in line with the GETFiT Tender award requirements. The key achievements during the period include: -

- Submission of Project Agreements, Performance Bonds, Declarations of Undertaking, and updated Environmental Project Briefs to the GETFiT agent;
- Establishment of a Project Steering Committee and nomination of members to the Advisory Committee;
- Recruitment of four (04) graduate trainees;
- Proposals for full EPC, Light EPC, suppliers and logistics had been received and were under review;
- Submission of applications for Land Zoning Approval to Kitwe City Council;
- Appointment of advisers for the Special Purpose Vehicles (SPVs), namely;
    - ✓ Fieldstone as Financial advisor
    - ✓ PriceWaterhouseCoopers as Auditors
    - ✓ CEC as Accounting Service Provider
    - ✓ Ernst & Young as Tax advisor

Mr. Nyirenda indicated that the key activities planned for the next 2 quarters included: negotiation of the Project Agreements, obtaining Environmental & Social

permits, updating the Feasibility Studies and Financial model, appointing an Insurance Adviser, selection of lenders, and rezoning of project land from commercial to industrial use.

3.0 Challenges

The following were highlighted by CEC as the major challenges impacting development of the projects: -

- Encroachments on project land by members of the community carrying out farming activities;
- Encroachments on project land by an estate developer who purchased Mr. Gondwe's farm and also encroachment of the road reserve by Mr. Mbachi's farm;
- Continued illegal dumping of waste;
- Indiscriminate cutting of trees.

4.0 Response by Kitwe City Council

The Town Clerk, Mr. Seke, stated that KCC was pleased with the developments CEC was bringing to the City and the Country as a whole. He indicated that power supply from the alternative energy sources would make the desired contribution to the national energy supply mix, to address the current deficit in power supplies due to the low water levels at the major electricity generation centers. Mr. Seke assured CEC of the Council's full support in developing the GETFiT Solar projects.

5.0 Status on CEC Application for Land Rezoning

CEC confirmed that all documents required for the conversion of the project land from Commercial to Industrial had been submitted to the KCC Planning Office and all the requirements related to public adverts as guided by the Council had been met. Mr. Mwanza (KCC) promised to check on the status of the application and advise accordingly.

6.0 Any Other Business

On a matter related to securing project land the Town Clerk enquired as to whether CEC had secured the CEC-owned wayleave reserve areas to deter encroachments. Mr. Nyirenda stated that the company had already embarked on an exercise to update the drawings for the wayleave reserve areas to include new developments. It was agreed that CEC would engage the Council within 3 weeks or so and provided relevant information to guide the Parties going forward as regards CEC wayleave reserves.

7.0 Close

There being no further business the meeting was adjourned. The proposed date of the next meeting is 15 August 2019 at the same venue.

COPPERBELT ENERGY CORPORATION PLC
GETFIT SOLAR PV PROJECT

MINUTES FOR CEC TRANSMISSION LINE PROJECT AFFECTED PERSONS MEETING HELD ON MONDAY 13TH MAY, 2024 AT SILAS LUNGU'S FARM IN GARNETON, KITWE.

Meeting Agenda
Introduction of delegates present to the PAPs
Opening remarks
Recap of previous engagement
Purpose of current meeting
Questions and answer, comment session
Closing remarks

Present	Worries Sinkala	Chairperson
	Mr. Chansa	CEC Representative
	Chisanga F. Mambwe	Consultant
	Mulemba Kayombo	Consultant
	Silas Lungu	Community Member
	Mr. Mulenga	Community Member
	Miss Chipasha	Community Member

PAPs in Attendance:
Kaulu Yotam
Pilesi Mubyana
Chipulu Margaret
Nyamoji Elisa
Kabwe Digashome
Tembo Elizabeth
Kampamba Meya
Chingungu Dorophina
Kayombo Josephine
Titima Florence
Mubanga Emmanuel
Samutu Yvonne
Samutu Kelvin
Mumba Kingford

Salachi Beauty
Simwale Mary
Kasongo Janet
Bupe Muse
Kasongo Beatrice
Mwansa Evalyn
Samoyo Oscar
Sakuwaha Elizabeth
Kapota Matthews
Mbaka Rose
Saputo Violet
Bwalya Alice
Mecha Catherine
Mutale Memory
Mutale Kabwe monica
Ntaimu Rodia
Kapindula Eline
Ntaimu Mary
Kambele Abram
Pinto Abiya Antonio
Mukonko Justina
Chikange Hellen
Nkandu Brian Rusford
Mwenya Mary
Namulungu Eness
Sailota Phiri Eunice
Bwalya Mary
Musonda Beauty
Margaret Phiri
Agness Njovu

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1. **Call the Meeting to order:** The meeting was called to order at 12:20 hours by Mr. Sinkala**.**

2. **Introductions:** The Chairperson asked all delegates present before the PAPs to introduce themselves and their roles in this exercise.

3. **Opening Remarks:** The Chairperson Mr. Worries Sinkala welcomed all PAPs in attendance to the meeting and thanked them for coming to the meeting.

4. **Announcements.** None

5. **Apologies**. None

6. **Declaration of interest.** None

7. **Recap of Previous Meeting:** Mr. Sinkala refreshed the memories of the PAPs concerning what was discussed in the previous engagement that took place in 2019. He stated that the PAPs were engaged concerning the 33kv transmission line that CEC was planning on constructing in the areas were the PAPs are currently farming and trading. He further stated that the activities that took place

8. **Business of the Day:** Mr Sinkala updated the PAPs as follows:
   8.1. **Status of the project:** Mr Sinkala reported that the project is still on but was slowed down because their three years had elapsed and the Zambian laws and regulations stated that the engagement has expired.

   8.2. **Purpose of meeting: -** Mr Sinkala informed the PAPs that the purpose of the meeting was to check if things are still the same in the community, whether the people are still the same and whether they are still interested in the project.

   8.2.1. **Assessment of fields:** Mr Sinkala reminded the PAPs that they were previously engaged and their fields were assessed. The informed them that this time, they will not be re-assessed but the same names that were used previously will be used. He stated that there was no need for them to register their names for compensation again because CEC already had the names and this would avoid confusion.
   8.3. **Compensation:** Mr Sinkala stated that compensation would be revisited if land ownership has changed. He also reminded the PAPs that the project is still alive.

9. **Questions and Comments from PAPs:**
   9.1. **Alexander Chama:** "*These agreements were made a long time ago and our crops have changed and so has their value. Will there be re-evaluations"*

   Response from audience: The valuations should not be redone because we are farmers have already gone through this process
   Response from the Chairperson: Re-evaluations will not be redone. However, because time has passed and money has reduced in value, consideration for upward adjustment will be made.

   9.2. **Shedrida Munsha:** *"In an event the owner of the land was not present at the time of registration and another person was registered, what does CEC do?*
   Response from chairperson: CEC will ensure that they locate the rightful owner of the land.

   9.3. **Christable Mwewa:** *We do not have our registration papers but our fields were measured what next?*
   Response from the chairperson: The chairperson stated that CEC had records of all registration papers collected in 2019 and they would be able to use the information to identify them.

9.4. **Charity Chengwe:** *If someone starts cultivating after hearing the rumours of compensation on a field that is already registered, what will you do?*
Response from Chairperson: The Chairperson stated that CEC knows all the affected people which is why they were invited. The names to be used are those in the record from 2019 which was the cut off-date.

10. **Closing remarks by the Chairperson:** The Chairperson stated that the project was still on and that they should expect it to commence soon. He also thanked the PAPs for attending the meeting and she further stated that the door was always open at CEC if they had further concerns.

There being no further business the meeting closed at 13:55 hours

APPENDIX 2.2: LIST OF CONSULTED INDIVIDUALS AND ORGANIZATIONS

LIST OF PROJECT AFFECTED PEOPLE

PAPs on the CEC Wayleave			
PAP No.	**Name of PAP**	**Sex**	**Age (yrs)**
1	Esnart Malasha	F	32
2	Priscilla Longolongo	F	38
3	Boniface Phiri	M	59
4	Mukumba Chola	F	48
5	Prudence Longolongo	F	36
6	Charity Chewe	F	59
7	Betrick Mulonga	M	33
8	Brian Kangwa	M	34
9	Emmanuel Mulenga	M	32
10	Tabhita Mtonga	F	39
11	Mathews Bwalya	M	41
12	Willie Chishimba	M	60
13	Erica Musonda	F	68
14	Chanda Mulenga	M	38
15	Grace Mwaba	F	40
16	Mary Mwansa	F	61
17	Roydah Katambi	F	30
18	Dorophina Chingugu	F	58
19	Christine Mwila	F	52
20	Lorin Lupandila	F	35
21	Emmanuel Maimba	M	34
22	Benson Malama	M	36
23	Mary Chabu	F	25
PAPs Between Dale Litana Fence and Road Reserve			
1	Hellen Milanzi	F	63
2	Irene Musonda	F	45
3	Husting Mwitwa	M	60
4	Mary Chipulu	F	48
5	Paison Chishala	M	50
6	Rosemary Musonda	F	56
7	Sara Mwewa	F	23
8	Dorothy Situla	F	45
9	Anneta Longolongo	F	50
10	Alexander Chama	M	75
11	Shedridah Munsha	F	56
12	Godfrey Situla	M	43
13	Alice Kapenge	F	41
14	Maxwell Zulu	M	84
15	Lile Kamwendo	F	83

16	Sofia Musebaulo	F	62
17	Martin Namuchana	M	70
18	Hellen Mulonga	F	30
19	Nale Chola	F	24
20	Ruth Mukamuna	F	30
21	Royda Musamba	F	43
22	Chansa Mulongo	F	35

List of consulted Traders at Mukuba Makeshift Market

Mukuba University Marketeers						
1	Sharon Chama	F	-	-	-	-
2	Maureen Mumbi	F	56	X		Married
3	Chola Matipa	F	40	X		Married
4	Prisca Mambwe	F	42	X		Divorced
5	Musonda Kakobanya	F	-	-	-	-
6	Rhoda Mwansa	F	32	X		Married
7	Mary Zulu	F	54	X		Married
8	Estela Mwamba	F	-	-	-	-
9	Costa Bupe	F	37	X	-	Married
10	Mary Kampamba	F	21	X		Married

PRPOSED 33kV OVERHEAD LINE_ Titled Land Project-Affected Persons/Organisation

S/N	Person/Company	Road Along	Property Type	SQM	HECTARES
1	ZESCO Wayleave	Kalulushi - Mwambashi	Commercial		
2	NFCA (Green Farm)	Kitwe - Chingola Dual Carriage	Agricultural	6132.50	0.6132
3	Mukuba University	Mukuba Access Road	School	16733.48	1.6733
4	Richard Mulenga	Country Road to GetFIT	Agricultural	593.70	0.0594
5	Rita Tumasi	Country Road to GetFIT	Agricultural	2850.45	0.2850
6	Benny Simango	Country Road to GetFIT	Residential	610.80	0.0611
7	Everisto Kangwa	Country Road to GetFIT	Residential	601.36	0.0601
8	Prospesy Simpemba	Country Road to GetFIT	Residential	646.80	0.0647
9	Frank Tailoka	Country Road to GetFIT	Residential	610.05	0.0610
10	Dale Litana	Country Road to GetFIT	Agricultural	4633.67	0.4634

List of Consulted Organizations

Name of organization	Name of consulted individual / Dept	Issues consulted on	Contact
Kitwe City Council	Office of the town clerk and planning department	Overall project development	
Office of the ward councillor - Itimpi ward	Ms. Mpasa Mwaya	Overall project development	+260966 951196
Nkana Water Supply and Sewerage	Mr. Kambani Banda	Overall project development	+260965135157
Department of Forestry	Sichamba Mpande	Forestry inventory	
Ministry of Agriculture	Department of Agriculture and Extension Services	Valuation of agricultural fields	+260965 751803 +260977 636858
ZEMA	EIA Inspectorate (Benson Chongo)	Overall project development and project categorization	
Road Development Agency	Joseph Himuluyi	Servitudes for transmission line route	
Government Valuation Department	Kasonde	Titled Land Plots	+260955758840

APPENDIX 3: WASTE MANAGEMENT PROCEDURE

	COPPERBELT ENERGY CORPORATION STANDARD OPERATING PROCEDURE			
Title:	**WATSE MANAGEMENT PROCEDURE**			
Procedure No.:	**CEC/CQQ/QA/004**	**Issue No. 8.0**	**Date: 29.11.2022**	**Status: Issued**

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Approved by: _____ Senior Manager – HSES and Risk	Date: 29.11.2022

1.0 Purpose

This procedure provides information and guidelines on managing waste at CEC to ensure compliance to legal requirements, company policies, local concerns to achieve continual improvement in environmental management performance. It also provides the information on separation and storage of waste according to type, characteristics, and disposal.

2.0 Scope

This procedure applies to all CEC facilities and sites.

3.0 Definitions

Within the context of this procedure, the following definitions shall apply:

Term	Definition
Waste	garbage, refuse, sludge's, and other discarded substances resulting from industrial and commercial operations and from domestic and community activities

Pollution	The presence in the environment of one or more contaminants in such quantities and for such duration and under such conditions that may cause discomfort or to endanger the health; safety and welfare of persons, or which may cause injury or damage to flora and fauna, or which may interfere unreasonably with the normal enjoyment of life or use of proper or conduct of business;
Hazardous Waste	Waste, which is poisonous, corrosive, irritant, explosive, inflammable, toxic or harmful to human, animal, plant, or the environment
Collection	The act of removing waste, or materials, which have been separated for the purpose of recycling, from a storage point;
Disposal	The storing, handling, processing, treatment and utilization and final location of waste to avoid undesired effects on the environment;
Licence	A licence to operate a waste disposal site or plant issued under this part

Disposal Site	Means the approved land where waste disposal facilities are physically located.
Storage	The interim containment of waste after generation and prior to collection form ultimate recovery or disposal;
Environment	Land, water, air and other external influences and conditions that affect the development and life of all organisms including human beings
Clinical Waste	This is waste from medical establishments like clinics and hospitals e.g., pharmaceutical waste, syringes, and body tissues;
Industrial Waste	This is waste, which comes from industries but does not include hazardous waste. This waste is in most cases is homogeneous and is easier to handle and manage e.g., mine waste such as waste rock and tailings, metals, chemical
Municipal Solid Waste	This is waste, which includes trading commercial and domestic waste e.g., packaging, perishables, kitchen waste and paper waste.

Approved by: _____ Senior Manager – HSES and Risk	Date: 29.11.2022

4.0 Procedure

4.1 Waste management at CEC

Waste generated at CEC is classified as hazardous and non-hazardous and management of these two streams of waste have been detailed below.

4.1.1 Hazardous Waste

Due to the inherent risks associated with the generation and handling of hazardous wastes, extreme care must be taken and maintained when handling, packaging, transporting, and disposing of these waste types. The following are the minimum requirements:

- There shall be dedicated hazardous waste storage area, which will be protected from other elements.
- The total amount of waste generated across CEC facilities shall not exceed 0.99 Tonnes per year at any given site and 500Tonnes at CSS.
- The storage area shall have an impervious surface and must contain any spillage. The containment can be achieved by provision of a bund wall, a sump, an inward sloping floor or tray. In each case the volume of the containment facility should be at least 110% of the largest holding vessel in the enclosure.
- Incompatible hazardous wastes will not be stored in proximity of each other, to an extent that the mixing of their vapours or because of an accidental spill will not result in a new major risk or a more dangerous hazard.
- All loading and offloading of the storage bins will take place within the containment area. Where this is not possible, appropriate measures will be taken to prevent spillage. The loading and offloading of the bins should be carried out in such a manner that under normal working conditions spillage will not occur.
- Bins for storing hazardous waste will be kept closed at all times.
- Access into hazardous waste storage areas will be restricted to authorised persons for purposes of loading and offloading of waste bins, inspections, and equipment maintenance.
- No hazardous liquid waste will be discharged into a storm water drain or a sewer system unless it has been prior to being discharged, appropriately treated to render the product non-hazardous to both people and the environment.

- Hazardous waste containers must not be transported by hand unless the container is designed for that purpose and there is no risk of the waste spilling in transit under normal handling conditions.
- Hazardous waste spills shall be immediately reported to the responsible line supervisor. The supervisor will arrange for the immediate containment of the spill, its recovery or treatment in situ and clean-up of the spill site. The supervisor will also report the incident to system control and HSES and Risk as appropriate considering its extent and significance. Non-hazardous waste (e.g., clothing), which has been contaminated with a hazardous substance, will be treated as hazardous.
- Waste transportation off site will be conducted in a manner which will protect people and the environment i.e., the vehicles used must be roadworthy and fitted with appropriate hazard warning sign / symbol.
- The transportation operation must be licensed with the local authority in any given town where CEC operates.
- The waste must only be disposed of at a site licensed for such waste type or agreed with the regulators in case of an interim storage site.
- Storage of Hazardous waste at the Hazardous Storage Shelter shall be relevant as long as the ZEMA limit is not exceeded.
- Disposal of hazardous waste shall be done in accordance with the prescribed regulations but shall only be done when it is economically feasible to do so, without exceeding the ZEMA annual limits.

4.1.2 Waste oil

There are mainly two different types of waste oil generated at CEC namely transformer oil and engine oil. Transformer oil shall be taken to the oil tank farm for regeneration. In a situation where the properties cannot be improved, the waste transformer oil is taken to the stores yard for onward collection by a licensed third party. The engine oil once generated is taken to the stores for onward collection by a licensed third party.

4.1.3 Oil Contaminated Waste.

The oil contaminated waste generated at CEC include oil filters, mutton cloth and used oil spill absorbents. The oil filters once generated shall be drained off completely and sold as scrap metal.
The contaminated mutton cloth shall be soaked with a biodegradable degreaser and thereafter can either be re-used or disposed of as non-hazardous waste. The used oil absorbents shall be taken to the bioremediation farm for treatment thereafter be used by horticulture as manure.

4.1.4 Fluorescent Tubes

The fluorescent tubes shall be crushed using a fluorescent tube crusher and then kept in interim storage facility awaiting final disposal to be approved by the Zambia Environmental Management Agency.

4.1.5 Clinical Waste

Clinical waste will be placed in biohazard bags at the Plant site Clinic. The bags will be sealed on site prior to being transported to the incinerator at Progress Medical Centre for high temperature burning in the incinerator. In respect of sharps, these may be placed in appropriate primary containers before being placed in biohazard bags to ensure that they do not puncture the biohazard bags.

4.1.6 Batteries

The used batteries generated are taken to stores where they are sold to licenced third parties.

4.1.7 Refrigeration Equipment

Fridges and freezers contain gases such as chloro-fluorocarbons (CFCs) and hydro chlorofluorocarbons (HCFCs). Both CFCs and HCFCs are greenhouse gases, which when emitted into the atmosphere contribute to climatic change It is recommended that prior to disposal of the equipment, maintenance staff should:

- Ensure that the gas is removed and contained in the refrigerant cylinders.

- Ensure that the oil is removed from compressors to prevent spillage.
- Ensure that refrigerant cylinders are emptied completely, and valves left open to prevent pressure build up inside which can result into cylinder explosion causing injury.

4.1.8 Electronic Waste

To reduce harm to mankind and the environment and to monitor and account for the decommissioned electrical and electronic equipment, such as printer cartridges, computers, laptops, meters, telecommunication equipment, generated by the Company; it shall be the responsibility of all employees in charge to adopt and implement the following:

Ensure all Electronic waste is properly packed in plastic bags where in preparation for storage at the main stores.

- Avoid throwing E-waste in waste bins.
- In the case of Cartridges and Copiers, caution must be taken to avoid spillage or discharge of Copier ink or powder.
- The Supervisor Horticulture shall then plan to have the E-waste collected and deposited / stored at the main stores. This waste shall be treated as hazardous waste and disposed of with other hazardous waste.
- The Supervisor Horticulture shall maintain monthly records of the quantities of E-waste collected during the month. This data shall be used to compile statistics on waste management for inclusion in the environmental monthly reports.
- All other forms of E-waste that include or are similar in form to all of the following: Laptops, Printers, Monitors, CPUs, Top Cage Electrical relays, Telecoms, and metering devices once generated shall be quantified and taken to stores for temporal storage awaiting final disposal.

4.1.9 Asbestos Waste

- All asbestos waste and used disposable PPE must be disposed of in accordance with the requirements of the Hazardous waste regulations.

- During and on completion of the Asbestos Contaminated Material works, these shall be double bagged/wrapped as it is produced. Bags shall be sealed, labelled, and cleaned prior to removal from the sealed off enclosure.

- Bags containing asbestos waste shall be transported along an agreed route for immediate removal from site, or safe storage within a lockable container located in an agreed position on site.

- Where practicable, large pieces of rigid materials must not be broken or cut for disposal in plastic sacks. They should be double wrapped intact in sheet plastics or other suitable material or placed in a sealed container.

- All asbestos waste shall be disposed of strictly at a site licensed to receive it in accordance with the Environmental Management Act No. 12 of 2011. Permanent records must be updated when asbestos has been removed.

- Asbestos stored shall only be transported with the authorisation of HSES & Risk department.

4.1.10 Expired chemicals

These are chemicals that are unused during their period of usefulness. When these chemicals exceed their shelf life without being consumed, they are disposed of at an incinerator. This disposal is approved by ZEMA.

4.1.11 Silica Gel

Silica gel is used in transformers to absorb moisture. After it has lived its usefulness, the silica gel is changed and disposed of as hazardous waste.

4.1.12 Solar modules

These modules are generated from CEC solar PV plants. During the life of the solar plant, some solar modules may be generated due to damage or other causes that makes them obsolete. The disposal of the modules will be done through ZEMA-licenced dealer.

4.2 Non-Hazardous Waste

4.2.1 Paper Waste

Paper Waste generated shall be kept separate from other waste types. Once the collection bins are full, they shall be transported to the Records Centre where arrangements will be made with Zambezi Paper Mills for final disposal.

It is the responsibility of each paper waste generator to ensure that confidential papers are shredded prior to being placed in bags for disposal.

4.2.3 Scrap Metal

Scrap Metals and machining waste are disposed of through registered scrap metal dealers. It is the responsibility of all employees to follow guidelines provided in the Procurement and Supply procedure (P&S/016) when confronted with this type of waste. For further clarification, employees should contact the Warehouse Supervisor or the Environmental Personnel on 244317/342.

4.2.4 Municipal Waste

Municipal waste generated at CEC includes garden waste, wooden pallets, kitchen waste and any other non-hazardous waste. All municipal generated other than garden waste and wooden pallets shall be placed in the designated waste bins and once filled up, shall be disposed of at the licensed dumpsites.

The garden waste is treated to form compost manure that is used within CEC. The wooden pallets are stored and are used as a source of energy.

4.2.5 Plastics

The waste plastics shall be put in separate waste bins and once filled up, shall be taken to the plastic recycling facilities.

4.2.6 Tyres

The used tyres once generated are taken to stores where they are sold to employees, while they are still in a condition that they can be reused.

4.2.7 Construction Waste

Construction waste generation shall be quantified and segregated according to type. The waste that can be salvaged and be re-used shall be separated and kept for use and whereas that which cannot be re-used within CEC is surrendered to the supply chain department for sale as scrap. Only minimal waste shall be taken to the dumpsite.

4.3 Waste Segregation

All the wastes generated shall be separated at the point of generation to ensure that contamination of non-hazardous waste by hazardous waste does not occur. Source segregation allows for waste reuse / recycling either on site or off site, thereby minimizing wastes requiring final disposal and double handling of waste.

4.4 Record Keeping

All departments shall maintain a record of the types and quantities of the waste being generated and shall be submitted to HSES and Risk department for inclusion in the Environmental monthly report.

5.0 Responsibilities and Distribution

5.1 Responsibility

Waste generated at CEC is disposed of using licensed waste disposal facilities. Responsibilities for waste disposal are as follows:

a. Civil and Mechanical Maintenance:

This function is responsible for collection of waste from waste storage sites and for disposal of non-hazardous waste. Disposal of this type of waste is done using licensed trucks that are suitable for this purpose. Domestic waste is disposed of at licensed landfills located in all CEC's operation areas. The new Ichimpe dumpsite in Kitwe, Mushi dumpsite in Luanshya, Helen dumpsite in Chingola and TD11 in Mufulira.

If an employee detects a non-compliant issue likely to cause breach of legislation, pollution, or hazard, shall inform the Civil Engineer on phone number 244138 and the Environmental /Safety Personnel on 244218/244205/244317/244342.

b. Supply Chain Management:

This function is responsible for disposal of waste oils, scrap metals, Batteries, tyres, and E-waste and building materials.

c. Progress Medical Centre is currently servicing CEC Plant Clinic and is responsible for disposal of clinical waste produced at the CEC Plant Site Clinic located at the Central Switching Station.

d. Employees: It is the responsibility of all employees to ensure that waste is disposed of as stipulated above.

e. The Environmental and Social Advisor: Responsible for developing, maintaining, and issuing this procedure. This procedure and its revisions are to be authorized for issue by the Senior Manager HSES and Risk. A copy of this procedure will be posted on the CEC Intranet in the Company Procedures Database and will also be issued when need arises.

6.0 References

Approved by: _____ Senior Manager – HSES and Risk	Date: 29.11.2022

Reference	Description
CEC/CQQ/QA/001	Developing, Issuing and Maintaining Procedures (CEC intranet)
CEC/IMS/QA/001	Integrated Management Manual
CEC/ESM/QA/007	Waste management standard
The Environmental Management Act No. 12 of 2011	The Zambia Environmental Management Regulations
Solid Waste Regulation and Management No. 20 of 2018	Ministry of Local Government

7.0 Related Documents

Reference	Description
CEC/CQE/QA/005	Soil Clean up Guidelines and Bioremediation
CEC/CQE/QA/006	Management of Hazardous Chemical Substance

8.0 Review

This procedure will be reviewed every after two years or when need arises.

9.0 Record of Amendment

Date	Revision	Revision Changed (Yes/No)	Indicate sections amended	Summary description of Amendment
March 2004	1.0		N/A	First Issue
April 2005	2.0	No	All	Procedure numbering system
October 2007	3.0	No	All	Formatting
June 2011	4.0	No	All	Formatting
April 2015	5.0	Yes	All	Format and entire contents revised
Oct 2018	6.0	Yes	All	Entire document reviewed, and typos corrected.
July 2020	7.0	Yes	All	Included electronic and asbestos on hazardous waste. Typos were also corrected.
November 2022	8.0	Yes	All	Whole document reviewed, typos corrected, and format/font corrected.

Approved by: _____ Senior Manager – HSES and Risk	Date: 29.11.2022

10.0 Appendices

i) Appendix 1 – Document Management Record

Appendix 1 – Document Management Record

Document Title:	WASTE MANAGEMENT PROCEDURE
Document ID:	CEC/CQE/QA/004
Previous Review Date:	OCTOBER 2018
Next Review Date:	NOVEMBER 2024

Document Issue Status

Issue	Date	Notes/changes	Originator	Authorised for Use
1.0	March 2004	First Issue	F Kasongo	V Nyirenda
2.0	April 2005	Procedure numbering system	C Chabuka	V C Nyirenda
3.0	October 2007	No Change	F Kasongo	V C Nyirenda
4.0	June 2011	Nil	F Kasongo	C Chabuka
5.0	May 2015	Format	Rhoda N. Mumba	Caroline Sinkamba
6.0	October 2018	Typos corrected.	Bupe C. Lunda	Caroline Sinkamba
7.0	July 2020	Included Electronic Waste and asbestos on Hazardous waste. Typos were also corrected.	Rhoda N Mumba	Caroline Sinkamba
8.0	November 2022	Typos and fonts corrected	Bupe Chama	C Sinkamba

Approved by: _____ Senior Manager – HSES and Risk	Date: 29.11.2022

APPENDIX 4: WATER TEST RESULTS

THE COPPERBELT UNIVERSITY

School of Mines and Mineral Sciences,
Department of Environmental Engineering
P.O Box 21692 – Kitwe – Zambia Cell: 0968-646575 / 0977-681549

CLIENT	CROWNBIT ENVIRONMENTAL SOLUTIONS LTD	**DATE SUBMITTED**
ADDRESS		**27.06.2024**
SAMPLE ID	LUASHIMBA STREAM WATER	
SERVICES REQUESTED	Water analysis	

Parameter	Unit	Result	Zabs Limits
pH		6.25	6.0 - 8.5
Turbidity	NTU	10.6	5
Conductivity	µS/cm	43.2	1500
TSS	mg/l	3	100
TDS	mg/l	21.6	800
NO_3	mg/l	0.20	45
SO_4	mg/l	3	250
Cl^-	mg/l	15	250
F^-	mg/l	<0.01	1.5
Fe	mg/l	0405	0.3
Cu	mg/l	0.035	1.0
Co	mg/l	0.008	0.05
Mg	mg/l	<0.1	30
Ca	mg/l	<0.1	100
Pb	mg/l	0.045	0.05
Mn	mg/l	0.02	0.02
Cd	mg/l	<0.01	0.05
Na	mg/l	6.23	200
K	mg/l	0.69	30
Total Hardness	mg/l	<0.1	-
Feacal Coliform	cfu/100	10	0
Total Coliform	cfu/100	31	0

Authorising Officer's Approval:	**Sign:**	**Date:**
	Name: **DR J MUNDIKE**	
Designation	Head of Department	

COPPERBELT UNIVERSITY
P.O. BOX 21692 - KITWE
OFFICIAL
2024
SCHOOL OF MINES AND MINERAL SCIENCES
DEAN'S OFFICE

APPENDIX 5: SOIL SURVEY REPORT

BASELINE DATA COLLECTION REPORT [SOILS]

SOLAR POWER GENERATION PLANT AT GARNETON SOUTH SITE

MARCH 2019

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1.0 Introduction, context and approach

The Garneton South site (interchangeably called Area J) is among the two sites which are being considered as possible sites for the location of solar power generation plants. The baseline soil data collection for the site was conducted with the purpose of describing the inherent soil quality to support general land use and more specifically its vulnerability to setting up of a Solar power generation plant. Other alternative potential land uses were evaluated covering a wider potentially affected area. This exercise was necessitated as part of the biophysical data collection of the area to constitute a full scale environmental Impact assessment prior to the setting up of the project according to the requirements of the Zambia Environmental Management Act.

The land husbandry data survey component of any land scape involves the collection of data and information on the physical land resources of an area which includes but not restricted to the Soils of an area and identification of the potential and limitations of these soils for several alternative land uses as well as recommendations for appropriate but sustainable land use management. The potential hazards associated with any land use are evaluated during this survey and remedial measures to lessen further land degradation are recommended.

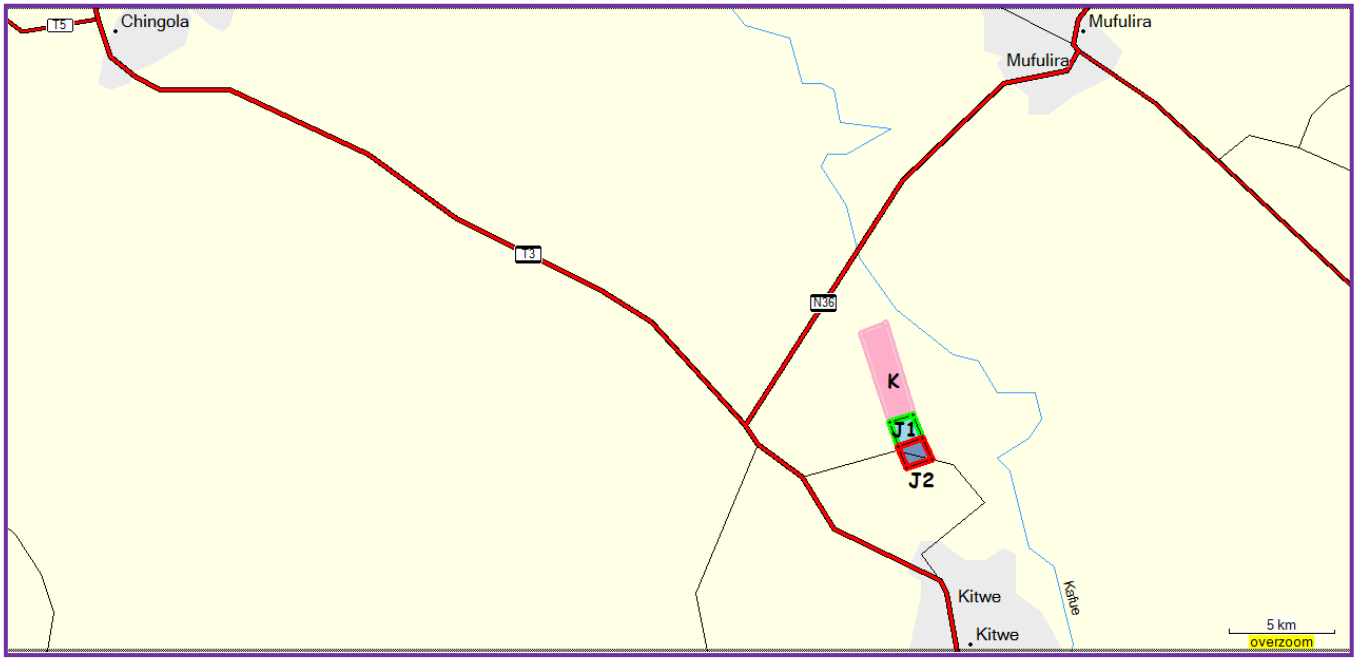
As soils are largely related to other components in terms of properties and factors affecting its use, data and information is also collected on the Geology of the area from which the soil is coming as well as other factors that influence the soil properties and its capability, which include, Land use, vegetation, climate, hydrology, topography or relief and organisms.

The main objective of the survey therefore was to provide baseline data and information; which outlines the soils, land and other physical natural resources inventory of the proposed Solar power generation plant and assess the environmental components and status of these resources and potential threats to degradation were highlighted including recommendations to not only sustainable resource use but also mitigation measures for the likely impacts.

This report highlights some findings of the baseline environment (soils related) of Garneton south site.

1.1 Location

The Garneton south site is located in Garneton area in Kitwe district, about 20 km northwest of Kitwe CBD. The site is located on the reserve land belonging to Copperbelt Energy Corporation which is along the 220 kV power transmission lines which leads to other mine townships of the Copperbelt. The site lie between latitudes 12^0 40' 29" and 12^0 42' 42.8" south with an area extent of 52 hectares. The figure below shows the geographical location of the site.



2.0 Approach

Soil mapping is a complex process which involves several steps including desk studies, survey planning, remote sensing, field investigations, data entry and analysis, laboratory investigations and finally the actual mapping, land capability and suitability evaluation and the final reporting and recommendations.

Background information was obtained from previous studies conducted within and around Garneton.

A base map was created to act as a guide line in the field and on which field data was plotted.

The most recent available satellite imagery covering the area was acquired and used to obtain an overview impression as well as to plot the traverses to be followed in observing the area on the ground.

In the field, soils were examined by means of auger borings to a maximum depth of 120cm where the auger was not stopped by rock or gravel or some other impenetrable layer.

At each auger site, a number of soil observations were made including (Texture, slope, vegetation, land use, soil depth, drainage, geology).

On the basis of the auger observations, the different soil types occurring in the area were identified and mapped. Soil boundaries were demarcated on the satellite imagery in the field in accordance with observed soil changes. The following sections summarize the major land and soil characteristics of area K and their implications to the proposed land use.

2.1 Climate

The Garnetone project site is located in a high rainfall area, where the mean annual rainfall is 1309 mm. The table opposite presents rainfall data for the Kafironda weather station on the Copperbelt. The data also shows that the area receives most of its rainfall in the months of November to March, with the months of May to September being effectively dry.

	Rain mm	Eff rain mm
January	313.8	156.4
February	223.4	143.5
March	200.0	136.0
April	68.3	60.8
May	7.2	7.1
June	0.1	0.1
July	0.2	0.2
August	0.3	0.3
September	2.4	2.4
October	36.7	34.5
November	166.0	121.9
December	290.7	154.1
Total	1309.1	817.4

The table below presents mean monthly maximum and minimum temperature, humidity, wind, sunshine hours, radiation and open pan evaporation data for the Kafironda station.

The number of sunshine hours is of great importance to the project being heavily reliant on solar energy and according to the data it is brighter for most parts of the day throughout the year except in a few months.

Month	Min Temp °C	Max Temp °C	Humidity %	Wind km/day	Sun hours	Rad MJ/m²/day	ETo mm/day
January	16.5	27.3	74	138	4.9	17.8	3.94
February	16.5	27.5	81	130	5.1	18.0	3.78
March	15.9	27.9	79	130	6.1	18.8	3.92
April	13.1	28.0	76	130	8.0	20.0	4.01
May	7.9	27.4	70	121	8.9	19.2	3.70
June	3.7	25.9	66	138	9.3	18.5	3.48
July	3.2	26.0	63	164	9.7	19.5	3.74
August	5.9	28.4	63	190	10.1	21.9	4.52
September	9.6	31.3	59	225	9.6	23.4	5.57
October	13.6	31.9	65	233	8.8	23.5	5.69
November	15.8	29.7	75	190	6.9	20.9	4.68
December	16.6	27.5	62	156	5.0	17.9	4.35
Average	11.5	28.2	69	162	7.7	20.0	4.28

2.2 Land Use and Human influence

The site has mainly been under three main land utilisation types which included the area under natural forest although this has been rampantly deforested and secondary vegetation has sprung over the last few years. Other areas have been used as damp site especially the eastern part where there is rampant damping of industrial and domestic waste.

Other areas are used for subsistence production of crops by the local people although the land marginal in terms of its capability to agricultural production mainly due to high presence of gravelly surfaces and while the sandy riverline areas have been used for quarrying of sand for construction around the townships in Mufulira, Garneton itself and Chambishi.

2.3 Topography and geology

As these areas are in vicinity of each other. Both areas have the same geological formation and the general configuration of the land is similar as they are influenced by the streams in their north and south boundaries. The area is mainly gently sloping with steep land being located in the northern and southern tips of the area towards the two streams in the respective directions. Three levels of topography can be distinguished in the area as indicated in the mapping units. The geology of the area is closely related to the soil types occurring in the area. The more resistant quartzitic rock types have given rise to shallow and stoney soils while the iron and manganese parent material is found in clayey, slightly deep soils. The main geological features are summarised as below.

Map Unit	Topography
1	Very slopy land especially towards the stream greater than 10 %
3	Gently sloping land 0 - 5 % slope
2	Slopy land 5 - 10%

Map Unit	Main geological features
WQS	White quartzitic gravels and stone spread on the surface over a large area
ERO	Extensive rock outcrops extended over one meter above ground
LGSS	latelitic gravels in the subsoil from 20cm below the surface
IQ	Iron and quartzitic rock parent material

2.4 The Soils

2.4.1 The general soils information in the area

In general terms the soils of the area belong to the major group of the urban districts of the copperbelt which is well drained, deep, yellowish red/strong brown, loamy/clayey soils with inclusions (20%) of moderately- imperfectly drained, deep-shallow, gravelly clayey soils and are classified as chromi/gley-haplic Acrisols with dystric Leptosols. They are associated to either of the following series Kasempa, Mufulira & Misamfu soil series which have low to very low nutrients content and are highly acidic hence agricultural productivity is very low.

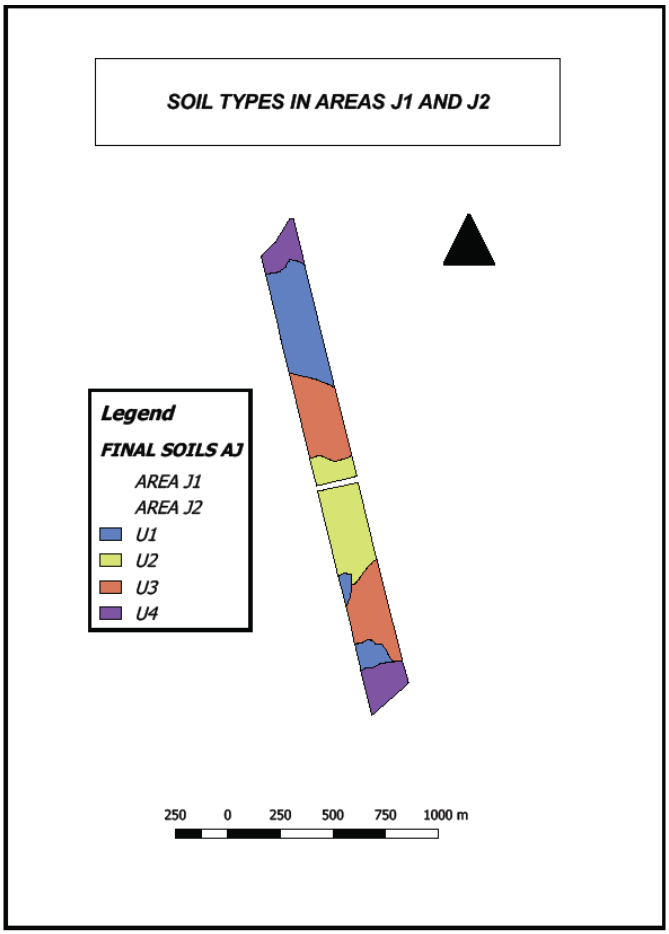
2.4.2 Current status of the soils

Four main soil subgroups were identified in the two areas and are mainly differentiated based on the location, topographical and hydrological factors.

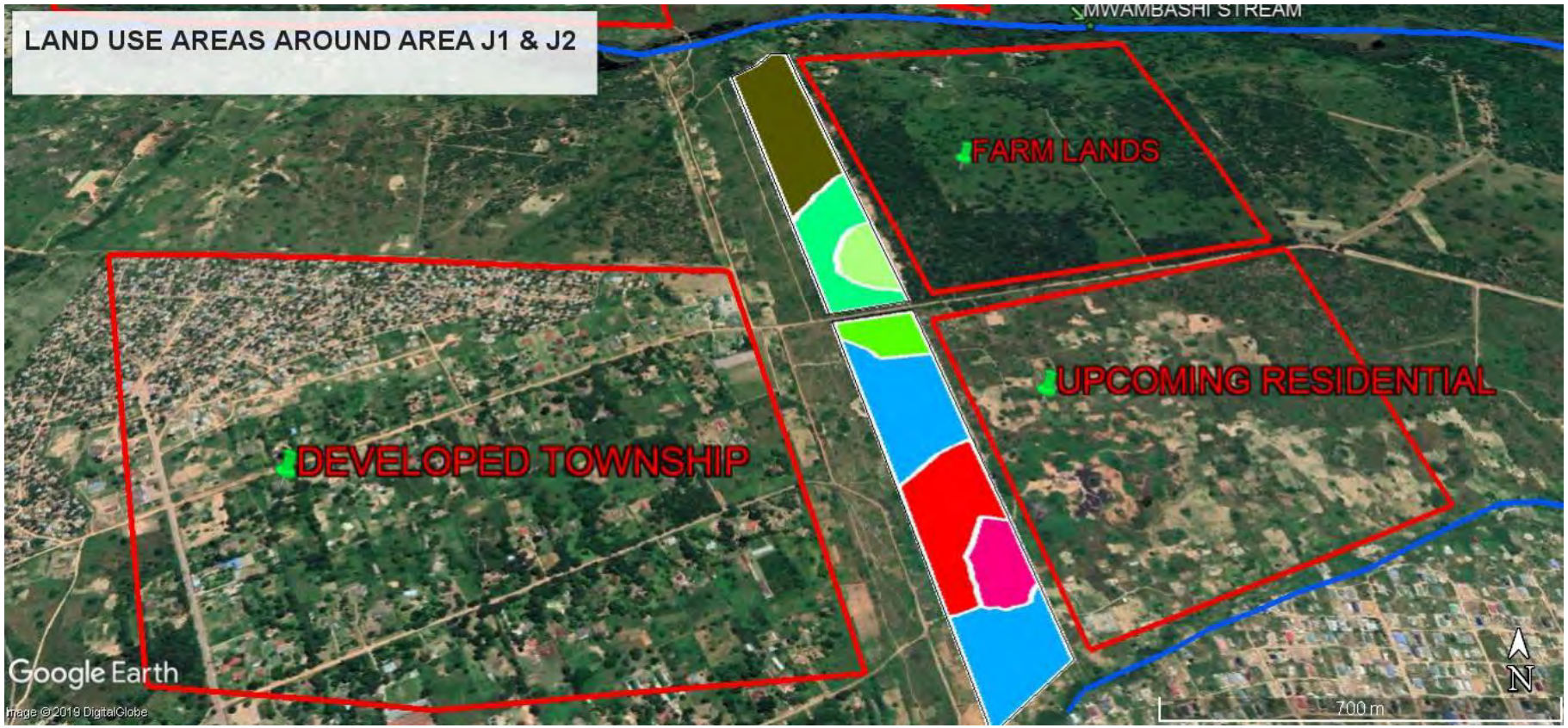
Map Unit	Brief description of soils
U1	Shallow stoney soils with stones or gravels on the surface and within the profile
U2	Deep, sandy clay soils: In areas with dense vegetation, there is an accumulation of organic matter in the top soils.
U3	Moderately deep soils with gravels below the surface in most cases from as high as 20cm to 100cm. They are marginally suitable to any meaningful agricultural alternative
U4	Imperfectly drained, deep, dark grayish brown sand soils with compacted gravelly sub soils at 100cm; These soils are structureless, on the surface and are located near dambo or plain areas where they have silty material deposited by water. Some places had compacted sub soils mainly due to accumulation of clay minerals. They are water logged in the rainy season when the soils become saturated with water and thus support grassland regrowth

The figure below shows the distribution of these soils in the target areas.

The western part of the site is being used for charcoal production at a commercial scale, while the eastern part has been subjected to damping of various wastes.



Land use in the project site and the surrounding areas



3.0 Threats and opportunities

3.1 Threats

3.1.1 Nature of the Land scape

The main threats to the stability of the landscape (Soils, vegetation, landuse, Water, socio and economic factors) is mainly related to the physical nature of the soils, land form, Climatic factors and socio settings, but in summary the following threats to the land scape are foreseen.

- The major source of the environmental impact on soils of the area during and after the construction is mainly related to the soil and land degradation as influenced by massive movement of construction materials and earth during construction, building and increased quarrying, etc.

- There is likely to be clearing of sites; this would lead to bare exposing the surrounding areas to accelerated erosion and increased run off. This is essentially because of;

  - Nature of the topography and the compacted physical soil characteristics.

- The changes to the top soil characteristics are likely to increase run off to the lower areas and may also increase sedimentation in the streams.

- Increased traffic to the project area would result in dust and noise pollution to the surrounding areas. Traffic is also likely to increase pressure on the roads and drainage networks of the area there by increasing degradation of the land.

- In order to increase exposure of the site to longer sunshine hours there may be an attempt to cut down some trees.

- In terms of alternative land use, permanent cultivation of annual crops is not attainable and would require management inputs that are usually not economically viable.

3.2 Opportunities

Owing to the climatic and physical setup of the sites, the areas lend themselves well to the development of solar power generation plant.

- Generally the soils are fairly stable on the site and are suited for traffic movement, building construction and roads subject to surface stabilization by quarry dust, crushed stones and concrete to reduce subsidence, water and wind erosion.
- Natural vegetation growth is possible which will eventually lead to more stable soils as long as there are appropriate measures such as fire management.
- The area experiences sufficient sun shine hours which are cardinal for the project through- out the year other than in a few months like in Winter when the hours reduce.
- Diversification or pursuing alternative livelihoods is possible, including securing employment in the project site and in nearby towns, starting small businesses, establishing vegetable gardens where conservation agriculture techniques can be applied would improve the people's livelihood which in turn will reduce the pressure for natural resources like forestry through charcoal burning.

4 APPENDIX: Sampled areas and summary of soil and site characteristics

Observation ID	Geo reference		Elevation	Parent material	Topography	Land use	vegetation	human influence	Drainage	Brief discription of soils
J1	35L 628472	8594544	1195	White quarzitic stones on the surface	slopy towards Mwambashi in the north greater than 10 %	forest	Primary Miombo thicket being cleared for Charcoal	Charcoal burning	well drained	shallow stoney soils
J2	35L 628635	8594587		extensive rock outcrops		forest	Primary Miombo thicket being cleared for Charcoal	Charcoal burning	well drained	shallow stoney soils
J3	35L 628724	8594129		White quarzitic stones on the surface	Gentle slope towards 2 %	forest	Primary Miombo thicket being cleared for Charcoal	Charcoal burning	well drained	Dark shallow stoney soils with high carbon
J4	35L 628580	8594092	1208	lateritic gravels at 10-20 cm	Gentle slope towards 2 %	forest	Primary Miombo thicket being cleared for Charcoal	Charcoal burning	well drained	Reddish brown gravelly soils
J5	35L 628699	8593637	1228	Quartz and Iron	Gentle slope towards 2 %	forest	Miombo regrowth		well drained	deep Reddish brown, sandy clay soils
J6	35L 628844	8593691		Quartz and Iron	Gentle slope towards 2 %	forest	Miombo regrowth		well drained	deep Reddish brown, sandy clay soils

J2A	35L 628917	8593467	1227	Quartz and Iron	Gentle slope towards 2 %	forest	Miombo regrowth	Land clearing	well drained	deep Reddish yellow, sandy clay soils
J2B	35L 629039	8592964		Quartz and Iron		Dum p site	shrubs and grasses	Laterite pits	well drained	moderately Reddish yellow, sandy clay soils
J2C	35L 628901	8592803	1216	surface quarzitic gravels and stones (90%)	Slopy land towards the southern stream	Crop land, maize and groun dnuts	cleared	Dump site for copper tails and excavated mateirals from the road constructio n site	well drained	shallow gravelly soils
Other	35L 628790	8593140		Wide rock outcrop (iron stone)					well drained	shallow gravelly soils
J2D	35L 628760	8593277	1227	Quartz and Iron	Gentle slope towards 2 %	forest	Miombo regrowth	Land clearing	well drained	deep Reddish yellow, sandy clay soils

APPENDIX 6: BIODIVERSITY REPORT

BIODIVERSITY STUDY
FOR

THE PROPOSED CONSTRUCTION OF
A SOLAR PV PARK UNDER THE GET FIT ZAMBIA SOLAR PV (GARNETON SOUTH)
BY
COPPERBELT ENERGY CORPORATION PLC. (CEC)

KITWE COPPERBELT PROVINCE

Report Prepared By

JACOB TEMBO

June 2024

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LIST OF ACRONYMS

BS	Biodiversity Study
BBOP	Business and Biodiversity Offsets Program
CBD	Convention on Biological Diversity
CEC	Copperbelt Energy Corporation
CIEEM	Chartered Institute of Ecology and Environmental Management
CITES	Convention on International Trade in Endangered Specie
EIA	Environmental Impact Assessment
EIS	Environmental Impact Study
EMA	Environmental Management Act
EMP	Environmental Management Plan
IFC	International Finance Corporation
IUCN	International Union for Conservation of Nature
NNL	No Net Loss
NPI	Net Positive Impact
DNPW	Department of National Parks and Wildlife
ZEMA	Zambia Environmental Management Agency

1.0 INTRODUCTION

Copperbelt Energy Corporation Plc. (CEC) plans to construct a Solar PV park under the GET FiT Zambia solar PV initiative. The proposed location for the project is Kitwe District, with the proposed area named as Garneton South near the CEC and ZESCO power lines. Garneton South site sits on a 52 Hectares piece of land and will be connected to the High voltage grid through an 8.1km 33kV power transmission line which will run from the Solar farm to Zesco Mwambashi Substation along Kalulushi road.

The development will be designed and constructed to CEC's exacting standards that meet the local and international demands and fully conform to the IFC Performance Standards and Environment Health and Safety (EHS) Guidelines.

The proposed project falls under The EIA Regulations, SI No. 28 of 1997 and is listed under the first schedule (Regulation 3(2)) "Projects which require Project Briefs. CEC commissioned an independent Environmental Consultant to undertake a full Environmental Impact Assessment of the project and prepare the EPB to be submitted to ZEMA. The Consultant conducted a biodiversity survey of the project area as part of the baseline condition of the proposed site in accordance with the International Finance Corporation (IFC) Performance Standard 6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources) as the proposed project is located in natural habitat (IFC/PS6 paragraph 5).

Thus this report provides a description of the biodiversity features of the project area such that key biodiversity features requiring special consideration can be identified for the purposes of later impact assessment and the identification and design of mitigations that will protect these key biodiversity features. The biodiversity survey results will subsequently be fed into the full EPB.

The structure of this report has been adopted from Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines for preparation of ecological report writing.

1.1 Brief Description of the Site and Access

The project site covers a portion of 52 Ha located in garneton area; Kitwe district of Copperbelt province. It is located just after Nakayombo stream near the mine waste dump site.

Some of the GPS coordinates for the site are shown below.

AREA K (WGS_1984_UTM_Zone_35S)

AREA J_1

LATITUDE	LONGITUDE	NORTHING	EASTING
-12.711447	28.18343957	8594481.899	628488.752
-12.7120601	28.18279704	8594414.408	628418.674
-12.7218834	28.18517725	8593326.720	628672.183
-12.7214552	28.18690739	8593373.227	628860.261
-12.7103221	28.18415307	8594605.962	628566.793
AREA J_2			
-12.7217248	28.18696677	8593343.380	628866.573
-12.730289	28.18908005	8592395.083	629091.707
-12.7316732	28.18754407	8592242.744	628924.232
-12.7221113	28.185228	8593301.483	628677.579

1.2 Brief Project Description

The project involves the construction and operation of a 20MWac solar PV power plant. Key project components include PV modules and mounting structures, underground direct current (DC) and alternating current (AC) cables, transmission lines, inverter stations, substation(s) (site substation(s)), stores and office building(s), access road and internal access tracks, perimeter security fence and security

1.3 Objectives of the Study

i) To identify and describe all potentially significant ecological effects associated with the proposed development
ii) To set out the mitigation measures required to ensure compliance with nature conservation legislation and to address any potentially significant ecological effects
iii) To identify how mitigation measures will/could be secured
iv) To provide an assessment of the significance of any residual effects
v) To identify appropriate enhancement measures
vi) To set out the requirements for post-construction monitoring

2.0 POLICY AND INSTITUTIONAL FRAMEWORK

The development of legislation dealing with natural resources management dates back to the colonial era. The formulation of laws followed a sector approach as pieces of legislation were formulated to deal with forests, wildlife, land, water, fisheries, and many other natural resources separately. Given the poor coordination, the promulgation of these laws brought about duplication and gaps. The first attempt to coordinate various laws was done under the auspices of the National Conservation Strategy (NCS) of 1985. The NCS aimed to ensure the sustainable use of renewable natural resources and to maintain biological diversity and essential process and life-support systems. The NCS recommended key environmental issues and prescribed policy, legislative and institutional measures to address these issues. The strategy put in place processes such as community management of natural resources and decentralization, capacity building of key institutions, legislative reforms and the establishment of institutions such as the Environmental Council of Zambia, now the Zambia Environmental Management Agency (ZEMA).

2.1 National framework

This chapter provides a brief summary of the Zambian legislation and international conventions pertaining to ecological/biodiversity management from which this report draws its strength and authority. CEC will ensure that the provisions of all these pieces of legislation and policies are strictly adhered during all phases of the project.

2.1.1 The Forests Act No. 4 of 2015

Part VI section 49 (1) subsection (a) and (b) provides for major forest produce on state Land and customary areas to be conserved for the use and benefit of the local community in the areas.

Relevance: The project will involve cutting down of trees in the project area.

Compliance: the trees in the project site will be cleared for the purposes of developing the project and CEC will ensure that indiscriminate cutting of trees is avoided.

2.1.2 Zambia Wildlife Act No. 14 of 2015

The act provides among other things for the establishment, control and management National Parks, Bird and wildlife sanctuaries and for the conservation and enhancement of Wildlife eco-systems, biological diversity and objects of aesthetic, pre-historical, geological, archaeological and scientific interests in National Parks.

PART IX section 75-82 provides for the following;

i) Self-defence

ii) Defence of property

iii) Game or protected animal killed through accident or error

iv) Wounding of game animal or protected animal

v) Wounding of dangerous animal

vi) Cruelty to wild animals

vii) Possession of maimed wild animal

viii) Molesting or provoking game animal or protected animal

Relevance: The project is located within a natural habitat and different animals were mentioned to exist within the site by the locals hence the Act is relevant.

Compliance: CEC will ensure that no animal is injured and if animals are found will be reported to departments of National Parks and wildlife.

2.2 International Agreements and Conventions

2.2.1 Convention on International Trade in Endangered Species (CITES)

The Convention on International Trade in Endangered Species of Wild Fauna and Flora, also known as the Washington Convention is a multilateral treaty to protect endangered plants and animals. It was drafted as a result of a resolution adopted in 1963 at a meeting of members of the International Union for Conservation of Nature (IUCN). The convention was opened for signature in 1973 and CITES entered into force on 1 July 1975. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species in the wild, and it accords varying degrees of protection to more than 35,000 species of animals and plants.

2.2.2 Convention on Biological Diversity

The Convention on Biological Diversity (CBD), known informally as the Biodiversity Convention, is a multilateral treaty. The Convention has three main goals including: the conservation of biological diversity (or biodiversity); the sustainable use of its components; and the fair and equitable sharing of benefits arising from genetic resources. In other words, its objective is to develop national strategies for the conservation and sustainable use of biological diversity. It is often seen as the key document regarding sustainable development. The Convention was opened for signature at the Earth Summit in Rio de Janeiro on 5 June 1992 and

entered into force on 29 December 1993. At the 2010 10th Conference of Parties (COP) to the Convention on Biological Diversity in October in Nagoya, Japan, the Nagoya Protocol was adopted

2.3 IFC Performance Standards

The following IFC Performance Standards are applicable to this BS:

2.3.1 Performance Standard 1 (Assessment and Management of Environmental and Social Risk and Impacts)

IFC Performance Standard (PS) 1 aims to identify and assess environmental (including biodiversity) and social risks and impacts of any given project. The project must adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimise, and where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment. PS1 promotes improved environmental and social performance of clients through the effective use of management systems. Furthermore, the standard promotes and provides a means for adequate engagement with Affected Communities throughout the project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated.

2.3.2 Performance Standard 6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources)

IFC PS6 has the greatest relevance to this BS. PS6 recognizes that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living and natural resources are fundamental to sustainable development. This standard covers the following aspects that are relevant to this BS:

- To protect and conserve biodiversity;
- To maintain the benefits from ecosystem services; and
- To sustainably manage living natural resources.

3.0 METHODOLOGY

This chapter describes the methodology used to assess the biodiversity of the proposed site which enabled the researcher to meet the objectives of the study.

3.1 Scope of the Study

When coming up with the scope of the biodiversity assessment several consultations were made which included interviews with the developers and the main consultant. Project design and scoping reports all formed the basis for scope formulation. Further, familiarization tours to the site were made to appreciate the site before the actual study was commissioned. The study was conducted between 1st and 5th May 2024 and covered the entire 52 ha of the proposed project site. The study looked at the following features;

i) Vegetation types and plant communities that occur on and around the site.
ii) Habitat associations and conservation status of the identified species of both flora and fauna
iii) Sensitive plant communities (exotic/alien) and/or habitats where disturbance should be avoided or minimized.
iv) Species and species group (Mammals, Birds, Reptiles, Amphibians, Invertebrates and Fish)
v) Areas of high biodiversity on the site including Rare/Endangered Species in the Project area.
vi) Species of special concern, including sensitive, endemic and protected species.

3.2 Desk Study

Desk study was conducted in April 2024. Resources books, journals, publications internet and other ecological reports that have been conducted in the region were reviewed and referenced appropriately. Interviews with nearby local communities were also conducted.

3.3 Field Survey

Field surveys were conducted within the 52 hectares proposed project site between 1st and 5th May 2024 by Mr. Jacob Tembo assisted by a local tour guide[1].

3.3.1 Terrestrial Biodiversity

3.3.1.1 Flora

The following methods were employed during the study;

i) 5 circular plots of 10m radius were created within the project area
ii) In each plot geographical coordinates were taken from the center of the plot.

[1] Jacob Tembo has a Bachelor of Science degree in Ecology (BSc) and a Master of Science degree in Environmental Management.

iii) The vegetation and tree inventory of each plot was Identified and described

iv) Areas of high biodiversity including rare or endangered species within the plot were identified and recorded

v) Any species of special concern, including sensitive, endemic and protected species were identified and recorded

3.3.1.2 Fauna

The following methods were employed during the assessment:-

i) Walking along the main roads observing and recording the variety of fauna observed

ii) Interviews with local inhabitants of the project area about the Terrestrial fauna found in project area.

3.3.2 Aquatic Biodiversity

3.3.2.1 Aquatic Flora

Aquatic flora was sampled using the systematic method. Random circular plots were created with 10m radius on banks of Mwambashi stream. At each of the plot, flora occurring in the wider riparian zone and on the water surface and edges was observed. Plants occurring in the aquatic areas were identified across a range of growth forms, including aquatic macrophytes (emergent, surface and sub-surface) species. Care was taken to focus plant identification and description of habitats to aquatic species only as stipulated in the scope of work. The choice of the plots was mainly determined by accessibility.

3.3.2.2 Aquatic Fauna

The following methods were employed to collect data on the aquatic fauna of the project area:-

i) Site walk over along the banks of the stream identifying and recording different types of aquatic fauna spotted in the stream.

ii) Interviews with local fishermen on the dominant fish species in the streams, methods employed, types of nets used, any interesting fish species caught and other aquatic fauna caught or spotted apart from fish

iii) Interviews with local inhabitants of the project area about the aquatic fauna found in and on the banks of the stream.

3.4 Study Limitations

The major limitations were:-

- It was not possible to determine seasonal variations in the species activities as only one site visit during one season was carried out.

4.0 BASELINE BIODIVERSITY CONDITION

4.1 Site Description and Proximity to other Conservation areas

The project site covers a portion of 52 Ha located in garneton area; Kitwe district of Copperbelt province. It is located just after Mwambashi stream near the CEC and ZESCO power lines covering. The site is not located within IUCN protected area and could be categorized as modified due to significant cutting down of trees and land cleared for agricultural purposes.

The immediate west of the site is CEC power lines and further west is a gravel access road. The north-western part of the site about 100m is a stream called Kanakankoko. The southern part of the site Nakayombo stream about 50m. The eastern side is mixed both modified and natural habitat. Generally the site slopes both on the NW side and southern side. There are no important sites within 10km radius.

4.2 Results

4.2.1 Types of Habitat

High level mapping of broad habitat structure classes based on density of vegetation using 2022 remote sensing imagery (Table 1) shows that there are four (4) types of habitats or vegetation cover within the project site; secondary Miombo woodland, shrubland, grassland and old fallow crop fields.

Table 1: Habitat/vegetation coverage within the site

No	Habitat/vegetation type	Area (km2)	% Coverage
1	Secondary Miombo woodland	0.16	31.82
2	Shrubs	0.06	11.36
3	Grassland	0.25	47.73
4	Old fallow crop fields	0.05	9.09
Total		0.71	100.00

The dominant land cover is grassland covering about 47% of the total area representing 0.25 km^2 of the total area. Some of the very old fallow fields were also categorized under this class.

Figure 1: Grassland cover on the project site

Secondary miombo woodland is the second dominant land cover with 32% representing 0.16km² of the total area. Mostly it concentrated on the northern side of the site just after Nakayombo road. The dominant tree species observed were Marquesia *macroura, Brachystegia boehmii, Brachystegia floribunda, Maprounea africana, Mimusops zeyheri, Bauhinia petersiana, Isoberlinia angolensis and Erythrophleum africanum.*

Figure 2: Mature tree on the project site

Shrubland is the third dominant land cover with about 11% representing 0.05km² of the total project site. This land cover was dominated by secondary vegetation of trees. Most of these trees were very small with average diameter of less than 5cm and height of 2-3m. The dominant trees include; *Dichrostachys cinerea, Uapaca kirkiana, Diplorhynchus condylocarpon and Parinari curatellifolia.* This land cover is also characterised by an evergreen perennial flowering plants in the subfamily *Bambusoideae* of the grass family *Poaceae* (Bamboo). This land cover was rather denser than sparse as the trees were seen growing close to each other without any distinctive strata. The ground was covered by patches of plant and grass species mixed with some herbs.

Figure 4: Some bamboo species characterising the shrubland

The fourth land cover was the old fallow crop fields covering about 10% representing 0.04km² of the total project area. This was characterized by grass and late pioneer herbaceous plants growing in association with some small plants and weeds. These fields became fallow after the illegal encroachers who practiced seasonal agriculture on the project land were displaced in 2020. The dominant grass species was *Hyperrhenia rufa* which covers most of this land cover. Other notable grass species include; *Dactylocterium aegyptiun*, *Cynodon dactylon, Digitaria termata, Eleusine indica, Setaria sp. Eragrostis sp, and Bidens Schmperi.* The figure below shows the common grass species found in this land cover.

Figure 5: Common Grass species growing in association with plants species

4.2.2 Species Richness, Evenness and Diversity

Species richness is the number of different species represented in an ecological community, landscape or region. Species richness is simply a count of species, and it does not take into account the abundances of the species or their relative abundance distributions. Evenness is a measure of the relative abundance of the different species making up the richness of an area.

Determination of species richness, evenness and diversity helps in understanding the productivity and biodiversity of an area this is important in impact assessment and formulation of mitigation measures of a project where forest clearing is present. Diversity is usually proportional to the stability of the ecosystem: the greater the diversity the greater the stability (Naffield, 2008). The most stable communities have large numbers of species which are fairly evenly distributed in good-sized populations. Pollution often reduces diversity by favouring a few dominant species. Diversity is therefore a factor in successful conservation management. The table below shows the species richness, evenness and diversity where trees will be cleared. Species diversity was calculated using Simpson index. **Simpson's Index of Diversity 1- D** value ranges between 0 and 1, where:

- High scores (close to 1) indicate high diversity.
- Low scores (close to 0) indicate low diversity.

The index represents the probability that two individuals randomly selected from a sample will belong to different species.

$$D = 1 - \frac{\Sigma n(n-1)}{N(N-1)}$$

where N = the total number of organisms of all species and n = the total number of organisms of a particular species from which Simpson's Diversity Index, 1 – D, is found.

Table 2: Species Richness, Evenness and Diversity

Habitat	Species Richness	Species Evenness	Simpson Index (1-D)
Plot 1	7	0.24	0.803
Plot 2	6	0.18	0.831
Plot 3	Grassland/bamboo	Grassland/Bamboo	Grassland/Bamboo
Plot 4	Grassland	Grassland	Grassland

Habitat	Species Richness	Species Evenness	Simpson Index (1-D)
Plot 5	*Tithonia sp*	*Tithonia sp*	*Tithonia sp*
Average	6.5	0.21	0.817

From table 3 above, plot 1 had the highest species richness, evenness and species diversity compared to plot 2. This entails that the above plot is very productive and have higher biodiversity than the other plot. On average, species richness, evenness and diversity is 6.5, 0.21 and 0.817 respectively. Therefore, the diversity of the area could be considered high as the value of the diversity index is closer to one.

4.2.3 Terrestrial Fauna

Mammals

No mammals were spotted during the period of study period, however, some locals interviewed reviewed that some mammals are occasionary seen, these included, Rabbits (*Lepus kapensis*) some rodents. No physical evidence of the mammals was observed in the study area such as droppings, footprints.

Birds (Avifauna)

The notable species of birds as observed and interviews from the locals include; *Egretta spp, Lybiustorquatus (*Black-collard Barbet), *Mirafra rufocinnamomea* (Flappet Lark), *Hirundo rustica* (European Swallow,) Swallow (*Hirundo dimidiate),* Swallow (*Hirundo daurica)*, Swallow (*Hirundo smithii)*, *Oriolus larvatus* (Black-headed Oriole), *Corvus albus* (Pied Crow), *Turdoides jardineii* (Arrow-marked Babbler) and *Cossypha heuglini (*Heuglin's Robin-Chat). The figure below shows evidence of some bird species.

Insects (Lepidoptera)

Difference types of insects were observed in the project area these include, termites, butterflies, ants, etc. Table 11 highlight types of butterflies observed.

Table 3: List of Identified Species of Butterflies Observed

No.	Species	Common name
1	*Belenois gidica*	Brown veined white
2	*Eurema brigitta brigatta*	Broad-bordered Grass yellow

3	*Mylothris agathina agtathina*
4	*Acraea induna mv*

Source: field data

Reptiles

Few reptiles were observed during the site walk over. These included the lizards, Geckos, Chameleons and skinks. Some common snakes such as black mambas are reported to be present in the area though none were observed during the course of the survey.

4.2.3 Aquatic Species in the Project Area

Aquatic Flora

Aquatic flora was observed in both Nakayombo and Kanakankoko streams, however, in Kanakankoko stream only mature trees were observed along the banks and access to the river habitat was difficult. In Nakayombo stream some water lilies (Nymphaea sp) were observed and other notable aquatic flora which include; *Cyperus papyrus, Phragmites mauritianus and Typha capensis,*.

Aquatic Fauna

Fish/ Ichthyology

The dominant fish species in the project area as reported by the local fishermen during the field visit included the following; *Labeobarbus polylepis, Clarias stapperssi, Barbus fasciolatus, Barbus multineatus, Pseudocrealabrus philander, Tilapia sp. B. lineomaculatus*, *Synodontis macrostigma*, *Serranochromis macrocephalus*, *Barbus miolepis. (Mormyrus longirostris)*, *(vittatus)*, barbel (*Schilbe intermedius,* butter barbel (*Schilbe mystus*. The fishermen use gill nets, hand nets and fish hooks as methods to catch fish species.

All the fish species highlighted by the fishermen were common to the project area and other river systems in Zambia.

4.4 Identification of Rare, threatened or Endangered Species in the Project Area

In the project area no threatened, rare or endangered species for both fauna and flora species were registered or are known to exist on the study site.

Species of commercial importance

The study area had exotic tree species that that could be exploited for commercial purposes

Species with potential to become nuisance, vectors or dangerous

No species with potential to become nuisance, vectors or dangerous were registered at the time of the study, however, the presence of black mambas has been reported.

4.7 Description of the Proposed Development

The project involves the construction and operation of a 20MWac solar PV power plant. Key project components include PV modules and mounting structures, underground direct current (DC) and alternating current (AC) cables, transmission lines, inverter stations, substation(s) (site substation(s)), stores and office building(s), access road and internal access tracks, perimeter security fence and security. During construction the following activities will be undertaken.

- Excavation of cable trenches;
- Ramming or drilling of the mounting structure frames;
- Installation of the modules onto the frames;
- Installation of measuring equipment;
- Laying of cables between the module rows to the inverter stations;
- Optionally laying of gravel or aggregate from nearby quarries placed in the rows between PV arrays for enhanced reflection onto the panels, assisting in vegetation control and drainage;
- Construction of inverter station foundations and installation of inverter stations;
- • Construction of site substation foundations and installation of site substation plant and equipment;
- Construction of office and welfare facilities;
- Testing and commissioning;
- Removal of equipment and demobilisation of construction team; and
- Construction of the transmission line.

5.0 BIODIVERSITY IMPACTS AND MITIGATION MEASURES

Impacts on biodiversity can often adversely affect the delivery of ecosystem services. This chapter discusses the major potential impacts on biodiversity features identified in section 4.0 (Vegetation, Mammals, Birds and Reptiles) from the project, and details the major mitigation actions that will be undertaken and how the project developer can sustainably manage and mitigate impacts on biodiversity and ecosystem services throughout the project's lifecycle.

All the impacts identified were as a result of constructing a 20MWac solar PV power plant. Key project components include PV modules and mounting structures, underground direct current (DC) and alternating current (AC) cables. The likelihood, consequence and risk of each impact were assessed.

The risks and impacts identification process considered direct and indirect project related impacts on biodiversity and ecosystem services and identified any significant residual impacts. This process also considered relevant threats to biodiversity especially focusing on habitat loss, degradation and fragmentation, invasive alien species, overexploitation, nutrient loading, and pollution (IFC/PS6 2012) see appendix I

5.1 Major Potential Biodiversity Impacts

The Major potential impacts for all the biodiversity features identified are listed below;

- Direct habitat loss due to vegetation clearance
- Indirect habitat loss of aquatic animals due to pollution of water resources
- indirect mortality of aquatic species due to pollution of water resources

5.1.1 Impacts During Preparatory and Construction Phases

The key impacts during the construction phase are associated with:

- Direct Loss and Degradation of Habitat – through development of infrastructure and possible increased human influx.
- Loss of faunal and floral Species
- Direct mortality (from collisions with and electrocution by vehicles and power lines)
- Cumulative Impacts associated with the Loss of Habitats and faunal Species – associated with the Project and other construction activities in the greater Project Area.

5.1.2 Impacts during Operations Phase

During operations the key impacts are associated with:

- Fragmentation (reduced connectivity) of animal populations
- Direct mortality (from collisions with and electrocution by vehicles and power lines)
- Cumulative Impacts to Proposed Conservation Areas– through development of modern construction activities.
- Cumulative Impacts associated with the loss of habitats and faunal Species

5.2 Mitigation Measures

5.2.1 Mitigation Measures during Construction

Avoid the Loss of Habitats and indigenous vegetation

Disturbances resulting from activities are expected (viz. Excavations, equipment laydown areas, temporary storage, parking for trucks, importing heavy equipment and may also include other activities). In this regard, the following will be undertaken:

- Natural drainage lines will not be disrupted significantly and development of borrow pits will be located as far away from any of the fringe habitats as possible to avoid drainage disturbances to the vegetation in the area.
- Vegetation clearing will be limited; only areas earmarked for infrastructure development will be cleared.

Containment of Construction Activities and Avoiding Footprint Creep

Construction activities will be contained within a reasonable minimum area through a planning and disciplined approach that accounts for the following considerations to avoid undesirable "footprint creep":

- The reasonable minimum area required for the construction activity will be determined in advance and clearly demarcated on the ground. These areas will consider equipment laydown areas, vehicle parking and turning space.
- Construction teams will be made aware of the demarcations prior to initiating construction works, and follow-up checks are to be done to ensure that the construction areas are not being exceeded.
- Toilet facilities and rest areas will be provided for construction teams to avoid the need for them to venture beyond the demarcated area in search of such necessities.

Integrate Biodiversity Importance into Induction Programmes

The importance of the natural environment and the local biodiversity will be incorporated into Induction Programmes for all of the workers and contractors working in the Project Area.

These components of the induction programmes will be regularly updated and improved, and will include the following topics:

- Awareness of the biodiversity that exists in the Project Area and surrounds and the impacts caused during the construction and operational phases of the Project.
- Outline the individual responsibilities to reduce impacts to the environment.
- Present the company procedures on land clearance and waste disposal.
- Vehicle speed limits and the reasons for them.
- Highlight the responsible people on any biodiversity related issues that may arise.

Implement an Internal Biodiversity Protection Statement

A Biodiversity Protection Statement to conserve plants and animals will be developed, and made applicable to all staff, contractors and other personnel associated with the Project. The following activities will be prohibited by CEC staff and contractors within and surrounding the Project Area, both during and outside of work hours:

- Any forms of hunting of wildlife or fishing or blank firing of guns.
- The intentional killing of any animals including snakes, lizards, birds or other animals. Awareness of the Animal Rescue Plan will be promoted as a means of addressing the presence of animals at risk or presenting a risk to the implementation of activities.
- Purchase, sale or transport of any live animals, bush meat or other local wild animal products from local communities or passing traders.
- Collection of any animals or animal products for consumption, medicinal or other use.
- Sellers of wildlife would not to be allowed on project site premises. Such people will be reported to local authorities or appropriate wildlife agencies such as NPWP.
- Purchase or transport of fuel wood from or for surrounding communities.
- Contamination or disposal of waste anywhere other than at designated disposal points.

The above information will be included within the site induction processes so that all workers are aware of these prohibitions. It will also be included in internal and external reporting documentation.

Maintain an Inventory of Floral and Faunal Species

The IFC standards require that developments demonstrate there is no net loss of biodiversity values as a result of their activities. This can in part be achieved through maintaining a structured register of species that demonstrates the continued presence of a diversity of species

within the site and the surrounding area about 200m from the boundary of the proposed site. A detailed inventory and photo library of plant and animal species present within and around the project concessions will be kept by the Environmental Department.

A biennial record will be kept of as many species as possible observed within and around the Project Area, with updates to cover all seasons and include migratory species. A record of species known to occur will never be complete, but will gradually become increasingly comprehensive. Data will be formally updated on an annual basis to assess progress, which can be measured by the growth in the number known to occur within and around the site.

Implement an Animal Rescue Plan

An animal rescue procedure will be developed and implemented for the safe translocation of any faunal species found to be at risk from operations or posing a threat to project activities. The animal rescue procedure will include the following aspects:

- Selected staff will be professionally trained and equipped to handle venomous snakes, with particular emphasis on species likely to be encountered in and around the Project Area, and a schedule maintained whereby a trained snake handler is on call during operational hours.

Develop and Implement Awareness Programmes Focused on Biodiversity

Awareness and appreciation of the local ecology among people generates tremendous support for the conservation of biodiversity. Various biodiversity-related activities will be highlighted in this document, which include the development of a register of species, the need for an animal rescue plan and offsetting and ecological monitoring programmes. Awareness of these activities will be raised among staff and contractors. The following suggestions are presented, but awareness programmes need not be restricted to these:

- Where possible, opportunities will be explored for involvement of staff, contractors and associated personnel to widen the appreciation and enthusiasm for the conservation of the biodiversity in and around the Project Area.
- Staff and contractors will be encouraged to report interesting wildlife sightings and observations, which are to be incorporated into the species register and recognition for worthwhile wildlife observations will be publicized accordingly.
- An acceptance of hyenas and vultures will be promoted due to their importance in the local ecosystem.
- Additional means of generating pride will be explored.

Proactive Dissemination of Information

MoH will consolidate information that demonstrates the compatibility of their activities with conservation and present the steps taken to avoid ecological impacts and promote cultural harmony. Such information will be proactively released through appropriate channels to avoid the development of negative perceptions against project activities within a proposed conservation area.

5.2.2 Mitigation Measures Proposed for Consideration during Operation

Implement an Internal Biodiversity Protection Statement

A Biodiversity Protection Statement to conserve plants and animals will be developed, and made applicable to all staff and other personnel associated with the Project. The following activities will be prohibited by CEC staff and contractors within and surrounding the Project Area, both during and outside of work hours:

- Any forms of hunting of wildlife or fishing or blank firing of guns.
- The intentional killing of any animals including snakes, lizards, birds or other animals. Awareness of the Animal Rescue Plan will be promoted as a means of addressing the presence of animals at risk or presenting a risk to the implementation of activities.
- Purchase, sale or transport of any live animals, bush meat or other local wild animal products from local communities or passing traders.
- Collection of any animals or animal products for consumption, medicinal or other use.
- Purchase or transport of fuel wood from or for surrounding communities.
- Contamination or disposal of waste into aquatic environments.

Maintain an Inventory of Floral and Faunal Species

The IFC standards require that developments demonstrate there is no net loss of biodiversity values as a result of their activities. This can in part be achieved through maintaining a structured register of species that demonstrates the continued presence of a diversity of species in the area associated with the project and vicinity.

A detailed inventory and photo library of plant and animal species present within and around the project concessions will be kept by the Environmental Department. The species within this inventory will be classified into taxonomic groups and families, Red Data status using the IUCN Red List of Threatened Species and their perceived threat status within the area.

A biennial record will be kept of as many species as possible observed within and around the Project Area, with updates to cover all seasons and include migratory species. A record of species known to occur will never be complete, but will gradually become increasingly

comprehensive. Such activities can involve a broad spectrum of staff within the Environmental Department and volunteers within the other departments of the company.

Data will be formerly updated on an annual basis to assess progress, which can be measured by the growth in the number known to occur within and around the concessions, and increases in the proportion of species that in the non-risk categories described in 7.

Implement an Animal Rescue Plan

An animal rescue procedure will be developed and implemented for the safe translocation of any faunal species found to be at risk from operations or posing a threat to project activities. The animal rescue procedure will include the following aspects:

- Selected staff will be professionally trained and equipped to handle venomous snakes, with particular emphasis on species likely to be encountered in and around the Project Area, and a schedule maintained whereby a trained snake handler is on call during operational hours.
- Selected staff, preferably with some medical background, will be trained and equipped with sedative drugs to safely subdue and translocate aggressive mammals.
- Safe areas of similar habitat type will be identified where animals rescued from areas of risk can be released without harm to operations, surrounding communities, neighboring operators or harm to that animal.

5.3 Significance of Residual Effects

Residual impacts are those impacts that remain following the implementation of the mitigation measures. Three main residual impacts were identified for this biodiversity study; Habitat loss and Vegetation clearing.

Despite measures that will be implemented to reduce habitat loss through vegetation clearing, habitat for various faunal species will be lost.

The site has mainly 4 vegetation types which include; Secondary miombo woodland, grassland, crop field and shrubland. Cropfield predominates in the area. Residual effects are habitat loss and vegetation clearing.

5.4 Compensation

In order to achieve no net loss (NNL) on biodiversity features with residual impacts, biodiversity tree replanting programme is proposed. The goal of tree replanting is to achieve no net loss and preferably a net gain of biodiversity on the ground with respect to species composition, habitat structure and ecosystem function and people's use and cultural values associated with biodiversity.

5.5 Assessments of the Impacts

Table 4: Impact Assessment of Habitat Loss due to Vegetation Clearance

Type of Impact	**Negative and Direct**							
Impact Criteria	**Pre-construction**		**Construction**		**Operation**		**Decommissioning**	
	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
Intensity/Severity	High	Low	Moderate	Low	Low	Low	NA	NA
Geographic Extent	Regional	Local	Regional	Local	Local	Local	NA	NA
Duration	Long Term	Short Term	Medium term	Short term	Short term	Short term	NA	NA
Consequence	High	Low	Moderate	Low	Low	Low	NA	NA
Probability	Definite	Probable	Possible	Probable	Unlikely	Unlikely	NA	NA
Significance	High	Moderate	Low	Negligible	Negligible	Negligible	NA	NA

Table 5: Impact Assessment of Indirect Mortality and Habitat Loss of Aquatic Species due to water pollution

Type of Impact	**Negative and Indirect**							
Impact Criteria	**Pre-construction**		**Construction**		**Operation**		**Decommissioning**	
	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
Intensity/Severity	Moderate	Low	Moderate	Low	Low	Low	Moderate	Low
Geographic Extent	Regional	Local	Regional	Local	Local	Local	Local	Local
Duration	Long Term	Short Term	Medium term	Short term	Short term	Short term	Short term	Short term
Consequence	High	Low	Moderate	Low	Low	Low	Moderate	Low
Probability	Possible	Probable	Probable	Unlikely	Unlikely	Unlikely	Probable	Unlikely
Significance	High	Moderate	Low	Negligible	Negligible	Negligible	Low	Negligible

6.0 CONCLUSION

The biodiversity study was conducted and prepared following relevant national and international legislation and planning policies. Further, the report complies with relevant national development plans, policies and statutory obligations which require the sustainable use of living natural resources and achieving no net loss on biodiversity.

Commitments and delivery of recommended mitigation measures shall be secured through planning, acquiring of various licences and permits from relevant authorities. The securing of the mitigation measures will result in reduction of impacts on biodiversity.

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Refining Estimates of Bird Collision and Electrocution Mortality at Power Lines in the United StatesScott R. Loss, 1 , * , ¤ Tom Will, 2 and Peter P. Marra 1

Effects Of An Exotic Plant And Habitat Disturbance Onpollinator Visitation And Reproduction In A Boreal Forest Herbørjanotl and Department of Ecology and Natural Resource Management, The Norwegian University of Life Sciences, P.O. Box 5003, Norway

Alien plant invasion and their impact on indigenous species diversity at global scale: A review

Measuring the Effects of Invasive Plants on Ecosystem Services: Challenges and Prospects

APPENDIX I: POTENTIAL IMPACTS

1.1 Direct habitat loss due to vegetation clearance and invasive species

Habitat loss and degradation are the primary drivers of the decline and extinction of wildlife populations in terrestrial ecosystems (WWF, 2014). Habitat supporting many biodiversity features will be lost under the project's direct infrastructure footprint.

Most significant impacts will be on plants/trees, which cannot move. Miombo is known to be the dominant tree species in the project area. The other rare plants are not known to occur under planned infrastructure. Impacts are also expected on the largely resident species and, to a lesser extent, migrant birds. Impacts on other priority species are not expected to be significant because they are not likely to use the area substantially or are largely passage migrants that only fly through the area.

These risk assessments and mitigation plans assume that the project will follow standard best practice for minimisation and restoration of construction (including construction camps, access roads, borrow pits and temporary parking areas) and operation footprints.

1.2 Indirect Mortality and habitat loss of aquatic animals due to water pollution

Pre-construction Phase

Runoff from site preparation activities could result in an increase in turbidity and organic load of surrounding water bodies. This will adversely affect the water quality and aquatic organisms.

Construction Phase

Alteration of soil structure during construction could lead to erosion and subsequent siltation in the surface water bodies at the downstream area. Changes in surface hydrology can in turn adversely affect conditions that maintain healthy biological resources especially the epifauna. Accidental spillage of hazardous materials, improper disposal of solid, liquid and hazardous wastes and contaminated surface runoffs from both the site and the construction personnel living quarters can also impact the aquatic environment. Site preparation and construction activities will occur over a limited time and in a localized manner.

Operational Phase

There would be minimal discharge from the quarterly cleaning of the PV modules. Wastewater would be routed to a pond from where they would be reused. Accidental leakage of transformer oil can occur during transmission line and substation operation, which would cause contamination of nearby surface-water bodies such as the Mwambashi and sandsale streams.

Decommissioning Phase

Runoff from decommissioning activities could result in an increase in turbidity and organic load of surrounding water bodies. This will adversely affect the water quality and aquatic organisms.

ANNEX II: COMMON WOOD TREE SPECIES

Table 6: Common Wood Trees found within the Site and the Local Names

No.	Local name	Scientific name
1.	Mufungo	*Anisophylusboehmii*
2.	Musamba	*Bracchystegia sp*
3.	Mtobo	*Isoberlinia angolensis*
4.	Msuku	*Uapaca kikiana*
5.	Mupundu	*Parinari curatellifolia*
6.	Mtondo	*Julbenardia paniculata*
7.	Kafulamume	*Maprounea africana*
8.	Mchenja	*Mimusops zeyheri*
9.	Katenge	*Dichrostachys cinerea*
10.	Mlombwa	*Pterocarpus angolensis*
11.	Nsengu	*Bamboo grass*
12.	Kaimbi	*Erythrophleum africanum*
13.	Msangati	*Pseudolachnostylis maprouneifolia*
14.	Museshi	*Marquesia macroura*
15.	Mtombolya	-
16.	Mupondo	*Bauhunia petersiana*

APPENDIX 7: LIVELIHOOD RESTORATION PLAN

APPENDIX 8: VALUATION REPORT FOR AGRICULTURAL FIELDS

REPUBLIC OF ZAMBIA
MINISTRY OF AGRICULTURE
OFFICE OF THE DISTRICT AGRICULTURAL COORDINATOR
P.O BOX 21916
KITWE

30th December 2019

The Chief Projects Officer
COPPERBELT ENERGY CORPORATION PLC
Kitwe

RE: ASSESSMENT OF FARMER FIELDS ON THE PROPOSED POWER TRANSMISSION LINE PROJECT IN GARNETON

Find enclosed herewith the above stated Assessment report as requested by your office.

Yours in national service,

Raphael Muyaule (Dr.)
District Agricultural Coordinator

KITWE

MINISTRY OF AGRICULTURE

DEPARTMENT OF AGRICULTURE

KITWE DISTRICT

ASSESSMENT REPORT ON FARMER FIELDS ON PROPOSED SOLAR PV POWER PROJECT IN GARNERTON KITWE DISTRICT

Compiled by

Francis Katongo

December **2019**

1.0 INTRODUCTION

This report reflects findings gathered during field visit to the project sites
The assessment team comprised of four officers from Ministry of Agriculture based in Kitwe district, the Chairman from the farming Community, MR. SILAS LUNGU and his team comprised of Mr. Chilufya and Mrs Musonda. The exercise was to verify what is on the ground of the farmer fields during the assessment exercise in Garnerton Camp.
The Assessment report was compiled by Messrs Francis Katongo a staff at Ministry of Agriculture, based at Kitwe.
The Assessment was conducted in two phases following the way-leaf of the power lines. The estimated value of Agricultural productivity loss for all affected households (beneficiaries) amounts to **K19,000.50**

2.0 METHODOLOGY

The assessment was carried out using standard practical methods i.e. valuation of agricultural production per unit area and crop gross margins. The affected fields were measured in the presence of most affected farmers and verified by the community chairperson. The crop yields were estimated based on the information given by the farmers and physical observation/assessment of the fields to determine production per hectare. The yield was multiplied by the number of hectares and the current market price for all affected crops to determine the expected revenue loss.

1. Every affected field plot on the way-leaf of the power lines was measured using Global Positioning System (GPS) to determine the area in hectares (ha).
2. The crops found at the time of the assessment where Maize, Groundnuts, Sweet potatoes, Cowpea, Mbambara nuts and Beans. The expected loss of income from all crops grown by the affected farmers is calculated per individual farmer as the tables show.
3. The value of land cannot be calculated because the affected farmers do not own land
4. The prevailing market prices during the last week of December, 2019 are as follows: Maize is sold at K120/ 50Kg bag, Groundnuts (shelled) is sold at K250/50Kg bag, Beans is sold at K300/50Kg bag, Cowpea is sold at K250/50Kg bag, Mbambara nuts are sold at K150/50Kg bag and Sweet potatoes are sold at K80/50Kg bag.

FINDINGS

NAME OF FARMER	NRC	PHONE No.	COORDINATES	CROP	SIZE OF FIELD (m2)	YIELD (ton/ha)	EXPECTED PRODUCTION (No. X 50Kg)	COST OF CROP (K)	PERIOD OF COST (yr)	VALUE OF CROP (K)
LORIN LUPANDILA	396304/67/1	0964878763	S 1243.211 E 02810.998	MAIZE PAN 53	2085.3	**2.44**	**10**	**120**	**1**	**1200**
CHRISTINE MWILA	219454/66/1	0971948194	S 1243.175 E 02810.986	MAIZE PAN 53	2023.5	**2.44**	**9.7**	**120**	**1**	**1164**
DOROPHINA CHINGUNGU	259310/67/1		S 1243.120 E02810.978	MAIZE	216.43	**2.44**	**1**	**120**	**1**	**120**
ROYDAH KATAMBI	486425/67/1	0964880141	S 1243.095 E 02810.968	MAIZE LOCAL	735.72	**2.44**	**3.5**	**120**	**1**	**420**
MARY CHABU	321179/32/1	0960659385	S 1243.059	MAIZE SC 719	1257.4	**2.44**	**6**	**120**	**1**	**720**

			E 02810.958							
GRACE MWABA	394852/67/1	0966745148	S 1242.996 E 02810.942	MAIZE SC 719	717.22	**2.44**	**3.4**	**120**	**1**	**408**
CHANDA MULENGA	412298/67/1	0972752343	S 1242.958 E 02810.928	MAIZE	380.75	**2.44**	**1.8**	**120**	**1**	**216**
WILLIE CHISHIMBA	234115/67/1	0965071692	S 1242.927 E 02810.929	COWPEA	108.18	**0.60**	**0.13**	**250**	**1**	**32.5**
				SWEET POTATO	236.22	**3.16**	**1.5**	**80**	**1**	**120**
ERICA MUSONDA	113865/65/1	0965270018	S 1242.875 E 02810.915	GROUND NUT	1437.0	**0.62**	**1.7**	**250**	**1**	**425**
MATHEWS BWALYA	184439/65/1	0962832862	S 1242.827 E 02810.905	MAIZE PAN 53	269.12	**2.44**	**1.3**	**120**	**1**	**156**
TABHITA MTONGA	369993/67/1	0968760496	S 1242.799	MAIZE SC 719	115.83	**2.44**	**0.5**	**120**	**1**	**60**

			E 02810.891							
BENSON MALAMA	133837/34/1	0969335259	S 1242.750 E 02810.874	MAIZE LOCAL	217.5	**2.44**	**1**	**120**	**1**	**120**
				GROUND NUT	217.5	**0.62**	**0.26**	**250**	**1**	**65**
EMMANUEL MULENGA	159460/32/1	0969601103	S 1242.709 E 02810.877	MAIZE LOCAL	1277.21	**2.44**	**6**	**120**	**1**	**720**
BRIAN KANGWA	226752/65/1	0761795226	S 1242.672 E 02810.875	MAIZE LOCAL	2600.9	**2.44**	**12.5**	**120**	**1**	**1500**
MUKUMBA CHOLA FOCUS	185746/44/1	0764710627	S 1242.637 E 02810.859	MAIZE PAN 53	1353.81	**2.44**	**6.5**	**120**	**1**	**780**
BETRICK MULONGA	105329/92/1	0961774090	S 1242. 632 E 02810.879	MAIZE SC719	1151.3	**2.44**	**5.5**	**120**	**1**	**660**
				GROUND NUT	1151.3	**0.62**	**1.4**	**250**	**1**	**350**
CHARITY CHEWE	225011/67/1	0964466458	S 1242.553	MAIZE LOCAL	1543.3	**2.44**	**7.4**	**120**	**1**	**888**

			E 02810.838							
PRUDENCE LONGO LONGO	394627/67/1	0965980237	S 1242.522 E 02810.836	MAIZE SC 719	988.02	**2.44**	**4.7**	**120**	**1**	**564**
BONIFACE PHIRI	225401/67/1	0963423587	S 1242.493 E 02810.825	MAIZE LOCAL	1349.2	**2.44**	**6.4**	**120**	**1**	**768**
PRISCILLA LONGO LONGO	451895/67/1	0966608416	S 1242.468 E 02810.814	MAIZE LOCAL	1035.0	**2.44**	**4.96**	**120**	**1**	**595.2**
ESNART MALASHA	394829/67/1	0969324389	S 1242.449 E 02810.813	MAIZE LOCAL	1373.7	**2.44**	**6.59**	**120**	**1**	**790.8**
MARY MWANSA	346660/67/1	0961934179	S 1243.214 E 02810.974	MAIZE PAN 53	322.79	**2.44**	**1.5**	**120**	**1**	**180**
				GROUND NUT	322.79	**0.62**	**0.4**	**250**	**1**	**100**
KAMWENDO LILE	132106/67/1	0963362753	S 1243.213	GROUND NUT	341.31	**0.62**	**0.4**	**250**	**1**	**100**

			E 02810.938							
GODFREY SITULA	346430/67/1	0964149257	S 1243.211 E 02810.909	MAIZE LOCAL	326.49	**2.44**	**1.5**	**120**	**1**	**180**
				GROUND NUT	326.49	**0.62**	**0.4**	**250**	**1**	**100**
DOROTHY SITULA	346665/67/1	0964149257	S 1243.207 E 02810.867	MAIZE LOCAL	358.18	**2.44**	**1.7**	**120**	**1**	**204**
				GROUND NUT	358.18	**0.62**	**0.44**	**250**	**1**	**110**
				MBAMBARA NUT	180.10	**0.26**	**0.1**	**150**	**1**	**15**
ANNETTA LONGO LONGO	272527/67/1	0968587695	S 1243.204 E 02810.805	MAIZE PAN 53	618.70	**2.44**	**2.96**	**120**	**1**	**355.2**
				BEANS	618.70	**0.71**	**0.8**	**300**	**1**	**240**
ALEXANDER CHAMA	119733/61/1	0965642217	S 1243.202 E 02810.761	MAIZE PAN 53	328.38	**2.44**	**1.5**	**120**	**1**	**180**
				GROUND NUT	328.38	**0.62**	**0.4**	**250**	**1**	**100**

SOFIA MUSEBAULO	142430/24/1		S 1243.201 E 02810.725	MAIZE LOCAL	255.43	**2.44**	**1.2**	**120**	**1**	**144**
ROSEMARY MUSONDA	258746/67/1		S 1243.199 E 02810.685	MAIZE PAN 53	250	**2.44**	**1**	**120**	**1**	**120**
ALICE KAPENGE	212216/65/1	alice	S 1243.198 E 02810.672	MAIZE LOCAL	252	**2.44**	**1**	**120**	**1**	**120**
SHEDRIDA MUNSHA	237448/67/1	0961582103	S 1243.197 E 02810.665	MAIZE LOCAL	249	**2.44**	**1**	**120**	**1**	**120**
MAXWELL ZULU	110957/67/1		S 1243.195 E 02810.618	MAIZE LOCAL	255	**2.44**	**1**	**120**	**1**	**120**
PAISON CHISHALA	312146/67/1	0961496002	S 1243.194 E 02810.603	MAIZE LOCAL	255	**2.44**	**1**	**120**	**1**	**120**
ROYDAH MUSAMBA	396500/67/1	0966437497	S 1243.192	MAIZE LOCAL	248	**2.44**	**1**	**120**	**1**	**120**

			E 02810.585							
IREEN MUSONDA	305309/33/1	0761821526	S 1243.192 E 02810.580	MAIZE LOCAL	253	**2.44**	**1**	**120**	**1**	**120**
SARA MWEWA	107255/62/1	0969780134	S 1243.191 E 02810.565	MAIZE LOCAL	250	**2.44**	**1**	**120**	**1**	**120**
NALE CHOLA	349522/66/1	0762113913		MAIZE LOCAL	500	**2.44**	**2**	**120**	**1**	**240**
HELEN MULONGA	480704/67/1	0961712012		MAIZE LOCAL	502	**2.44**	**2**	**120**	**1**	**240**
CHANSA MULONGA	357043/65/1	0968483320		MAIZE LOCAL	749	**2.44**	**3**	**120**	**1**	**360**
HELEN MILANZI	220341/67/1	0961712012		PAN 53	498	**2.44**	**2**	**120**	**1**	**240**
HUSTINA MWITWA				MAIZE LOCAL	504	**2.44**	**2**	**120**	**1**	**240**
NAMUCHANA MARTIN	150116/16/1	0964720286		MAIZE LOCAL	525	**2.44**	**2.2**	**120**	**1**	**264**
RUTH MUKAMUNA	357188/65/1			MAIZE LOCAL	525	**2.44**	**2.2**	**120**	**1**	**264**

EMMANUEL MAIMBA	226735/65/1			MAIZE LOCAL	502	**2.44**	**2**	**120**	**1**	**240**
MARY CHIPULU	313549/67/1	0961576345	S 1243.165 E 02810.072	MAIZE PAN 53	395.62	**2.44**	**1.89**	**120**	**1**	**226.8**
				GROUND NUT	395.62	**0.62**	**0.5**	**250**	**1**	**125**
				SUGARCANE	200	**0.33**	**250**	**3**	**1**	**750**

TOTAL = K19000.50

CHALLENGES

A. Low Crop production as farmers were told not to continue cultivating in the project sites
B. Some identified farmers did not show up during field verification

CONCLUSION

Farmer fields were verified and the cost of each crop was calculated.

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APPENDIX 9: LETTERS OF CORRESPONDENCE

ZAMBIA RAILWAYS LIMITED

Office of the Director Technical Services

Corporate Office
Shitima House, Kafue River Avenue
P.O. Box 80935
KABWE, ZAMBIA
Tel: +260 215 227 005
Fax: +260 215 224 411

21st December, 2018

The Chief Projects Officer,
Copper belt Energy Corporation Plc
Operations Head Office,
23rd Avenue,
Nkana East,

KITWE.

Dear Sir/Madam

Re: **WAYLEAVE TO CROSS A 33KV OVERHEAD TRANSMISSION LINE FOR POWER EVACUATION AT KM 83.0-83.25 GARNERTON-CHAMBISHI SECTION.**

Reference is hereby made to your letter dated 20th November,2018 regarding the above subject

We wish to bring to your attention that after assessing the proposed site by our Permanent Way Inspector (Kitwe),it is feasible to cross the Railway Line at the proposed location under the following conditions:

i) submission of three(3) copies of working drawings, or soft copies, showing the angle of crossing on the site plan and a cross section;

ii) Minimum height above rail level of lowest portion of earth conductor, stay-wire or cradle, under conditions of maximum sag shall be 7,010 mm;

iii) Minimum angle of crossing between the railway track and the power line shall be 70 degrees;

iv) Minimum clearance between any supporting structure forming part of a crossing or its foundation measured horizontally and at right angles to the centre of the nearest track shall be 2,310 mm; and

v) Payment of the following charges:

S/No	DESCRIPTION	RATE (ZMW)	QTY	AMOUNT (ZMW)
1	Fixed charge for overhead way-leave@ K7,800.00 each.	7,800.00	1	7,800.00

2	Train working protection	2,275.00	3	6,825.00
3	Annual consideration fee for overhead way-leave	5,200.00	-	5,200.00.00
4	Scrutiny fees for the drawings@ K1,300.00/drawing set	1,300.00	set	1,300.00
	Sub Total			21,125.00
	Add 16 percent VAT			3,380.00
	Grand Total			24,505.00

Final approval for you to proceed with the works will be granted after you have made payment of the sum of Twenty four thousand five hundred and five thousand kwacha (K24,505) and submission of the drawings. Once approval is granted, you will also be required to enter into a Wayleave Agreement with Zambia Railways Limited. Our Engineering Superintendent Track in Ndola on Mobile Number 0969195296 will be on hand to arrange for train working protection.

For any further clarification, please do not hesitate to contact the undersigned

Yours faithfully,

ZAMBIA RAIL WAYS LTD.

Fred Mwila
DIRECTOR TECHNICAL SERVICES.

Copy: Chief Executive Officer
Finance Director
Manager Infrastructure (P)
Technical Manager (Operations)
Company Secretary
Head Estates
Regional Manager(North and Inter-mine)
Engineering Superintendent (North and Inter mine)

ROAD DEVELOPMENT AGENCY

The Regional Manager - Copperbelt Region Plot 4084, Mosi-O-Tunya Road, Tel/Fax: 212 650497
P.O. Box 71517 Ndola Copperbelt Province

In reply please quote No.:
RDA/10/2/5

November 21, 2018

The Chief Projects Officer
Copperbelt Energy Corporation PLC
P.O Box 20819
Kitwe

RE: APPLICATION FOR TRANSMISSION LINE ROUTE ACCESS RELATED TO THE GET FiT (ZAMBIA) SOLAR PROJECTS TENDER.

Reference is made to your letter dated November 12, 2018, and referenced CEC/VCW/206/2018 in which you requested for a budgetary quote and letter of comfort for the purpose of the tender for the Global Energy Transfer programme in Ganerton area, Kitwe.

We write to inform you that should your consortium be the successful bidder for the above mentioned tender, the Road Development Agency will be glad to grant you consent to use part of the road reserve to construct approximately 8km of 33kV power evacuation line subject to the provisions of the Public Roads Act No. 12 of 2002 and upon payment of the processing fees hereby attached for your ease of reference.

We wish you luck in your tender and remain available for any clarifications you may require.

Yours faithfully,
ROAD DEVELOPMENT AGENCY- COPPERBELT REGION

Eng. Joseph M. Himululi
REGIONAL MANAGER

ROAD DEVELOPMENT AGENCY

Internal Memo

PROCESSING FEES FOR ROAD INFRINGEMENT

Further to the Public Roads Act No 12 of 2002 Sections 5, 22, 33, 35 and 56, we wish to notify the general public that those wishing to infringe a Public Road by carrying out activities such as access to the public road, erecting a sign, cutting a road, erecting an advertising sign e.t.c in respect of Inter-territorial, territorial main roads and district roads must obtain application form No. RDA/D1 from the Finance Office of the Road Development Agency Headquarters or Regional Manager of the Province upon payment of the respective processing fees stated below.

Item No.	Type of Infringement	Within 20 km radius from town center	Over 20km but within 50Km from town center	Over 50 km from town center
1	Cutting a road for various purposes	K 7,500.00	K 7,500.00	K 7,500.00
2	Boring of road for various purposes	K5,000.00	K5,000.00	K5,000.00
3	Erecting advertising Sign	K 3,000.00	K 3,000.00	K 3,000.00
4	Access	K 7,500.00	K7,500.00	K 7,500.00
5	Others	Charges extrapolated from above depending on nature and magnitude		

For urban and rural roads, the application forms are available at the respective Local Road Authorities offices.

RDA: Good Roads for sustainable development.

Director Maintenance
Road Development Agency

FORM No. RDA/D 1

REPUBLIC OF ZAMBIA

ROAD DEVELOPMENT AGENCY

APPLICATION TO INFRINGE A PROCLAIMED ROAD

(Sections 5,22,33, 35 and 56 of the Public Roads ACT NO 12, 2002)

NB: Kindly fill in this application in block letters and forward it to the Director & CEO of the Road Development Agency with copy to the Regional Engineer where road or bridge is located.

The Director, Road Development Agency Headquarters

Sir,

1. I hereby apply to infringe a proclaimed road by: (indicate the appropriate item with an X)

(a) ☐ Laying a cable under the road surface;

(b) ☐ Laying a pipeline;

(c) ☐ Laying a pipeline through an existing bridge/culvert;

(d) ☐ Laying a cable through an existing bridge/culvert;

(e) ☐ Constructing a furrow, canal or ditch (pipelines) across or under such proclaimed road;

(f) ☐ Erecting a building or structure;

(g) ☐ Erecting an advertising sign;

(h) ☐ Erecting any other sign;

(i) ☐ Erecting a fence;

(j) ☐ Access to the proclaimed road

(k) ☐ Other (Specify

2. Further details in respect of the application are:

2.1	**Details of Applicant**	
(a)	First and surname of applicant:	
(b)	Postal address :	
(c)	Telephone Number:	
(d)	Fax Number:	
(e)	Name of Company/Farm:	
(f)	Location/ Plot Number	
(g)	Principal business (if applicable)	
2.2	**Details of Road/ bridge to be infringed upon:**	
(a)	Name of road /bridge:	
	Road designation number:	
(b)	Status of road (Trunk, Main, District):	
(c)	District:	
(d)	Province:	
(e)	Start date and period:	

3. Attached please find a sketch map to indicate where the road is to be infringed. In the case of cables through the culvert/bridge a plan is also attached to indicate the envisaged way of anchoring.

4. Attached please find a sketch of proposed advertisement sign.

5. I undertake to strictly adhere to the provisions of Public Roads No. 12 of 2002 and to further specifications that you shall provide.

6. I also agree to pay to the Road Development Agency a processing charge stated overleaf.

7. I agree also to pay for the full reinstatement of road resulting from any damage caused directly or indirectly by ourselves as per assessment that will be made by Road Development Agency.

....

Signature of Applicant Date

Copy: Regional Manager

_____Region

ZAMBIA ENVIRONMENTAL MANAGEMENT AGENCY

Head Office
Corner of Church & Suez Roads
P.O. Box 35131
Lusaka, Zambia
Tel: +260- 211-254130/254023/254059
Fax:+260-211-254164/256658

Northern Regional Office
Jacaranda Road
P.O. Box 71302
Ndola, Zambia
Tel: +260-212-621048/610407
Fax: +260-212-610246

Livingstone Office
Plot No. 555
Junction Obote / Nehru Roads
P.O. Box 60195
Livingstone, Zambia
Tel / Fax:+260-213-321297

Chirundu Border Office
Lusaka Road
P.O. Box CRU31
Chirundu, Zambia
Tel/Fax: +260-211-515261

In reply please quote

No: ZEMA/FAC/102/12/8/C/14

February 6, 2019

The Managing Director
Copperbelt Energy Corporation
P.O. Box 20819
KITWE

Dear Sir,

RE: ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED TWO 20MW SOLAR PARKS UNDER THE GETFIT ZAMBIA PROJECT

The above matter refers.

We confirm receipt of your letter dated 24th January, 2019, in which Copperbelt Energy Corporation ("CEC") sought guidance on the level of environmental impact assessment for the two 20MW solar power generation projects in Kitwe.

We have since reviewed your correspondence and wish to advise you to proceed to compile and submit separate environmental project briefs for the two proposed projects.

Additionally, we advise you to identify and consult stakeholders such as but not limited to the following:

1. Energy Regulation Board;
2. Zesco Limited;
3. Kitwe City Council; and
4. ZAFFICO.

Yours faithfully,

Fredrick Muyano
Manager Operations-North
For/Director General
ZAMBIA ENVIRONMENTAL MANAGEMENT AGENCY

ZAMBIA ENVIRONMENTAL MANAGEMENT AGENCY

Head Office
Corner of Church & Suez Roads
P.O Box 35131
Lusaka, Zambia
Tel: +260-211-254023/254059

All Correspondence to be addressed to The Director General

info@zema.org.zm www.zema.org.zm

In reply please quote

ZEMA/EA/EPB/8004

August 27, 2020

The Director
CEC-Innovent Garneton South Solar Limited
C/O CEC-Innovent Garneton South Solar Limited
23rd Avenue, Nkana East
P.O. Box 20819
KITWE

Dear Sir,

RE: DECISION LETTER IN RESPECT OF THE ENVIRONMENTAL PROJECT BRIEF FOR THE PROPOSED 33KV TRANSMISSION LINE FROM GARNETON SOLAR SITE TO MWAMBASHI SUBSTATION IN KITWE DISTRICT BY CEC-INNOVENT GARNETON SOUTH SOLAR LIMITED

Reference is made to the above captioned Environmental Project Brief ("EPB") submitted to Zambia Environmental Management Agency ("ZEMA") on **June 26, 2020** for consideration in accordance with the requirements of the Environmental Management Act No. 12 of 2011 as read together with the Environmental Impact Assessment Regulations, Statutory Instrument No. 28 of 1997.

ZEMA has since reviewed the EPB and based on the information provided by yourselves and taking into account written and verbal comments from interested and affected parties as well as our site verification inspection findings; the said EPB has been **approved** with conditions.

You are advised to fully acquaint yourselves with the conditions herein and to ensure compliance thereof.

Yours faithfully,

Simon Mulenga Mwansa
Acting Director General
ZAMBIA ENVIRONMENTAL MANAGEMENT AGENCY

Cc: The Town Clerk – Kitwe City Council, **KITWE**
The Provincial Planner – Copperbelt Province – **NDOLA**
The Executive Director – Energy Regulation Board, **LUSAKA**
The Manager – ZEMA, Northern Region, **NDOLA**

Northern Regional Office P.O Box 71302 Tel: +260-212-621048/610407
Solwezi P.O Box 110134 Tel/Fax: +260-218-821297
Livingstone P.O Box 60195 Tel/Fax: +260-213-321279
Chipata P.O Box 510527 Tel: +260-216-221254
Chirundu P.O Box CRU 31 Chirundu Tel/Fax: +260-211-515261

Zambia Environmental Management Agency
DECISION LETTER

1.0 PROJECT BACKGROUND

1.1 PROJECT TITLE:

33kV Transmission Line from Garneton Solar Site to Mwambashi Substation in Kitwe District by CEC-Innovent Garneton South Solar Limited.

1.2 PROJECT PROPONENT:

CEC-Innovent Garneton South Solar Limited
C/O CEC-Innovent Garneton South Solar Limited
23rd Avenue, Nkana East
P.O. Box 20819
KITWE

Contact Person's Details

Name:	Caroline Sinkamba
Designation:	Senior Manager HSES and Risk
Address:	CEC-Innovent Garneton South Solar Limited 23rd Avenue, Nkana East P.O. Box 20819 **KITWE**
Phone:	+260960 632602/
Email address:	sinkamba@cec.com.zm

1.3 PROJECT LOCATION:

The project site is located about 20 km north-west of Kitwe Central Business District (CBD). The power transmission line will be constructed from the substation at Garneton South Solar PV Park to ZESCO Mwambashi Substation.

GPS Coordinates

EASTING	NORTHING
628280.1116	8595157.026
628279.2492	8595156.786

ZAMBIA ENVIRONMENTAL MANAGEMENT AGENCY
27 AUG 2020
DIRECTOR GENERAL'S OFFICE
P.O. BOX 35131, LUSAKA

Zambia Environmental Management Agency
DECISION LETTER

623132.5736	8593647.254
622012.7972	8594029.037
621767.4626	8593478.206

1.4 DATE OF SUBMISSION BY PROPONENT:

June 26, 2020

1.5 DATE OF CONSIDERATION BY THE AGENCY:

August 27, 2020

2.0. TOTAL PROJECT COST/INVESTMENT: USD 50,000.00

3.0. DETAILS OF THE PROJECT:

CEC-Innovent Garneton South Solar Limited intends to construct a 33kV power transmission line from the substation at Garneton South Solar PV park to ZESCO Mwambashi Substation. Electricity generated from Garneton North Solar PV park and Garneton South Solar PV park will be evacuated via the same transmission line and terminate at Mwambashi Substation.

The power transmission line will be constructed with steel monopoles, electric conductors, underground direct current (DC) and alternating current (AC) cables. The solar power transmission line will have an estimation of 102 Monopoles with two portions of underground lines. The total linear distance of the powerline that will be constructed using an underground power cable which sums up to 1.405km. The remaining sections with a total distance of 8.295km will be an overhead powerline line with 18m wayleave width. The powerline will cover a total distance of 9.7km.

The line route will traverse private titled land owned by Copperbelt Energy Corporation, the road reserve from Garneton to Kitwe Chingola (T5) road, residential plots, commercial plots, and crop fields owned by neighbouring communities.

ZAMBIA ENVIRONMENTAL MANAGEMENT AGENCY
27 AUG 2020
DIRECTOR GENERALS OFFICE
P.O. BOX 35131, LUSAKA

Zambia Environmental Management Agency

DECISION LETTER

Substation works to be carried out at ZESCO Mwambashi to facilitate termination of the transmission line and integration of the solar plants to the national grid include:

i. Extension of the 33kV busbar;
ii. Civil works to reposition part of the substation drainage network;
iii. Construction and equipping of a new 33kV line bay;
iv. Installation of a 33kV cable from the newly constructed line bay to the take off point;
v. Installation of protection, control and communication panel in the existing control building; and
vi. Integration of the new line bay into the substation automation at ZESCO Mwambashi Substation.

The project will also involve compensation of the project affected persons and institutions on the power transmission route. The project affected persons include 62 individuals and 3 organisations namely; ZESCO Limited (wayleave), NFCA Green Farm and Mukuba University (access road).

4.0. DECISION BY THE AGENCY:

4.1. The project is **approved** subject to conditions listed below.

4.1.1. CEC-Innovent Garneton South Solar Limited shall implement the project and all environmental management commitments as stated in the Environmental Project Brief (EPB) with changes as may be made by Zambia Environmental Management Agency (ZEMA) and any other conditions that may be issued thereafter.

4.1.2. This approval is for the Construction of the 33 kV Transmission Line from Garneton Solar Site to Mwambashi Substation in Kitwe District by CEC-Innovent Garneton South Solar Limited. Therefore, without an appropriate and written authorisation, CEC-Innovent Garneton South Solar Limited shall not conduct or carry out activities which are not part of the approved project and which can impact negatively on the environment.

4.1.3. CEC-Innovent Garneton South Solar Limited shall compensate all project-affected institutions and persons before commencement of the project.

4.1.4. CEC-Innovent Garneton South Solar Limited shall put in place effective measures to ensure that all spillage/leakage from transformers and other machines are cleaned immediately to prevent pollution of soil, surface water and groundwater.

4.1.5. Prior to project commencement, CEC-Innovent Garneton South Solar Limited shall obtain clearance from ZESCO, NFCA Green Farm and Mukuba University with respect to infrastructure or facilities already installed/constructed by the aforementioned institutions.

4.1.6. CEC -Innovent Garneton South Solar Limited shall consult and comply with the requirements and specifications of the Energy Regulation Board including compliance to such technical standards as ZS 418: Electrical Safety Code – Code of practice, Part 1 – Construction, installation and commissioning rules, Part 2 – Operation and maintenance, The Zambian Grid Code, Statutory Instrument No. 79 of 2013, Zambian Distribution Code, and the Wayleave Code of Practice.

4.1.7. The project and related activities shall be implemented in such a way that public and private property, health and livelihood including crop fields and farms shall not be damaged, harmed, endangered, affected negatively or lost. Where it is determined that the health of people, property or livelihood is harmed, damaged, endangered, harmed, affected negatively or lost as a result of project or related activities, CEC-Innovent Garneton South Solar Limited shall be liable for the payment or settlement of the appropriate compensation and other forms of relief or replacement.

4.1.8. CEC-Innovent Garneton South Solar Limited shall ensure that all waste including hazardous waste is collected, stored temporarily, and disposed of appropriately by a duly licensed person.

4.1.9. CEC-Innovent Garneton South Solar Limited shall not be incinerating solid waste and other unwanted materials without appropriate and written authorisation from ZEMA or other mandated authority. Waste receptacles shall be made available.

4.1.10. CEC-Innovent Garneton South Solar Limited shall put in place effective measures to ensure that existing natural resources and built structures are minimally affected and lives of people are not endangered by the project. Poles and power lines shall be installed or constructed appropriately away from residential and other built structures.

4.1.11. CEC-Innovent Garneton South Solar Limited shall identify and appropriately compensate any person to be affected by the project.

4.1.12. CEC-Innovent Garneton South Solar Limited shall consult and comply with the requirements and specifications of the Energy Regulation Board, Forestry Department, Kitwe City Council, Road Development Agency, Road Transport and Safety Agency and other mandated authorities.

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4.1.13. CEC-Innovent Garneton South Solar Limited shall ensure that clearing of vegetation is restricted to the way-leave area only and stumping of trees shall be done as opposed to uprooting. Where possible, CEC-Innovent Garneton South Solar Limited shall re-vegetate the disturbed areas with indigenous species of trees.

4.1.14. CEC-Innovent Garneton South Solar Limited shall preserve flora and fauna habitats in areas of the project site which will not be used for the project.

4.1.15. All radioactive materials or materials containing radioactive substances shall be handled and disposed of appropriately.

4.1.16. CEC-Innovent Garneton South Solar Limited shall integrate drainage and erosion control measures in the development and operation of the project.

4.1.17. CEC-Innovent Garneton South Solar Limited shall put in place effective measures or install and operate appropriate and effective facilities for monitoring, preventing and controlling land degradation, soil contamination, air pollution, and pollution of surface water and groundwater.

4.1.18. Noise levels and vibrations from project activities shall be monitored and shall be controlled to within appropriate limits.

4.1.19. CEC-Innovent Garneton South Solar Limited shall put in place an appropriate Emergency Preparedness and Response Plan, and shall submit the same to ZEMA within three months of receipt of the Decision Letter or within three months of project commencement.

4.1.20. CEC-Innovent Garneton South Solar Limited shall ensure that all incidents with potential to pollute the environment and/or harm human beings are reported to ZEMA immediately.

4.1.21. CEC-Innovent Garneton South Solar Limited shall collect, decontaminate and dispose of all contaminated waste in an environmentally sound and acceptable manner.

4.1.22. CEC-Innovent Garneton South Solar Limited shall put in place appropriate measures to suppress dust.

4.1.23. CEC-Innovent Garneton South Solar Limited shall bring to the attention of the National Heritage Conservation Commission discoveries of any items of archaeological, cultural and/or historical value.

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4.1.24. CEC-Innovent Garneton South Solar Limited shall obtain appropriate licences and/or permits from Zambia Environmental Management Agency and shall comply in full with the conditions of the licences or permits issued in accordance with the Environmental Management Act No. 12, 2011 and its subsidiary legislation.

4.1.25. At decommissioning and closure, CEC-Innovent Garneton South Solar Limited shall prepare and submit an appropriate Decommissioning and Closure Plan and Report outlining implementation of all environmental management commitments presented in the environmental project brief for consideration by ZEMA.

4.2. CEC-Innovent Garneton South Solar Limited **shall:**

4.2.1. As appropriate obtain and comply in full with other relevant authorisations such as those stipulated in the following Acts of Parliament:

i. The Electricity Act, Cap 435 of the Laws of Zambia;
ii. The Water Resources Management Act No. 21 of 2011;
iii. The Forests Act No. 4 of 2015;
iv. The Energy Regulation Act, CAP 436 of the Laws of Zambia;
v. The Local Government Act No. 2 of 2019;
vi. The Urban and Regional Planning Act, No. 3 of 2015;
vii. The Workers' Compensation Act, CAP 271 of the Laws of Zambia;
viii. The Public Health Act, CAP 295 of the Laws of Zambia;
ix. The Road Traffic Act No. 11 of 2002; and
x. The Public Roads Act No. 12 of 2002.

4.2.2. Make available information on hygiene, malaria control, HIV/AIDS and other communicable and infectious diseases to employees.

4.2.3. Put in place environmental, occupational health and safety policies and procedures.

4.2.4. Provide employees with appropriate fire-fighting equipment and train them in firefighting and emergency response.

4.2.5. Provide employees with Personal Protective Equipment (PPE) and employees shall undergo appropriate medical check-ups.

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Zambia Environmental Management Agency
DECISION LETTER

4.3. CEC-Innovent Garneton South Solar Limited shall comply with environmental standards and/or specific limits of particular pollutants as its responsibility. Thus, compliance with Zambia Environmental Management Agency recommended measures **does not absolve** CEC-Innovent Garneton South Solar Limited of its responsibility if such measures do not achieve compliance with environmental control standards.

4.4. CEC-Innovent Garneton South Solar Limited shall, in accordance with Section 15 of the Environmental Management Act No. 12 of 2011, allow inspectors from ZEMA **unrestricted entry** to the project site at any reasonable time with or without making prior notice throughout the project cycle.

4.5. The implementation of the project shall commence **within three years** from the date of approval. Failure to commence implementation of the project within the stated period shall render the Decision Letter invalid and CEC-Innovent Garneton South Solar Limited shall be required to re-submit the EPB for consideration.

4.6. The Agency may suspend or cancel the Decision Letter **without notice** should CEC-Innovent Garneton South Solar Limited fail to comply with any condition of approval.

4.7. This Decision Letter may be amended on the volition of the Agency or otherwise should a situation arise that requires that an amendment be effected.

27/08/20
.....
Date

.....
Simon Mulenga Mwansa
Acting Director General
ZAMBIA ENVIRONMENTAL MANAGEMENT AGENCY

27 AUG 2020
DIRECTOR GENERALS OFFICE
P.O. BOX 35131, LUSAKA

APPENDIX 10: SAMPLE QUESTIONAIRE

Questionnaire on vulnerability Assessment of owners of crop fields to be displaced from the Garneton Solar PV Project Sites in Kitwe, Zambia.

By

DH Engineering Consultants Limited

Enumeration Details

1.1 Date of enumeration 20/04/2019

1.2 Name of enumerator TUKAMBEKJI PHIRI

1.3 Date checked _____

1.4 Name of Field Supervisor _____

SECTION 1: FARMER IDENTIFICATION

Q1. Name of Respondent: MANDA BEAUTY

Q2. Sex: M / F.... F

Q3. Age: 30 Years.

Q4. Level of education of Respondent:

1=None; 2 = Primary; (3)=Secondary; 4=Tertiary

Q5. In which part of Kitwe do you live? Nkana east.

Q6. What mode of transport do you normally use to get to your crop field.

1. Footing ✓
2. Bicycle
3. Public transport
4. Personal car

SECTION 2 HOUSEHOLD DEMOGRAPHICS

Q1. Household head Sex [2] 1= Female 2= Male	**Q2.** Marital status of the household head? [1] 1 = Married; 2 = Single; 3 = Divorced; 4 = Separated; 5=Widowed
Q3. Level of Education of household head? 1=None; (2)= Primary; 3=Secondary; 4=Tertiary [2]	**Q4. Level of Education of spouse if applicable head?** 1=None; 2 = Primary; 3=Secondary; 4=Tertiary; 5= Not applicable [3]
Q5. Household size [9]	**Q6.** Household members older than 18 years [2]
Q.7. What is the main occupation of the head of household? [1] 1 = Field crop production; 2 = Vegetable Production; 3 = Fishing; 4= Trading; 5 = Formal employment; 6 = Other (specify)	

SECTION 3: HOUSEHOLD ASSET OWNERSHIP

Tools/implements (TIMP)	Code	Tick	Quantity owned	Condition 1=Working 2= Not working
Q1. Physical Assets (Ox drawn Implements)				
1. Ox-drawn plough	IMPL1			
2. Ox drawn planter	IMPL2			
3. Cultivator	IMPL3			
4. Ridging plough	IMPL4			
5. Ox-cart	IMPL5			
Q2. Physical Assets (Livestock)				
6. Cattle	LVST1			
7. Goats	LVST2			
8. .Poultry	LVST3			
9. Pigs	LVST4			
10. Other specify	LVST5			

Q3. Other Physical Assets	Code	Tick	Quantity	Condition 1=Working 2= Not working
Bicycles	OPAST1			
Radios	OPAST2			
TV set	OPAST3			
Vehicle	OPAST4			
Motorbike	OPAST5			
Others (specify)	OPAST6			

Financial Assets Q1. Sources of income	Code	Tick	Estimated annual income (ZMK)
Petty trading (Specify)	Incm1		
Gardening activities/Off season farming	Incm2		
Chicken rearing	Incm3		
Goat rearing	Incm4		
Cattle rearing	Incm5		
Remittances from other sources	Incm6		
Sale of rain fed food crops (specify) maize	Incm7	✓	Nil
Other sources (specify) sweet potato leaves	Incm8	✓	K20

SECTION 4: LAND OWNERSHIP

Q1. Are you aware that you have been cultivating on land that belongs to the Copperbelt Energy Corporation (CEC)? Yes✓...No.....

Q2. If yes to question 1, when and how did you learn about this? learnt about it in November last Year when an announcement was made by CEC

Q3. Who allocated this land to you or how did you acquire permission to cultivate this land The late Mr. Mwansa, who used to be their neighbour.

Q4. For how long has the Respondent cultivated the piece of land in question? 2013

Q5. If asked to vacate the land, how soon would you do that? after harvesting.

Q6. Do you own any other land elsewhere? Yes.....No.✓....

Q7. If yes to above, specify where?.....

Q8. What form of ownership?
1=Customary
2=Private (on title)
3=Other.....

SECTION 5: AGRICULTURAL PRACTICES

5.1. Crop production practices

Crops grown	Code	*Q14* *Did interviewee grow the crops this season or not* ***0=No 1=Yes***	*Q15. Did farmer grow the crop in 2017/2018 Season* ***0=No 1=Yes***	*Q16. Did farmer grow the crop in 2016/2017 season*	*Q17 What is the land preparation method for this crop* ***1=hand hoeing 2= Ox drawn ploughing 3=Tractor ploughing 4= Planting basins 5= Ox drawn ripping 6= Ridging by hand***	*Q18 Weeding method for this crop* ***1= mechanical by hand hoe 2= mechanical by ox-drawn implement 3= weeding with chemicals***	*Q19 Month of planting in the season* ***1=October 2=November 3= December 4= January 5= February***
Maize	**CRPG RO1**						
Sweet potato	**CRPG RO2**	1	1	1	1	1	2
Irish potato	**CRPG RO3**						

groundnuts	CRPG RO4						
cassava	CRPG RO5						
Sorghum	CRPG RO6						
Millet	CRPG RO7						
cowpeas	CRPG RO8						
Other	CRPG RO9	sweet potato leaves	1	1	1	1	2

5.2: YIELDS

Crops grown	Code	*How much yield of each crop do you produce in a good season (Kgs)*
Maize	CRPG RO1	
Sweet potato	CRPG RO2	25kg x 6
Irish potato	CRPG RO3	
groundnuts	CRPG RO4	
cassava	CRPG RO5	
Sorghum	CRPG RO6	
Millet	CRPG RO7	
cowpeas	CRPG RO8	
Other	CRPG RO9	~~Gro~~ Sweet potato leaves 1 bag

Crops grown	Code	*How much do you earn from the sale of your agricultural produce per season (ZMK)*
Maize	**CRPG RO1**	
Sweet potato	**CRPG RO2**	K 200
Irish potato	**CRPG RO3**	
groundnuts	**CRPG RO4**	
cassava	**CRPG RO5**	
Sorghum	**CRPG RO6**	
Millet	**CRPG RO7**	
cowpeas	**CRPG RO8**	
Other	**CRPG RO9**	S/P Leaves. K 80

SECTION 6: WILLINGNESS TO ADOPT OTHER LIVELIHOODS

Q1. Do you consider subsistence farming / agriculture as your main source of livelihood?
(1)=Yes
2=No

Q1. If given a choice, would you still choose subsistence farming as your main source of livelihood?
(1)=Yes
2=No

Q2. If no, what other potential sources of livelihood do you plan to venture into?
1._____

2._____

3._____

4._____

Q3. What has been the main hindrance for not adopting the above mentioned alternative livelihoods?

_____

_____

DATA COLLECTION FORMS FOR SOCIO-ECONOMIC SURVEY OF PAPs ON GARNETON NORTH AND SOUTH SOLAR PV SITES

1	**Basic Information**										
	First Name	Last Name	NRC	Marital Status	Physical/Health Status (Normal, Chronically Ill, Disabled)	Illness Symptoms within the past 2 weeks (Yes/No)	Home Adress	Gender	Age (yrs)	Project Site	Family Size (Number of Household members)

2	**Income Stream Analysis**			
	Primary Source of Income/ Year (ZMW)	Secondary Source of Income/Year (ZMW)	Remitances Received/Year (ZMW)	Total Household Net Income/Year (ZMW)

3	**Household Expenditure**													
	Medical Expenses (ZMW)	Education (School Fees, PTA, Books, etc) (ZMW)	Rentals (ZMW)	Housing (own House-maintenance, Rates,etc) (ZMW)	Alcohol, Non-Alcoholic Beverages (ZMW)	Expenditure on Consumer Goods (Clothing, Footware) (ZMW)	Remitances in Cash or in Kind (Given to Church, Family etc) (ZMW)	Communication (Airtime) (ZMW)	Private or Public Transport (Including Transport to and from work, school) (ZMW)	Food (Breakfast) (ZMW)	Food (Lunch) (ZMW)	Food (Super) (ZMW)	Personal Services (Laundry, Entertainment, Hairdressing) (ZMW)	Total Expenditure (ZMW)

4	Physical Assets														
	Number of Houses	Number of Farms outside CEC Land	Plot (Residential, commercial)	Livestock (Goats, Cattle, Pigs etc)	Poultry (Chickens, Ducks, etc)	TV	Ra dio	Bicycle	Bed	Matress	Cell Phone	Hoe	Axe	Shovel	Brazier (Imbabula)

5	Accommodation							
	Amount for Rentals/Year (ZMW)	Source of Income for Rented Accomodation (Remitances, Salary, wages, etc)	Period of residence at rented Accomodation (Years)	Period of residence at own house (Years)	Mode of aquistaion of current accomodation (Purchased, built, gift, inheritance, other)	Building Materials used for House (Burnt Bricks, Concrete blocks, mud bricks, wood)	Roofing Material used for the House (Grass, iron sheets, clay tiles)	Portable Water Source (inbuilt, water well, borehole, tap stream, River)

6	Agricultural Produce Analysis													
	Size of Farm on Project Land (Ha)	Duration of cultivation on project Land (Yrs)	Mode of Access to Project Land (Rented, common access)	Continuation of farming once Farm is taken for the project (Use own Land, buy land, rent land, no plans yet)	Type of Crop 1 (Major Crop)	Type of Crop 2	Type of crop 3	Type of crop 4	Quantity of Major crop Harvested/ Annum (Kg-Major Crop)	Quantity of Harvest Sold/Annum (Kg-Major Crop)	Quantiy of Harvest reserved for Home Consumption/ Annum (Kg-Major Crop)	Type of staple food Consumed (Maize, Cassave, Millet, other)	Source of Staple food (Harvested, Purchased)	Quantity of Staple Food Reserved for family consumption (kg)

7	**Employment**				
	Employment Status of Household head (Working Formally, Retired, Running a Business)	Prefered job type at the Project Site (Maintaining lawns on Project Site, Cleaning Pannels, Bush clearing, digging of drainages, other manual jobs)	Reason for not Taking any job type (Already employed, Age, disability, not Interested, Other)	Number of Household members employed (Formally, running a business)	
8	**Grants and Government Assistance**				
	Number of Household member entitled benefiting from Government Social Cash Transfer Programme for Vulnerable People	Number of Household members who are Beneficiaries of Relief Food from Government, NGO or other institution	Number of Household members who are beneficiaries of Donor-sponsored Poverty Eradication programs	Number of Infants or children within the houseold on Government/NGO nutritional assistance	Number of Household beneficiaries of Any Other Government/NGO (e.g. FAWEZA)

Field Survey on Establishment of Nature, Approximant Number of Assets and Owners

		List of Coordinates								
Name	NRC No.	E	N	Total Size of Farm	Size of farm in project site	Type of crops	Home address	Gender	Age	Project site
Johnson Chingugu	112811/25/1			0.24 Ha	0.24 Ha	Maize		M		North
6/2/2019		628190.64	8595996.3							
		628194.68	8595977.4							
		628203.27	8595980.3							
		628207.68	8595971.4							
		628243.26	8595985.8							
		628226.66	8595918.6							
		628200.96	8595926.9							
Josephine Kayombo		628198.74	8595891.5	0.10 Ha	0.10 Ha	Maize		F	56	North
6/2/2019		628241.31	8595892.5							
		628240.02	8595869.4							
		628202.97	8595865.5							
Emmanuel Mubanga	103488/34/1	628128.72	8595825.1	0.33 Ha	0.27 Ha	Maize	IT 1247	M	72	North
6/2/2019		628110.95	8595832.4							
		628118.27	8595770.4							
		628091.96	8595763.5							
		628072.15	8595873.6							
Evon Samuntu		628063.02	8595872.8	0.16 Ha	0.11 Ha	Maize	IT 1247	F	38	North
6/2/2019		628117.35	8595878.5							
		628113.42	8595899.8							
		628047.52	8595901.4							
Beauty Saladi		628096.73	8596073.4	0.23 Ha	0.23 Ha	Maize	IT 1409	F	55	North
6/2/2019		628147.18	8596062.9							
		628144.22	8596129.7							
		628129.24	8596132							
Kabwe Digashome	160875/43/1	628424.79	8595213	0.34 Ha	0.34 Ha	Maize	KS 3437	M	65	North

6/2/2019		628360.67	8595200.9							
		628364.64	8595261.5							
		628415.76	8595256.3							
		628415.65	8595256.3							
		628293.73	8594879							
Cassava Field		628444.08	8595131	517 m2	517 m2					North
19/02/2019		628436.26	8595130.5							
		628431.3	8595187.3							
Eness Namulungu	219732/47/1	629028.27	8592296.3	0.88 Ha	0.67 Ha	Maize, Nuts, Sweet Potatoes	N 131439	F	33	South
19/02/2019		628999.61	8592273.3							
		628979.83	8592292.4							
		628962.76	8592288.2							
		628933.18	8592326.5							
		628956.49	8592341.5							
		628967.92	8592371.8							
		628956.71	8592389.7							
		628953.6	8592373.5							
		628949.85	8592362.7							
		628882.11	8592340.1							
		628875.39	8592366.3							
		628869.79	8592401							
		628881.55	8592432.1							
		628910.8	8592440.6							
Mukonko		628910.36	8592440.8	0.17 Ha	0.15 Ha	Maize,Nuts		F		South
19/02/2019		628882.53	8592432.8							
		628862.2	8592474							
		628855.94	8592483.8							
		628889.2	8592490.5							
Eunice Sailota Phiri	267739/52/1	628924.98	8592336	0.27 Ha	0.20 Ha	Maize,Nuts	7616	F	67	South
19/02/2019		628910.73	8592330.9							
		628941.26	8592240.9							
		628974.69	8592260.8							
Bana Mokonko		628939.95	8592238.3	0.36 Ha	0.1 Ha	Maize,Nuts		F		South
19/02/2019		628910.43	8592217.2							
		628876.2	8592282.6							
		628909.42	8592329.9							
Abiya		628779.62	8592986	0.20 Ha	0.20 Ha	Maize,Nuts		F		South
19/02/2019		628805.25	8592986.5							
		628819.64	8592974.5							

		628843.64	8592929.1							
		628820.03	8592918.7							
Shi Mbita		628851.48	8592909.6	0.11 Ha	0.11 Ha	Maize,Nuts		M		South
19/02/2019		628808.24	8592880.1							
		628841.52	8592868.8							
		628842.77	8592929.3							
Abraham Kambele		628842.77	8592929.3	0.21 Ha	0.21 Ha	Maize,Nuts	622 Twatasha	M	82	South
19/02/2019		628863.72	8592951							
		628843.31	8592998							
		628798.21	8592989.7							
		628824.32	8593002.5							
Elini Kapindula		628855.17	8592979.6	0.15 Ha	0.15 Ha	Maize	851 Rescos	FF	70	South
19/02/2019		628866.39	8592988.3							
		628846.2	8593037							
		628809.65	8593022.9							
Mary Taimo		628873.53	8592983.7	0.20 Ha	0.20 Ha	Maize,Nuts	331 Rescos	F	62	South
19/02/2019		628902.51	8593028.2							
		628902.12	8593038.1							
		628897.08	8593050.3							
		628847.07	8593037.4							
Royda Taimo		628805.16	8593038.2	198 m2	198 m2	Maize		F		South
19/02/2019		628808.01	8593044.2							
		628823.33	8593047							
		628831.2	8593034.5							
Bana Kasongo		628024.9	8596328.4	0.20 Ha	0.20 Ha	Maize, Nuts		F		North
19/02/2019		628017.8	8596341.4							
		628015.51	8596340.4							
		628088.49	8596341.3							
		628078.94	8596295.5							
Jane Kasongo		628085.13	8596294	0.40 Ha	0.40 Ha	Maize, Nuts		F		North
19/02/2019		628088.04	8596314.5							
		628118.67	8596314.2							
		628117.24	8596335.2							
		628142.23	8596337.1							
		628145.48	8596240.2							
		628101.76	8596250.2							

Oscar Samoyo	568515/67/1	627884.65	8597470.9	793 m2	793 m2	Maize, Nuts	PIZ	M	27	North
19/02/2019		627881.61	8597493.8							
		627863.8	8597494							
		627857.29	8597471							
		627861.14	8597458.6							
Elizabeth Sakwaya	472888/67/1	627807.1	8597371.3	783 m2	783 m2	Ground nuts	PIZ	F	25	North
19/02/2019		627794.31	8597377.8							
		627788.62	8597368.3							
		627773.98	8597372.9							
		627774.45	8597356.3							
		627780.31	8597355							
		627780.5	8597348.2							
		627787.33	8597345.9							
		627803.4	8597346.2							
Kaposa Mathews	181407/35/1	627770.65	8597548.2	0.20 Ha	0.20 Ha	Maize, Nuts	PIZ	M	27	North
19/02/2019		627774.78	8597549.5							
		627775.67	8597554.4							
		627786.79	8597563.8							
		627787.68	8597568.3							
		627785.1	8597573.4							
		627785.46	8597582							
		627775.46	8597603.3							
		627772.69	8597616.3							
		627795.48	8597636.5							
		627826.21	8597611.1							
Mary Simwale		628171.22	8596217.2	565 m2	565 m2	Maize, Nuts		F		North
19/02/2019		628169.5	8596219.8							
		628149.78	8596181.5							
		628149.78	8596181.5							
		628148.37	8596182							
		628143.42	8596168.9							
		628132.28	8596179.1							
		628109.13	8596150.5							
		628116.61	8596147.3							
		628123.25	8596151.3							
		628127.75	8596160.8							
		628134.46	8596157							
NOTE:										
ALL FARMS ABOVE 1000 SQUARE METERS ARE INDICATED IN HECTARES										
DATES INDICATED BELOW NAMES INDICATE DAY THE COORDINATE PICKING EXERCISE WAS CARRIED OUT IN PRECENSE OF THE FARM OWNER OR REPRESENTATIVE.										

APPENDIX 11: PROOF OF LAND OWNERSHIP

5m H889 6/76

DR 10b

REPUBLIC OF ZAMBIA

CERTIFICATE OF TITLE

No.: 51826

Farm No. KITWE/LN-1000001141/3

LANDS REGISTER

Printed on: 29/11/201

Property number KITWE/LN_1000001141/3 Ernest Kapenda

PRELIMINARY REGISTRATION

ENTRY NO. 1 DATE OF DOC 28/11/2018 DATE OF REG 28/11/2018

Lessor THE PRESIDENT OF ZAMBIA

Lessee COPPERBELT ENERGY CORPORATION PLC

NATURE OF DOC STATE LEASE FOR 99 YEARS FROM 01/10/2018 WITH AREA SIZE 22.3188 HECTARES

AREA 22.3180 Ha

PRELIMINARY REGISTRATION

ENTRY NO. 2 DATE OF DOC 28/11/2018 DATE OF REG 28/11/2018

Title holder COPPERBELT ENERGY CORPORATION PLC

NATURE OF DOC Certificate of Title NO. CT_51826

AREA 22.3180 Ha

DR 1A

No.: 51826

REPUBLIC OF ZAMBIA

Registered No.: LN-1000001141/3/2

THE LANDS AND DEEDS REGISTRY ACT

(Section 45)

CERTIFICATE OF TITLE

THIS Certificate, dated the TWENTY-EIGHTH day of NOVEMBER two thousand and EIGHTEEN under the hand and seal of the Registrar of the Lands and Deeds Registry of Zambia WITNESSETH that COPPERBELT ENERGY CORPORATION PLC a Company incorporated in Zambia under the Companies Act Cap 388 of the Laws of Zambia and having its office registered at Kitwe is a tenant or lessee for the unexpired residue of a term of 99 years from the first day of November, 20 18 (subject to such reservations, restrictions, incumbrances, liens, estates and interests as are notified by memorial underwritten or endorsed hereon) of and in ALL that piece of land in extent 22.3188 hectares more or less being Farm No.Kitwe/LN-1000001141/3 situate at Kitwe in the Copperbelt Province of Zambia which piece of land is more particulalry delineated and described on Diagram No. SD-1000003899 of 2018 except and reserved all minerals oils and precious stones whatsoever upon or under the said land.....

.....

Registrar

Memorials

Date of Document	Date of Registration	Registered No.		Cancellation
28/11/2018	28/11/2018	LN-1000001141 /3 /2	Subject to the exceptions reservations restrictions restrictive covenants and conditions mentioned contained or referred to in a lease (a copy of which is attached hereto) made between The President of the Republic of Zambia of the one part and **COPPERBELT ENERGY CORPORATION PLC** of the other part.	

PTO

Memorials

Date of Document	Date of Registration	Registered No.		Cancellation

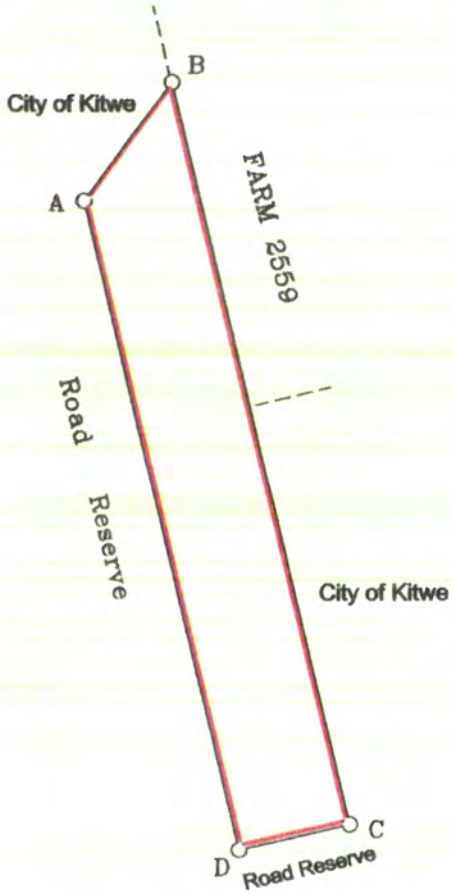
SIDES	METRES	ANGLES OF DIRECTION	CO-ORDINATES SYSTEM	E	METRES	N
AB	246.83	36.28.03				
BC	1268.67	166.56.22				
CD	187.72	256.48.20				
DA	1108.90	346.56.13				

DIAGRAM NUMBER
SD_1000003899/2018

APPROVED:

GOVERNMENT SURVEYOR

DATE: 27/11/2018



SCALE 1: 12500

BEACON DESCRIPTION: All are iron pegs in concrete

THE FIGURE: A – B – C – D – A

REPRESENTS: 22.3188 Hectares

OF LAND BEING: Kitwe/LN_1000001141/3

SITUATED IN THE: Copperbelt PROVINCE REPUBLIC OF ZAMBIA

SURVEYED IN: November 2018

BY ME

LAND SURVEYOR

PARENT DIAGRAM No.:

SURVEY RECORDS No.: SR_1000000685/2018

S G FILE No.: S/34/LN_1000001141

PLAN No.: SR_1000000685/2018

MAP REFERENCE: 1228C3 & C4

LF/1
Stocked by Lands
10m M593 12/84 S&T

C07 - 51824
Reg-LN-1000001141/3/3/2
DATED - 28/11/2018

REPUBLIC OF ZAMBIA

Lease No. LE-15708

Province COPPERBELT

FARM No. KITWE/LN - 1000001141/3

THIS LEASE MADE the 28 day of NOVEMBER

two thousand and 2018 BETWEEN HIS EXCELLENCY THE PRESIDENT OF ZAMBIA (hereinafter called 'the President') of one part COPPERBELT ENERGY CORPORATION plc A company incorporated in Zambia having its office registered at Kitwe.

(Hereinafter called 'the Lessee' which expression where the context so admits includes Itself, its successors in title and assigns) of the other part

WITNESSETH as follows

1. In consideration of the sum of K 600,000.00 now paid by the Lessee to the President receipt whereof the President doth hereby acknowledge and of the rent hereinafter reserved and the covenants and condition herein after contained the President hereby demises unto the Lessee ALL THAT piece of land

In extent Two Two decimal point Three One Eight Eight (22.3188) Hectres

More or less being Farm No. KITWE/LN - 10000011

situated in Kitwe

province of ZAMBIA which piece of land is more particularly delineated and described on Diagram No. SD-1000003899

attached to these presents

(hereinafter called 'the said land')TO HOLD unto the Lessee for terms of Niuety - Nine (99) years from the first day of November two thousand and Eighteen (herein called 'the said terms')

YIELDING AND PAYING therefor during the said term the rent as hereinafter provided.

EXCEPTING AND RESERVING out of the demise hereby made all minerals, mineral oils and precious stones whatsoever upon or under the said land.

2. The Lessee for itself, its successors in title and assigns

hereby covenant with the President as follows:

(1) To pay all such rates taxes assessment an imposition whatsoever as may hereafter become payable in respect of the said land according to the law

(2) To permit during the said term the President or any person or persons authorised by the President to enter on the said land at any reasonable time during the day for the purpose of inspection or to lay or have access to water mains drains sewer pipes telegraph or telephone wires and electric manis of all description whether the same or any of them be overhead or underground provided that just and fair compensation shall be paid by the President to the Lessee for any loss or damage occasioned thereby.

(3) To pay on or before the execution of these presents the sum of K 322.73 being rent for the period from the date of commencement or the said to the thirty - first day of December two thousand and Eighteen and thereafter yearly rent of K 322.73 on the thirty - first day of December in each successive year in arrear free of all deductions

(4) within a period of twenty-four months from the date of the certificate of title to erect on the said land good and substantial buildings to the approval of the planning Authority and to the value as assessed by the local authority of not less than K.....250,000.00.....and to complete the foundations thereof within twelve months from the date of the certificate of title.

(5) At all times during the said term well and sufficiently to repair, cleanse, uphold, maintain and keep any messuage or buildings which may be erected on the said land and all additions thereto and the wall fences, sewers drains and amendments and to execute at the lessee's own cost all such sanitary and other works as may from time to time be lawfully required by the local authority.

(6) Except with the prior written consent of the President not to assign sublet mortgage charge or any manner whatsoever encumber or part with possession of the said land or any part thereof or interest therein or concerning the same or attempt so to assign sublet mortgage charge encumber or part with possession of the said land.

(7) Except with the prior written consent of the President not to use the said land or the buildings thereon or to be erected thereon or any part thereof for any purpose other than for.....
COMMERCIAL purposes in accordance with the approved development plan or any amendment thereof and for which an application for planning permission has been submitted to and approved by the Copperbelt Province Planning Authority

...e President hereby covenants with the Lessee that the Lessee paying the rent of .....322.73..... ...ereby reserved and observing and performing the several covenants and condition herein on the Lessee's ...rt contained shall peaceably hold and enjoy the said land during the said term without any interruption ... the President or any person lawfully claiming under the President.

...ROVIDED ALWAYS and it is hereby mutually agreed as follows:

(1) If and whenever the rent hereby reserved or any party thereof shall be in arrear and unpaid for twenty-eight days after the same shall have become due (whether legally demanded or not) or if the Lessee shall at any time make default in the observance of any of the covenants and conditions herein contained on the Lessee's part to be performed or observed it shall be lawful for the President to re-entre upon the said land and hold the same as of his former estate as if this Lease had not been made but without prejudice to any right of action or remedy of the Lessor in respect of any prior breach non-performance non-observance of any of the lessee's covenants or conditions herein contained.

(2) The annual rent stated in sub-clause shall at the option of the President be subject to revision during the subsistence of the Lease or any extension thereof at such periods as the President might in his absolute discretion decide.

IN WITNESS WHEREOF.....HARRY CHIFINDA MWEWA SHAMENDE.....

.....ACTING CHIEF LANDS OFFICER FOR.....

Commissioner of Lands of the Government of Zambia for and on behalf of the President has hereunto set his hand and seal and.....COPPERBELT ENERGY CORPORATEDN

.....plc has hereunto set his hand and seal.....

on the day and year first before written.

SIGNED SEALED and DELIVERED

by the said.....HARRY CHIFINDA MWEWA SHAMENDE.....

.....

For and on behalf of the President of Zambia

in the presence of:

SEAL

Witness.....REBECCA NYONDO.....

Address: P .O. Box 30069, 73799, NDOLA/LUSAKA

Occupation: Civil Servant

SIGNED SEALED and DELIVERED

by the said.....THE COMMON SEAL OF COPPERBELT

.....ENERGY CORPORATION plc has hereuto been affixed

in the presence of:

DIRECTOR Witness.....

Address.....

SECRETARY Occupation.....

5m H889 6/76

DR 10b

REPUBLIC OF ZAMBIA

CERTIFICATE OF TITLE

No.: 51825

Farm No. KITWE/LN-1000001141/4

LANDS REGISTER

Printed on: 29/11/2

Property number KITWE/LN_1000001141/4 Ernest Kapenda

PRELIMINARY REGISTRATION

ENTRY NO. 1 DATE OF DOC 28/11/2018 DATE OF REG 28/11/2018

Lessor THE PRESIDENT OF ZAMBIA

Lessee COPPERBELT ENERGY CORPORATION PLC

NATURE OF DOC STATE LEASE FOR 99 YEARS FROM 01/10/2018 WITH AREA SIZE 18,000 HECTARES

AREA 18.0000 H

PRELIMINARY REGISTRATION

ENTRY NO. 2 DATE OF DOC 28/11/2018 DATE OF REG 28/11/2018

Title holder COPPERBELT ENERGY CORPORATION PLC

NATURE OF DOC Certificate of Title NO. CT_51825

AREA 18.0000 H

DR 1A

REPUBLIC OF ZAMBIA

No.: 51825

Registered No.: LN-1000001141/4/2

THE LANDS AND DEEDS REGISTRY ACT

(Section 45)

CERTIFICATE OF TITLE

THIS Certificate, dated the TWENTY-EIGHTEENTH day of NOVEMBER two thousand and EIGHTEEN under the hand and seal of the Registrar of the Lands and Deeds Registry of Zambia WITNESSETH that COPPERBELT ENERGY CORPORATION PLC a Company incorporated in Zambia under the Companies Act Cap 388 of the Laws of Zambia and having its office registered at Kitwe is a tenant or lessee for the unexpired residue of a term of 99 years from the first day of November, 2018 (subject to such reservations, restrictions, incumbrances, liens, estates and interests as are notified by memorial underwritten or endorsed hereon) of and in ALL that piece of land in extent 18.0949 hectares more or less being Farm No. Kitwe/LN-1000001141/4 situate at Kitwe in the Copperbelt Province of Zambia which piece of land is more particulalry delineated and described on Diagram No. SD-1000003900 of 2018 except and reserved all minerals oils and precious stones whatsoever upon or under the said land.....

.....

Registrar

Memorials

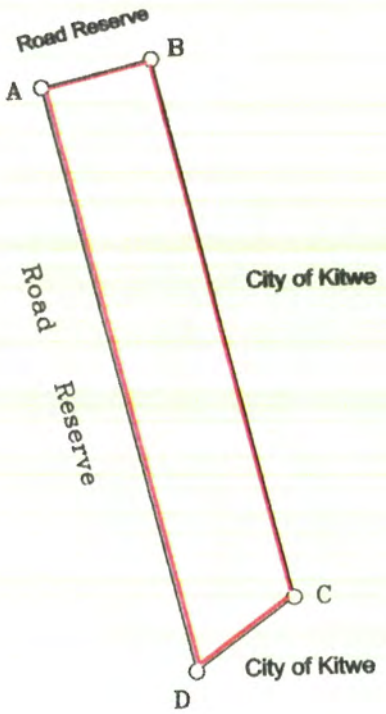
Date of Document	Date of Registration	Registered No.		Cancellation
28/11/2018	28/11/2018	LN-1000001141 /4/1	Subject to the exceptions reservations restrictions restrictive covenants and conditions mentioned contained or referred to in a lease (a copy of which is attached hereto)made between The President of the Republic of Zambia of the one part and **COPPERBELT ENERGY CORPORATION PLC** of the other part.	

PTO

Memorials

Date of Document	Date of Registration	Registered No.	Cancellation

SIDES		ANGLES OF DIRECTION	CO-ORDINATES SYSTEM			DIAGRAM NUMBER
	METRES		E	METRES	N	SD_1000003900/2018
AB	187.72	76.48.20				APPROVED:
BC	924.91	166.56.13				
CD	203.47	234.14.44				
DA	1002.97	346.56.13				GOVERNMENT SURVEYOR
						DATE: 27/11/2018



SCALE 1:12500

BEACON DESCRIPTION All are iron pegs in concrete

THE FIGURE A – B – C – D – A

REPRESENTS 18.0949 Hectares

OF LAND BEING Kitwe/LN_1000001141/4

SITUATED IN THE Copperbelt PROVINCE REPUBLIC OF ZAMBIA

SURVEYED IN November 2018

BY ME LAND SURVEYOR

PARENT DIAGRAM No.:

SURVEY RECORDS No.: SR_1000000685/2018

S G FILE No.: S/34/LN_1000001141

PLAN No.: SR_1000000685/2018

MAP REFERENCE: 1228C3 & C4

LF/1
Stocked by Lands
10m M593 12/84 S&T

COT – 51825
Ref No LN – 1000001141/4/2
DATED – 28/11/2018

REPUBLIC  **OF ZAMBIA**

Lease No. LE-15707

Province COPPERBELT

FARM No. KITWE/LN - 1000001141/4

THIS LEASE MADE the 28 day of NOVEMBER

two thousand and 2018 BETWEEN HIS

EXCELLENCY THE PRESIDENT OF ZAMBIA(hereinafter called 'the President') of one

part COPPERBELT ENERGY CORPORATION plc A Company incorporated in

Zambia having its office registered at Kitwe.

(Hereinafter called 'the Lessee' which expression where the context so admits includes

itself, its Successors in title and assigns) of the other part

WITNESSETH as follows

1. In consideration of the sum of K 540,000.00 now paid by the Lessee to the President receipt whereof the President doth hereby acknowledge and of the rent hereinafter reserved and the covenants and condition herein after contained the President hereby demises unto the Lessee ALL THAT piece of land

In extent One Eight decimal point Naught Nine Four Nine (18.0949) Hectres

More or less being Farm No. Kitwe/LN - 100000

situated in Kitwe

province of ZAMBIA which piece of land is more particularly delineated and described on

Diagram No. SD-1000003900

attached to these presents

(hereinafter called 'the said land')TO HOLD unto the Lessee for terms of

Ninety - Nine (99) years from the first day of November

two thousand and Eighteen (herein called 'the said terms')

YIELDING AND PAYING therefor during the said term the rent as hereinafter provided.

EXCEPTING AND RESERVING out of the demise hereby made all minerals, mineral oils and precious stones whatsoever upon or under the said land.

2. The Lessee for Itself, its successors in title and assigns

hereby covenant with the President as follows:

(1) To pay all such rates taxes assessment an imposition whatsoever as may hereafter become payable in respect of the said land according to the law

(2) To permit during the said term the President or any person or persons authorised by th President to enter on the said land at any reasonable time during the day for the purpose inspection or to lay or have access to water mains drains sewer pipes telegraph or telephone wi and electric manis of all description whether the same or any of them be overhead or undergrou provided that just and fair compensation shall be paid by the President to the Lessee for any l or damage occasioned thereby.

(3) To pay on or before the execution of these presents the sum of K 296.07 being rent for the period from the date of commencement or the said to the thirty - fir day of December two thousand and Eighteen and thereaft yearly rent of K 296.07 on the thiryt - first day December in each successive year in arrear free of all deductio

(4) wit lan as fou

(5) At any anc sar

(6) Exc an or i or

(7) Exc the an ha

Preside eby rese t contai the Presi

OVIDE

(1) If a twe the here Pre had any here

(2) The the abs

(4) within a period of twenty-four months from the date of the certificate of title to erect on the said land good and substantial buildings to the approval of the planning Authority and to the value as assessed by the local authority of not less than K.250,000.00.....and to complete the foundations thereof within twelve months from the date of the certificate of title.

(5) At all times during the said term well and sufficiently to repair, cleanse, uphold, maintain and keep any messuage or buildings which may be erected on the said land and all additions thereto and the wall fences, sewers drains and amendments and to execute at the lessee's own cost all such sanitary and other works as may from time to time be lawfully required by the local authority.

(6) Except with the prior written consent of the President not to assign sublet mortgage charge or any manner whatsoever encumber or part with possession of the said land or any part thereof or interest therein or concerning the same or attempt so to assign sublet mortgage charge encumber or part with possession of the said land.

(7) Except with the prior written consent of the President not to use the said land or the buildings thereon or to be erected thereon or any part thereof for any purpose other than for.....
COMMERCIAL purposes in accordance with the approved development plan or any amendment thereof and for which an application for planning permission has been submitted to and approved by the Copperbelt Province Planning Autority.

President hereby covenants with the Lessee that the Lessee paying the rent of .....296.07.....
eby reserved and observing and performing the several covenants and condition herein on the Lessee's
t contained shall peaceably hold and enjoy the said land during the said term without any interruption
the President or any person lawfully claiming under the President.

OVIDED ALWAYS and it is hereby mutually agreed as follows:

(1) If and whenever the rent hereby reserved or any party thereof shall be in arrear and unpaid for twenty-eight days after the same shall have become due (whether legally demanded or not) or if the Lessee shall at any time make default in the observance of any of the covenants and conditions herein contained on the Lessee's part to be performed or observed it shall be lawful for the President to re-entre upon the said land and hold the same as of his former estate as if this Lease had not been made but without prejudice to any right of action or remedy of the Lessor in respect of any prior breach non-performance non-observance of any of the lessee's covenants or conditions herein contained.

(2) The annual rent stated in sub-clause shall at the option of the President be subject to revision during the subsistence of the Lease or any extension thereof at such periods as the President might in his absolute discretion decide.

IN WITNESS WHEREOF.....HARRY CHIFINDA MWEWA SHAMENDE.....

ACTING CHIEF LANDS OFFICER FOR

.....

Commissioner of Lands of the Government of Zambia for and on behalf of the President has hereunto set his hand and seal and.....COPPERBELT ENERGY CORPORATION

plc has hereunto set his hand and seal

.....

on the day and year first before written.

SIGNED SEALED and DELIVERED

by the said.....HARRY CHIFINDA MWEWA SHAMENDE.....

.....

For and on behalf of the President of Zambia

in the presence of:

Witness.....REBECCA NYONDO.....

Address: P .O. Box 30069/LUSAKA 73799, NDOLA

Occupation: Civil Servant

SIGNED SEALED and DELIVERED

by the said.....THE COMMON SEAL OF COPPERBELT

ENERGY CORPORATION plc has hereunto been affixed

.....

in the presence of:

DIRECTOR Witness/////.....

Address/////.....

SECRETARY Occupation/////.....

APPENDIX 12: A CHANCE FIND PROCEDURE FOR CULTURAL AND HERITAGE FEATURES

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Approved by:  Risk and Compliance Manager	Date: *30.04.2023*

1. PURPOSE

The purpose of this Technical Standard is to establish the programme design, risk management controls and supporting information, to ensure the preservation and protection of cultural heritage by avoiding, reducing, and in some cases compensating the adverse impacts that projects might cause to cultural heritage. The procedure is aimed at providing a frame work for understanding and evaluation of the site before undertaking a project that may have an impact on culture heritage.

2. SCOPE

The guidance in this Standard is mandatory and applies to CEC operations and all its sites and projects (i.e. employees and contractors who are directly or indirectly involved in undertaking projects in green field areas). The Standard applies to all new projects and is applicable to the entire operation lifecycle (including project assessment and planning, evaluation, operation and closure). It also applies to cultural heritage regardless of whether or not it has been legally protected or previously disturbed.

3. DEFINITIONS

Definitions of key terms used in this document are shown in the following table.

Term	Definition
Chance Find	A previously unknown tangible cultural heritage resource encountered during any part of a project lifecycle. Most commonly these are archaeological sites found during construction or surface clearing.
Critical Cultural Heritage	Consists of (i) the internationally recognized heritage of communities who use, or have used within living memory the cultural heritage for long-standing cultural purposes; and (ii) legally protected cultural heritage areas, including those proposed by host governments for such designation.
Cultural Heritage	According to the National Heritage Conservation Commission Act Chapter 173 of the Laws of Zambia "Cultural Heritage" means • Any area of land which is of archaeological, traditional or historical interest or contains objects of such interest; • Any old building or group of buildings of historical or architectural interest; • Any relic, national monument or ancient heritage;

Term	Definition
	• Any other object constructed by man, other than a relic, of aesthetic, archaeological, historical or scientific value or interest; According IFC Performance Standard 8; "Culture Heritage" means. • Tangible forms of cultural heritage, such as tangible moveable or immovable objects, property, sites, structures, or groups of structures, having archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values; • Unique natural features or tangible objects that embody cultural values, such as sacred groves, rocks, lakes, and waterfalls; and • Certain instances of intangible forms of culture that are proposed to be used for commercial purposes, such as cultural knowledge, innovations, and practices of communities embodying traditional lifestyles.
Cultural Heritage Management Plan (CHMP)	A Cultural Heritage Management Plan (CHMP) is a comprehensive document that describes management measures, including reporting requirements that are in place in a project or facility to address the specific cultural heritage protection needs that have been identified according to the requirements of this Cultural Heritage Technical Standard. The CHMP will be a part of the project or facility's Environmental and Social Management Plan.
IFC (International Finance Corporation)	Member of the World Bank that finances and provides advice to private sector ventures and projects in developing countries.
Intangible cultural heritage	Intangible forms of cultural heritage include cultural resources, knowledge, innovations, and/or practices of indigenous or local communities embodying traditional lifestyles. These are of concern only if the project intends to use the cultural heritage – such as using cultural resources, knowledge, innovation and/or practices such as using traditional techniques or practices - for commercial development.
Lifecycle	The phases of a CEC project including assessment and planning, evaluation, operation and closure.
Stakeholders (cultural heritage)	In the context of cultural heritage, stakeholders may include: historical or traditional users and owners of heritage; indigenous peoples; traditional communities embodying traditional lifestyles; ministries of archaeology; culture or similar national or heritage institutions; national and local

Term	Definition
	museums; cultural institutes and universities, and civil society concerned with the cultural heritage or historical preservation, areas of environmental of scientific or environmental interest, affected indigenous peoples, and religious groups for whom the cultural heritage is traditionally sacred.
Tangible cultural heritage	Tangible cultural heritage is a unique and non-renewable resource that possesses cultural, scientific, spiritual, or religious value and includes moveable or immovable objects, sites, structures, groups of structures, marked and unmarked grave sites, natural features, or landscapes that have archaeological, paleontological, historical, architectural, artistic, religious, aesthetic, or other cultural value. These also include natural features that embody cultural values, such as sacred groves, rocks, lakes, springs and waterfalls.
ZEMA (Zambian Environmental Agency)	Zambia Environmental Management Agency (ZEMA) is a Zambian independent environmental regulator and coordinating agency, established through an Act of Parliament that provides for integrated environmental management and the protection and conservation of the environment and the sustainable management and use of natural resources.
National Heritage Conservation Commission	National Heritage Conservation Commission (NHCC) is a Zambian independent coordinating agency, established through an Act of Parliament that provides (i) for the conservation of ancient, cultural and natural heritage, relics and other objects of aesthetic, historical, prehistorical, archaeological or scientific interest and; (ii) for the regulation of archaeological excavations and export of relics; and to provide for matters connected with or incidental to the foregoing.
CEC	Independent power transmission and quality electricity distribution company with interests in Zambia and sub-Saharan Africa, including optic fibre based telecommunications.

4. IMPLEMENTATION GUIDELINES

CEC and all its sites/projects are required to follow the requirements listed below with regards to the mechanisms for identifying, evaluating, preserving and protecting cultural heritage that may be impacted by a proposed CEC activity or operation.

4.1 General Principles

a) CEC and all its sites/projects shall create, implement and maintain arrangements to perform an international standard cultural heritage impact assessment (as part of a wider ESIA) for every potential new project and expansion of existing operations, and as part of business decision-making.

b) CEC and all its sites/projects shall strive at every stage from project screening through to execution to protect tangible and intangible cultural heritage from the potential adverse impacts of its activities and to support its preservation.

c) Project planning and engineering staff shall be fully consulted regarding all baseline assessments as their plans and knowledge regarding project design will provide critical input for the survey process.

d) Appropriate government agencies (i.e. The National Heritage Conservation Commission, ZEMA, etc.) shall be informed at the start of cultural heritage surveys in order to gain access to government heritage archives and to understand government protection standards, priorities and survey requirements. In some cases survey may require interviews with knowledgeable local people. In the case that project confidentiality is a concern, initial surveys can be done without consultation, recognizing that in no situation can invasive survey work, such as archaeological testing be performed without formal government permission.

e) Prior to commissioning a cultural heritage survey, CEC shall identify all formal permitting requirements that may exist and shall ensure that all necessary arrangements are put in place to obtain a permit and to ensure compliance with this permit.

f) CEC shall ensure that both the surveys and the individuals performing such studies meet any specific requirements imposed by the national heritage authority and any relevant international standards as may exist.

g) CEC shall ensure that brief training is provided to construction crews particularly supervisors on the chance finds procedure as outlined in this standard.

h) CEC Culture Heritage Standard shall meet the requirements of the IFC Performance Standards and the "National Heritage Conservation Commission Act Chapter 173" of the Laws of Zambia. These requirements are summarised as follows

- Performance Standard 1 – Assessment and Management of Social and Environmental Risks and Impacts. This Standard is also applicable in that it

requires an assessment of all the potential environmental impacts of a project and the minimisation and/or mitigation of these impacts.

- Performance Standard 8 – recognizes the importance of cultural heritage for current and future generations. Consistent with the Convention Concerning the Protection of the World Cultural and Natural Heritage, this Performance Standard aims to ensure that clients protect cultural heritage in the course of their project activities. In addition, the requirements of this Performance Standard on a project's use of cultural heritage are based in part on standards set by the Convention on Biological Diversity. The Objectives are:
- To protect cultural heritage from the adverse impacts of project activities and support its preservation.
- To promote the equitable sharing of benefits from the use of cultural heritage.
- The "National Heritage Conservation Commission Act Chapter 173" of the Laws of Zambia to seek:
- To provide for the conservation of ancient, cultural and natural heritage, relics and other objects of aesthetic, historical, prehistorical, archaeological or scientific interest;
- To provide for the regulation of archaeological excavations and export of relics; and to provide for matters connected with or incidental to the foregoing.

4.2 Culture Heritage Assessment

CEC will undertake cultural heritage assessment in order to protect cultural heritage in accordance with the National Heritage Conservation Commission Act and the Convention concerning the Protection of the World Cultural and Natural Heritage. This will be done during project design and execution. A phase of evaluation is considered important in assessing the significance of all possible cultural heritage sites. This will include field-based study, and documentation of the cultural heritage sites present in the project area. During these practices, where the risk and identification process determines that there is a chance of impacts to cultural heritage, CEC will have to engage professionals to assist in the identification and protection of cultural heritage.

4.3 Cultural Heritage Feasibility Study

It is good practice to identify any potential cultural heritage issues before the start of the ESIA where possible to identify any issues of significant concern such as project cost and design constraints that may present limitations for the ongoing feasibility of the project.

4.4 Desktop Study and Consultations

A desktop study shall be undertaken once the decision has been made that the project is feasible and will be undertaken to identify existing known and potential undiscovered cultural heritage.

a) CEC shall ensure that the desktop survey considers the following:

- Literature review – the extent will depend on the sensitivity of the cultural heritage associated with the project's area of influence that may be impacted. The review shall consider a variety of sources including national heritage archives, published journals, existing assessments and studies in the project site and its area of influence, web-based information, protected area management plans.
- Initial desktop analysis – includes consideration of existing spatial data and landscape mapping particularly for critical cultural heritage. The analysis shall consider satellite imagery or aerial photographs, topographical mapping, protected area maps.

b) CEC shall ensure the necessary arrangements for undertaking direct engagement with stakeholders including Affected Communities. This may involve the appointment of social and other specialists. As cultural heritage is not always documented or protected by law, this engagement may be critical for identifying it, documenting its presence and significance, assessing potential impacts to it, and exploring mitigation options. Stakeholder engagement shall be planned and managed in accordance with the Stakeholder Engagement Technical Standard.

c) CEC will need to consult the Affected Communities who use or have used the cultural heritage for long-standing cultural purposes. This will enable CEC to have knowledge of the importance of the cultural heritage and get the views of the affected communities on such cultural heritage. This consultation will involve

relevant stakeholders including the Zambia Environmental Management Agency, ZEMA, local authorities and the National Heritage Conservation Commission.

4.5 Community access

In the event that CEC's project site contains cultural heritage or prevents access to previously accessible cultural heritage sites being used by, or that have been used by, Affected Communities within living memory for long-standing cultural purposes, CEC shall allow continued access to the cultural site or will provide an alternative access route, subject to overriding health, safety, and security considerations.

4.6 Baseline Survey

a) A baseline cultural heritage survey shall be undertaken during the project screening phase for all new potential projects to collect data on current (i.e. pre-development) cultural heritage attributes as this information may determine whether or not a proposed project should go ahead to the planning and development phases.

b) The survey may involve multi-phased desktop and field investigations where follow-up work is required to the information provided by earlier phases of investigation.

c) The survey shall record sufficient details of tangible cultural heritage of all forms (e.g. archaeological sites, monuments etc.) and of all ages and cultural affiliations, recognising that differing cultural heritage types may have different stakeholders, e.g. scientific and traditional, national and local.

4.7 Risks and Impacts Identification Process

a) The risks and impacts identification process will adopt the same form as that for the overarching ESIA process and reference shall be made to the Conducting ESIAs to International Standards Technical Standard.

b) CEC shall strive to ensure at every stage from project screening through to execution that the potential impacts to cultural heritage are avoided.

c) Where avoidance is not possible, and because cultural heritage is non-renewable, CEC shall strive to adopt 'preservation-in-place' over removal.

d) The impact avoidance and reduction measures shall be included in the Cultural Heritage Management Plan and shall be reviewed and updated regularly as CEC progresses through the project phases.

e) The following cultural heritage risks and impacts shall be considered:

- Cultural heritage baseline conditions in the project's area of influence;
- An analysis of project alternatives in relation to the baseline conditions to determine potential impacts;
- Project-related short and long term, direct, indirect and residual impacts on the cultural heritage identified in the literature review and baseline studies;
- The range of relevant threats to cultural heritage;
- Proposed impact mitigation measures in accordance with the mitigation hierarchy as described in the Conducting ESIAs to International Standards Technical Standard.

f) The scoping of the risks and impacts identification process is a continuous process and is intended to be so that it can be changed to reflect the changing needs of the project and as a result of new information becoming available.

4.8 Cultural Heritage Management Plan

a) A Cultural Heritage Management Plan (CHMP) shall be prepared that details the impact management arrangements (where impact cannot be avoided), an action plan for implementing the protection and preservation arrangements and any necessary monitoring requirements.

b) The CHMP shall detail the arrangements for the periodic internal and external reporting (as required) of the impact management activities.

c) The CHMP shall be integrated into the Company or Project Environmental and Social Management Plan.

d) Compliance with the CHMP and the development of additional sub-plans and procedures shall be a project commitment of CEC, its contractors and their subcontractors.

e) Impact reduction measures shall be considered in the following order of priority:

i) changes to the project design;

ii) Introduction of special construction and operational procedures,

iii) preservation in place, and

iv) Compensatory mitigation measures (such as rehabilitation and restoration of cultural heritage if possible where disturbance has occurred).

f) Opportunities to promote and enhance the conservation of cultural heritage of a protected area shall be considered as appropriate.

g) CEC shall ensure that the CHMP contains suitable arrangements for dealing effectively with chance finds (refer to 5.3 below).

h) The action plan for the protection and preservation arrangements shall include the following:

- Definition of the agreed goal(s), objectives and targets;
- Costs of the various protection arrangements;
- Description of the required actions; completion indicators; responsibilities and accountabilities, and
- Monitoring timeframes and mechanisms.

i) The monitoring arrangements shall consider the following:

- Mechanisms for monitoring the effectiveness of management actions,
- Maintenance and monitoring of specific controls such as preservation activity, and
- Arrangements for adapting management and mitigation responses as necessary to accommodate changes.

j) The plan shall be a project specific and practical document that forms the basic guidance for implementing this Standard in the context of a particular project or operational unit that is owned or operated by CEC.

4.9 Chance Find

Cultural heritage that can be found by chance include archaeological material, human remains and large heritage structures.

In a case where during construction or operations where cultural heritage is expected to be found, CEC shall follow the described processes below.

4.10 Chance Find Involving an Archaeological Material and Human Remains

In the event that an artefact is discovered as a result of construction or operational activities, the following procedure will be followed:

- The chance find shall not be disturbed any further until an assessment by a competent Authority (NHCC) is made;
- All activities in the vicinity of the chance find/ site will cease immediately;
- The discovered chance find/ artefact/site will be delineated;
- Record the chance find location, and all remains are to be left in place;
- The area will be secured to prevent any further damage or loss of removable object;
- Report the chance find, artefact/ site to the Project Manager on site;
- The Project Manager will assess, record and photograph the chance find/artefact/site;
- The chance find, artefact/site will be reported to the Risk and Compliance Manager ;
- The chance find will then be reported to the National Heritage and Conservation Commission and or the Health Department of the local Authority by the Risk and Compliance Manager;
- In consultation with the NHCC and or Local Authority, an appropriate course of action to take will be determined;
- In consultation with the NHCC an appropriate on site temporal storage area will be identified allowing temporal storage of any artefacts or other archaeological material recovered;

Approved by: _____ Senior Manager-HSES & Risk	Date: *30.04.2023*

- In the case of human remains such as bones, in addition to the above the NHCC, the Health Authorities will be contacted and the guidelines for treatment of human remains will be adhered to. If skeletal remains are identified, the NHCC will be contacted to examine the remains.
- All Employees and Contractors on site will be required to avoid disturbing conservation areas identified by NHCC;
- Documentation of the chance find/ artefacts will be completed with guidance from NHCC;
- Authorisation to resume works on the site where chance find artefacts were discovered would be given by the respective Authority upon completion of the required procedure.

4.11 Handling Large Heritage Structures

Should the chance find be deemed to be part of a structure or large deposit in the area, the following will take place:

- The Employees or contractor will notify the Project Manager of the discovery;
- The project manager will ensure photographs or video is taken of the discovery.
- The chance find will then be reported to the NHCC and photographs submitted for assessment.
- The historical importance/cultural value of the discovery will be determined by the NHCC and it will be a matter of discussion between CEC and the NHCC;
- The Risk and Compliance Manager will complete a report on the findings in line with the NHCC, requirement;

4.12 Removal of Replicable Cultural Heritage

When CEC encounter tangible cultural heritage that is replicable and not critical, mitigation measures that favour avoidance will be implemented. Where avoidance is not feasible, the following will be implemented as follows:

- Minimize adverse impacts and implement restoration measures, in situ, that ensure maintenance of the value and functionality of the cultural heritage, including maintaining or restoring any ecosystem processes needed to support it;

- Where restoration in situ is not possible, restore the functionality of the cultural heritage, in a different location, including the ecosystem processes needed to support it; The permanent removal of historical and archeological artifacts and structures is carried as described above;

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

4.13 Removal of Non-Replicable Cultural Heritage

The most efficient way of protecting culture heritage is by preservation in its place and removal can result in irreparable damage or destruction. CEC will therefore not remove nonreplicable culture heritage unless the following conditions are met:

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

4.14 Critical Cultural Heritage

Critical cultural heritage consists of two types namely the internationally recognized heritage of communities who use, or have used within living memory the cultural heritage for long-standing cultural purposes and legally protected cultural heritage areas, including those proposed by host governments for such designation.

CEC shall should not remove, significantly alter, or damage critical cultural heritage. In exceptional circumstances when impacts on critical cultural heritage are unavoidable, the Consultation and Participation as described in the Environmental Impact Assessment process shall be implemented and engagement of experts to assist in the assessment and protection of culture heritage will be done.

Legally protected cultural heritage areas are important for the protection and conservation of cultural heritage, and additional measures are needed for any projects that would be permitted under the applicable sections of the National heritage conservation act. In the case where the proposed project is located within a legally protected area, CEC in addition to the requirements of the critical cultural heritage cited above will meet the following requirements:

- Comply with defined National heritage conservation act of 1994
- Consult the protected area sponsors and managers, local communities and other key stakeholders on the proposed project; and
- Implement additional programs, as appropriate,

4.15 Project's Use of Cultural Heritage

In the situation where a project proposes to use the cultural heritage, including knowledge, innovations, or practices of local communities for commercial purposes, CEC will inform these communities of

- Their rights under national heritage conservation act;
- The scope and nature of the proposed commercial development; and
- The potential consequences of such development.

CEC will not proceed with such commercialization unless it (i) enters into a process of consultation and participation as described by the EIA regulations and the results documented. The outcome of the consultation and participation process should also provide for fair and equitable sharing of benefits from commercialization of such knowledge, innovation, or practice, consistent with their customs and tradition.

5. ROLES AND RESPONSIBILITIES

CEC shall ensure that roles and responsibilities for implementing and complying with this Standard are allocated. Key responsibilities shall be included in job descriptions, procedures and/or other appropriate documentation.

6. COMPLIANCE AND PERFORMANCE

CEC shall ensure they comply with the requirements of this standard. Performance against meeting the requirements of this Standard shall be assessed periodically, documented and, where required, reported to CEC Group. The assessment of performance shall include setting and reporting on key performance indicators (KPIs) where these have been established. The evaluation of performance shall include, as a minimum, confirmation that:

- A cultural heritage assessment is undertaken as part of the overarching ESIA for all potential projects.
- A Cultural Heritage Management Plan is prepared and implemented for every project.
- Stakeholder engagement must be included as an essential component of the assessment and involves Affected Communities where they exist within the project area.
- The competence and credibility of all specialists (internal and external) that contribute to the cultural heritage assessments and impacts management must be able to present evidence (such as training, certification, etc.) to demonstrate this.
- The data and findings of the impact assessment and management plan must be disclosed formally either as standalone reports or within the ESIA disclosure report and in a manner and form that is accessible to all stakeholders.
- Clear and transparent evidence of the adoption of the mitigation hierarchy must be available to support the proposed impacts management arrangements.
- All management and monitoring arrangements must be actively maintained and implemented, and documentary evidence kept to demonstrate this.

7. SUPPORTING INFORMATION

Reference	Description
International Finance Corporation Performance Standards Guidance Notes	The IFC has published Guidance Notes to guide the implementation of the full range of performance standards. These are available on the website. The guidance is currently being updated and draft versions (V2) are available however these have not yet been finalised and formally published. http://www.ifc.org/ifcext/sustainability.nsf/Content/PerformanceStandards
National Heritage Conservation Commission Act, Cap 173	An Act to repeal and replace the Natural and Historical Monuments and Relics Act; to establish the National Heritage Conservation Commission; to define the functions and powers of the Commission; www.parliament.gov.zm/downloads/VOLUME 12.pdf http://www.zambialii.org/zm/legislation/consolidated-act/173
World Bank - Cultural Heritage Country Files	These are data files now in place with the World Bank. They contain valuable information for clients who are in the initial phases of project development and are concerned with possible heritage issues and constraints in the host country. The files contain existing, readily available technical and contact information, and a checklist of additional information that should be obtained.
World Heritage List (from the Convention Concerning the Protection of the World Cultural and Natural Heritage)	List forming part of the cultural and natural heritage which the World Heritage Committee considers as having outstanding universal value. http://whc.unesco.org/pg.cfm?cid=31

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8. REVIEW

This Technical Standard shall be periodically audited and reviewed to determine its accuracy and relevance with regard to legislation, education, training and technological changes. In all other circumstances, it shall be reviewed no later than two years since the previous review.

9. RELATED DOCUMENTATION

A summary of the references and supporting documents relevant to this document is provided in the following table.

Doc. Ref.	Document name

APPENDIX 13: DRAWINGS FOR THE 33KV POWER TRANSMISION LINE ROUTE

EXCEPT WHERE OTHERWISE STATED, ALL DIMENSIONS ARE IN METRES

FILE: Y:\WORKING DRAWINGS\SOLAR PLANT PROJECT\Survey\E19238E.dwg

LEGEND

- PROPOSED 33kV O/H LINE
- OPTION 1 33kV LINE
- OPTION 2 33kV LINE
- PROPOSED 33kV U/G CABLE
- EXISTING 33kV O/H LINE
- EXISTING 66kV O/H LINE
- EXISTING 11kV O/H LINE
- EXISTING 220kV O/H LINE
- EXISTING 330kV O/H LINE
- WIRE FENCE
- TARRED ROAD
- GRAVEL ROAD
- ROAD RESERVE BOUNDARY
- PROPERTY BOUNDARY
- NWASCO U/G WATER PIPE
- FIBRE OPTIC LINE
- DRAIN
- RAILWAY RESERVE
- BUILDING
- WATER BODY/STREAM
- GATE
- RAILWAY TRACK
- ZAFFICO COMPARTMENT
- DAMBO AREA
- CULVERT
- WAYLEAVE AFFECTING PAP's

PROPOSED GETFIT - MWAMBASHI 33kV LINE
ZESCO OHL
ZESCO OHL
2 x ZESCO OHL's
66kV LINE TO MUFULIRA (EASTLEY SUB STN)
TO KALULUSHI
TO CHINGOLA
CEC PROPOSED 33kV OHL
EXISTING ZESCO OHL
14m
18m
TO KITWE
UNKNOWN PLOT
SICHONE FARM
(CELL : 0964224616)
NFCA MINE FARM
STREAM
KITWE - CHINGOLA DUAL CARRIAGE WAY
MR SICHONES FARM
(CELL : 0964224616)
FORMER SINOHYDRO CAMP
MUKUBA UNIVERSITY
TO GETFIT
TO SOLAR GETFIT
75°
MULENGA FARM F3054
MKANDAWIRE FARM F3484
UNKNOWN PLOT
BEACON
MBACHI FARM
LUANSHIMBA STREAM
MULENGA FARM F3011
LITANA FARM F2223
GARNETON ZAMBIA COMPOUND
TO KITWE - CHINGOLA T3
GETFIT
PLOT
LIFESONG
TO GARNETON EAST TOWNSHIP
(ZESCO) CSS - LUANO 330kV O/H LINE
(CEC) CSS - LUELA 220kV O/H LINE
(CEC) CSS - KANSUSWA 220kV O/H LINE
SPRING WATER
MAIZE CULTIVATION
MWAMBASHI RIVER
PUMP STATION
SAND PITS
TO SAND SALES
GARNETON SOUTH
GARNETON NORTH
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REV No.	DATE	REVISIONS	DRAWN	CHK'D	DESIGN APP'D	PROJ. APP'D
0	16.09.19	FIRST DRAWN CAD	MCC	LK	HF	OC
1	25.10.24	SHOWING LINE MODIFICATIONS	MCC	PC	SK	BN

REFERENCES

DRAWING No.

TITLE

PROPOSED 33kV TRANSMISSION LINE ROUTE

FOR THE SOLAR GETFIT PROJECT

GARNETON TO MWAMBASHI ZESCO SUBSTATION

COPPERBELT ENERGY CORPORATION

THIS IS A C.A.D. PRODUCED DRAWING. ALL MODIFICATIONS MUST BE CARRIED OUT USING THE AUTOCAD SYSTEM.

DRAWING NUMBER

PROJECT No. | JOB PROJ | ESTIMATE | JOB | ITEM

PROJ / A / EST / JOB / ITEM - DWG

E19238E

REVISION No.0

NTS

E19238E

APPENDIX 14: CERTIFICATE OF INCOPORATION

Companies Form 7
Companies Registration No. **120180009890**
Serial No. **1089009**

Republic Of Zambia

CERTIFICATE OF INCORPORATION OF COMPANY LIMITED BY SHARES

(Section 10)

This is to certify that CEC-INNOVENT GARNETON SOUTH SOLAR LIMITED is on and from the **23rd day of November 2018** incorporated as a COMPANY LIMITED BY SHARES.

Given under my hand and seal at Lusaka, Zambia, this **23rd day of November 2018**.

COMPANIES REGISTRATION AGENCY PATENTS &

P.C. Mwaba
Assistant Registrar of Companies

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

Companies Form 10
Companies Registration No. **120180009890**
Serial No. **1089009**

SCAN TO VIEW COMPANY REGISTRATION DETAILS

Republic Of Zambia

CERTIFICATE OF SHARE CAPITAL

(Section 10)

This is to certify that CEC-INNOVENT GARNETON SOUTH SOLAR LIMITED has the nominal capital of **K 15,000.00** divided into **15000** shares of **K 1.00** each.

Given under my hand and seal at Lusaka, Zambia, this **23rd day of November 2018**.

COMPANIES REGISTRATION AGENCY ** PATENTS &

P.C. Mwaba
Assistant Registrar of Companies