

CONTRACTOR ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (CESMP)

PROJECT: PLANT, DESIGN INSTALLATION AND PROCUREMENT OF THE CONSTRUCTION AND REHABILITATION OF MV LINES FOR DISTRIBUTION NETWORK IN KIGALI CITY.



FINAL REPORT

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TABLE OF CONTENT

Contents

ACRONYMS	6
GLOSSARY OF TERMS	8
Chapter 1. INTRODUCTION.....	10
I.1 Project background.....	10
I.2 Project Scope of Work.....	10
Chapter 2. DESCRIPTION OF PROJECT PHASES AND ACTIVITIES	14
2.1. Activities of Pre-construction investigations.....	14
2.2. Activities of construction phase.....	15
2.3 Operation phase	20
2.4 Project activities closure	21
Chapter 3. PROJECT AREA ENVIRONMENTAL, SOCIAL AND ECONOMIC BASELINE DESCRIPTION.....	22
A. ENVIRONMENTAL BASELINE.....	22
3.1 Geographical context of the study area.....	22
3.2 Administrative entities of Kigali City.....	22
3.3 Topography	23
3.4 Slope analysis	23
3.5 Wetlands in City of Kigali	24
3.6 Geology and soil	24
3.7 Climate of Kigali City.....	25
3.8 Precipitation	25
B. SOCIO-ECONOMIC BASELINE DATA OF THE PROJECT AREA	25

3.9 Employment.....	25
3.10 Under employment.....	26
3.11 Energy Sector.....	26
3.12 Education	26
3.13 Society.....	27
3.14 Security	27
3.15 Gender.....	27
3.16 Child Health: Maternal Health.....	28
3.17 Fighting HIV/AIDS	28
Chapter 4. RELEVANT LEGISLATIVE & REGULATORY FRAMEWORK.....	29
4.1. Policies and Regulatory Framework of Rwanda	29
4.2. International conventions ratified by Rwanda	30
4.3. International safeguards Policies	31
Chapter 5. CONSTRUCTION MANAGEMENT PLANS	32
5.1. Construction and site management plans.....	34
5.2. Traffic management plan	35
5.3. WASTE MANAGEMENT PLAN.....	36
5.3.1. Waste Minimization.....	37
5.3.2. Waste identification	37
5.3.3. Waste storing	37
5.3.4. Waste disposal	37
5.3.5. Waste Identification, and Classification	38
5.3.6. Monitoring and Revisions.....	39
5.4. Air quality and noise management plan.....	39
5.4.1. Air quality	40

5.4.2.	Noise Management	40
5.5.	Watercourse management plan	41
5.6.	Labour force management plan.....	42
5.6.1.	Training.....	43
5.6.2.	Alcohol, Intoxicants/drugs, and Non Prescribed Medicine	43
5.6.3.	Housekeeping.....	43
5.6.4.	Grievance Mechanism for workers and community	44
5.7.	Occupational health and safety management plan	47
5.7.1.	HS Policy and objectives	47
5.8.	HAZARDOUS MATERIALS MANAGEMENT PLAN	47
5.8.1.	Chemicals Associated with Construction	48
5.8.2.	Chemicals Evaluation Assessment	48
5.8.3.	Chemicals Handling and Storage.....	48
5.8.4.	Control Measures	49
5.8.5.	Training.....	49
5.9.	Emergency preparedness and response	49
5.10.	Construction stakeholder engagement plan.....	52
5.11.	Local recruitment plan.....	54
5.11.1.	Human Resource Policies and Procedures	54
5.11.2.	Working Conditions and Terms of Employment	55
5.11.3.	Local recruitments.....	55
5.11.4.	Non-Discrimination and Equal Opportunity	56
5.12.	Site restoration plan	56
5.13.	Working permits	57
5.14.	Land aquisition	57

6. ANALYSIS OF ALTERNATIVES	49
6.1 Project site location.....	49
6.2 Alternative technology.....	49
6.3 No Project Alternative	50
6.4 Comparison of alternatives	50
7. ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES	51
7.1. Positive impacts	51
7.2. Potential Adverse Environmental Impacts and Mitigation Measures.....	51
7.2.1. Permanent Land Loss/Acquisition.....	51
7.2.2. Construction of Access Roads	52
7.2.3 Permanent Minor Loss and Destruction of vegetation cover/crops.....	52
7.2.4. Disruption in Daily Living and Movement Patterns.....	52
7.2.5. Aesthetics and visual related impacts- visual intrusion on the landscape	53
7.2.6 . Water Resources	53
7.2.7 Disruption of Infrastructure and Services	53
7.2.8 Temporary /Limited Fugitive Noise	54
7.2.9 Temporary /Limited Fugitive Dust	55
7.2.10. Soil Erosion.....	55
7.2.11 Accidents/Hazards	56
7.2.12 Storage and Management of solid waste	56
7.2.13 Fire risk	56
7.2.14 Project decommissioning.....	57
8. CONTRACTOR ENVIRONMENTAL, SOCIAL MANAGEMENT & MONITORING PLAN AND COMPLEMENTARY INITIATIVES	58
8.1. Environmental Management and Monitoring Plans (EMMP).....	58

8.2. Environmental and Social Supervision Framework	71
8.2.1. Construction Supervision Framework	71
8.2.2. Construction Supervisory – Supervisor and EUCL	71
8.2.3. Construction Supervision – Contractor.....	72
9. COMMUNICATION AND REPORTING.....	75
9.1. Communication Process.....	75
9.2. Reporting process.....	76
10. TRAINING & CAPACITY BUILDING	79
10.1. PIU/EUCL Team	79
10.2. Supervising Firm.....	79
10.3. Construction Contractor.....	80
11. PUBLIC CONSULTATIONS AND DISCLOSURE REQUIREMENTS	81
11.1. Public Consultation.....	81
11.2. Roles and responsibilities of each Institution	83
12. IMPLEMENTATION PLAN & SCHEDULE	85
12.1. Implementation	85
13. COST ESTIMATE.....	87
REFERENCES.....	88
APPENDICES.....	90

ACRONYMS

CESMP:	Contractor Environmental and Social Management & Monitoring Plan
CM:	Construction Manager
CP:	Children Protection
CoK:	City of Kigali
EHS:	Environment, Health and Safety
ESIA:	Environmental and Social Impact Assessment
ESS	Environmental and Social Specialist
EUCL:	Energy Utility Corporation Limited
GBV:	Gender Based Violence
HMMP:	Hazardous Materials Management Plan
HSO:	Health Safety Officer
ILO:	International Labor Organization
MIFOTRA:	Ministry of Public Service and Labor
MINIJUST:	Ministry of Justice
MININFRA:	Ministry of Infrastructure
MINIRENA:	Ministry of Natural Resources:
MINISPOC:	Ministry of Sport and Culture
MoE:	Ministry of Environment
MSDS:	Materials Safety Data Sheet
OHSMP:	Occupational Health and Safety Management Plan
PAPs:	Project Affected Persons
PEM:	Project Environmental Manager
PIU:	Project Implementation Unity
PM:	Project Manager
PPEs:	Personnel Protective Equipments
A/RAP:	Abbreviated/Resettlement Action Plan
RAPEP:	Rwanda Association for Professional Environmental Practitioners

REG:	Rwanda Energy Group
REMA:	Rwanda Environmental Management Authority
RNP:	Rwanda National Police
RoW:	Right of Way
TMP:	Traffic Management Plan
WB OP:	World Bank Operational Procedure
WCMP:	Watercourse Management Plan
WMP:	Waste Management Plan

GLOSSARY OF TERMS

- **Consultation:** A process of communication with those potentially affected by a project, policy, plan or program.
- **Environment:** The combination of elements whose complex interrelationships makeup the settings, surroundings and conditions of life of the individual and society as they are or are felt.
- **Environmental and social management plan:** A comprehensive plan for the implementation of mitigation measures prescribed in the environmental impact assessment.
- **Environmental audit:** An environmental management tool consisting of a periodic and objective evaluation of an organization and installations to assess compliance with regulatory and other requirements, as defined by audit criteria.
- **Environmental impact assessment:** A critical evaluation of the likely effects of a projection on the environment, including the prescription of mitigation and management actions.
- **Impact:** The consequence of an action or activity on the human or natural environment. Impacts may be positive, negative or neutral.
- **Issue:** A question or concern regarding an environmental impact, consequence or effect.
- **Mitigation:** Prescribed actions taken to prevent, avoid, reduce or minimize the impacts, or potential adverse effects, of a project.

- **Monitoring:** A combination of observation and measurement to assess the environmental and social performance of a project and its compliance with the EIA/EMP, or other approval and regulatory conditions.
- **Natural habitats:** Land and water areas where most of the native plant and animal species are still present, and either are legally protected, officially proposed for protection, or unprotected but of known high conservation value.
- **Proponent:** The proposer, or applicant, of a project.
- **Risk:** The likelihood of occurrence of an adverse project effect.
- **Social impact assessment:** A component of EIA that assesses the impacts of a project, policy, plan or program on people and society.

Chapter 1. INTRODUCTION

1.1 Project background

Kigali is currently experiencing a rapid increase of power demand for the last 20 years due to different development activities that are growing in the City. Rwanda Energy Group is in the process to increase the power supplied in Kigali City and it's environ through construction of new and rehabilitation of the existing electrical networks within the City. The refurbishment of the existing electricity infrastructures will not only be able to satisfy the increasing demand, but also to have a reliable power with flexibility of operations by providing a stable and reliable power supply and participate actively in Economic development of Rwanda. It is in this aim that REG has initiated a project for “***Construction and rehabilitation of MV lines for Distribution Network system strengthening to improve service reliability and Voltage stability within Kigali city***”.

1.2 Project Scope of Work

The scope of work include all designs works, supply of all required material, installation and civil works for the construction of the following Medium Voltage line:

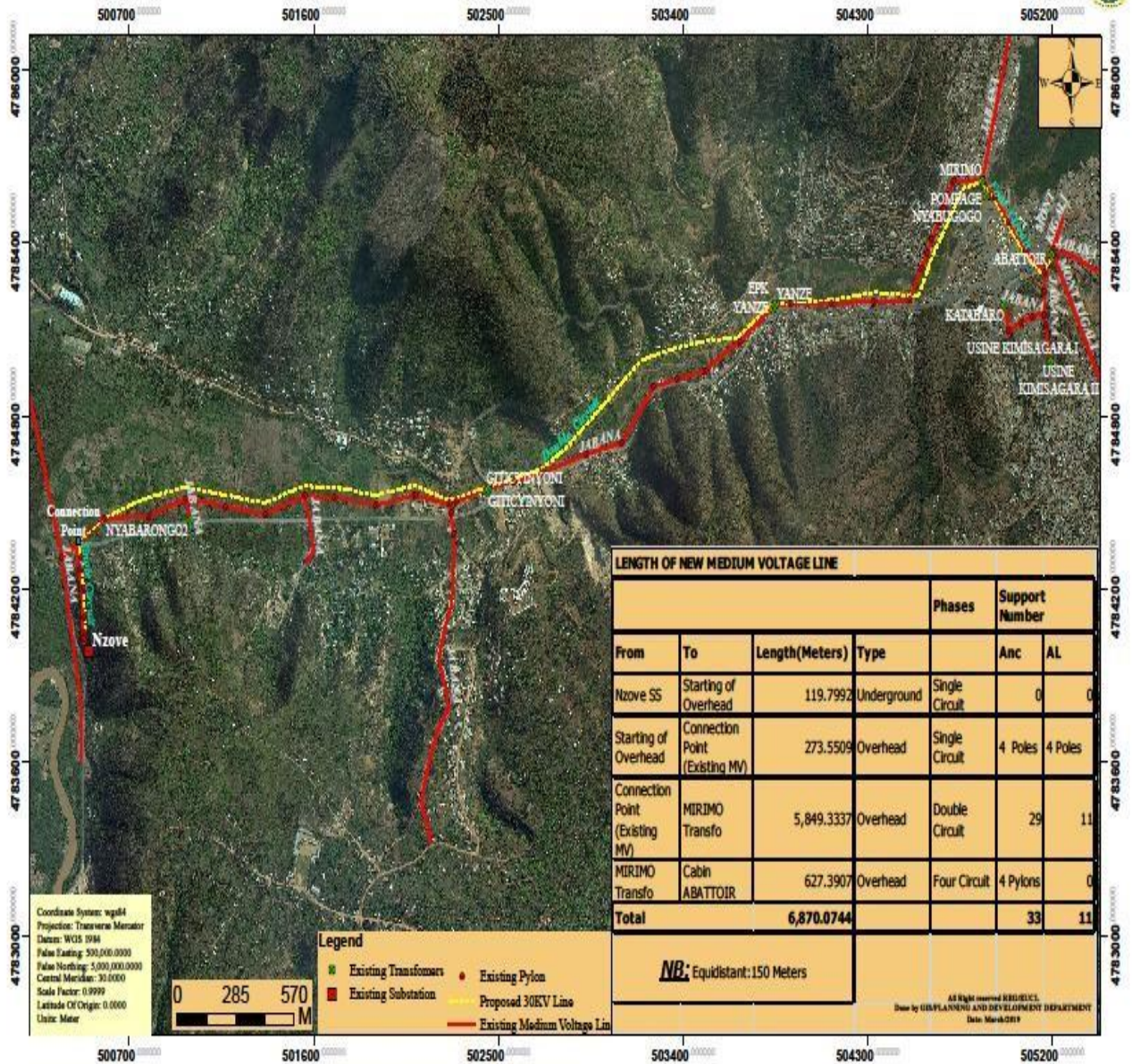
i. Upgrade of Medium Voltage overhead line from Nzove substation to Abattoir Nyabugogo

- Construction of a 4.7km double circuit line along existing overhead line as shown on the map;
- Construction of a 0.5 km four circuit line from the double circuit to Abattoir cabin (only 3 circuit will be equipped)
- Supply and installation of a 400kVA transformer (mounted on tower) and related accessories;
- Supply and installation of MV 240mmsq copper cables and cable accessories to link new lines with the substations on both side
- Shift conductors of the two feeders, Kigali North and Nyamirambo to new erected end tower;

- Addition of one angle poles on the line from Nyamirambo and installation of end poles one for the line towards Kimisagara Water Pumping Station and the other towards Inkundamahoro Commercial building;
- Relocation of exiting MV line tapping from old to the new constructed line, this includes 2 MV lines and 4 distribution transformers.
- Dismantling of exiting MV line from Nzove Substation to abattoir and transport of the dismantled materials to EUCL store in Kigali.

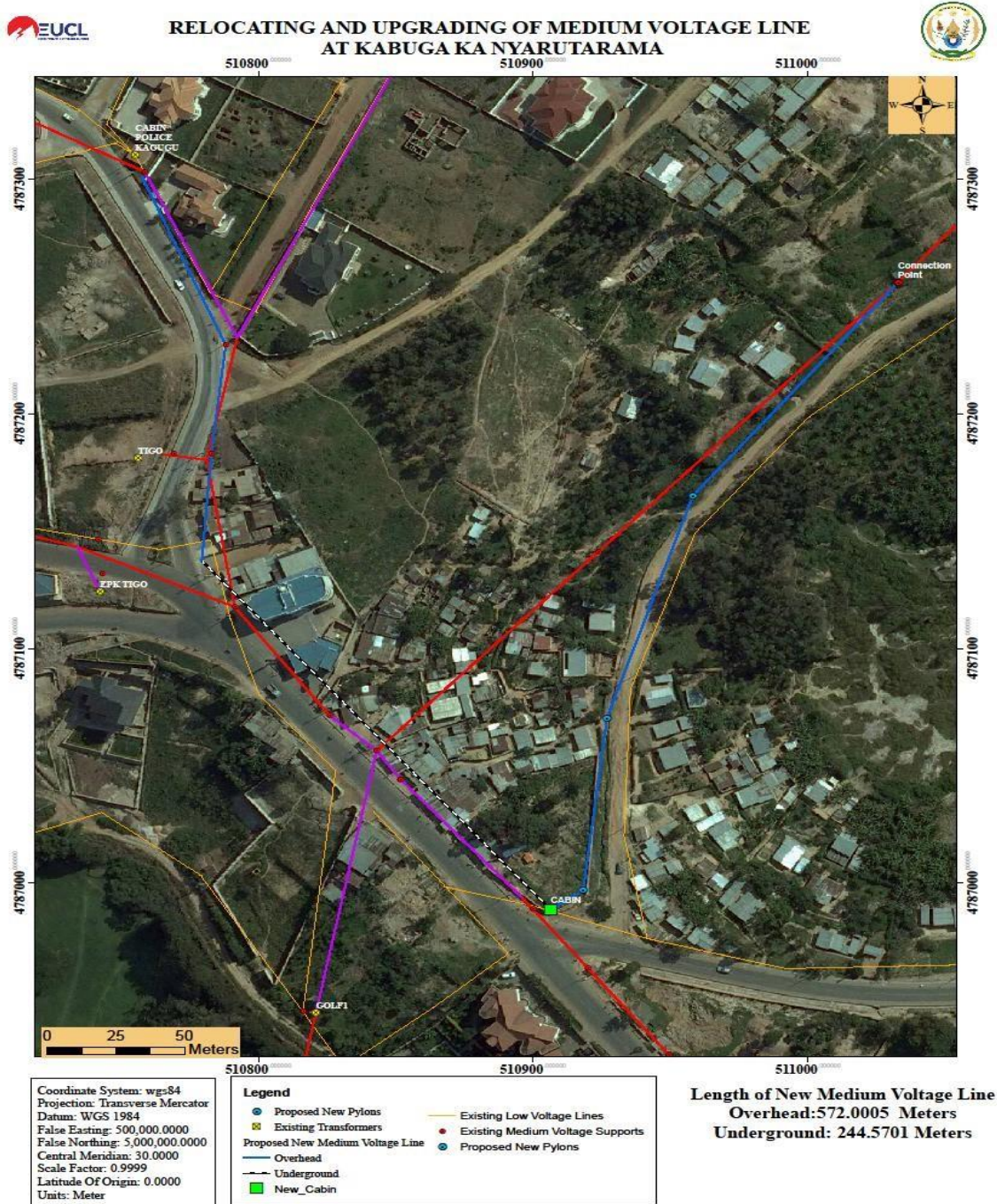


Proposed 30 kV MV Line to link Nzove Ss to Abattoir



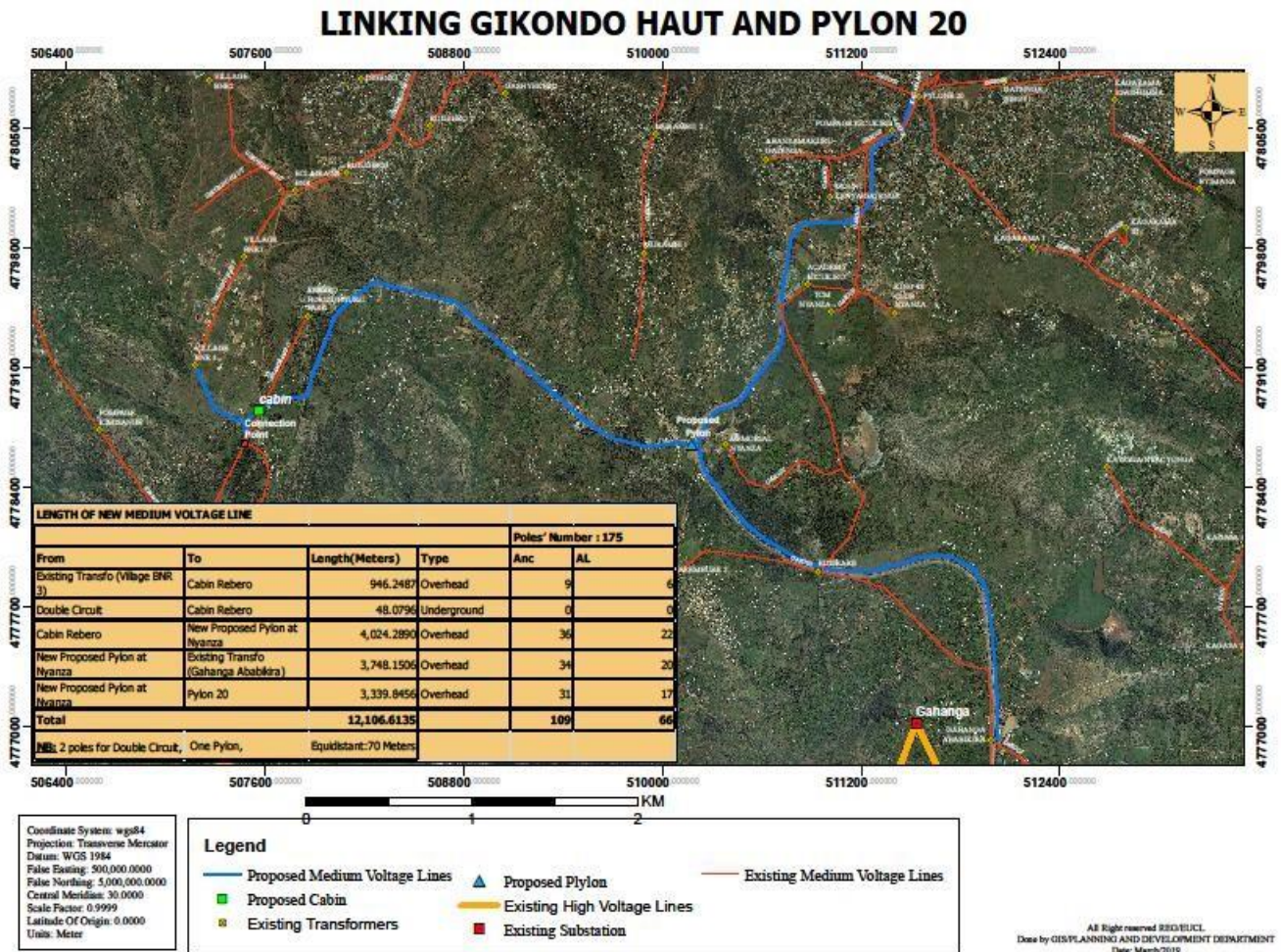
ii. *Upgrade of MV underground line at Kabuga ka Nyarutarama*

- Deviation of a section of MV line from Kinyinya (350 m of deviation);
- Replacement of a section of 450 for the feeder Kagugu;
- Dismantling and transport to EUCL stores of the existing materials of the upgraded Line



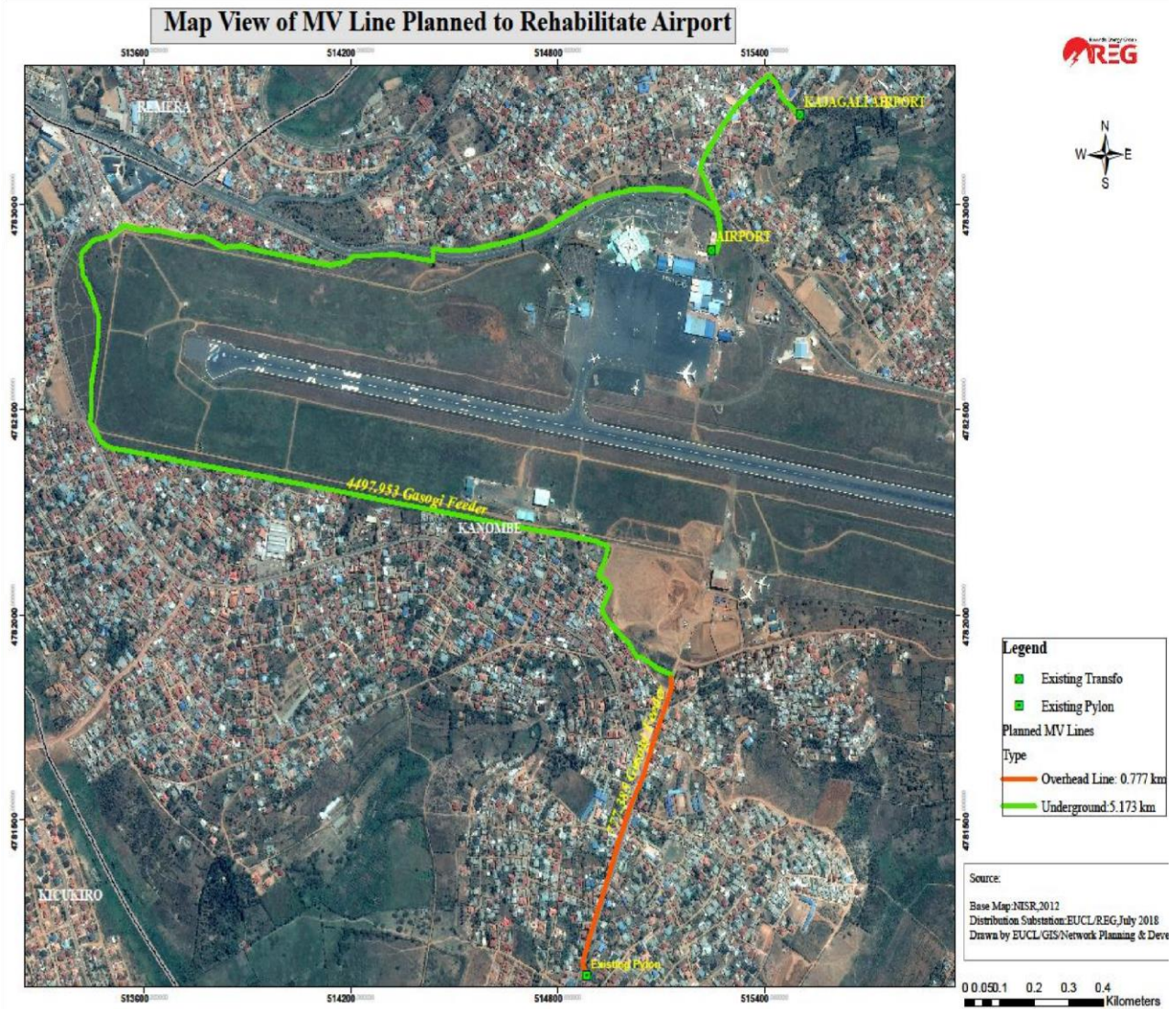
iii. **Construction of Medium Voltage overhead line Nyanza -Rebero**

- Construction of MV line from Rebero New Cabin and tapping to the existing Pylon 20-Gahanga line.
- Erection of one Dead end pole and laying 120mmsq copper cables towards the new Rebero cabin;
- Extension of Gikondo Haut by 570 m in order to be linked to the new cabin
- Relocation of exiting MV line tapping from old line to the new constructed line
- Dismantling of exiting MV line from Gahanga to Kicukiro District and transport of materials to EUCL store in Kigali



iv. Upgrade of MV line from Samuduha to Kanombe airport

- Replacement of a section of around 600 m of existing overhead line by a double circuit overhead line;
- Laying 120mmsq underground copper cable (and in respect of guideline of laying MV cable as specified) from SAMUDUHA to Kanombe and from SAMUDUHA to Rubirizi (RAB)
- Connect new upgraded line to existing line and cabins
- Dismantling and transport of material of exiting MV overhead line up to EUCL store in Kigali

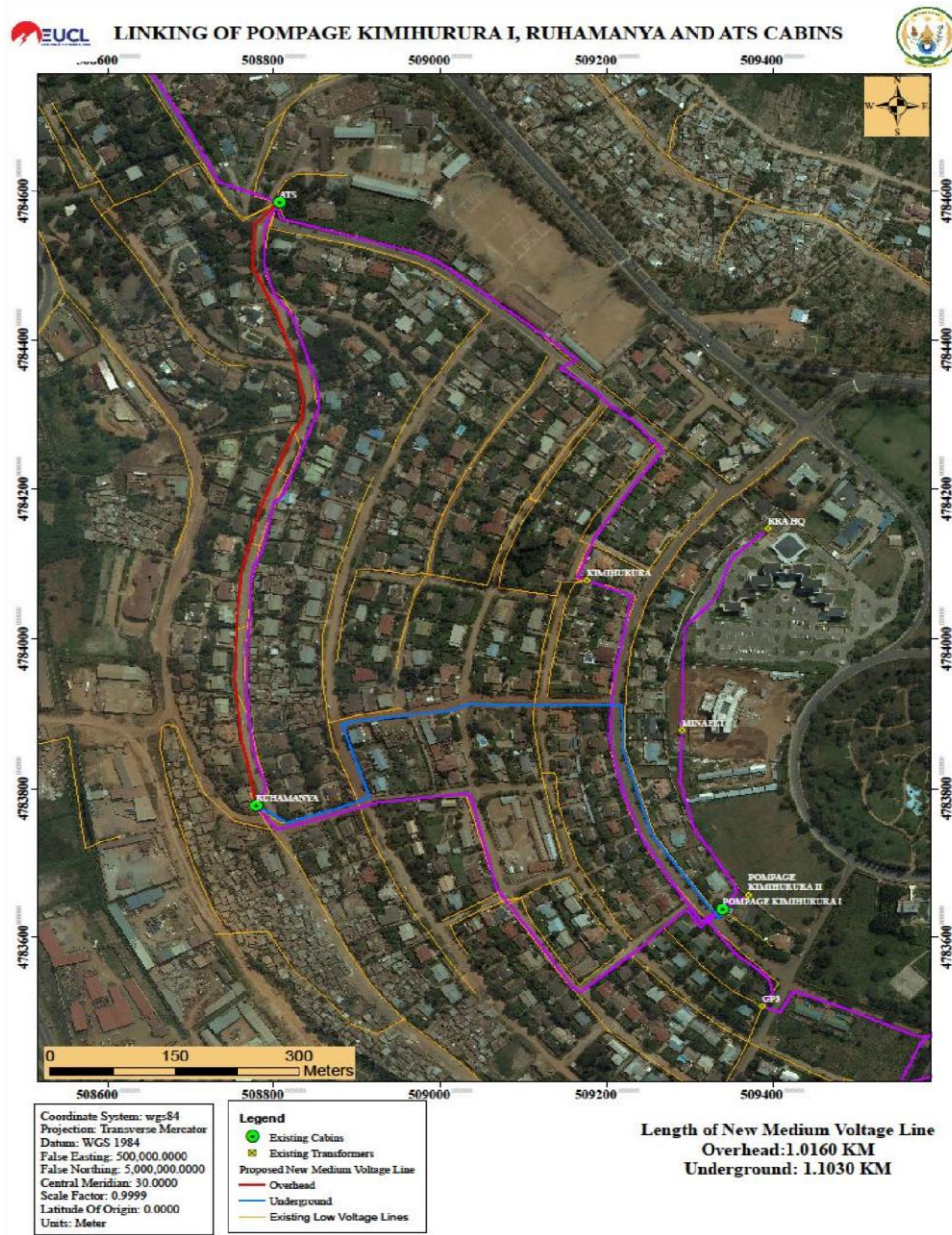


v. ***Extension of MV line at Remera Controle Technique in order reinforce nearby MV line***

- Construction of 430 m of MV line as shown on the map;
- Supply and installation of 400kVA, 15/0.4kV distribution transformer with all accessories (Disconnect switch with fuses, LV distribution box, LV cables, and earthing)

vi. ***Upgrade of MV line in Kimihurura/Ruhamanya/ATC***

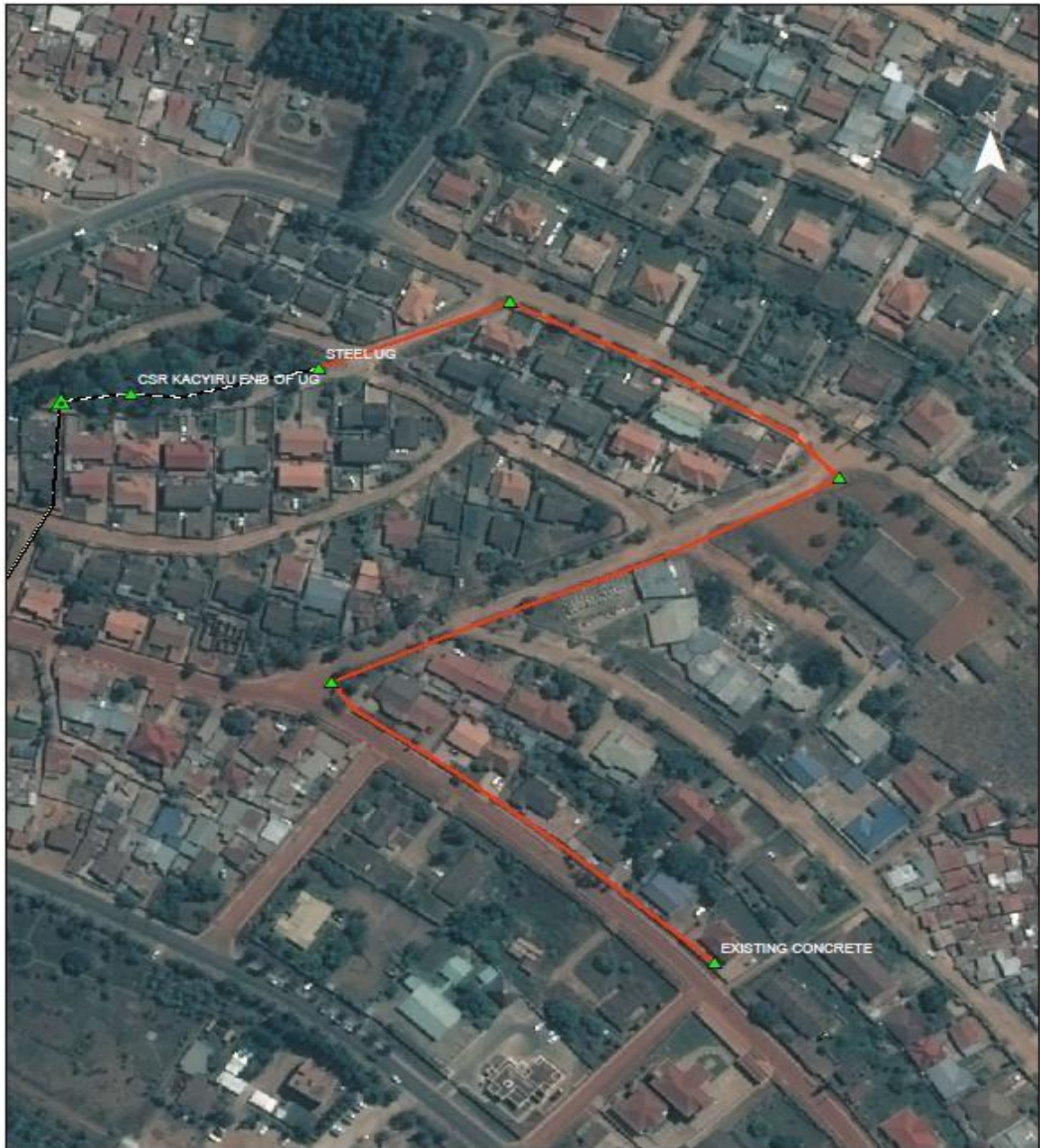
- Replacement of MV underground with 120mmsq, copper cable from Pompage Kimihurura to Ruhamanya;
- Construction of 1 km line from Ruhamanya to ATC cabin
- Cut and repair roads to original state of all damages along the line route as specified in the tender document;
- Connection of new upgraded line to existing MV switching substations



vii. Extension of MV line from AMBA UGANDA to CSR Kacyiru switching substation

- Construction of 430 m of MV line as shown on the map;
- Supply and installation of 400kVA, 15/0.4kV distribution transformer with all accessories (Disconnect switch with fuses, LV distribution box, LV cables, and earthing)

AMBA UGANDA_CSR KACYIRU

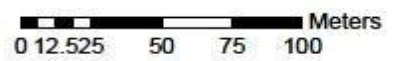


Legend

- New Mv_Line
- - - New_UG

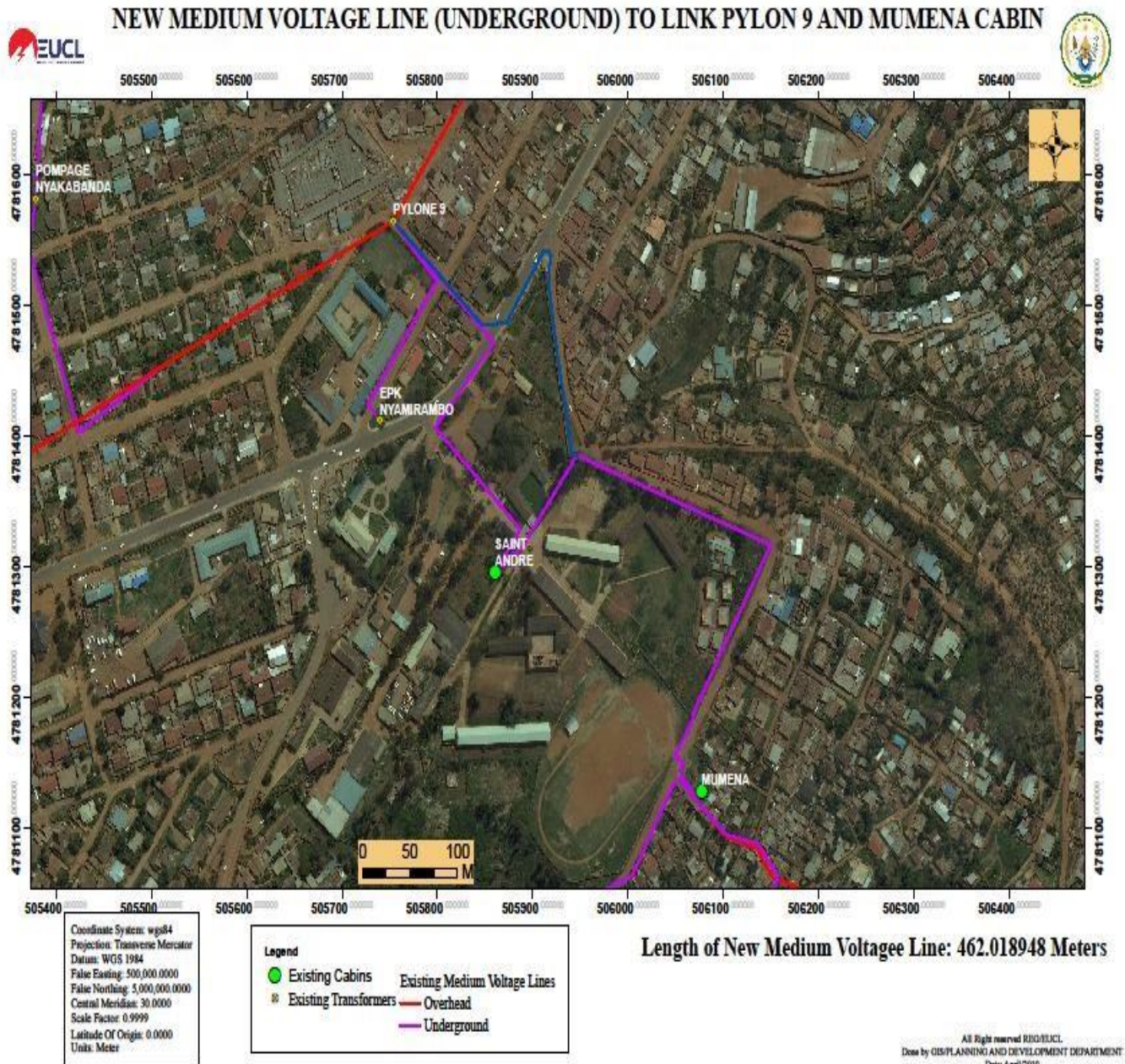
Length Mv-line = 850 m

Length UG = 200 m



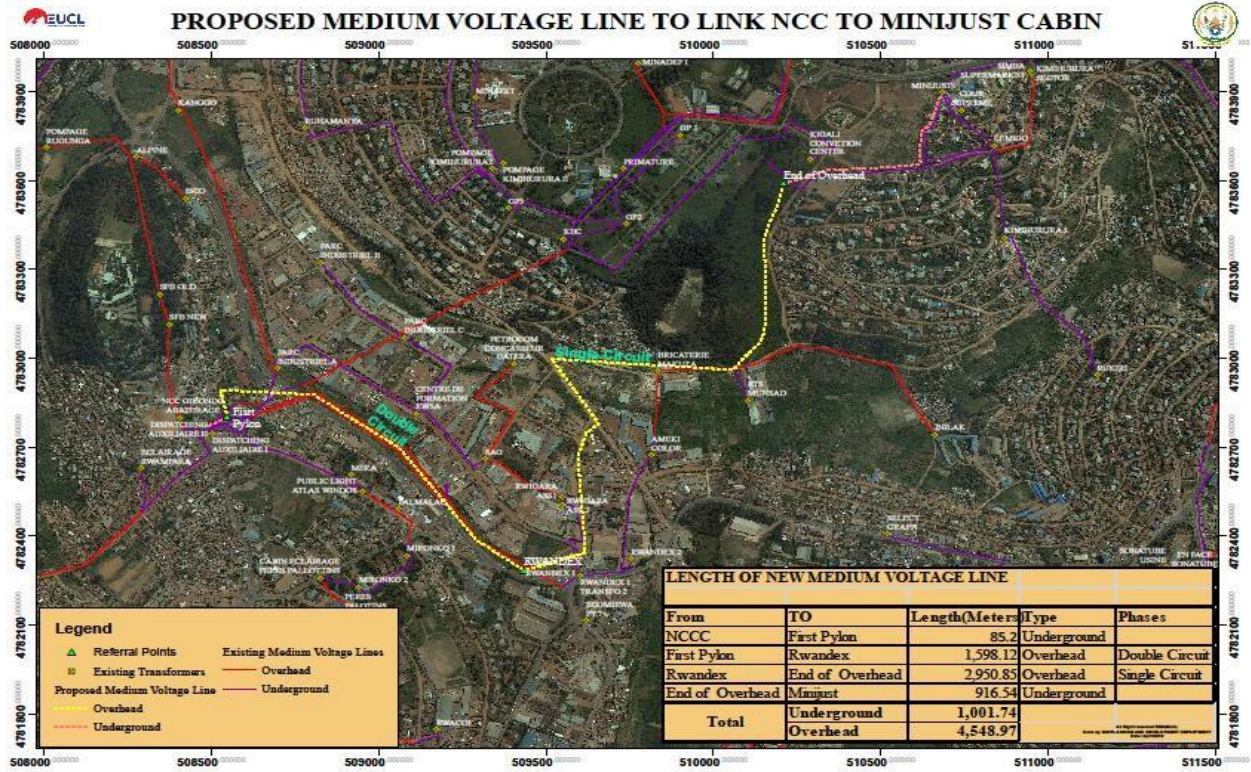
viii. Replacement of MV underground line between Saint André and nearest pylon in Nyamirambo

- Laying MV cable 240mmsq between Saint Andre Nyamirambo and nearest tower as indicated on the map;
- Connection of new MV cable with existing 240mmsq copper cable;
- Cut and repair roads and restoration to normal surface all damages



ix. Reinforcement of distribution network in Kimihurura (Gikondo-Rwandex-MINJUST)

- Construction of a double circuit line for a section from Gikondo NECC to the tower at Rwandex, 1600m; for the two circuits one will be used as Parc industrial feeder and will be extended up to MINIJUST, the other will be used as Gasogi feeder;
- Construction of a single circuit line section Rwandex to Minijust, 3,000m; MV underground cable 240mmsq for a section of 1,000 from the end the line to MINIJUST substation;
- Lay new MV cable, 240 mmsq for Parc industrial feeder and Gasogi feeder;
- Link the new upgraded line to existing line of Gasogi;
- Installation of MV underground copper cable 240mmsq cable with civil works as described in the document from end pole near Kigali Convention Centre to MINUJUST and connection on both ends.
- Installation of MV underground copper cable 240mmsq cable from indoor GIS at Gikondo to the first double circuit tower and connection on both ends cables
- From the existing masonry fence to the indoor GIS, MV cables will be laid into a reinforced concrete cable trench and covered with concrete cover.
- Dismantling the upgraded section of Gasogi feeder and the line from Gikondo NECC to Aggreko.



Chapter 2. DESCRIPTION OF PROJECT PHASES AND ACTIVITIES

The project shall have different activities which shall be carried out in for different phases namely pre-construction, construction, testing, operation and decommissioning phases.

The activities of the project include but not limited to

- Storage location selection and its related works
- Site clearance and earthworks
- Excavation to remove unsuitable materials
- Electrical cables laying and stringing
- Backfilling the excavated cable trenches with approved materials as specified
- Improvement/construction of drainage facilities
- Repairs and/ construction of damaged roads
- Towers and poles erection for the overhead lines
- Cables stringing
- Loading and offloading materials

2.1. Activities of Pre-construction investigations

The activities of the pre-construction phase will start with detailed investigation of the site's biological and physical characteristics in order to minimize any unforeseen adverse impacts during the project cycle. This phase also entails mobilization of labor force, equipment as well as acquisition of various permits as required by the law. The investigation of the sites intervene to develop a baseline data bank that shall guide in impact monitoring. The main activities to be involved in the pre-construction phase include:

- Line surveys;
- Maps reproduction
- GESS-technical investigation (soil test) where applicable;
- Materials analysis including soil, stones and sand tests;
- Mobilization of the labor and equipment's
- Permit acquisition if necessary

2.2. Activities of construction phase

Staffing and employment

This project will be the most source of job creation for local community, skilled and unskilled people. It will generate a number of jobs since it is expected to employ a maximum of more than 100 employees in total and this number will be attained when the project is fully operating.

Site preparation

Manpower will be used to clear the project site and trenches excavation and trucks and other machinery will be used to transport materials and personnel to the project sites. The indicated place where excavation will take place for the overhead lines will be rehabilitated and restored accordingly.

Sourcing and transportation of construction materials

Construction materials and other equipments (cross arms, cables, stubs, transformers, wires, aggregates, stones, sand, bricks, cement etc.) will be transported by trucks to the construction sites and greater emphasis will laid on procurement of local materials.

Storage sites

The project is expected to have only one temporally storage site for material and machinery parking as it will be implemented by one contractor. The selection of the location will be made based on the availability of adequate land for establishing the storage site, including parking areas for machinery, stores and easy access to working site and an appropriate distance from environmental sensitive areas. Some of the materials from borrow pits like sand and stones will be used directly after delivery and as such no piling up is expected. Other materials like aggregates and sand will be stored at the operation site ready for use. Cement will be stored in special storage rooms. No Fuel will be stored in the project area since all machinery will use the approved petrol stations in the area. .

Storage of materials: the storage will be properly made to avoid any soil/ water contamination or environmental pollution. Bulky materials such as rough stones and sand will be brought to

site only when needed due to space constraints. To avoid stacking large quantities of materials on site, the contractor should order bulky materials such as sand, gravel and stones at crusher& asphalt plant sites.

Excavation and foundation works

Excavation will be carried out to prepare the cables trenches and tower legs and poles. The excavated soil will be re-used to backfill the excavated trenches after cable laying as well as backfilling the tower/pole legs after erection. The perimited space of excavation will be barricaded and the backfilling will be performed on the same day after laying cable is completed to avoid further related fall accidents in trenches.

Overhead cable indicators

Permanent overhead cable indicators shall be installed along a cable route in order to mark the location of cables. The average distance between two indicators shall not be more than 300m.

Demolition works

Any wastes or debris arising from any demolition works will be transported to their respective site disposals and should be transported by the licensee company as RURA provides.

Landscaping

To improve the aesthetic value or visual quality of the sites once construction ceases, the contractor will be required to restore the damaged areas. The landscaping will include establishment of roadside tree planting, backfilling and vegetating of abandoned quarry sites. Some sections of the road will have to be landscaped as construction proceeds to reduce erosion.

Underground activities arrangements

Organization of works

Work will be performed sometimes in the vicinity of energized lines. During the construction and installation, the contractor must use methods in order to reduce to the minimum the need to de-energize the lines, furthermore when crossing high voltage lines the contractor will use

methods which avoid de-energizing the high voltage lines. The Contractor shall make provisions to be able to shift teams and equipment in order to continue work at other sites if the shut-down cannot be granted for the requested period at the requested dates. He shall be able to resume the works scheduled during shut-downs when they are granted, with a reasonable advance notice. The required interruptions shall be kept to a minimum in terms of length of the shut-down.

Tarmac roads crossing

Works of road crossing will include:

- Removal of existing asphalt;
- Demolishing of existing pavement structure of the road;
- Excavation up the required level;

Cables will pass in a reinforced service pipe with inner diameter of at least 80 cm with manhole on both side of the road; manholes will be covered by a manhole cover made in ductile iron material.

- The reinforcement concrete pipe will be laid on a concrete base of class C25-30 with a minimum thickness of 10cm
- Backfill will be done using lateritic material
- Each circuit will have its own pile and manholes
- Traffic movement shall be continuous using one part of the road and the other one after completion of works and vice versa

Burn bricks and Warning tape

Warning tape will be laid at a depth of 300 mm between the cable and warning tape for MV underground cables. Burnt bricks will be laid along MV underground cables in order to protect the cables. Estimates of brick to be laid per linear meter are 36.

General Environmental protection

Consistent with economy and efficiency in the execution of the project, the Contractor must prevent, minimize, or mitigate environmental damages during all erection activities. The natural landscape should be preserved to the extent possible by conducting operations in a manner that will prevent unnecessary destruction or scarring of the natural surroundings. Except where required for permanent works, storing and processing areas, all trees, saplings, and shrubbery should be protected from unnecessary damage by Contractor's operations. After unavoidable damage, replanting, or restoration are required promptly to prevent further damage (e.g., erosion), and to restore quasi-original conditions where appropriate.

The Contractor's facilities, such as warehouses, and storage areas, should be planned in advance to decide what the area would look like upon completion of work. These facilities should be located so as to preserve the natural environment (such as trees and other vegetation) to the maximum extent possible. Temporary buildings, storing and processing areas should be landscaped and planted according to an ecological design to provide some substitute area for lost natural habitats. The Contractor should ensure proper disposal of waste materials and garbage.

The Contractor's operations should be so performed as to prevent accidental spillage of contaminants, debris, or other pollutants, especially into streams or underground water sources. Such pollutants include untreated sewage and sanitary waste, tailings, petroleum products, biocides, mineral salts. Waste-waters must not enter streams without using settling ponds, gravel filters, or other processes, so as not to impair water quality or harm aquatic life.

Occupation health measures for workers and the general public

During project implementation, some diseases and work accidents may occur. For this matter, safety measures must be observed and respected. These include but not limited to the following:

Personal Protective Equipment (PPE)

- The use of appropriate personal protective equipment (PPE) such as helmet, gloves, reflectors, protective boots etc, have to be mandatory for all site workers during project implementation.
- Workers will be trained on proper use of personal protective equipment (PPE) regardless of their prior working experience elsewhere.
- Workers have to be informed and sensitized on the relevance of using adequate PPE.
- First aid equipments will be made available and staff will be trained on their use.
- Warning notices will be put on working site for the safely of workers and persons passing nearby, this include toolbox and safety meetings, community awareness via local Authorities
 - Power cuts will be communicated one week prior to their execution.

All requirements contained in the detailed and separate Contractor Environmental Health and Safety Plan shall be respected and implemented as planned

Wastes Generation and Management

The proposed project shall generate a substantial amount of waste both degradable and non degradable. The contractor should provide facilities for handling them by providing adequate waste management facilities like dust bins, and mobile toilets will be made available on site where applicable. Storm water from the project area shall be channeled into the storm water drainage system with consideration of downstream effects.

Types of waste to be generated by the project activities and their management methods are summarized and provided in the table below:

Table 1: Wastes Generation and Management

Waste	Types	Amount	Treatment/Storage/ Disposal	Service provider
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				and frequency
Solid Waste (bio-degradable)	Vegetation and remnants of Timber.	To be determined	They can be used as source of energy for cooking	To hire & monthly frequency
Solid Waste (Non Bio-degradable)	Food remains, cardboards and papers	To be determined	Collected in a large skip bucket at site then disposed at the authorized dumpsite or decomposed for use in adding nutrients to activate the decomposition reaction.	To hire & monthly frequency
	Top soils	To be quantified	landscaped areas and planted trees or manure	To hire & monthly frequency
	Tins, glasses and plastics	To be determined	Sold to recyclers and those that cannot be sold due to their quality should be collected in a large skip bucket at the campsite then disposed at the authorized dumpsite	To hire & monthly frequency
Liquid waste including excreta	Sewage	To be determined	considering the extent of the project, mobile toilets will be mandatorily provided at construction sites. Liquid waste shall be transported regularly to the official NDUBA dump site under a contract with authorized waste handler(s).	To hire & monthly frequency

2.3 Operation phase

The operation phase is made of power distribution and maintenance of the lines when deemed necessary. No major activities are expected to be carried out during the operation phase. Maintenance will include replacement of old and/ or damaged materials, activities which are considered not to be harmful to the environment. Only minimal noise and leakage

of oil from some transformers and can be harmful to biological diversity. This shall be regularly monitored for maintenance to address these two effects.

2.4 Project activities closure

Upon completion of the works, the contractor shall remove all of his tools, materials and other articles from the construction area. The Contractor shall also clean areas where he worked, remove foreign materials and debris resulting from the project activities and shall maintain the site in a clean, orderly and safe condition. Materials and equipment shall be removed from the site as soon as they are no longer necessary to minimize the demobilization work after completion of the project. Before the final inspection, the site shall be cleared of equipment, unused materials and rubbish so as to leave the area aesthetical clean.

Chapter 3. PROJECT AREA ENVIRONMENTAL, SOCIAL AND ECONOMIC BASELINE DESCRIPTION

A. ENVIRONMENTAL BASELINE

3.1 Geographical context of the study area

Kigali is the capital and most populated city of Rwanda. Kigali city is located in the central of the Country and covers an area of 730 km² of which only half can be built up due to topographical, environmental and planning restrictions of the City. The City is bordered in Eastern Province by Rwamagana and Bugesera districts, in Northern Province by Gakenke and Rulindo districts and in Southern province by Kamonyi district, as shown in Figure below: (Map showing Kigali City).

3.2 Administrative entities of Kigali City

Administratively, Kigali City is made up of three districts namely Gasabo, Kicukiro and Nyarugenge (Table 1). Gasabo is divided into 15 sectors which are: Bumbogo, Gatsata, Jali, Gikomero, Gisozi, Jabana, Kinyinya, Ndera, Nduba, Rusororo, Rutunga, Kacyiru, Kimihurura, Kimironko and Remera. Kicukiro district is made of 10 Sectors namely: Gahanga, Gatenga, Gikondo, Kagarama, Kanombe, Kicukiro, Kigarama, Masaka, Niboye and Nyarugunga. The sectors of Nyarugenge district are Gitega, Kanyinya, Kigali, Kimisagara, Mageragere, Muhima, Nyakabanda, Nyamirambo, Nyarugenge, and Rwezamenyo. The table below illustrates the administrative entities of city of Kigali.

Table 2: Administrative context of Kigali City

Province	Districts	Surface area covered (km ²)	Number of sectors	Number of cells	Number of villages
Kigali City	Gasabo	429.3	15	73	494
	Kicukiro	166.7	10	41	355

	Nyarugenge	134	10	47	327
TOTAL		730	35	161	1,176

Source: City of Kigali Administration

3.3 Topography

The topography of Kigali is made of transitions between mountain ridges and valleys in between. Kigali's altitude is ranging from 1,300 to 1,600m and this terrain has implications on the works for water supply systems as well as for the sewerage infrastructures and eventual discharge of effluents.

The city center area is surrounded by a series of hills, the highest of which is Mount Kigali at 1,850 m. The slope of Kigali city varies in gradient from inclinations of up to 45 or 50 %, to those in wetland valley areas with slopes of less than 2 %.

3.4 Slop analysis

Kigali City is built on hilly landscape sprawling across ridges and wetlands with an altitude varying between 1300-2100m. The Nyarugenge District is dominated by strong linear ridge running north-south with a maximum altitude of 1900m and softens towards the flat alluvial planes of the Nyabarongo River on the west. The Gasabo District constitutes of more aggressive relief due to the tight rectilinear ridges oriented northwest with a maximum altitude of 2100m to 1900m and gentle relief along the Nyabugogo River and southern part of the district.

The Kicukiro District is composed of gentle slope plateaus, averaging less than 1700m of altitude and the slopes gently settle into the alluvial plains of the Nyabarongo River.

In Nyarugenge District 37%, Gasabo District 37.5%, Kicukiro District 6.8% area occupied by steep slopes. The slopes of Kicukiro District are relatively gentle compared to other two districts with 15,562 ha land below 20% slope available for development compared to Gasabo District (26891 ha) and Nyarugenge District (8401.4 ha).

3.5 Wetlands in City of Kigali

The Kigali City contains a complex system of wetlands, present along the low-lying valleys adjacent to the rivers. These wetlands cover 14% of the total land area of the city, approximately 10,000 hectares. According to the IMCE classification, wetlands of Kigali are the Central Plateau Swamps mostly present on the altitude of 1400m to 1800m. These wetlands possess mineralized soil type (clay sandy, limono sandy) and the dominant vegetation is *Polygonum pulchrum*, *Cyperus papyrus*, *Commelina diffusa*, *Cynodon dactylon*, *Eicchornia crassipes*, *Pennisetum purpureum* etc. The main function of wetlands within the city is to act as a water reserve and agricultural production.

Most of these wetlands in Kigali are surrounded by densely populated steep slopes, intensively used for settlement structures and cultivation. These developments alter the watershed, increase soil erosion and siltation in the wetlands. The principal threats to wetlands of Kigali are linked to agricultural (mainly rice and sugarcane), livestock activities, human settlements, industries and sand quarries.

3.6 Geology and soil

The City of Kigali is underlain by granitic and meta-sedimentary rocks. The degree of metamorphism undergone by the sediments is generally low. Primary rocks observed in the city are schists, sandstones and siltstones. The surface of the city is dominated by lateritic soil along the hillsides and alluvial soil along the marshlands. There are four general types of soil found in Kigali include lateritic soils, arkosic sandstones, colluvium (slope wash) and alluvium (river deposits). The valley of Nyabugogo and Nyabarongo River provide a fertile belt of alluvial soil suitable for agriculture whereas the hilly slopes have undergone soil erosion for a long time, leaving them bare and less productive

Nyabugogo valley area (one of the sections of the project sites) is dominated by quartzite and schist/shale basement aquifers with other lithology classes including shale, granite, pegmatite and alluvial material in valley bottoms. Aquifers associated with quartzite and schist, have average storage and transmission properties hence groundwater recharge rates, base-flow and recession behaviour are expected to exhibit average values.

3.7 Climate of Kigali City

Kigali has a tropical wet and dry climate, which is modified by its high elevation. The average temperature is 20°C with monthly variations of about 1.5°C. However the temperature trend for the urban area of Kigali in three meteorological stations between 1971 and 2008 showed an increasing annual mean temperature of 0.2°C for a period of nearly 40 years. Mainly, for the last 10 years a warming in Kigali is evident. In the first instance, this development could be attributed to global warming, because more or less rising temperatures could be recognized all over Rwanda during the last decades. But it could also be related to the ongoing urbanization, because the temperature trend of Kigali is much higher and faster than in other parts of the country. Total average annual rainfall is around 1,028 mm and it follows the typical bimodal pattern found in other parts of Africa. The rainfall pattern is influenced by the Inter Tropical Convergence Zone (ITCZ).

3.8 Precipitation

The city of Kigali has an altitude of 1,567m and experiences a long rainy season that extends from mid-February to mid-May with another rainy season from mid-September to mid-December. However the rainy season may extend for some weeks into the dry season and vice versa. In general, the average precipitations range from 65 mm to 200 mm per month. In times of extreme storms and rainfall, there can be a danger of flooding in the city, especially where urban developments have created impervious surfaces or changed hydrological conditions in rivers. Kigali, is one of the major flood prone areas in the country, where almost every year flood events are recorded. Figures below show the temperature averages for Kigali.

B. SOCIO-ECONOMIC BASELINE DATA OF THE PROJECT AREA

3.9 Employment

The overall Nyarugenge, Kicukiro and Gasabo districts's overall employment rate is estimated at 94.5% of the resident population aged 18 years and above; while the unemployment rate is 0.1% and the economic inactivity rate is 2, 1.5%.

Much as the employment seems to be high and the unemployment at only 0.1%, it is important to take into account that Rwanda's definition of unemployment is that established by the International Labor Organization (ILO) which classifies the un employed as those people who work under one hour per week but are actively seeking work and able to start immediately. Looking at the poverty levels as described in the just previous section, more strategies to improve employment and the quality of employment are needed.

3.10 Under employment

The above figures however high they seem to be, the basis is the one hour of employment in the week as defined by ILO. A deeper analysis of the employment characteristics is thus important as it reveals the challenge of under employment in the districts. 94.5% of adults as per the EICV 3 findings, worked 38 hours or fewer in all their jobs in the seven days prior to being interviewed and this indicate under employment in terms of time worked. In addition to this great number of working adults that are underemployed, majority work on commercial businesses at small scale. Commercial farming, but rather subsistence ones, little incomes are earned from this employment as a result which translates into living standard among the district population.

3.11 Energy Sector

Energy is a key driver of growth and as the country targets fast growth of 100% (General access) and 100% in the project areas and rapid poverty reduction, access to energy and its affordability will be pivotal to these goals during the NST1 (up to 2024)

The primary sources of energy used for lighting by households as identified by NISR during EICV3 Survey included: electricity, oil lamp, firewood, candle, lantern, battery, and other unspecified sources.

3.12 Education

The arrival of electricity improves the conditions for children's learning in at least four ways. Adults are also positively affected. The four changed practices will be dealt with in turn that children in households with access to electricity generally have a higher educational

achievement than those children in households without access to electricity. This result supports the assumption that having electricity enables children to spend more time doing homework, which in turn contributes to better school results, and eventually better educational outcomes such as a higher level of education.

3.13 Society

Electricity enhances income generation (agro-processing and small service business such as mills and shops) and enables inhabitants to make savings on expenses on kerosene, gasoline, candles and batteries. Income increase and savings as well as the possibility to use refrigeration improve the diet and thus decrease malnutrition and hunger

3.14 Security

As mentioned above, that does not only reduce physical impairments resulting from the heavy loads, but also reduces the risk of harassment and sexual assault and thus HIV/AIDS risk. The communities' safety in general improves due to street lighting at night.

3.15 Gender

Furthermore women and children have more productive time which can be used for studying and thus education is improved. Electricity supply allows lighting at night and gives inhabitants the chance to study during evening hours. Latter also improves the communities' social life, since community gatherings at night are possible and it benefits from electrical devices such as TV and radio. Furthermore telecommunication is enhanced. People get more aware of the outside world which gives them more knowledge.

Electricity can reduce the time females spend on household tasks such as collection of fuel wood. Therefore, they have more time to study and become literate. Other jobs traditionally reserved to women such as shopkeeper or craftworks may improve with the access to electricity. Public lighting improves public safety in rural communities, which is very important for women.

3.16 Child Health: Maternal Health

Access to electricity decreases indoor air pollution of kerosene/gasoline smoke and candles and improves safety around the house. In addition to the better diet and more hygienic cooking conditions, mothers and children shall benefit from improved medical service. The electricity enables refrigeration, adequate lighting, telecommunication and use of medical technology, which in turn, permit vaccination, sterilization and an improvement in time and quality of the medical service. Electricity supply also allows the use of ground water pumps, thus water borne diseases due to contaminated surface water can be decreased.

3.17 Fighting HIV/AIDS

Electricity contributes to the general improvement of medical services (keywords: access and refrigeration) and awareness of diseases rises due to campaigns on radios and TVs.

Chapter 4. RELEVANT LEGISLATIVE & REGULATORY FRAMEWORK

The Environment Social Management Plan for the construction of Kigali 30kV overhead and underground lines being implemented by the Rwanda Electricity Sector Strengthening Project under Electricity Utility Corporation Limited (EUCL) is carried out within the framework of local, national and international environmental regulations. To comply with this framework, the environmental certificate of approval on previous related ESIA has been issued by Rwanda Development Board and the following sections explain properly this framework.

4.1. Policies and Regulatory Framework of Rwanda

- The Government of Rwanda (GoR) adopted Vision 2020 in 2000 with primary objectives of transforming Rwanda into a middle-income country by the year 2020 and transforming Rwanda into a knowledge-based economy. Among its priorities including the infrastructural development.
- The Vision is being implemented through the medium term planning framework of the Economic Development and Poverty Reduction Strategy (EDPRS 2) embarked by the GoR under implementation since 2013/14 to 2017/18.
- **Integrated Household Living Conditions Survey (EICV, or the English acronym IHLCS)**, survey provides information on changes in the well-being of the population such as poverty, inequality, employment, living conditions, education, health and housing conditions, household consumption, among others.
- **Law N°21/2011 of 23/06/2011, governing electricity in Rwanda.** This law was published in the official gazette n° Special of 12/07/2011. It governs all activities of electric power production, transmission, distribution and trading within or outside the national territory of the Republic of Rwanda.
- The Organic Law n° 04/2005 of 08/04/2005 determining the modalities of protection, conservation and promotion of environment in Rwanda regulate the Occupation health and safety;
- The Organic law N° 08/2005 of 14/07/2005 determining the use and management of Land in Rwanda;

- Law on mining and quarry exploitation (law n° 37 /2008 of 11/08/2008);
- Ministerial order N° 003/2008 of 15/08/2008 relating to the requirements and procedure for environmental impact Assessment (EIA);
- Ministerial order N°004/2008 of 15/08/2008 establishing the list of works, activities and projects that have to undertake an environment impact assessment.

4.2. International conventions ratified by Rwanda

The following laws, regulations and conventions ratified by Rwanda are in line with this project:

- The international Convention on Biological diversity and its habitat signed in Rio de Janeiro in Brazil on 5 June 1992, as approved by Presidential Order No 017/01 of 18 March 1995;
- The CARTAGENA protocol on biodiversity to the Convention on of Biological biodiversity signed in NAIROBI from May 15, to 26, 2000 and in NEW YORK from June 5, 2000 to June 4, 2001 as authorized to be ratified by Law No 38/2003 of 29 December 2003;
- The United Nations framework Convention on Climate Change, signed in RIO DE JANEIRO in BRASIL on 5 June 1992, as approved by Presidential Order No 021/01 of 30 May 1995;
- The KYOTO Protocol to the framework on climate change adopted at KYOTO on March 6, 1998 as authorized as authorized to be ratified by Law No 36/2003 of December 2003;
- The STOCKHOLM Convention on persistent organic pollutants, signed in STOCKHOLM on 22 May 2001, as approved by Presidential Order No 78/01 of 8 July 2002;
- The BASEL Convention on the Control of Transboundary Movements of Hazardous wastes and their disposal as adopted at BASEL on 22 March 1989, and approved by Presidential Order No 29/01 of 24 August 2003 approving the membership of Rwanda;

4.3. International safeguards Policies

Rwanda is a signatory to several international agreements. Therefore, apart from adhering to local laws and regulations, the project will be implemented in line with the following safety international standards and policies. Some of the key international safeguards policies include:

- World Bank policies on Environmental and Social Assessment
- Relevant World bank safeguard policies on Environmental and Social Assessment.

The following are triggered under this project:

- ❖ Environmental assessment , OP 4.01
- ❖ Natural Habitats, OP 4.04
- ❖ Cultural Property, OP 4.11
- ❖ Forests, OP 4.36
- ❖ Involuntary Resettlement, OP 4.12

Chapter 5. CONSTRUCTION MANAGEMENT PLANS

It is recommended that a number of management plans be developed for all the project phases. The management plans should define desired outcomes and actions to address the issues raised in the risks and impacts identification process, as measurable events to the extent possible, with elements such as performance indicators, targets, or acceptance criteria that can be tracked over defined time periods, and with estimates of the resources and responsibilities for implementation. During construction and pre-commissioning phase, the development of the plans will be responsibility of the Contractors and the Client and Supervision Firm will review and approve the plans before they are implemented

A number of management plans will be implemented throughout the construction and operation phases of the project including the following plans:

- *Construction site Management Plans* – measures to minimize negative impacts of construction activities on local communities and the natural environment, to reduce the induced impacts of camp sites, to prevent pollution and ensure that hazardous materials are stored properly without risk to the environment;
- *Erosion Control and Biodiversity Protection Plans* – The project sites are located in a mountainous region, the project must include measures to reduce or halt erosion and landslide problems. This might include the use of erosion control structures, protective re-vegetation and reforestation, slope stabilization, etc.;
- *Environmental Monitoring Plans*– measures to ensure project compliance, measure the success of proposed mitigation, continue baseline monitoring and review environmental and social performance;
- *Health and Safety Management Plans* - shall be prepared a health plan to mitigate project impacts on the health and safety of workers and local populations;
- *Training and Capacity Building Plan*– training and capacity shall be provided in all aspects of the CESMP.

The responsibilities to prepare the proposed specific plans are summarized in table below:

Table 3: The responsibilities for specific environmental management plans

Proposed Plans	Proposed Sub-plans	Primary responsibility for implementation and Monitoring		
		Client	contractor	Supervision firm (if on board)
Construction & Worker Camp Management plan	Worker camp management plan		X	
	Construction management plan		X	
	Waste management plan		X	
	Pollution prevention plan		X	
	Safety during construction		X	
	Environmental training of worker construction		X	
Erosion control and biodiversity protection plan			X	
Environmental monitoring plan	Environmental sampling	X		
	Oversight			X
Community relation & community safety plan			X	

Public Health Management Plan	Construction worker health management plan		X	
	Localized Health Management Plan	X	X	X
Environmental Health Safety guidelines				X
Training and Capacity building		X	X	X

X: Primary responsibility for implementation and Monitoring

5.1. Construction and site management plans

The site management of this project mostly deals with the management of excavation works, soil management, erosion and site restoration. The site management activity starts before construction activities by clearing the site, excavations, construction and post construction. The following measures should be respected by the contractor in order to implement the project with minimum impact on site and its surroundings:

- Minimize area to be disturbed as much as possible;
- Prohibit works from exceeding the approved working plot;
- To communicate people reside down areas of excavation sites and stockpiles about the day of excavation activities;
- Ensure that any material overflowing from stockpiles/ storage embankments onto residential/ agricultural land is removed immediately upon identification and site is restored to the satisfaction of the owner/user;
- To create trenches downside of excavation sites and stockpiles in order to avoid materials overflowing toward agriculture and residential land;
- Undertake slope stability and erosion protection before excavation activities;

- All damages to be caused by overflowed materials should be compensated by the contractor. The compensation process will be in line with Law No. 32/2015 Relating to Expropriation in the Public Interest, WB OP 4.12
- Implement measures to limit wind and water erosion of soil stockpiles:
 - ✓ Re-vegetation
 - ✓ Covering stockpiles with shade netting
 - ✓ Using water as a dust suppressant
- Scheduling works to avoid heavy rainfall periods (i.e., during the dry season) to the extent practical to avoid erosion;
- For excavation works during the rainy season, construct temporary drainage channels to divert water to natural soak away from areas of potential erosion
- Re-plant degraded areas with local species common in the area to complement natural vegetation regeneration to improve ground cover.
- Re-vegetate all finalized areas on an on-going basis

5.2. Traffic management plan

The Traffic Management Plan (TMP) provides the framework for smooth traffic flows and prevention of accidents as well as risks to workers, visitors, and the community by ensuring proper and safe traffic flows. The TMP covers the actions to be taken by all Contractor project personnel involved in the operation of motor vehicles and provides measures to be implemented by the Contractor to ensure safety of the project personnel and the public.

In terms of traffic, the Construction Manager and Health and Safety officer will have the following responsibility:

- ✓ Check and ensure the drivers have the right qualifications and experience
- ✓ Ensure works are undertaken in a safe manner by having a guide to manage traffic flows
- ✓ Ensure all entry and exit movements to and from traffic streams are in accordance with the requirements of safe working practices

- ✓ Ensure that a 40 km/hour speed restriction is imposed at the work site and in accordance with traffic guides
- ✓ Ensure that temporally traffic signs are in place for access roads.
- ✓ Training should be given to all drivers related to OHS, driving requirements of the project and details on the working code of conduct;
- ✓ Monitoring and Evaluation should be done regularly to check is all drivers are complying with all traffic requirements.

i. Emergency Protocol

Drivers will be given clear, verbal and written instructions on the action they need to take in the event of a road accident. This will include:

Provision of first aid.

Notification of emergency services.

Recording the location, nature and cause of the accident.

Provision of temporary traffic control measures at the scene.

ii. Training

All personnel that will be driving a vehicle will undergo driver training prior to commencement of project activity. The training will include the following:

Rwanda traffic legislation (Remind them traffic and road safety laws).

Standard safe driving practices.

Safety devices present on the vehicles.

Emergency procedures.

Vehicle inspections prior to operation and prior to any extended trip.

iii. Monitoring and Revisions

The Health and Safety officer will monitor driver's conduct and performance to ensure high safety standards are maintained. Disciplinary measures, including verbal, written warnings or dismissal, will be used in the event of driving infractions. Detailed monitoring is developed in section 4.14 of this report.

5.3. WASTE MANAGEMENT PLAN

This Waste Management Plan (WMP) will deal with waste to be generated as a result of project activities during the construction period. The WMP specify provisions for disposal, re-use or recycling of solid and hazardous waste. It includes actions to be taken by the Contractor project personnel for the management and safe disposal of waste materials generated by construction activities.

During the construction period, The Contractor will be responsible for collection, storage, treatment and transport of all types of waste generated during the course of project activities. Where the Contractor is conducting project activities in the field all waste generated will be collected and disposed in the official waste disposal site.

5.3.1. Waste Minimization

The Contractor will promote waste minimization, by waste avoidance, reduction, reuse and recycling to the extent practical. Waste minimization is generally accomplished through the "7Rs": reduce, reuse, recycle, recover, react, reflect and respect. Waste inventory approach is annexed to this report.

5.3.2. Waste identification

Waste will be identified basing on its characteristics such as degradable, non-degradable, organic waste, chemical as well as hazardous and non-hazardous waste. After identification all waste will be stored.

5.3.3. Waste storing

Waste will be stored according to its composition. All waste containers will be labeled to facilitate staff where to store any kind of waste. Containers will keep waste temporally because after a certain period, all stored waste should be transported to an approved site.

5.3.4. Waste disposal

All waste should be disposed in appropriate site as per Rwanda Utility Regulatory Authority (RURA) requirements. Both degradable and non degradable solid waste should be disposed in the centralized NDUBA landfills for easy of control and further segregation to recyclers and re-users. Waste transportation should be done by an approved company to transport waste. The contractor will sign a contract with approved company to transfer waste from site to

landfills. Recyclable waste should be transported to plant to recycle i.e Electronic waste (E-waste) to Bugesera plant, steel waste to Rwamagana steel plant, plastics to Rwanda Plastic industry in Kigali Economic Zone. Pure (Polychlorinated Biphenyls) PCB as well as redundant PCB equipment must be disposed of as hazardous material at licensed facilities for further incineration by authorized entity (REMA). In Rwanda, incineration of PCB products is done in Bugarama (CIMERWA Plant) by REMA.

Excreta and waste water resulting from toilets facilities will be transported by authorized companies (COPED, AGRUNI etc) accredited by RURA. Treatment will be done off site in appropriated places recognized by the Government of Rwanda.

5.3.5. Waste Identification, and Classification

The Contractor's waste management strategy will be in compliance with the applicable Rwandan regulations.

Waste types to be generated during the construction period will include:

- 1) Non-hazardous Waste: Waste that is not hazardous, and may consist of recyclable and non-recyclable components. Non-hazardous wastes can be a combination of putrescible and non-putrescible waste materials.
- 2) Hazardous Waste: Are wastes which by virtue of their concentration nature (such as ignitibility, corrosiveness, reactivity, toxicity, radioactivity etc.) pose a hazard to human or environmental health if improperly managed e.g. waste oil and lubricants.

Waste Storage and Segregation

All waste will be segregated into clearly marked containers prior to transportation to management facility. Mixing hazardous and non-hazardous waste is prohibited. Each container/skip shall bear clear labeling.

5.3.5.1. Non-hazardous Storage Requirements

- Reception areas will be designed to prevent fire and minimize airborne pollutants and odors.
- Storage areas will be sufficient to accommodate the volume of waste anticipated to be generated and the period of time between collection and disposal.

- Containers will be of sufficient capacity and equipped with lids.
- Containers and storage area are to be cleaned on a regular basis. .
- After generation, waste will be transported to the disposal site at the earliest opportunity.

5.3.5.2. Hazardous Storage Requirements

- Hazardous waste storage areas will be designed to have spill containment systems.
- Spill response supplies and equipment will be available in close proximity to the storage areas. In case spill accident happened, the entire quantity of soil (environment) damaged will be collected and dispose in approved deposit place.
- Containment curbs will be maintained around the loading and unloading area.
- Containers will be designed to contain the hazardous waste and will have identification labels.
- Storage facilities will be inspected regularly for leaks.
- Selected personnel will be trained in the handling of hazardous waste and will be specifically tasked with the disposal and handling of wastes generated.
- The storage areas will be paved, fenced, marked and illuminated.
- Hazardous wastes will not be allowed to accumulate beyond the capacity of the storage area. It will be transported on a regular basis to an appropriate storage facility licensed by RURA.

5.3.6. Monitoring and Revisions

The Environmental Inspectors (Supervision team) will monitor waste storage, segregation, transfer and disposal to ensure compliance.

5.4. Air quality and noise management plan

Air quality and noise management plan for construction phase includes management of dust generation, specification and maintenance of machineries, noise preparedness and use of PPE for all personnel. The Contractor will ensure that all materials and machineries to be used

during construction phase are complying with national and international standards. The contractor will ensure that the following measures are respected:

5.4.1. Air quality

5.4.1.1. Mobile source emissions

- Limit vehicle speed to 40km/hr for all vehicles traveling on unpaved roads
- Idling of delivery trucks or other equipment will not be permitted during unloading or when not in active use.
- Dust covers will be provided on trucks used for transportation of materials prone to fugitive dust emissions.
- Regular maintenance of vehicles will be done on regular basis;
- Ensure all vehicles have valid technical checkup certificate (complying with national air quality standards);
- Provision of dust masks for use when working in dusty conditions;

5.4.1.2. Stationary source emissions

- All stationary construction equipment will be located as far away as possible from sensitive receptor locations in order to allow maximum dispersion of emitted pollutants.
- Areas prone to fugitive dust emissions due to activities such as excavation, grading sites and routes of delivery vehicles across patches of exposed earth, will be frequently water sprinkled to prevent re-entrainment of dust. Watering must be done 4 times per day and more times when required depending on the climate conditions and number of tracks using the road.
- Apart from these, equipment/ machines and vehicles will be always kept in good state of repair to minimize emissions.
- No burning of waste to be undertaken on site

5.4.2. Noise Management

Noise should be controlled through:

- Ensure that equipment to be used meets industry best standard in relation to noise attenuation.
- Ensure that all machines & vehicles are turned-off while not in use.
- Ensure that noise suppression systems on machines and vehicles are maintained.
- All pneumatic tools to be used in close proximity to residential properties should be fitted with an air exhaust port silencer.
- Contractor should ensure that construction activities are not exceeding national standards:
 - ✓ Industrial area: 75 db (day time) and 70 db (night time)
 - ✓ Commercial area: 65 db (day time) and 55 db(night time)
 - ✓ Residential area: 55 db (day time) and 45 db (night time)
 - ✓ Silence zone: 50 db (day time) and 40 db (night time)

As per IFC/World Bank Environmental, Health, and Safety (EHS) Guidelines, accepted noise level are:

 - ✓ Residential, institutional and educational: 55 db (day time) and 45 db (night time)
 - ✓ Industrial and commercial: 70 db (day time) and 70 db (night time)

Both National and IFC requirements are good. It is recommended to respect National Noise Standards during construction phase.
- High noise generating construction activities like, compacting etc. will be carried out only during day time (from 7 am to 5 pm). All Night shifts shall be subjected to approval from competent authorities and or Districts.
- In the event that noisy activities are undertaken outside of the specified working hours, all noise receptors will be informed of such activities in advance (before 24 hours).
- Workers to wear ear plugs, muffs as part of their PPE
- Assess and manage all noise complaints

5.5. *Watercourse management plan*

Watercourse Management Plan (WMP) deals with management of wetlands, swamps, marshlands etc. The following measures should be respected by the contractor in order to implement the project with minimum impact on water resources:

- Construction area will be isolated and care will be taken to divert the run-off to storm water drainage, so possibility of pollution from construction run-off is prevented.
- It is advised to carry out excavation activities during dry season.
- Precaution will be taken to ascertain that no waste material like cement, paint and solid material is dumped into watercourse.
- Existing natural drainage lines on site will be maintained as far as possible
- Ensure that vehicles and equipment are in good condition and clean any spills or leaks of oil on the site to avoid water resource contamination.
- Confine vehicle maintenance to specifically designated areas in order to contain any potential fuel or lubricant spill.
- Ensure all hazardous substances and materials are stored in appropriate locations away from watercourses. A distance of ten meters (20 m) away from the banks of streams and rivers and fifty meters (50 m) away from the lake banks as per Rwanda Environmental Law N°48/2018 of 13/08/2018
- Portable spill containment and clean-up equipment to be provided at appropriate locations on site and training in the use of the equipment
- Adequate portable or permanent sanitation facilities serving all workers should be provided at construction sites. A distance of ten meters (10 m) away from the banks of streams and rivers and fifty meters (50 m) away from the lake banks as per Rwanda Environmental Law N°48/2018 of 13/08/2018

5.6. *Labour force management plan*

During the construction period it is anticipated that labour force will consist mostly of sub-contractors and small crews retained to conduct minimal clearing activities, construct temporary way-leave access roads. However, the Contractor will ensure that the part labour

providers comply with the following Government of Rwanda and international labour standards:

- Non-discrimination.
- No child (-18) or forced labour.
- The provision of suitable working conditions.
- Access to a grievance mechanism.
- Health and safety training including HIV/AIDS prevention.
- Wages to be paid in full and on time, to meet legal minima and be sufficient for basic needs.
- Recording of hours worked and wages paid after each fifteen (15) days.
- For part time workers, working hours to be controlled and overtime to be paid.
- No repeated casualization to avoid meeting wages and other legal benefits.
- All relevant social security regimes to be applied;
- Code of conduct, health and safety policy, prevention of GBV and sexual harassment

5.6.1. Training

The Contractor shall ensure that all employed and contracted personnel are sufficiently qualified and competent to carry out the work for which they were retained. The Contractor will record the training and qualifications/certificates of its staff and will these be presented to the client upon request.

5.6.2. Alcohol, Intoxicants/drugs, and Non Prescribed Medicine

- Alcohol, Intoxicants, and Non Prescribed Medicine shall not be permitted on any site
- While on job, the use of intoxicants (sedatives, tranquilizer) will be not be permitted

5.6.3. Housekeeping

- ✓ Smoking will not be permitted in site store
- ✓ All materials at site will be neatly stacked in the assigned location provided with suitable enclosures

- ✓ Scrap generated at site will be removed on a day to day basis by the respective personnel at the end of the shift everyday
- ✓ Packaging materials, if any, shall be removed from the site immediately after opening the boxes
- ✓ Gas cylinders shall be kept in the floors in such a way that it cannot be tipped inadvertently

5.6.4. Grievance Mechanism for workers and community

5.6.4.1. Grievance mechanism for workers

A grievance mechanism will be adopted as presented in the below Figure. A grievance/ complaint can be submitted either in written or verbally.

A grievance can be submitted in the following ways:

- By communicating the grievance/ complaint to the Construction manager (via letter/note or verbally) who will be responsible for reporting the issue to Project Manager;
- By submitting the grievance directly to Project Manager (via letter/note or verbally); and

All grievances received will be forwarded to the Social and Environmental Manager who will be responsible for recording them in a Grievance/Complaints Register and for implementing the grievance response mechanism.

5.6.4.2. Grievance mechanism for community

A grievance mechanism will be adopted as presented in below Figure. A grievance/ complaint can be submitted either in written or verbally.

A grievance can be submitted in the following ways:

- By communicating the grievance/ complaint to the local Authority/ Sector (using the official letter/note or verbally) who will be responsible for reporting the issue to REG-EUCL;

- By submitting the grievance directly to REG-EUCL (either verbally or written); and
- By submitting the grievance to the contractor who will then be responsible for informing REG-EUCL.

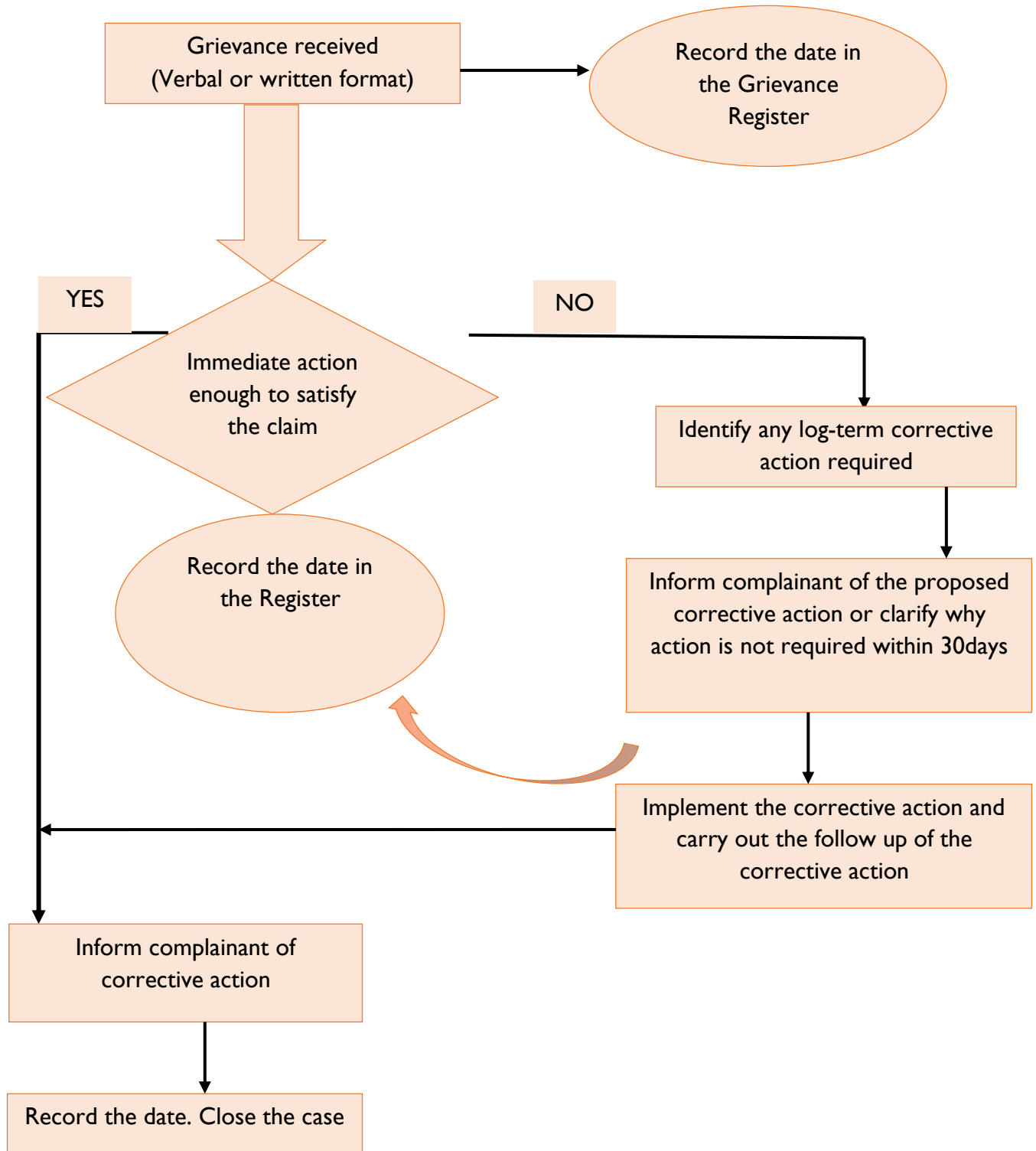
All grievances received will be forwarded to the Social specialist of Supervision Company who will be responsible for recording them in a Grievance/Complaints Register and for implementing the grievance response mechanism. Grievance committees shall be established on behalf of communities/PAPs and workers to ensure the smoothest environment to address all grievances on a required satisfaction.

Grievance Response Mechanism

When a grievance is received, the mechanism for dealing with it will be as follows:

- Grievance received;
- Grievance recorded in the Grievance/ complaints Register;
- For an immediate action to satisfy the complaint, the complainant will be informed of corrective action;
- Implement corrective action, record the date and close case;
- For a long corrective action, the complainant will be informed of proposed action. If complainer is not satisfied with the solution taken, both parties will seat and negotiate until the mutual agreement is reached; and
- Implement corrective action, record the date and close case.

Figure 1: Flowchart for Processing Grievances



5.7. Occupational health and safety management plan

5.7.1. HS Policy and objectives

The Contractor will commit to achieving the required standards of health, safety, environment within its operational areas for the construction period. The Employer's needs and expectations for this period are anticipated and will be met through safe and timely operating procedures, actions and solutions that will minimize risk of accidents and harm to people and the environment.

During construction period of this project, the Contractor will respect this Health and Safety (HS) Management System to ensure that project activities comply with regulatory, reporting, operational and document control requirements. *Note that the full Health and Safety Management Plan is submitted separately to this report.* Health and Safety management system include the following components:

- The HS Policy, target and objectives.
- Organization/Employer and responsibilities.
- Employees responsibilities
- HS documents and communication.
- HS Construction control.
- Training, awareness and competence.
- Workers Health and Safety.
- Health and Safety measures recommended for each activity

5.8. HAZARDOUS MATERIALS MANAGEMENT PLAN

The Hazardous Materials Management Plan (HMMP) sets out the methods for identifying hazardous materials and managing the risks associated with their transportation, storage, use and disposal. The HMMP ensures the safe and proper use of hazardous chemicals. It addresses the use and disposal of hazardous and non-hazardous materials. It also provides program to reduce the risk of accidents involving hazardous chemicals and/or wastes. Furthermore, it addresses environmental protection, protection of employees and training of personnel on the relevant precautions to be taken when handling such substance.

5.8.1. Chemicals Associated with Construction

Hazardous chemicals likely to be encountered during preliminary construction activities include:

- Lubricant and hydraulic oils.
- Fuel.
- Engine coolants.
- Paints, varnishes and adhesives.
- Gas cylinders.
- General detergents.
- De-scaling agents.
- Dispersants for oil spill response.

5.8.2. Chemicals Evaluation Assessment

MSDS (material safety data sheet) will be obtained for all chemicals used on site with copies displayed in appropriate locations.

Worker training on hazardous chemicals include:

- Handling
- Storage
- Appropriate PPE
- Fire risk
- Spill response
- First aid

5.8.3. Chemicals Handling and Storage

Each product will be supplied with an MSDS (English and Kinyarwanda language, whenever possible) and a copy retained by the environmental officer and the first aid specialist. Additional copies will be provided in the storage areas.

Chemicals will be labeled and stored in accordance with the following criteria:

- Explore opportunities to use non-hazardous materials in place of hazardous materials
- Prevent the uncontrolled releases of hazardous materials

- Hazardous materials will be labeled and properly marked.
- Storage areas are to fitted with spill containment systems.
- Incompatible materials are to be segregated.
- Storage areas are to be paved, fenced and marked.
- Storage areas should be inspected daily.
- Storage areas should be supplied with spill cleanup kits.
- All chemicals must be handled in accordance with the applicable MSDS.
- Avoid use of hazardous materials subject to international bans and phase-outs.
- Prioritize the allocation of resources for emergency response equipment
- Train all staff on the hazardous materials management plan

After construction, area where all chemicals and dangerous materials stored will be rehabilitated by the contractor until its initial status. After cleaning and rehabilitation, the contractor will ask the National regulator to check if area is well cleaned with no dangerous features. Pure (Polychlorinated Biphenyls) PCB as well as redundant PCB equipment must be disposed of as hazardous material at licensed facilities for further incineration by authorized entity (REMA). In Rwanda, incineration of PCB products is done in Bugarama (CIMERWA Plant) by REMA.

5.8.4. Control Measures

Storage areas for hazardous materials will be isolated and secured.

5.8.5. Training

Before the commencement of any construction activity, all personnel will be provided with chemical management training to ensure the safe and proper handling of hazardous chemicals and to reduce the potential for accidents.

5.9. Emergency preparedness and response

Appropriate emergency preparedness and response plans must be developed to ensure the effective management and mitigation of emergency incidents. The full emergency plan is

developed in HS Management Plan submitted separately. The following aspects of emergency preparedness and response must be addressed:

- The identification of the emergency scenarios and the development of appropriate and specific emergency response procedures for each scenario.
- The training of emergency response teams on the appropriate procedures and the use of emergency response equipment.
- The identification of emergency contacts and support services and the development of effective communication systems / protocols (including communication with potentially affected communities).
- As part of the development of emergency preparedness and response plans, involve the appropriate government authorities to determine procedures for engagement, communication and reporting (emergency, health, environmental authorities).
- Emergency equipment and facilities must be provided (e.g., first aid kits, firefighting equipment, spill response equipment, personal protection equipment).
- Development of decontamination / clean-up procedures and identify critical remedial measures to contain, limit and reduce pollution.
- The identification of potential risk relating the uncontrolled release of hazardous materials and the preparation of a spill prevention, control, and response plans including:
 - ✓ Training of operators on spill prevention
 - ✓ Development of standard operating procedures for filling containers or equipment and the transfer of hazardous materials.
 - ✓ Identification of locations of hazardous materials and associated activities on site.
 - ✓ Identification and availability of the appropriate personal protective equipment.

Table 4: List of Emergency Contacts

#	Description	Telephone number
Police		
1	Traffic and Road Safety	0788311110
2	Fire Brigade	0788311120
3	Police Commander (CoK)	0788311138
4	Toll Free	
5	Emergency	112
6	Fire Brigade	111
7	Traffic Accidents	113
8	Child-Help-Line	116
9	Anti-GBV	3512
10	Anti-Corruption	997
Other		
1	Ambulance	912
Name of Hospital with agreement-CHUK		
1	Ambulance (Hot Line)
2	Customer Care
3	Director General, Hospital

In case of an emergency, the contractor emergency response procedure will be activated immediately . Its objectives are:

- To ensure no loss of life
- To ensure that the environment is protected
- To ensure that manpower, equipment and funds are available to effectively contain the emergency (fire, explosion, electrocution, shocks, accident, spill clean-up for oil/chemical, etc.)

In order to ensure that good record keeping is maintained and accurate information concerning emergency are disseminated to the workers, public and government, the under mentioned procedures cover the information and issues on the following:

- Transformer shut down and Outages
- Search for leakages
- Isolation of supply points
- Notification of authorities
- Safety precaution and environmental proceedings
- Repair methods, procedures and Emergency repairs
- Contractor arrangement
- Re-commissioning and start up

5.10. Construction stakeholder engagement plan

Usage of different consultation methods gives the possibility of involving various stakeholders and discussion and informing on various issues. These methods vary from intensive collaborative cooperation with, to just informing of the stakeholders.

In the construction phase, close relations with the stakeholders are required to flag concerns in an early stage and take the necessary measure to prevent serious impacts, risks or misunderstandings among the stakeholders. The table below provides an overview of the stakeholder engagement activities in the construction phase.

Table 5: Stakeholder engagement activities in the construction phase

Project Stage	Purpose	Stakeholders	Methods

Construction	Announcement of job opportunity, the initiation of the construction works with safety arrangements and grievance mechanism as well as emergency preparedness and response	Local residents in the project area	One public hearing at each site among Nine project sites within the city of Kigali. The event will be communicated via local authority channels
	Communication between local residents and the project (Contractor, Supervisor and EUCL)	Local residents in the project area	Regular dialogue with local residents and local authority
	Regular information on progress of works	Project Implementation Unit (PIU)	Regular PIU meetings to update members on progress and concerns
	Regular information on progress of works	Local residents in the project area	Public meetings to be organized with local authorities. To inform the public the progress of construction activities and to receive questions and concerns related to the project
	Involvement of local residents in monitoring	Local residents in project area	Through Local authority (sectors) Councils, with support from EUCL

	Register, respond and remedy of grievances expressed by local residents	Local residents in the project area	Grievance mechanism
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5.11. Local recruitment plan

As per A/RAP principals, local people especially PAPs and vulnerable people have priority to be recruited during construction phase. Therefore, Local authorities and/or REG to share with the contractor the list(s) of PAPs to be prior considered during job recruitment. The contractor will recruit workers especially man-powers in the sector where construction activities are happening. Also the established District Task Forces (DTFs) and Local Resettlement Committees (LRCs) will help to provide list of vulnerable people (people classified in first category) to be considered during job recruitment (manpower). Also, gender issue need to be considered during job recruitment.

5.11.1. Human Resource Policies and Procedures

All workers performing work for the contractor must have a contract which describes the employment roles and responsibilities. The contract must be provided as part of the hiring process and shall describe all policies and procedures related to working conditions. The employment relationship with women workers, young workers and workers with disabilities must be assessed to mitigate discrimination. Policies and procedures dealing with human resource matters include (not limited to):

- Human Resources Policies:
 - ✓ Working Relationship.
 - ✓ Working Conditions & Terms of Employment.
 - ✓ Workers' Organizations.
 - ✓ Non-Discrimination & Equal Opportunity.
 - ✓ Grievance Mechanism.
- Protecting the Workforce:

- ✓ Child Labour (-18).
- ✓ Forced Labour.
- Occupational Health & Safety

5.11.2. Working Conditions and Terms of Employment

Working conditions, treatment of workers and worker's terms of employment must be communicated to workers verbally and / or in writing. Where:

- Conditions in the workplace refer to the physical environment, health, and safety precautions, and access to facilities (including all basic services such as sanitary facilities, access to drinking water, etc.).
- Treatment of workers refers to all aspects related to respect for the worker's personal dignity, disciplinary practices and reasons and process for termination.
- Terms of employment refer to remuneration and benefits, deductions, hours of work, breaks, rest days, overtime arrangements, overtime compensation, medical insurance, pension, and leave for illness, vacation, maternity, or holiday. Transport allowance should be provided to workers to regularly return for short visits to their families and friends

5.11.3. Local recruitments

Local community must benefit from the project under the following conditions:

- Recruitment scheme should be communicated to local community in advance;
- Local community should be prioritized during recruitment;
- People affected by the project (Project Affected People or PAPs) should be highly prioritized to get job;
- EUCL is requested to share a list of affected people with the contractor so that the list will help during job recruitment.
- The list for vulnerable PAPs will be shared with cells Local Resettlement Committees (LRCs) for review and recommend most vulnerable among shortlisted vulnerable PAPs;
- Equal chance should be given to women and men during recruitment;

- Note that some technical activities require advanced skills should only depend on knowledge and experience not only being on the list of affected people;
- An awareness training should be given to local people during construction activities.

5.11.4. Non-Discrimination and Equal Opportunity

Apply the principles of equal opportunity and non-discrimination through effective methods and as applicable to country specific aspects and the relevant legislation. The basis for recruitment, training and advancement shall be based on experience, skill and qualifications and the process for recruitment and promotion shall be transparent and consistent. Avoid systematic applications of job requirements that would disadvantage certain groups.

Labour policies and procedures must address and protect disabled persons and must include appropriate working conditions, access and egress. A grievance mechanism must be available to all workers to address complaints, handle appeals, and provide recourse for employees.

5.12. Site restoration plan

The construction phase of this project will be composed by excavation of project components like access road, materials stores etc. After construction Lines with related facilities, the contractor will rehabilitate sites upon their initial status with respect the following items:

- Minimize removal of topsoil /put aside all topsoil in order to reuse at closure step
- For all components of the project, the contractor is obliged to restore sites back to their previous/ natural conditions.
- Plan all rehabilitation environmental protection measures: recuperation and safe disposal/reuse of material and structures (bridges, drainage pipe, etc.); reuse top soil that was scuffed and put aside, plantation of trees, restoration of soil condition for culture, etc.

- Re-plant degraded areas with local species common in the area to complement natural vegetation regeneration to improve ground cover.
- Re-vegetate all finalized areas on an on-going basis
- **At closure** restore the site to original state or specific state according to contract with the landowner/community/local government authorities and sign with them a «receive in good state» form with confirmation photos of restored site.

5.13. Working permits

The implementation of this project will require access roads, borrow pits & quarries, spoil areas and quarries etc which will require different permits. The following permits and measures will be required during construction phase:

- Identify and use quarries recognized by state (quarry materials, gravels and sands)
- Develop detailed ESIA/ARAP for access road construction and new quarries/obtain permit/implement and supervise social and environmental measures
- Recruit a certified valuer for to conduct valuation of assets that will be affected
- Permit to be provided by RURA will be required for spoil areas (if spoil areas will be established)
- Any other service requiring an authorization shall comply with the existing requirements.

5.14. Land aquisition

Land acquisition is classified into two categories according to responsibilities to deal with compensation (if any):

- All issues related to land acquisition and expropriation within ROW are under EUCL responsibilities. No construction activities allowed until all affected people have received their full compensation and other entitlements as per Abbreviated/Resettlement Action Plan;

- All assets to be damaged by construction activities but outside of the approved line route shall be compensated by the contractor and,
- A valuer will be hereto recruited by the contractor to conduct valuation of assets that will be affected outside the RoW.

5.15. Environmental monitoring plan

The objectives of the environmental monitoring plan are to a) ensure project components are compliant with all laws and approval conditions; b) measure the success of proposed mitigation measures; c) continue baseline monitoring and d) facilitate a continual review of post construction and operation activities.

Description: Environmental monitoring will be done during construction and operation phases

Construction

The focus of monitoring during the construction phase will be to implement systematic observations to periodically measure the success of proposed mitigation measures and continue baseline data collection.

Environmental sampling during the construction phase will be done by the supervision firm in conjunction with EUCL. Specific monitoring aspects to be addressed during construction include:

- | | |
|--------------------------------------|--------------------------------------|
| ○ Noise; | ○ Protected areas; |
| ○ Air quality; | ○ Access roads; |
| ○ Water quality and water resources; | ○ Resettlement of displaced persons; |
| ○ Sedimentation and erosion; | |
| ○ Reclamation and revegetation | |

Oversight and performance assessment of monitoring activities shall be carried out by the Environmental expert of supervision firm.

Operation

Monitoring during the operation phase shall be conducted by the EUCL and reflect those environmental and socio-economic issues that may persist upon completion of construction activities. Monitoring shall focus on evaluating the effectiveness of project mitigation measures and continue baseline monitoring and sampling. Monitoring activities should focus on the following:

- Hydrology;
- Water quality;
- Sedimentation;
- Downstream erosion;
- biodiversity of project areas;
- Resettlement of displaced persons;
- Auxiliary project components

Timing/Schedule:

Environmental monitoring shall start as soon as the project is given the go-ahead, and monitors shall be ready to be mobilized prior to the onset of construction activities.

Responsibility:

- Monitoring shall be implemented throughout all project phases and managed by EUCL;
- EUCL will also be responsible for ensuring that the surrounding environment and social communities are protected throughout the life of the project;
- The environmental expert of supervision firm shall be responsible for oversight and performance assessment of all environmental monitoring activities.

Chapter 6. ANALYSIS OF ALTERNATIVES

6.1 Project site location

An analysis of alternative location was undertaken through mapping and involvement of all the stakeholders in this selection process. At the end of this process, alternative location of the project were selected among the possible ones, based on the following general sitting criteria (which are related to economic and environmental values):

- Not in restricted zones such as forests, wetlands;
- Distance from zones of landscape value;
- Distance from mountain edges, preference for valley routings;
- Located in urban areas without sensitive ecosystem components;
- **Route within and or nearby the existing RoW (project case)**
- Minimisation of infrastructure crossing and destruction (e.g. highways, other powerlines, etc.).

6.2 Alternative technology

The technology adopted shall have outdoor 30kV overhead distribution line with improved/modern equipments and systems which are up-to-date and are environmentally friendly while contributes to the reduction of CO₂ in the atmosphere, once the covered areas (urban) will be with stable network, will be shift from traditional biomass energy to the grid energy.

This alternative will enhance the upgrade of the capacity of the 30kv line and support and enhance the expansion of distribution network for the electrification of new towns and villages.

The alternative of “providing on-grid electrification for the proposed sectors” is the most feasible in light of the easy availability of hydropower in the country, the positive environmental benefits, and most importantly because this is what the local communities prefer. Electricity is included as a measure of development in a village and therefore is always given high priority in the list of developmental activities for any district Development plan.

It is therefore impossible for the government to overlook this demand especially since the country is a major generator of hydropower energy. While there will be no environmental cost from this alternative, with increasing population it is expected that the demand for fuelwood will increase each year, putting very heavy pressure on the already dwindling forest resource.

6.3 No Project Alternative

A **No Project alternative** would primarily mean that the status quo will be maintained and in a sense the environmental impacts (adverse) will not occur if the existing old incapable line is maintained and the new electricity lines are not constructed. However positive benefits will be forgone in terms of providing more access to electricity to the populace of the project areas which would have in turn spurred and contributed to economic growth?

6.4 Comparison of alternatives

The **two alternatives “project site location” and “Technology alternative”** are found most feasible for these types of projects considering the positive socio-economic and environmental benefits and most importantly providing more access to electricity to the populace of the project areas and its surroundings.

The **third alternative of “No Project”** is not feasible because the benefits mentioned would be lost and that would hinder the development in the project area. While there will be no environmental cost from this alternative, with increasing population it is expected that the demand for fuel wood will increase each year, putting very heavy pressure on the already dwindling forest resource.

Chapter 7. ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

The anticipated impacts as well as their mitigation measures are well detailed in the previous environmental study but according of some project data it is noted that such the space required for construction of 30kv overhead line will be enlarged and therefore it will also be increase in terms of impacts and mitigation measures. The kind of attention should be taken as supplementary effort to control soil erosion and for the compensation of project beneficiaries and their properties. (Ensure the compensation done properly)

Those initial environmental impacts and mitigation measures with combination of this minor amendment are synthetized in the following sections.

7.1. Positive impacts

Positive impacts of this project include employment opportunities, income generation, and industrialization, improvement in service delivery, technology transfer and capacity building. Regarding the environment, increased distribution of electricity to the project area will ease the pressure on the use of fire wood that is rampant in the area and in effect help to conserve the fragile and diminishing forest cover of the country by providing an alternative source of energy.

7.2. Potential Adverse Environmental Impacts and Mitigation Measures.

The following adverse impacts are anticipated to occur during the design/planning and construction/rehabilitation phases of the project.

7.2.1. Permanent Land Loss/Acquisition

The construction of the 30kV overhead line in Kigali city, will not generate the loss of land, structures/buildings, green spaces and trees for the construction activity, especially when towers and poles foundations construction and stringing of conduction will be performed. This will be allowed only once the compensation of lost properties will be fully granted.

Mitigation: An Abbreviated Resettlement Plan (ARAP) has been elaborated to outline the principles of eligibility and compensation of project affected people (PAPs). Efforts have been made during the identification of the proposed project site to ensure minimal physical and

economic disturbance. According to the ARAP, the project affected persons (If any) will be compensated for all destroyed properties to pave way for the construction of the Line Routes in accordance with the ARAP provisions.

7.2.2. Construction of Access Roads

The construction of access roads can impact the environment through compaction of land and a permanent loss of land and public infrastructures will be temporarily affected.

Mitigation: First option will be to rehabilitate existing roads/tracks for access to minimise the number of new roads required, the impact is not expected to be significant.

7.2.3 Permanent Minor Loss and Destruction of vegetation cover/crops

The construction of this kind of overhead line in urban area within the RoW will affect ornamental and fruits trees, some Eucalyptus Trees only. Here, let us mention that seasonal crops are not subjected to be destroyed due to the project sites are urban based without agricultural assets.

Mitigation: This impact is unavoidable and destroyed assets will be compensated as per the A/RAP at full market value before any construction works commence.

7.2.4. Disruption in Daily Living and Movement Patterns

It is anticipated that the construction activities will result in some intrusions and disruptions in the daily living and movement patterns of people living in the project area. Such disruptions are anticipated to be of high significance, but of a short-term nature, and could be caused by the movement of construction vehicles and frequent entries to the properties as a result of the construction activities.

Mitigation: Construction will be restricted to working hours and specific activities will be notified to traffic agencies and be done as quickly as possible with huge workforce to enable continuous use of roads in the project sites. The traffic movement shall be continuous using one part of the road and the other one after completion of works and vice versa

7.2.5. Aesthetics and visual related impacts- visual intrusion on the landscape

The line and towers will be the most visually intrusive component. It is anticipated that the construction of the proposed lines will have a visual impact on the immediate surrounding area.

Mitigation: The line is likely to present a low degree of view obstruction as a result of the terrain being on hilly area, and efforts will be made to ensure blending with background colour/patterns of most landscapes and an aesthetic stringing mode is to be granted as per ESIA certification conditions by RDB.

7.2.6 . Water Resources

The construction of the 30kv overhead line may interfere with the natural drainage systems and modify flow of surface water, and these changes can contribute to soil erosion, flooding, channel modification, downstream scouring and sedimentation in streams and other drainage channels.

Mitigation: working in sections and not during the rainy season will assist in this regard. The construction sites are partially in proximity of water course. Especially the site of Nzove-Nyabugogo which needs a specific attention during excavation and delivery of materials.

7.2.7 Disruption of Infrastructure and Services

Without the implementation of appropriate management measures, general services (such as underground pipes, existing distribution line) could be damaged during the construction/rehabilitation periods. Any disruption in the services (especially in the local electricity supply should distribution line be damaged) could potentially have a negative impact on local enterprises (e.g. affecting businesses activities). The nature and extent of the impact will depend on the length of the interruption in general services. Sometimes, the contractor will be expected to undertake construction works in the vicinity of energized lines. This could lead to frequent power interruptions, black outs or even de-energization of lines.

Mitigation

- The contractor will establish whether there is any infrastructure located near or inside the right of way for the distribution line in order to avoid any damage to these during the construction/rehabilitation phase;
- Discussions will be held with the relevant parties whose infrastructure could be negatively affected;
- The Local Authorities will be informed of the construction/ rehabilitation schedules to ensure the minimum disruption of such infrastructure;
- The contractor shall make sure that the Time Schedule provides for adequate advance notice to the Employer as to when shut-downs and/or partial de-energizing of existing equipment are required. The Contractor shall make provisions to be able to shift teams and equipment in order to continue work at other sites if the shut-down cannot be granted for the requested period at the requested dates. He/she shall be able to resume the works scheduled during shut-downs when they are granted, with a reasonable advance notice. The required interruptions shall be kept to a minimum in terms of length of the shut-down;
- Property owners and nearby communities should be informed well in advance of the construction/ rehabilitation schedule and any changes to this work schedule;
- Heavy vehicles will make use of existing access roads on private properties as far as possible. In cases where private roads are to be used, this should be negotiated with the property owner before the construction period commences;
- Construction vehicles will keep to the speed limit and avoid busy roads, as far as possible;
- Construction/rehabilitation activities will not be undertaken after-hours or over weekends;
- Construction will preferably not take place during the harvesting season.
-

7.2.8 Temporary /Limited Fugitive Noise

Noise resulting from access road for lines construction construction/ rehabilitation may disturb neighbouring communities and local fauna. This impact will be of a temporary nature.

Mitigation: Noise will be minimized by among others, maintaining equipment and vehicles to manufacturers' standards and limiting operating times to daylight hours.

7.2.9 Temporary /Limited Fugitive Dust

Dust will be an issue during the construction since it is recommended that construction/rehabilitation take place during the dry season. Fugitive dust will be localised and may be emitted from vehicle movements, construction & rehabilitation works e.g., excavations and stock piles of materials including machinery as well as from truck traffic during the construction. This could cause health related impacts to the communities around and workers in the project site.

Mitigation: The dirt roads, exposed construction areas and material stockpiles will be watered. Furthermore stockpiles will be located downwind from the commercial, residential and other establishments. Workers in the project site must be equipped with the necessary and required Personal Protective Equipment (PPE) prescribed by the construction industry to mitigate dust impacts and other accidents; construction / rehabilitation schedule will be communicated with potentially affected parties.

7.2.10. Soil Erosion

During the construction phase, activities involving preparation, stripping, grading, soil removal, backfilling, compacting, disposal of surplus and excavation of the earth surface to pave way for the installation of the line and erection of towers and poles will lead to localized soil erosion and run off when rains are experienced. This impact is only expected to occur in the areas where excavation works will be carried out during rehabilitation and construction of the line.

Mitigation: These impacts can be managed by restricting the use of heavy machinery and vehicles to designated work areas and installing soil protection works in areas sensitive to erosion prior to construction/rehabilitation phases. Disturbed soils will be compacted immediately. The final site grade of the line will include an adequate drainage channel that will facilitate drainage and avoid flooding and pooling. Protecting stockpiles through the use of silt fencing and reduced slope angles.

Due to the increase of the required space , the control of soil erosion impact should also be increased. The supplementary adequate measures such as human and financial means allocated to this activity will be taken into account accordingly.

7.2.11 Accidents/Hazards

As a result of the operation of equipment and machinery during construction/rehabilitation, there is a likelihood of accidents occurring especially to the workers. During operation phase, there is potential for accidents and hazards occurring in the electrical lines that could lead to loss of life or injury to the workers

Mitigation: All workers need to be provided with the recognised and appropriate Personal Protective Equipment while at the construction site including gloves, dust masks, boots, goggles, and overalls among others. Hazardous areas will be designated and access pre-authorized. All workers will have basic health and safety training.

7.2.12 Storage and Management of solid waste

Solid waste materials during the construction/rehabilitation include paper wrapping, scrap metal, excavated soils, polythene, plastic and metal will cause pollution and littering of the immediate and localized environment.

Mitigation: The contractor will engage refuse handling company to remove the wastes from the site to the recommended dumping site.

7.2.13 Fire risk

During operation, the risk of fire outbreaks during bad weather e.g. storms, winds etc cannot be ruled out especially when a tower or pole crash or if electrical faults occur in the substations.

Mitigation: A robust fire prevention program and fire suppression system will be developed by the contractor for use in the substations and electric lines. The sites will have firefighting equipment approved by the Fire department. A fire evacuation plan must be posted in various points including procedures to take when a fire is reported.

7.2.14 Project decommissioning

Decommissioning of the subproject will involve dismantling and removing all structures of the lines, dismantling the supporting infrastructure (towers) and all those structures that were associated with this subproject implementation. Some of the impacts of this subproject phase are similar to those that have been discussed during construction and operational phase. But there are those impacts that are specific to project decommissioning and the proponent will be required to rehabilitate the site to its former status or near what it was before the project was commissioned. REG will be responsible for preparing the decommissioning plan as specified by the Organic Law and will remain responsible for the costs as per the regulations of Rwanda Environmental Management Authority (REMA).

Chapter 8. CONTRACTOR ENVIRONMENTAL, SOCIAL MANAGEMENT & MONITORING PLAN AND COMPLEMENTARY INITIATIVES

The Contractor environmental management and monitoring plans shall be detailed in this and soundly reflecting the all highlighted reverse impacts, positives ones and related mitigation measures for adverse ones and enforcement ones for positive impacts.

8.1. Environmental Management and Monitoring Plans (EMMP)

An Environmental and Social Management Plan (ESMP, Table below) is designed to verify that predictions of environmental impacts are accurate and that unforeseen impacts are detected at an early stage and allow corrective measures to be implemented, if needed. During the construction phase the plan provides for dust, noise, visual impacts, service disruption and safety monitoring. During the operation period, monitoring is planned in terms of routine inspection of the health and safety of the workers and the nearby communities, disruption impacts during maintenance of electric lines and fire hazards.

Environmental monitoring will include visual observations, selection of environmental parameters at specific locations and sampling and regular testing of the relevant parameters. Monitoring will be done at a number of levels. The first level of monitoring of the CESMP will be conducted by the Contractor at work sites during construction/ rehabilitation, under the direction and guidance of the Consultant/Supervisor who will be responsible for reporting the monitoring to the implementing agency, EUCL. The second level of monitoring of the CESMP will be done by EUCL where they will verify the results of the Contractor and to audit direct implementation of environmental mitigation measures contained in the CESMP and construction contract clauses for the Project. EUCL also have the direct responsibility to implement and monitor land acquisition and compensation issues as outlined in the elaborated and particularized ARAP. Their Project teams will include an environmental and Social Specialists to oversee the compensation issues. The third level will be REMA that will monitor and audit the compliance of the project activities implementation with proposed mitigation measures.

The parameters that will be monitored as a minimum include noise; soil erosion; vegetation clearing, re-vegetation & exotic species introduction; rehabilitation of construction open pits sites such as camps sites, material storage etc; accidents and health & safety incidents.

The potential impacts, mitigation measures, responsibility and others parameters needed to be monitored are synthesized in table below:

Table 6: Environmental Management and Monitoring Plan (EMMP)

Potential Impacts	Mitigation Measure	Parameters to be Monitored	Location	Method	Monitoring Frequency	Responsibility	Cost (USD)
Pre-construction							
Impact due to the construction of the proposed 30kv overhead line.	RoW selection approved by RDB/REMA and District officials	RDB/EC clearance process	RoW	Field investigation by Environmental officer (ESS)	Before construction/rehabilitation	RDB/REMA/EUCL	Project
Loss of assets	Compensation for destroyed other properties	Payment	RoW	Payment proof	Before construction	EUCL/Kicukiro, Nyarugenge & Gasabo Districts	As per ARAP
Loss of trees and vegetation	Compensation for destroyed crops and trees	Payment	ROW	Payment proof	Before construction	EUCL/Kicukiro, Nyarugenge & Gasabo Districts	As per ARAP

Potential Impacts	Mitigation Measure	Parameters to be Monitored	Location	Method	Monitoring Frequency	Responsibility	Cost (USD)
Loss of details on specific and adequate measures	Elaboration of specific management plans	Completed management plans	ROW	Plans in place	Before construction	Contractor/ EUCL	Project
Construction							
Removal of trees in project area	1.Ensure that only those trees marked by the forestry staff are felled 2. Follow standards, EUCL/REG procedures and practices in clearing sites.	Number of violations	RoW	Site Observations	Two weeks	EUCL&ESS/R WFA	Project
	Explore possibility of planting low growing	Re-vegetation	RoW	Site Observations	Two weeks	EUCL&ESS	Project

Potential Impacts	Mitigation Measure	Parameters to be Monitored	Location	Method	Monitoring Frequency	Responsibility	Cost (USD)
	vegetation below the towers/poles						
	1.Mark site boundary & prohibit cutting outside the site 2.Only fell trees that have been marked by forestry staff;	Number of violations	Row	Site Observations	Two weeks	Contractor/ EUCL&ESS/R WFA	Project
Worker could damage species & habitats outside project site	3.Prohibit hunting or fishing by workers and enforce strictly	Number of illegal reports	Camp sites & Access roads	Site Observations surveys	Monthly	Contractor/ EUCL&ESS	Project
	4.Train workers in importance of wildlife and habitats;	Number of illegal reports	Labour camps	Contractor records and sites observation	Monthly	Contractor/ EUCL&ESS	Project
	5.Locate labour camps where no forest clearance is needed;	Number of illegal reports	Labour camps	Site Observations	Monthly	Contractor/ Supervisor	Project

Potential Impacts	Mitigation Measure	Parameters to be Monitored	Location	Method	Monitoring Frequency	Responsibility	Cost (USD)
	6. Provide adequate food supply so workers do not need to hunt	Illegal activities	Labour camps	Site Observations	Monthly	Contractor/ Supervisor	Project
Delivery of RE materials to drop off points - Air pollution from vehicular movement	Minimize number of deliveries through timely scheduling	Number of deliveries	Drop off points	Site Observations	Monthly	Contractor/ Supervisor	Project
Carriage of materials to site could block access	Consult farmers when transporting material	Number of consultations	RoW	Site Observations; Village survey	Monthly	Contractor/ Supervisor	Project
Excavation of foundation-dust may blow from cleared areas	Avoid using large machinery, manual excavation and minimize disturbance at excavated sites,	Site Observations	RoW	Site Observations	Monthly	Contractor/ Supervisor	Project
Effect on local drainage and soil erosion	construct towers and poles on stable ground		RoW	Site Observations	Monthly	Contractor/ Supervisor	Project

Potential Impacts	Mitigation Measure	Parameters to be Monitored	Location	Method	Monitoring Frequency	Responsibility	Cost (USD)
Works may create noise, dust & impede access	1. Inform communities of work in advance;		RoW	Site Observations; Village survey	Monthly	Contractor/ Supervisor	Project
	2. Identify sites of local significance; locate no activities nearby;		RoW	Site Observations; Village survey	Monthly	Contractor/ Supervisor	Project
	3. Consult protectors of facilities (monasteries, nunneries, schools, clinics, etc) and avoid working at sensitive and religious times;		RoW	Site Observations; Village survey	Monthly	Contractor/ Supervisor	Project
Economic benefits if local people are employed in contractor's workforce	Employ as many local residents as possible in workforce	Number of locals employed	RoW	Site Observations; worker survey	Monthly	Contractor/ Supervisor	Project

Potential Impacts	Mitigation Measure	Parameters to be Monitored	Location	Method	Monitoring Frequency	Responsibility	Cost (USD)
Importing foreign workers can cause environmental and social problems at labor camps and in host community	1. Ensure imported workers are provided with housing that has ample toilets, proper drainage and treatment for sewage.	Number of observations from camp site	RoW	Site Observations; worker survey	Monthly	Contractor/ EUCL&ESS	Project
	2. Collect solid waste weekly and dump in an official CoK dumping site		RoW	Site Observations	Monthly	Contractor	
	3. Instruct workers on required behaviour in host community and prohibit them damaging biodiversity species		RoW	Site Observations; worker survey	Monthly	Contractor/ EUCL&ESS	
	4. Camps must be cleaned up daily and		Labour camps/contractor	Site Observations;	Monthly	EUCL&ESS	

Potential Impacts	Mitigation Measure	Parameters to be Monitored	Location	Method	Monitoring Frequency	Responsibility	Cost (USD)
	restored after project is completed.			camps inspection			
Diseases can be introduced into host communities from social and sexual contact with imported workers	1.Initial screening of workers for HIV/AIDS, TB, malaria, swine flu, etc.;	Contractors record on Health issues	Labour camps	Site Observations; worker survey	Monthly	Contractor/ Supervisor	EPC
	2.Facilitate access to the nearest Health facility for checkup;		Labour camps	Site Observations; worker survey	Monthly	Contractor/ EUCL&ESS	
	3.Raise worker/community awareness of risks of socially & sexually transmitted disease;		On site	Site meetings and public consultation	Before and during construction	Contractor/ EUCL&ESS and districts	
	4.Practical measures, e.g. free condoms for workers;		Labour camps	Site Observations; worker inspection	Monthly	Contractor/ Supervisor	

Potential Impacts	Mitigation Measure	Parameters to be Monitored	Location	Method	Monitoring Frequency	Responsibility	Cost (USD)
	Ensure staff/workers bear medical insurances		Contract or	worker inspection	Monthly	Contractor/ Supervisor	
Workers and villagers are at risk from accidents on site	Implement Health and safety plan that includes measures to: -Exclude the public from all construction/ rehabilitation sites; -Ensure that workers use personal protective equipment and Provide Health & safety training for all personnel; -Follow documented procedures for all site activities & Keep	Health and safety mgt. plan Protective equipment	Labour camps On sites	Site Observations	Monthly On visit	Contractor/ Supervisor	Project

Potential Impacts	Mitigation Measure	Parameters to be Monitored	Location	Method	Monitoring Frequency	Responsibility	Cost (USD)
	accident reports & records; -Inform local communities about the work and dangers						
Operation and Maintenance							
Provision, operation and maintenance of new RE system	Field personnel should report power outages to EUCL and repair faults quickly and effectively	# reports and repairs	RoW	Reports observations	Monthly	Contractor/ Supervisor	Project
	Public education to raise villagers' awareness of dangers of electricity and how to utilize the system safety.	Training and awareness reports	All sites	Reports observations	Monthly	Contractor/ Supervisor/ EUCL&ESS	Project

Potential Impacts	Mitigation Measure	Parameters to be Monitored	Location	Method	Monitoring Frequency	Responsibility	Cost (USD)
	<p>1. Follow EUCL O&M and H&S manuals and revise these manuals if necessary to increase safety of workers;</p> <p>2. Regular training of EUCL workers to raise awareness of dangers and working procedures to be followed</p> <p>3. Improve supervision of field workers;</p> <p>4. Regular management reviews of safety record, with remedial action where necessary</p>	<p>Training and supervision reports</p> <p>Provision of First Aid Kits (FAKs)</p>	<p>All sites</p> <p>All sites</p>	<p>Reports observations</p>	<p>Monthly</p> <p>Annually</p>	<p>Contractor/ Supervisor/ EUCL</p>	<p>Project</p>

Potential Impacts	Mitigation Measure	Parameters to be Monitored	Location	Method	Monitoring Frequency	Responsibility	Cost (USD)
	As above: repair faults quickly and effectively Conduct system maintenance regularly and diligently	Repair and maintenance reports	All sites	Reports Observations	Monthly	EUCL-O&M	Project

8.2. Environmental and Social Supervision Framework

Environmental supervision is a process to ensure project-related construction activities are completed in compliance with the Government of Rwanda’s regulations, World Bank policies and mitigation measures as outlined in this CESMP. With respect to the project, supervision is required primarily during construction activities.

8.2.1. Construction Supervision Framework

Construction supervision is a daily process whereby a designated individual or group provides oversight to the Contractor and sub-contractors to ensure that environmental commitments identified within the CESMP. Environmental and Socio-economic supervision shall be implemented as part of overall project supervision.

Enforcement shall be implemented through the Contractor’s technical proposals based on the Terms of Reference (ToR) for Construction and Camp Management and contractual clauses relating to socio-economic and environmental performance.

8.2.2. Construction Supervisory – Supervisor and EUCL

The Supervising firm and EUCL shall be responsible for ensuring that:

- CESMP provisions are incorporated into contractor documents;
- Adequate resources and personnel are in place to implement and supervise CESMP performance;
- Contractor and all sub-contractors comply with CESMP regulations on a daily basis;
- Audits or compliance reviews are completed on a scheduled basis and the results provided to either the World Bank or Government of Rwanda; and;
- All monitoring resources are properly implemented and data is adequately recorded *for monthly reporting purposes*.

The Project Environmental & Social Manager will represent the project or project-related matters and will be responsible for ensuring the CESMP mitigation measures are fully employed.

The Project Environmental & Social Manager will be responsible for supervising and monitoring of all construction activities in relation of proposed impacts mitigation measures.

8.2.3. Construction Supervision – Contractor

The Contractor (and sub-contractors) shall organize representatives within an Environmental Compliance team, which shall be led by the Workplace Safety & Environmental Advisor and collectively, they shall ensure construction activities abide with CESMP requirements. For additional details on roles and responsibilities refer to the Construction Camp Management Plan describes the supervision framework for overseeing environmental and socio-economic parameters related to this project.

Table 7: Project Environmental supervision framework

Issue	Location: Where is the issue?	Parameter: What is being overseen?	Procedure: How is the issue managed
Noise	Construction site Project –adjacent areas	<ul style="list-style-type: none"> Amount of noise being created during construction hours and days; Frequency of disturbance to local villagers 	<ul style="list-style-type: none"> Visual and auditory Observations; Report forms; Monthly reporting to SUPERVISOR AND EUCL
Dust	<ul style="list-style-type: none"> Construction site; Access Roads; Water withdrawal sites 	<ul style="list-style-type: none"> Amount of dust generated during construction activities; Water resource use for spraying 	<ul style="list-style-type: none"> Daily observations; Incident reporting; Monthly reporting to SUPERVISOR AND EUCL
Management of hazardous materials	Hazardous materials storage site	Storage facility location, security and maintenance	<ul style="list-style-type: none"> Inventory checklists; Reporting incidents or accidents; Monthly/Quarterly reporting to SUPERVISOR AND EUCL

Solid waste	Designated landfill Construction site Camp sites	<ul style="list-style-type: none"> • Amount of waste generated at construction and camp sites • Amount of waste disposed at the landfill; • Recycling of material; • Littering and contamination of environment 	<ul style="list-style-type: none"> • Waste tracking sheets or register; • Incident reports; • Monthly reporting to SUPERVISOR AND EUCL
Sewage waste	<ul style="list-style-type: none"> • Construction site services; • Camp site services 	<ul style="list-style-type: none"> • Quantity and quality of sanitation services provided; • Misuse of sanitation services; • Inappropriate disposal of human waste 	<ul style="list-style-type: none"> • Daily checklists; • Incident reports • Monthly reporting to SUPERVISOR AND EUCL
Potable Water	Construction site Camp site	<ul style="list-style-type: none"> • Misuse of water reserves; • Misuse of natural water sources • Contamination of water resources 	<ul style="list-style-type: none"> • Daily checklists; • Incident reports; • Monthly reporting to SUPERVISOR AND EUCL
Construction equipment and vehicle maintenance	<ul style="list-style-type: none"> • Construction site; • Vehicle/equipment storage area; • Access roads 	<ul style="list-style-type: none"> • Vehicles/equipment operating at standard levels; • Excess oil, fuel, lubricant leaks and gas emissions; • Disorderly conduct or misuse of equipment / vehicles 	<ul style="list-style-type: none"> • Daily checklists; • Incident reports • Quarterly reporting to SUPERVISOR AND EUCL

<p>Work Code of Conduct and Safety</p>	<ul style="list-style-type: none"> • Construction site; • Camp site 	<ul style="list-style-type: none"> • Safety, security and orderly conduct of construction workers ; • Accidents and unplanned events; • Conflict with local villagers 	<ul style="list-style-type: none"> • Environmental and safety meetings held regularly; • Incident report forms; • Monthly/Quarterly reporting to SUPERVISOR AND EUCL
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Chapter 9. COMMUNICATION AND REPORTING

The following section describes the communication and reporting mechanisms to be implemented as part of the CESMP.

9.1. Communication Process

The table below, describes the lines of communication for construction workers, local villagers, employees and other project-related individuals with respect to filing grievances or incidences throughout the construction and operation of the Project.

Table 8: Communication Pathway

Stakeholders	Potential impacts	Means of contact	Key Contact
Local villagers (disturbed, if any)	<ul style="list-style-type: none"> • Adequate compensation package (financial assistance, food cache, water reserves, etc.); • Location of resettled household; • Disturbance from construction camp and associated activities (drugs, alcohol, prostitution, disease, environmental issues, etc.); • Access to community services (medical, education, telephone, market, etc.); • Safety and security of local villages; • Information broadcasts on potential hazards (blasting, road closures, reduced river access, etc.) 	<ul style="list-style-type: none"> • Complaints/concerns shall be communicated to local village leaders and authorities through a grievance process; • Information broadcasts and project updates shall be provided by the contractor to local village leaders 	EUCL/PIU

Potential employees	<ul style="list-style-type: none"> • Employment opportunities; • Adequate resources (food, water, etc.) and shelter; • Competitive wages 	<ul style="list-style-type: none"> • Recruitment of locals at the project site and through word of mouth; • Issues shall be conveyed to site foremen 	Contractor
Government Stakeholders	Environmental and socio-economic impacts	Monitoring committee	EUCL/PIU
Construction workers and camp sites	<ul style="list-style-type: none"> • Worker code of conduct; • Social conflicts between local villagers and workers; • Behavior issues (gambling, drugs, etc.); • Environmental issues (exploitation of natural resources, etc.) 	<ul style="list-style-type: none"> • Weekly meetings with construction workers; • Individual meeting with disorderly workers 	Contractor

9.2. Reporting process

Reports shall be produced through the sequence of implementation of monitoring programs, collecting incident/grievances forms, consulting with local villages and project-affected areas and auditing performance of existing programs/mitigation measures within the CESMP as per the table below that describing the types of reports that shall be produced.

The Supervising firm (Supervisor) should provide with report updates, frequency of reporting to EUCL and the donor (WB) and will vary depending on the nature of the non-compliance and monitoring schedule.

Table 9: .Types of External report

Responsibility	Types of report	Purpose of reporting	Frequency of submission	Submit to:
Contractor & workplace safety and Environmental Manager	Accidents/Incident Report	Filing/notification of accidents or unplanned events	Within 24 hours of the incident	EUCL/WB
	Non-compliance Report	Detail the cause, nature and effect of any environmental and/or socioeconomic non-compliant act performed	Within one week of the event	EUCL/WB
	Monthly Compliance Report	Report to the Construction Supervision Team	Report of compliance and noncompliance measures on a monthly basis	SUPERVISOR/EUCL
Construction supervision team	Daily Compliance Checklist	Checklist of environmental and social compliance of construction	Daily	Contractor (internal)
	Monthly Compliance Report	Monthly report of compliance within 5 days of receipt of report from Contractor	Monthly	SUPERVISOR/EUCL

Responsibility	Types of report	Purpose of reporting	Frequency of submission	Submit to:
Project Environmental Manager	ESMP updates, including any changes in management or monitoring procedures	For approval prior to implementation	As required, prior to implementation	SUPERVISOR/ EUCL
	Key changes in project activities that may trigger Environmental Approvals	Ensure compliance with environmental regulatory approvals	As required, prior to implementation	SUPERVISOR/ EUCL
	Environmental monitoring reports	Notification of non-compliance with standard environmental guidelines and parameters	Dependent on environmental parameter: weekly, monthly, quarterly or annually	SUPERVISOR/ EUCL
PIU Safeguards Unit	ARAP and sub-plans	Ensure disturbed PAPs rehabilitated	As required, prior to implementation	EUCL/WB

Chapter 10. TRAINING & CAPACITY BUILDING

A key component of CESMP success depends of effective capacity building plan, the training of staff and all others involved in the ESMP, including the construction contractor and all sub-contractors and/or consultants.

All those responsible for the management, implementation and operation of any aspect of the CESMP shall be adequately trained for their role. Training records shall be maintained on site, for each employee, to provide evidence for auditing/inspection purposes. The following training shall be considered for each organization:

10.1. PIU/EUCL Team

The environmental unit shall be provided with enough technical and financial logistics to complete this oversight role; external resources or contractors may be required. Specific training to the environmental unit should be provided as follows:

- Principles and procedures for environmental & Social impact assessment (ESIA);
- Fundamentals of environmental management;
- Compliance assessment, monitoring and follow-up;
- Environmental audits;
- Social impact assessment and public consultation; and
- Fundamentals of aquatic ecology and environmental flows associated with construction and operation of hydroelectric projects (including trained expertise in water quality testing and analysis).
- Specific key tips of CESMP implementation and compliance

10.2. *Supervising Firm*

The supervising firm shall have environmental staff trained for Monitoring to ensure contractor compliance with CESMP requirements. Alternately, the Supervising firm can subcontract this responsibility to adequately trained personnel. Training records, including attendance and specific course, shall be maintained for inspection by the project. Specific training to the environmental unit should be provided as follows:

- Principles and procedures for environmental impact assessment;

- Fundamentals of environmental management;
- Compliance assessment, monitoring and follow-up;
- Air, soil and water sampling procedures;
- Construction impacts, including civil works, sediment and erosion control, soil handling and vegetation removal;
- Waste management;
- Fuel and hazardous materials management;
- Fundamentals of ecology ;
- Construction camp management; and
- Monitoring, auditing and follow-up.

10.3. Construction Contractor

The construction contractor shall have environmental staff trained for CESMP Implementation prerequisites to ensure contractor and all subcontractor compliance with ESMP requirements. The construction contractor shall maintain training records, including attendance and specific course, for inspection by the project. Specific training to the construction contractor environmental unit should be provided as follows:

- Principles and procedures for environmental impact assessment;
- Fundamentals of environmental management;
- Compliance assessment, monitoring and follow-up;
- Air, soil and water sampling procedures;
- Construction impacts, including civil works, sediment and erosion control, soil handling and vegetation removal;
- Waste management;
- Fuel and hazardous materials management;
- Construction camp management;
- Community relations and public consultation procedures; and
- Monitoring, auditing and follow-up.

Chapter 11. PUBLIC CONSULTATIONS AND DISCLOSURE REQUIREMENTS

11.1. Public Consultation

Upon identification of the households that were affected by the project, meetings organized with the administrative authorities to discuss compensation requirements and concerns. The districts arranged meetings for the negotiations with the local communities to discuss the alternatives for compensation. Below is the table illustrating the issues raised during public consultations (as per the ARAP):

Table 10: The issues raised during public consultations

Issues	Stakeholders	Response to issues	Timing
Any Loss of properties	Local authorities, Project affected people/ EUCL	There will be compensation for lost assets by EUCL (if any)	September 2020
Loss of vegetation at site clearing	District authorities/ REMA/RDB	The contractors will re-establish green areas	September 2020
Job opportunities	Local residents/ District authorities/ Government	First priority given to affected residents especially women (proposed to have at least 30 % of women for unskilled labor) Better paying jobs than subsistence advantages	September 2020
Occupational health and safety	District authorities/ EUCL/RDB	<ul style="list-style-type: none"> - Safety gear for workers.(overalls, helmets, boots, gloves, masks, eye grasses etc) - Proper sanitation facilities (toilets, drinking water for dehydration) 	September 2020

		<ul style="list-style-type: none"> - Insurance coverage for workers - Water sprinklers to reduce dust. 	
Storm water management at stations	Local residents/authorities (cell, sector & districts)	<p>Rain water harvesting from roofs and tanks leading to an underground tank for reuse.</p> <p>Proper drainage channels surrounding sites boundaries to prevent erosion.</p>	August 2020
Loss of life and property from accidents	Local residents and authorities	<ul style="list-style-type: none"> - Availability of First Aids Kits - Provision of personal protective equipments 	August 2020
Poor sewage management	Local residents/ authorities/ EUCL/ RDB/REMA	On-site MOBILE TOILET and monthly transportation to approved district dump site or landfill	September 2020
Ground water contamination from oil spills from trucks	District authorities/REMA/EUCL	Drains will be directed to established oil drains, which connect to oil separators that sieve oil from water	September 2020
Traffic congestion and accidents	Local residents/ authorities/District authorities/Sector authorities	<p>Traffic sign posts as means of safety and direction.</p> <p>Especially for sites with heavy traffic congestion.</p>	September 2020

11.2. Roles and responsibilities of each Institution

Table 11: Roles & responsibilities of institutions in compensation procedures

Organization	Roles And Responsibility
PIU/EUCL team	<ul style="list-style-type: none"> • Screening of sub-projects to identify and compensation requirements; • Work with districts authorities to create Compensation & Grievance Committees (CGCs); • Provision of short term capacity building and technical support relating to and compensation activities to the members of C&G committees;
PAPs	<ul style="list-style-type: none"> • Participation in documentation and valuation/measurement of assets of PAPs
District authorities	<ul style="list-style-type: none"> • Review and sign off of all documentation (e.g. completed ARAP, grievance forms, consultation plans). • Participation in documentation of assets; • Verify if Compensation of PAPs successfully done and approval • Responsible in monitoring and implementation
Compensation & Grievance Committees.	<p>Evaluation of assets, distribution of compensation payments, identification of areas of rehabilitation and effective consultation at sector, cell and village levels.</p> <ul style="list-style-type: none"> • Representation of PAPs; • Facilitate coordination of information collection activities (such as surveys, supervising documentation) for monitoring purposes, in accordance with procedures put in place by the District authorities; • Elect a representative of the Committee to act as Project Liaison Officer who has regular contact with PAPs and can lead consultations, public participation and grievance mechanisms; • Responsible for ensuring that grievance mechanisms meet the requirements of competent legislations.

Organization	Roles And Responsibility
EUCL during assets fields Measurements	<ul style="list-style-type: none"> • EUCL to play an oversight role in monitoring and ensuring that the process of surveying the cultivated land is done in an open and transparent manner and in the presence of all the PAPs
PAPs during crops and trees fields Measurements	<ul style="list-style-type: none"> • The primary role of the PAPs during the process of measuring cultivated land situated in the sub-project area was to be physically present and ascertain that indeed the measurements are correct and to their satisfaction. Upon being adequately satisfied with the measurements, their signatures were given as proof of approval
Districts during Assets Measurements and payment	<ul style="list-style-type: none"> • The authorities of the districts will play an important role during survey and valuation of land targeted for the project; • Ensure that all the money sent to the PAPs' respective bank accounts and complaints fully addressed • Working with EUCL/EUCL to ensure the satisfactory implementation of A/RAP activities.
EUCL/EUCL	<ul style="list-style-type: none"> • Ensure that the A/RAP process is implemented successfully; • Transferring money to PAPs for payment of compensation; • Working together with the Districts to ensure that complaints are dealt with and that the final updated A/RAP drafted for compliance purposes

Chapter 12. IMPLEMENTATION PLAN & SCHEDULE

12.1. Implementation

Contractor shall assume overall responsibility for the implementation of the CESMP as described including the following activities:

- Preparation of management plans
- To ensure the Oversight of Contractor ESMP implementation requirements, training and technical assistance to environmental Unit, Supervisor/EUCL shall adapt a Monitoring plan for the CESMP considering the requirements identified in the table below:

Table 12: CESMP Implementation Plan

Implementation Items	Description	By When	Responsible
Implementation of project Management Plans by Contractor	To implement the following management plans: <ul style="list-style-type: none"> • Community Relations and Community Safety Plan; • Construction and worker camp management Plan • Environmental Monitoring Plan; • Erosion control and Biodiversity Management Plan; • Public Health Management Plan 	At the beginning of project implementation phase	Burhani Engineers
Training	<ul style="list-style-type: none"> • Perform a training plan outlining training: • requirements, topics, and areas of capacity building; • Identified courses/seminars; 	During the project implementation phase	Burhani Engineers

Implementation Items	Description	By When	Responsible
	<ul style="list-style-type: none"> • Identified staff requiring training; • Implement training plan 		
Implementation of site specific CESMP and ARAP for the 30kv overhead and underground distribution line	The CESMP for the construction of 30kV implementation to be in place prior to commencement of any construction activities (the present report).	During the project first phase (commencement of construction activities)	Burhani Engineers, EUCL

Chapter 13. COST ESTIMATE

The costs to be met by the contractor in ensuring mitigation will be contained in the final bid document and for this reason cannot be reflected in this document. However, the table above has some costs associated with environmental monitoring and mitigation. The costs for resettling, compensation of PAPs and ARAP implementation will be met by EUCL and is contained in the separate Abbreviated Resettlement Action Plan. Recurring costs imply costs that will be met by EUCL either on annual or monthly basis. While the costs related the purchase of PPEs and other safety equipments and tools will largely depend on the rate of wear and tear, however and is part of the overall responsibility of the contractors as prescribed above. The cost related to maintenance of the outage will be met timely by EUCL and costs towards solid waste disposal will be met by the contractor on monthly basis throughout the project life.

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APPENDICES

Appendix 1: CHECKLIST FOR THE IMPLEMENTATION OF CESMP

Table 13: Checklist for the implementation of CESMP

Activity	Parameter to monitor	Compliance status (Yes/No)	Remarks (good practices, problem observed, possible cause of noncompliance and/or proposed corrective/preventive actions)
Site preparation & Management	Is the contractor working within approved plot		
	Is there assets outside the approved plot affected by construction activities		
	Erosion is prevented as required		
	Site are restored after construction as required		
	Any complain related to assets affected outside the approved plot		
Traffic	Number of drivers		
	Driver with valid license		
	Drivers received training on the project principles		
	Vehicles respected required speed		
	Maintained vehicles/ machined		
	Installed traffic signage on site		
Waste management	Type of waste		
	Waste are stored as required		
	Waste are transferred to landfill		

	Waste transferred to recycling plant		
	Pure (Polychlorinated Biphenyls) PCB transferred to incineration site		
	Presence of hazardous waste		
	Hazardous waste are managed as required		
	Number of workers trained on waste management		
	Contract is signed with company to transport waste		
	Is 7”R” implemented		
	Is there mobile toilet on site		
	Any complain related to waste management		
Air Quality	Number of vehicles with valid technic checkup		
	Is there visible particle matter in air caused by dust		
	Watering practices are implemented		
	Number of Staff using PPE		
	Any complain related to air pollution		
Noise level	Noise emitted is within Rwanda standards		
	Is there any noisy activity done during night		
	Any complain related to noise issue		
Watercourse	Any oil spills/ waste released into water course		
	Water sampling is done in watercourses nearby construction sites		
	Any complain related to water pollution		
Labor Force		Number	

	Total number of workers including man power		
	Number of reported discrimination cases		
	Number of workers with valid contracts;		
	Number of workers delayed to receive their salaries		
	Number of workers who are not paid overtime hours;		
	Number of workers who have health and accident insurance;		
	Number of complains		
	Number of pending cases on above complains		
	Number of staff received permission to visit their friend & family		
Occupational Health and Safety	Number of workers trained on HS Protocol		
	All PPE are available and in good conditions First Aid Kits (FAK) are available and in good conditions		
	Number of Staff trained to use PPE and FAK		
	Any incident or accident happened		
	Action taken to the above incident/accident		
	Tool box is implemented as required		
	Is there any MoU between contractor and nearest hospital/clinic		
	Is there any reported or observed case related to harassment		

	Is there any case reported or observed related to Gender Based Violence (GBV)		
Emergency Preparedness and Response	Number of workers trained on emergency preparedness/ response		
	Number and status of emergency equipment		
	Available printed visible emergency contacts (all sites)		
Local Recruitment	Total number of local people recruited among all staff;		
	Number of recruited PAPs among local staff		
	Number of women recruited among all staff		

Appendix 2: CONSTRUCTION WASTE INVENTORY AND MANAGEMENT PLAN

Template of Construction waste Management Plan

1. Plan Identification

Agent/Institution	Addresses	Additional info.
Company Name:		
Contact Person:	Telephone #:	
Project Location:	CoK	
Contractor:	BURHANI ENGINEERS LTD	
Contact Person:	Telephone #:	
Re-use/Recycling Coordinators:		
Engineer(s):		
Contact Person:	Telephone #	
Designated Re-(Use/cycling) Managers:		

2. Plan Description & operationalization

i. Waste Management Goals:

- This project will salvage for reuse a minimum of **XX%** by weight of the waste generated on-site.
- Waste reduction will be achieved through design, reuse and recycling efforts will be maintained throughout the construction process.

ii. Waste Prevention Planning:

- Compliance with Solid Waste District's (SWD) mandatory recycling requirements for businesses. The SWD mandatory recyclables include:
 - All kinds of paper
 - Corrugated cardboard
 - White and colored office paper
 - Plastic and glass bottles and jars
 - Metal cans
- Compliance with SWD and available District/ site or chantier Landfill, e.g.: disposal of tires, appliances, yard waste, mandatory recyclables, hazardous waste, batteries, fluorescent tubes, and large metal items.
- Project Construction Documents – Requirements for waste management which will be included in all work. The Contractor will contractually require all subcontractors to comply with the SWD mandatory recycling requirements. A copy of this Construction Waste Management Plan will accompany all Subcontractor Agreements and require subcontractor participation.
- The Construction Waste Reduction Plan shall be implemented and executed as follows and as on the chart:
 - Salvageable materials will be diverted from disposal where feasible.
 - There will be a designated area on the construction site reserved for a row of dumpsters each specifically labeled for respective materials to be received.
 - Before proceeding with any removal of construction materials from the construction site, Recycling Coordinators will inspect containers for compliance with SWD requirements.
 - Wood cutting will occur in centralized locations to maximize reuse and make collection easier.
 - Hazardous waste will be managed by a licensed hazardous waste vendor/Wholesalers

iii. Communication & Education Plan:

- The Overall Contractor will conduct an on-site pre-construction meeting with subcontractors. Attendance will be required for the subcontractor's key field personnel. The purpose of the meeting is to reinforce to subcontractor's key field employees the commitments made by their companies with regard to the project goals and requirements.
- Waste prevention and recycling activities will be discussed at the beginning of each weekly subcontractor coordination meeting to reinforce project goals and communicate progress to date.
- As each new subcontractor comes on site, the recycling coordinators will present him/her with a copy of the Waste Management Plan and provide a tour of the recycling areas.
- The subcontractor will be expected to make sure all their crews comply with the Waste Management Plan.
- All recycling containers will be clearly labeled. Containers shall be located in close proximity to the building(s) under construction in which recyclables/salvageable materials will be placed.
- Lists of acceptable/unacceptable materials will be posted throughout the site.
- All subcontractors will be informed in writing of the importance of non-contamination with other materials or trash.
- Recycling coordinators shall inspect the containers on a weekly basis to insure that no contamination is occurring and precautions shall also be taken to deter any contamination by the public.

iv. Motivation Plan:

- The project team will develop and publish a project mission statement that can be distributed to the subcontractors, attached to subcontracts, and posted at the jobsite.
- The Contractor shall conduct a pre-award meeting for workers and subcontractor (if any) under consideration will be required to attend the meeting to review project goals and requirements with the project team. Attendance will be a prerequisite for award of subcontracts. A sign-off will be required by subcontractors attending the meeting that the project goals are understood. This document will be an attachment to every subcontract. Copies of the attachment will be posted prominently at the jobsite.

Appendix 3: Contractor certifications (ISO 9001, ISO 14001 and OHSAS 18001)