REPUBLIC OF RWANDA

MINISTRY OF INFRASTRUCTURE

Environmental and Social Impact Assessment (ESIA) Report

Development of Urban Infrastructure in six Secondary Cities of Rubavu, Rusizi, Musanze, Muhanga, Huye and Nyagatare of Rwanda, and the City of Kigali

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Compiled for:

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Compiled by:

Green World Consult Ltd
Centenary House,
P.O. Box 816 Kigali – Rwanda

REPORT DETAILS PAGE

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EIA Team Composition:

Name	Area Of Expertise	Assigned Position
Dr. Denis Byamukama	Water and Environmental Resources Management	Team Leader
Mr. Pius Kahangirwe	Environment Health/Safety and Natural Resources Management	Environmental Health and Safety Specialist
Dr. Wilson Mwanja	Ecologist	Assitant team leader
Mr. Bob George Nkulanga	Environment and Development Specialist	Project coordination
Landry Nkiriyumwami	GIS and mapping	GIS/mapping

EXECUTIVE SUMMARY

This Environmental Impact Assessment Report was prepared following the environmental assessment of the proposed roads and drainage infrastructure subprojects of the Rwanda Urban Development Project (RUDP) that has been planned by Ministry of Infrastructure (MININFRA) for appraisal and funding by the World Bank for implementation in six secondary cities of Muhanga, Huye, Musanze, Rubavu, Rusizi and Nyagatare and Agatare area of Nyarugenge District in the City of Kigali (CoK). With funding from the World Bank, the Government of Rwanda (GoR) through the MININFRA has prepared an investment proposal to the RUDP aimed at improving the urban management, infrastructure services and stimulating local economic development. EIA Report provides an assessment of the respective subprojects; an Environmental and Social Management Plan (ESMP) for the respective cities; and associated costed Environment Monitoring Plan for the implementation of the ESMP. Overall there were no significant environmental impacts predicted but there were some significant negative social impacts resulting from expropriation of land and displacement of households in the area of Agatare and Musanze City for which Abbreviated Resettlement Plans (ARAPs) have been prepared to ensure all impacts are appropriately mitigated and addressed. The citizens found the proposed RUDP implementation highly beneficial and did not attract any dissent in all citizen engagement processes carried out in preparation of the RUDP.

The key RUDP elements components include:

(a) *Performance Based Grants to Support Infrastructure Investments for Basic Services* (including settlement upgrading) in the secondary cities of Rubavu, Rusizi, Musanze, Muhanga, Huye, and Nyagatare that have been identified in the National Urbanization Strategy to serve as poles of future urban and economic growth.

(b) *Facilitating Local Economic Development in the six secondary cities*: Linked to the infrastructure investments, support will be provided to secondary cities in promoting local economic development including infrastructure investments to facilitate markets, and technical assistance to district governments in enabling and partnering with the private sector.

(c) *Upgrading of the Agatare Informal Settlement in Nyarugenge District of the City of Kigali*. This intervention intended to serve as a pilot for testing approaches for community based urban regeneration that can subsequently be scaled up to other parts of Kigali and to secondary towns.

(d) *Technical Support for the Implementation of the National Urbanization Strategy*: Targeted capacity building support will be provided to districts, the CoK and national government agencies working to enable an equitable urbanization process which also promotes economic growth. In the six secondary cities the focus will be on (a) improving urban management, spatial planning systems through use of GIS and support to the ongoing effort to revise master plans, as well as enhancing the capacity of cities to plan, develop and execute capital investment plans in view of their long term urbanization trends, (b) supporting the development of a systematic methodology and approach on urban upgrading (e.g., land sharing for housing, community roles in housing development etc.) and for sharing its knowledge between Kigali and other districts, (c) at the national level, support could be provided to national government entities such as RHA to establish an urban observatory, including the systematic collection of data on demand and supply aspects of housing.

(e) *Project Management Support*: Support will be provided to the implementing agencies at national level and to the Districts on project management, including for the recruitment of staff as needed (e.g. engineers, financial management, procurement, Social and Environmental Safeguards

specialists). The districts may also be provided with technical assistance for managing and implementing infrastructure works

Project objectives and outputs

The overall objective of the RUDP is to support Rwanda's urbanization process by delivering basic services that will improve living conditions and promote local economic development. The project is guided by Rwanda's Urbanisation and Rural Settlement Sector Strategic Plan 2013-18, which appropriately recognizes and calls for socially equitable development and ensuring of environmental integrity in all urban infrastructure developments. The Sector Strategy promotes the development of secondary cities while creating a network of urban and urbanizing centres. Additional overall urban development guiding principles to be followed in preparing this project are: (a) designs which will encourage densification of the cities, resulting in reduced urban infrastructure and services costs, (b) local economic development must also be taken into consideration in the dialogue with the cities as to investment options, and (c) the investment options must be ranked as well using social inclusive growth as a major criteria.

Project motivation

MININFRA has put in place a strategy for Urban Development to mitigate effects and take advantages of opportunities by envisaged increase in the number of people migrating from rural areas to urban centres. The RUDP is one of the projects put together as a means of achieving the objectives of the Urban Development Strategy. Among the initial benefits that will be realised by the RUDP, which will be further defined during the EIA process include the following:

- The Project will improve the connectivity and economic opportunities within the respective beneficiary cities;
- Increased economic activity in the project area, the city, and the district as a whole;
- Direct and indirect job creation and employment (with the associated multiplier effect) during the implementation of the proposed subprojects and the operation of the completed projects;
- Contribution to the social, economic and institutional development of the communities within the project areas; and
- Improvement and development of skills whilst enriching the communities affected by the completed infrastructure of the subprojects in the future.

The roads and drainage subprojects in the first phase of RUDP will involve mainly rehabilitation of existing roads by upgrading them from murram to asphalt (tarmac) roads, and to minor extent construction of new roads to hard surface (likely tarmac or cobblestone roads) within the cities. These will increase the accessibility and connectivity between settlements and city centres or CBDs. The roads targeted are mostly those regarded as city roads under the urban authorities not those linked to the national grid under the Roads and Transport Authority (RTDA), the agency responsible for national roads.

Field survey revealed in a number of the cities a number of the settlements that will benefit from the RUDP interventions were faced with serious challenges in connecting to the central business area of the respective cities, and had to walk 10 to 20 times the distance for which access roads have been planned. In general for the project areas in nearly all cities, 70% of the houses had no vehicular access and the footpaths are also dilapidated and eroded. About 20% of the houses are located along the internal 39 motorable earth roads. These roads are also in a very poor state. Only 5% of the

houses are located along the main tarmac road. This makes it very difficult for emergency response like ambulances and fire trucks to access certain areas in case of fires, etc

Key Findings
All the beneficiary cities of the RUDP are highly populated with high population densities ranging from 130 residents per Sq. Km for Nyagatare City to 4,605 residents per Sq. Km in Agatare Area of the CoK.

Anticipated Positive Environmental and Social Impacts of the proposed RUDP investments
The RUDP was generally viewed positively by communities in the respective project areas; and implementation operationalization of the proposed subprojects were viewed and assessed by beneficiary citizens across the seven cities as having the following benefits including 1) improved town connectivity, accessibility and infrastructure; 2) improved health; 3) social cohesion and engagement; and 4) economic opportunities. Because of the positive view of the local authorities and high expectations of the citizens deliberate efforts were made to limit the first phase of the project only to the implementation of subprojects that were assessed as not involving involuntary displacement and associated compensation owing to the lack of prior planning and accurate information on the cost of the expropriation. Indeed cities of Nyagatare, Rusizi, Rubavu, and Muhanga were able to completely avoid any expropriation in the first phase, while the cities of Musanze, Huye and Agatare area of the CoK only managed to significantly limit the need for expropriation with Agatare area having relatively much more compared to Musanze and Huye cities.
All the proposed subprojects under the RUDP are for rehabilitation and upgrading of already existing infrastructure, removing any risk or impact to any physical cultural sites, natural habitats, forests, ecologically sensitive areas, and other socially important facilities and sites such as health centres, graveyards or community social centres, Mostly it will individual property close to the cities' road and drainage infrastructure in unplanned areas of the cities that will be affected.

The short and relatively narrow nature of the proposed infrastructure subprojects that is spread in across seven cities will be largely labour intensive with very limited use of light or small machinery. As such it is envisaged that RUDP will provide employment to the local population with strong suggestion for deliberate efforts by implementing agencies to ensure that the contractors hire from attendant communities with special provisions for the vulnerable groups, including women and child headed households, who are able to do the manual work. The RUDP is projected to provide between 3,000 and 10,000 manual jobs over the two years of implementation of subprojects in the first phase, and nearly double the number in the second phase of implementation.

In border towns including Rusizi and Rubavu cities, implementation of the proposed roads and drainage subprojects will greatly assist the small-scale traders, who are largely women and youth dealing in food and household items, to move between Rwanda and Democratic Republic of Congo (DR Congo) by reducing the distance they have trek following the only existing paved roads with loads on goods on their heads and or on hired motorcycles and bicycles. Between 25,000 and 40,000 small traders are estimated to benefit from the implementation of the proposed roads and drainage infrastructure subprojects in the two border towns by cutting down the daily trekking distance between the targeted markets. The trekking distance will be cut by more than 50% in both the cities. In all six secondary cities and Agatare area of the CoK, the RUDP implementation has been assessed to greatly enhance the connectivity of the towns and linking different communities to the respective CBDs and other socioeconomic facilities of importance such as markets and public service centres contributing to improvement in the well being of the respective local populations in general. It is also envisaged that increased connectivity within the cities will stimulate local economic development in terms of growth in trade, movement of merchandise, increasing in local and international tourism, and service delivery. The secondary beneficial impacts of implementation of RUDP include among others:

- Improved accessibility and connectivity within beneficiary cities,
- Reduced public transport costs,
- Road safety improvement,
- Improved access to social services,
- Stimulation of and improved local economies and induced development.

Other benefits include increase in value of agricultural products due to improved access to markets, stimulation and development of roadside economic activities, increased social mobility and access to social services especially health, and growth in local and international tourism.

Anticipated Environmental and Social Risks

Implementation of RUDP subprojects in the first phase has been assessed to have non-serious environmental and social impacts except for Agatare area with low but significant amount of impact on people through expropriation of their property and in limited cases displacement from their homes and businesses. The ARAP identified 32 houses that will be fully affected and 258 houses and properties that will be partially affected in Agatare area, and 26 households City of Musanze that will be partialy affected with two economically displaced. In Huye and Rusizi City the citizens offered land to the Districts as a bargain and contribution to the District to have the particular road subprojects undertaken in the first phase without need for expropriation. To this effect, ARAPs have been developed for Agatare area and Musanze City to guide the acquisition, compensation, displacement and resettlement of persons affected by the RUDP including a resettlement monitoring system to follow up and ensure that the resettled people are not socioeconomically worse off in the new setting compared to the former settlement.

Some of the key environmental and social impacts identified are as follows: **Noise and Dust Pollution**

Construction vehicles and excavations will increase ambient noise and decrease air quality through dust. Noise and dust will lead to increased irritation especially in the directly affected communities, which may cause social distress, reaction against the project, and possible health impacts.

Access Restrictions to Services and Developments

Nearly all of the subprojects selected are existing roads which are already playing very important socioeconomic role in the communities and cities, providing a variety of services such as access to socioeconomic services and facilities including educational facilities and market opportunities to sell and purchase food and general supplies. The Environmental and Social Management Plan (ESMP) has included explicit details for mitigating the impacts caused by restricted access. We would like to emphasize that the cost or budget for implementing the ESMP is part of the civil works contract.

Population Influx

An external workforce is likely to be brought into the area where employment positions cannot be filled locally possibly causing conflicts between locals and newcomers. The creation of employment opportunities may also result in a population influx into the area in search of possible opportunities, contributing to existing ongoing population expansion in the project areas. Construction teams that are constituted from people not from the project area have potential to create social tensions and cause disruption.

Conflict Potential

The RUDP was assessed not to create any conflict as it was welcomed enthusiastically by all

communities. Care was taken to ensure that the Grievance Redress Mechanism is well understoond by all citizens, especially those directly affected by the implementation of the RUDP.

Increase in Traffic and Safety Hazards

Construction activities will lead to a significant increase in vehicular traffic. There will be need for access or alternative routes around the site. Increased traffic will lead to deterioration of these access routes and the creation of dust. Households have indicated that roads become impassable during the wet season, especially during the rainy seasons. Details for management of impacts of increased traffic during the operational phase of the subprojects are articulated within the ESMP.

Labour and Rural Employment Opportunities

The use of heavy machinery and hi-tech equipment in the construction and or rehabilitation of urban infrastructure for the RUDP will greatly limit the absorption of the huge **surplus labour** and unemployed young people who form over 80% of the adult population with the majority only providing family labour for subsistence agricultural production. Given that the RUDP subprojects are generally small in terms of the dimensions of the roads and structure it will be advisable that where manual labour is feasible for the proposed subprojects, efforts be made right from the designing to the tendering through the construction to consider use of manual labour in the construction and or rehabilitation works. Given that the majority of the households and farming households and rely on family labour, it is important to ensure that the children are not caught up in providing manual labour for the construction and rehabilitation works.

Social-Environmental Linkages

During the implementation of the RUDP any resultant environmental degradation is likely to hit those hardest that are already disadvantaged. Socioeconomically, the vulnerable social groups are usually found occupying marginal lands such as the low lying lands and close to wetlands. These wetlands and lowlands also coincidentally serve as areas for drains and destination of the drain wastewater and storm water, and are characterized by frequent flooding especially Gikondo marshland of CoK. Such areas will also be likely the most directly affected during the construction and rehabilitation of the infrastructure works as they will hold the proposed drainage infrastructure, serve as the destination for drain water,

Other direct negative impacts will include:

- Soil erosion especially during rainy season;
- Scouring of the landscape due to opening of borrow pits;
- Destruction of vegetation due to clearing right-of-way and inadequate revegetation;
- Dust emissions,
- noise and vibrations during road construction;
- Increased sediment loads to streams and rivers where road crossings occur.
- The project could further have impacts from improper disposal of cut to spoil and wastes.

Other concerns include occupational safety hazards, traffic accidents and HIV/AIDS risk associated with construction labour.

Institutional Capacity for implementing agencies

The EIA assessed that proposed institutional capacity of the respective agencies and found that necessary provisions have been made to ensure smooth implementation of all key issues raised in preparation ot the RUDP including taking on board environmental and social safeguards. In the RUDP Environmental and Social Assessment context, the village and Sector leaders, as well as the statutory committees for resettlement will have to ensure that any vulnerable social groups rights and needs are appropriately considered with the guidance from the Sociologists and Environmentalists from the MININFRA, the Single Project Implementing Unit (SPIU), and the One Stop Centre from the beneficiary

districts. Our assessment established that all these positions are provided for and for most part they are already occupied. The RUDP has provisions for capacity building both at Central and Local Government agencies involved with management and implementation of the RUDP.

MININFRA already has established position for Sociologist and Environmentalist as senior level, positions which are currently occupied. The SPIU, which will be under Local Development Agency (LODA), will include the two positions of Sociologist and Environmentalist, who will also be supported by possibility for hire of consultants whenever needed. The Districts already have positions of District Environmental Office working under the One Stop Centre. They however, did not have position of the sociologist and will have to rely on the SPIU or consulting services for social assessment needs. Skills in mainstreaming of social, vulnerability or gender issues will need to be boosted at levels through training under the imbedded capacity building component of the RUDP.

Access to Information for All

The RUDP design, budget allocation and implementation of investments and trainings must include **awareness campaigns** that reach even those groups that often are not participating in 'regular' meetings at community levels. The World Bank Policy on Access to Information, launched on July 1, 2010 is a landmark disclosure policy adopted by the World Bank. The policy outlines a clear process for making information publicly available and provides a right to appeal if information-seekers believe they were improperly or unreasonably denied access to information or there is a public interest case to override an exception that restricts access to certain information.

Recommendations: Risk Mitigation Measures and Strategies

- Normally drainage installation is sized according to the probability of occurrence of an expected peak discharge during the design life of the installation. This is related to the intensity and duration of rainfall events occurring not only in the direct vicinity of the structure, but also upstream of the structure. The proposed footpaths in Agatare area and streets have been designed to include drains of different widths to gather for storm-water which in turn is delivered to the main, secondary and tertiary drains. We therefore, recommend that detailed hydrologic analysis be conducted to fully understand the expected peak discharge in the area (Agatare) after upgrading. The study should look at slope, soil types and the anticipated population increase in Agatare as some of the parameters which should be included in the analysis for proper designing of storm-water drains to mitigate potential future flooding in the area and this requires detailed survey of each drain to be conducted to allow for appropriate design.
- The current flooding in Gikondo wetland is a result of mainly built-up areas and on-going development surrounding this wetland that is far much wide than the project area, all of which direct the storm water down to Gikondo and Rwampara river. The Agatare area that is planned to be upgraded is one among other contributors to the on-going flooding of Gikondo wetland. Given that the contributing factors go beyond the project area with Gikondo wetland shared between two Districts of the CoK, and having established that the investment under RUDP in drainage upstream of the wetland in no way contributes to any increased flooding in the wetland, there is a need for a holistic approach to the challenge of flooding faced in Gikondo wetland. To this effect the project does impact the volume of water entering to Gikondo wetland, however this EIA study recommends that:
    - MININFRA works with Ministry of Finance to integrate the Gikondo wetland into the on-going large study under Ministry of Finance for flooding management of Nyabugogo catchment area, for which Gikondo wetland is part, for comprehensive solution to challenges of wetland management and services.

- Based on this concern, the Bank team (including the project engineer), the City of Kigali, the MININFRA, the RHA, the FS and SG consultants visited the Gikondo wetland and agreed that in order to mitigate soil erosion problems and to protect against accidents involving children, flow dissipation structures are recommended for inclusion in the preliminary and detailed designs for all four existing outfalls that discharge into the wetland.

- In addition, the Bank engineer in consultation with the FS consultants is recommending that the FS consultants run an elevation survey downstream from the wetland – up to the Nyabugogo River that the wetland discharges into – to plot the slope profile of the stream that runs through the wetland and determine if there might be a section, or sections, where the stream profile could be altered under a civil works intervention which would allow the stream to flow unconstructed.

- **Expropriation and relocation:** **T**he principle of minimal resettlement has been adopted to reduce the cost of expropriation. Nonetheless, some structures will be affected during the implementation of subprojects in the secondary cities and Agatare area. Structures will be affected by two types of network infrastructure: access streets and in some areas drains. Also structures in the wetland will be relocated to safer grounds; most preferably within the study area especially in Agatare. It was observed that there are some households staying within the wetland and along the periphery that are currently being affected by flooding. Impacts of flooding on the local population can therefore be seen as an indirect impact of the Agatare project if the road drainage is improved. The Government of Rwanda has established a program aiming to relocate settlers living less than 30 m from wetlands including in the city of Kigali and every year some sites are identified as priority for relocation. The resettlement of households settled in the flooding sections of the wetland is required and will be given a priority by the CoK with the support of MININFRA for the year 2016-2017. **CoK and Nyarugenge District should consider this issue among its priorities.**

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ACRONYMS & DEFINITIONS

ACRONYMS:

AASHTO	American Association of State Highway and Transportation Officials
AIDS	Acquired Immune Deficiency Syndrome
CoK	City of Kigali
dBA	Decibels
DDP	District Development Plans
DLC	Dry Lean Concrete
EIA	Environmental Impact Assessment
EPDRS2	Economic Development and Poverty Reduction Strategy 2
ESMP	Environmental and Social Management Plan
GIS	Geographic Information System
GoR	Government of Rwanda
HIV	Human Immunodeficiency Virus
LODA	Local Administrative Entities Development Agency
MES	Multilateral Environmental Agreements
MINALOC	Ministry of Local Government
MINECOFIN	Ministry of Finance and Economic Planning
MININFRA	Ministry of Infrastructure
MINIRENA	Ministry of Natural Resources
O&M	Operation and Maintenance
OHS	Occupational Safety & Health
PPE	Personal Protective Equipment
PPP	Public Private Partnership
PQC	Pavement Quality Concrete
RALGA	Rwandese Association of Local Government Authorities
RDB	Rwanda Development Board
REMA	Rwanda Environment Management Authority
RHA	Rwanda Housing Authority
RNRA	Rwanda Natural Resources Authority
RTDA	Rwanda Transport Development Agency
RUDP	Rwanda Urban Development Project
WB	World Bank

DEFINITIONS:

Carriageway: Area of road used by vehicles. It is bounded on either side by road shoulder.
Casual water: Standing water which results from roadwork activities and is found in puddles or containers on or near construction sites. It often is a breeding ground for disease vectors e.g. snails and mosquitoes, which can affect areas surrounding the road site.
Developer: Any person who has proposed or has undertaken to implement a project in the public or private sector
Drainage: This is the natural or artificial removal of surface and sub-surface water from an area.
Environment: The physical factors of the surroundings of the human being including land, water, atmosphere, climate, sound, odour, taste and the biological factors of fauna and flora and includes the cultural, social and economic aspects of human activity, the natural and built environment.
Environmental Impact Assessment (EIA): The systematic evaluation of a project to determine its impact on the environment and natural resources.
Environmental impact: Effects a project has on the environment and natural resources. These effects may be positive or negative, which could produce costs or benefits.
Environmental Management Plan: An Action Plan or Management Strategy for the implementation of mitigation measures identified in an EIA
Environmental Monitoring: refers to regular collection of environmental data at the project site while environmental auditing is a systematic documentation, periodic and objective evaluation of protection and management of the environment.
Environmental Planning: Means planning that takes into account environmental issues
Key stakeholders: Those inhabitants of an area affected by a project who have the most to lose and the most to gain from the completion of the project, and whose concerns must be addressed in an environmental assessment.
Landscape: Refers to the spatial organization of an environment on a broad scale, and how that organization shapes, and is shaped by, the activities which take place within it.
Lead Agency: Means any public office or organization including every Ministry or Government department which has functions for the protection of any segment of the environment and the conservation and sustainable use of natural resources.
Maintenance: Activities undertaken to prevent deterioration of the road pavement during its serviceable lifetime. Such activities may include clearing of side ditches, desilting of culverts, repairing of potholes, ravelled surfaces and deformations, clearing of vegetation on verges and restoration of road furniture and markings. The activities are categorized as *routine*, *recurrent* or *periodic*, depending on extent of work or, plant used, frequency and cost.
Murram: Refers to gravel suitable for road building.
Natural areas: Terrestrial and aquatic areas in which the component ecosystems are characterized primarily by native species, and in which human activities have not altered ecological function to the point where the ecosystems have changed in character or distribution.
Pavement: A structure composed of layers of increasing rigidity and strength and of varying thickness, designed to carry traffic loads on natural soil formations, typically comprising subgrade, sub-base and base layers.
Project: A development activity or proposal which has or is likely to have an impact on the environment. This encompasses polices, plans and programmes or strategic environmental assessment as well as technology and other categories of activities.
Proponent: The agency (MININFRA) proposing, and has responsibility for, a road project.
Public involvement: The dialogue, encompassing consultation and communication, between a project proponent and the stakeholders. It includes dissemination, solicitation, and presentation of information.

Rehabilitation: An enhanced period of maintenance intended to restore the road to its original condition. Structural defects are repaired without major changes to alignment and width standards as would be implemented in a reconstruction.
Resettlement Action Plan (RAP): An action plan prepared as part of an EIA to address issues of involuntary resettlement, compensation and rehabilitation of people and communities affected by a road project.
Residual impacts: Those negative environmental impacts which could not be eliminated during project design.
Road prism: Area of the ground containing the road surface, cut slope and fill slope.
Road reserve: Area of land typically extending from the centre line of the road, owned by the road and within which the roads authority has rights to extend the road and place associated infrastructure. This area can also be used for placing surface or subsurface utilities (water mains, electricity, telephone cables etc).
Scoping: The process of establishing the principal issues to be addressed in an environmental impact assessment
Screening: The process of determining if a project should be subjected to a detailed EIA. The main considerations being project type, size and the environmental sensitivity of project location
Shoulder: Area of road (typically 1.5 m wide), between the carriageway and ditch, often used by pedestrians and cyclists, may or may not be sealed.
Stakeholder: Individuals, communities, government agencies, private organizations, non-governmental organizations or others having an interest or "stake" in both the EIA process and outcomes of the projects.

1. INTRODUCTION

1.1 Background to the Project

With funding from the World Bank (WB), the Government of Rwanda (GoR) through the Ministry of Infrastructure (MININFRA) is in the process of preparing an investment proposal to support the development of six secondary cities of Rwanda including Musanzi, Rubavu, Nyagatare, Huye, Rusizi, and Muhanga; as well as development of infrastructure in Agatare areas of Nyarugenge District in the City of Kigali. The proposed investment aims to improve urban management, infrastructure services and local economic development. The key project elements components include:

a) *Performance Based Grants to Support Infrastructure Investments for Basic Services* (including settlement upgrading) in the secondary cities of Rubavu, Rusizi, Musanzi, Muhanga, Huye, and Nyagatare that have been identified in the National Urbanization Strategy to serve as poles of future urban and economic growth. The focus will be on supporting district governments in improving core infrastructure and services in the core urban centers of these six districts. Districts would be provided with grants based on their performance in critical institutional areas such as urban management (including, but not limited to, procurement, financial management, revenue collection, and planning and budgeting).
b) *Facilitating Local Economic Development in the six secondary cities*: Linked to the infrastructure investments, support will be provided to secondary cities in promoting local economic development this could include infrastructure investments to facilitate markets, and technical assistance to district governments in enabling and partnering with the private sector (e.g., through guidance on Public Private Partnership (PPP) arrangements).
c) *Upgrading of the Agatare Informal Settlement in Nyarugenge District of the City of Kigali*. This intervention includes planning, facilitation and implementation of the Agatare neighbourhood upgrading intervention, and is intended to serve as a pilot for testing approaches for community based urban regeneration that can subsequently be scaled up to other parts of Kigali and to secondary towns.
d) *Technical Support for the Implementation of the National Urbanization Strategy*: Targeted capacity building support will be provided to districts and national government agencies working to enable an equitable urbanization process which also promotes economic growth. In the six secondary cities the focus will be on (a) improving urban management, spatial planning systems through use of GIS and support to the ongoing effort to revise master plans, as well as enhancing the capacity of cities to plan, develop and execute capital investment plans in view of their long term urbanization trends, (b) supporting the development of a systematic methodology and approach on urban upgrading (e.g., land sharing for housing, community roles in housing development etc.) and for sharing its knowledge between Kigali and other districts, (c) at the national level, support could be provided to national government entities such as RHA to establish an urban observatory, including the systematic collection of data on demand and supply aspects of housing.
e) *Project Management Support*: Support will be provided to the implementing agencies at national level and to the Districts on project management, including for the recruitment of staff as needed (e.g. engineers, financial management, procurement, Social and Environmental Safeguards specialists). The districts may also be provided with technical assistance for managing and implementing infrastructure works.

Need for the Project

Field survey revealed in a number of the cities a number of the settlements that will benefit from the RUDP interventions were faced with serious challenges in connecting to the central business area of

the respective cities, and had to walk 10 to 20 times the distance for which access roads have been planned. In general for the project areas in nearly all cities, 70% of the houses had no vehicular access and the footpaths are also dilapidated and eroded. About 20% of the houses are located along the internal 39 motorable earth roads. These roads are also in a very poor state. Only 5% of the houses are located along the main tarmac road. This makes it very difficult for emergency response like ambulances and fire trucks to access certain areas in case of fires, etc.

Storm water in community settlements is produced from house roofs, paved areas and from roads during rainfall events. The amount of storm water is therefore related to the amount of rainfall precipitation as well as the nature of the surface. Vegetated surfaces slow the rate of runoff to storm water and also allow rainfall to penetrate the soil whereas impervious surfaces do not and therefore produce more run-off. During a storm event, the peak flow of storm water is higher and duration shorter with an impervious surface, while the peak flow is lower and duration longer with a vegetated surface. Storm water run-off may contain as much solids as household wastewater depending on the debris and pollutants in the path of the storm water run-off, although in general the pollutant load of storm water is lower than that of wastewater (UNEP, 2014).

Deep gullies and gorges left behind in cities such as Rusizi, Rubavu and Huye, by the poorly constructed and or limited capacity drainage systems, and in Musanze City were gullies and deep gorges that have come up over years as a result of the voracious seasonal natural and volcanic rivers from up the hills, call for urgent redress of the poor drainage infrastructure to ensure that storm water and wastewater is guided and restrained appropriately within the established channels. In Agatare Area the main drainage channel has become too dangerous and was reported to result in fatalities each rainy season with deepening of the channel and eating away of the walls of channels with the huge volumes and fast moving water from the slopes of hilly terrain. While it is evident that some drains have been constructed/improved to address the problem of storm water in the area, some residents release waste (grey) water into the drains causing pollution along the channel and in the final location of disposal – often the low lying wetlands. Other drains are just natural and un-serviced. Because of low velocity of water in these drains, uncollected solid waste is deposited along the drains leading to blockage and flooding of houses lying along the drain corridor. Some of the existing covered storm water drains which also serve as footpaths in the respective project areas require rehabilitation after being destroyed (swept over) during heavy rains because of high velocity of the water. Three factors are responsible for the high velocity and destruction: high slopes, impervious surface, high gradient, the presence of solid waste from households which affects smooth flow of water and the general capacity of the drains. To establish the correct sizes, location and length of the drains required to address this problem, an in-depth hydrological modelling is necessary.

1.2 Objective of the EIA

The main objective is to carry out a comprehensive environmental impact assessment for the proposed infrastructure development activities i.e. construction of secondary urban roads and drainage systems. The specific objectives included:

i. Establishment of the project's potential environmental and social impacts and propose measures to mitigate them;
ii. Assessment of the impacts of alternatives and advise the design consultant accordingly; and

iii. Determination of the actions required by MININFRA and other stakeholders to satisfactorily address the environmental impacts that might arise as a result of project implementation.

1.3 Project Locations

The project will be executed in the following six secondary cities of Rwanda as shown in the Figure 1 below. These are: Rubavu, Rusizi, Musanze, Muhanga, Huye and Nyagatare. Additionally, Infrastructure Up gradation studies will be carried out for Agatare, Nyarugenge District, Kigali

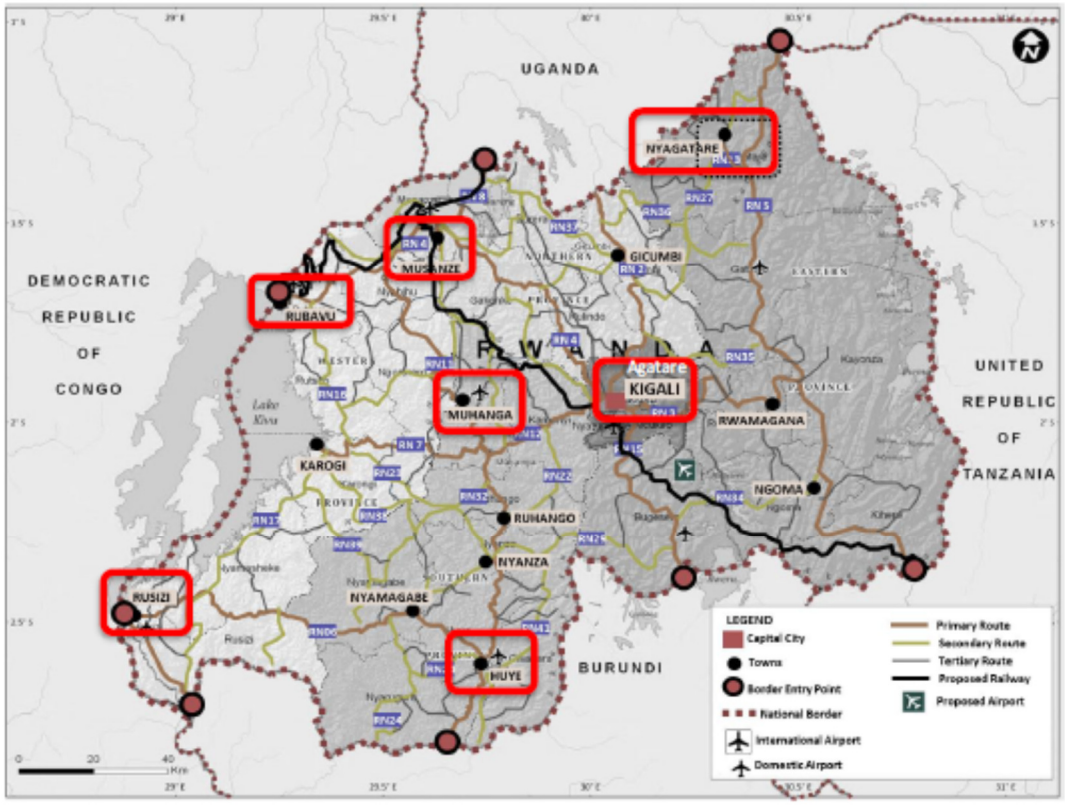


Figure 1: Project Areas

1.4 EIA Process in Rwanda

The EIA process followed the legal procedures as contained in Environmental Impact Assessment Guidelines, 2006 for Rwanda. The flow chart in Figure 2 summarizes the process.

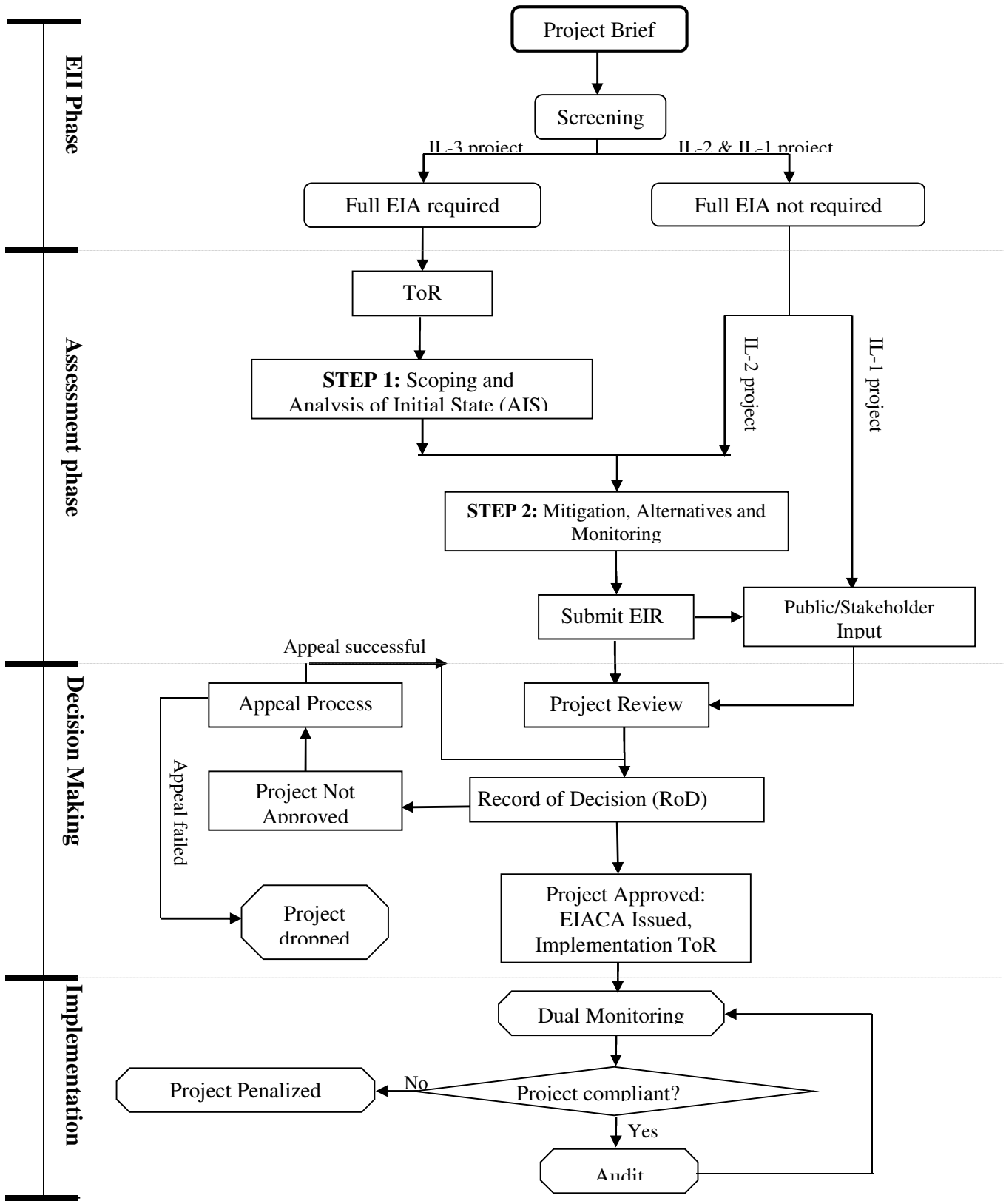


Figure 2: EIA Process in Rwanda

1.5 Scope of EIA

In contrast to new road and drainage projects where interest is on preventing impacts, focus of environmental assessment for rehabilitation or upgrade centres on rehabilitating and mitigating further impacts. The World Bank's handbook on roads and the environment guides that for existing roads, which are to undergo upgrading, the focus should be on repair or rehabilitation of prior environmental damage. For example, a culvert that restricts water flow, thus causing flooding, should be examined with special regard to widening the water channel. The World Bank's roads handbook also advises that for existing road projects, the EIA should:

i. Define the nature of the proposed work and how it would change the existing road;
ii. Identity which aspects of the existing road have caused unacceptable negative impacts;
iii. Based on baseline conditions, analyze combined effect of the rehabilitation action with that of the existing road operations; and
iv. Prepare an action plan for repair of prevailing environmental damage and for the prevention of any negative effects resulting from the new work. This requirement does not suggest that state of the environment in the study area must be brought back to pre-development state but rather, at the very least, ongoing degradation be halted and the environment not be subjected to significant new negative impacts.

The EIA scope therefore dwelt on the aforementioned aspects in addition to consideration of the environmental and social issues raised in the draft Feasibility Study reports for each secondary city and for the Agatare area in the CoK.

1.6 Structure of the Report

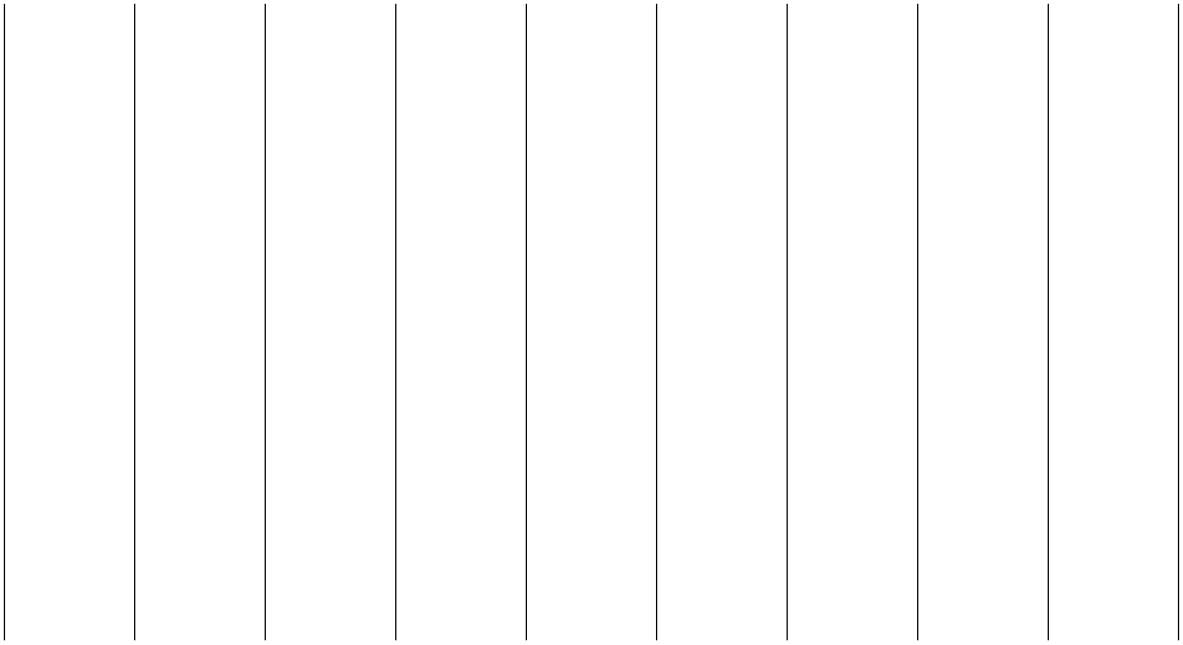
This report is arranged in the following chapters:

Chapter 1: Introduction
Chapter 2: Policy, Legal and Institutional Framework
Chapter 3: Approach and Methodology
Chapter 4: Environment and Socio-Economic Baseline
Chapter 5: Project Description
Chapter 6: Project Need and Analysis of Alternatives
Chapter 7: Potential Impacts and Mitigation Measures
Chapter 8: Environmental & Social Monitoring Plan
Chapter 9: Environmental Management Plan
Chapter 10: Environmental Management and Monitoring Plan
Chapter 11: Public Consultation Findings
Conclusions and Recommendations
References
Annexes

1.7. Stakeholder analysis

A total number of 481 persons were involved in the consultation and citizen engagement during the Enviromental Assessment exercise for the seven cities combined including those from the six secondary cities and those from Agatare area in the CoK.. The table below gives the kind of stakeholders involved in the assessment with 42.5% being the citizens from the project sites, 24% being local leaders, 15.4% being most local government staff but with a good representation of the central government agencies, 9.6% being civil society organizations including both NGOS and community based organizations (CBOs), while 8.5% were the different teams of consultants involved

with the study including feasibility study team, those from the Bank, and the safeguards consultancy team.



2. POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

2.1 Introduction

In this chapter, policy, legal and institutional framework within which this EIA was undertaken is discussed. National laws are discussed along with relevant multilateral environmental agreements (MES) to which Rwanda is a party. Road development may have serious impacts on the environment from two perspectives: first, effects of construction/improvement itself and the resulting disturbance on ecological and social systems especially impacts on property rights; and secondly, after the road has been constructed/improved, the economic activities it creates may have both negative and positive impacts on the environment and social setting of the areas it traverses. These environmental and social effects must be managed within a legal framework.

In the juridical system of the Republic of Rwanda, the EIA procedure is regulated by the Ministerial Order N° 003/2008 of 15/08/2008; whereas the *Ministerial Order* N°004/2008 of 15/08/2008 establishes the list of works*,* activities *and* projects *that are required to undertake a mandatory* EIA. This list includes physical infrastructure *activities.* Sector Guidelines for EIA for Road Development Project are in place (August, 2009). Rwanda has various laws, policies and institutional set up governing the management of its natural environment as discussed in the following sub-sections.

2.2 Policy Framework

Policy	Relevancy
Vision 2020 and EDPRS 2	▪ The long-term objective of Vision 2020 is to make Rwanda a middle-income country. To reach the targets set for Vision 2020, the government developed the Economic Development and Poverty Reduction Strategy 2 (EPDRS2) 2013-2018 which, under the Economic Transformation Pillar, aims to promote secondary cities as centres of non-agricultural economic activities. Six key urban centres were identified as secondary cities and "poles of growth" to be prioritized: Muhanga, Huye, Rusizi, Rubavu, Musanze and Nyagatare. Linkages to other towns and rural areas will be enhanced in these cities, as well as access to affordable housing, while Kigali will remain the main city and regional hub. ▪ Under EDPRS2, Priority 4 provides for transform the economic geography of Rwanda by facilitating urbanisation and promoting secondary cities. Six Secondary Cities will be developed as poles of growth and centres of non-agricultural economic activities. This will require investment in specific hard and soft infrastructure and strategic economic projects that will trigger growth of these cities and enhance linkages to other towns and rural areas. Upgraded roads will be a key element of increased attractiveness of these cities.
Rwanda Environmental Policy	The overall objective of the Environmental Policy is the improvement of man's wellbeing, the judicious utilization of natural resources and the protection and rational management of ecosystems for a sustainable and fair development. The policy seeks to achieve this through improved health and quality of life for every citizen and promotion of sustainable socio-economic development through a rational management and utilization of resources and Environment, integrating Environmental aspects into all the development policies, planning and in all activities carried out at the national, provincial and local level, with the full participation of the population, conservation,

	preserve and restoration of ecosystems and maintenance of ecological and systems functions. With reference to the National Policy on Environment (NPE) in Rwanda, as of November 2003, to ensure a sustainable environment protection and management, the following principles mention among others that were adopted: ▪ It is every person's right to live in a safe and stable environment, but on the other hand, they must keep it salubrious, ▪ The national economic growth must be based on rational use of resources and take into account environmental dimensions, ▪ Active and effective participation of the whole population for environment protection and management, ▪ A special emphasis must be laid on environmental education and sensitisation programme at all levels with more involvement of women and the youth, ▪ Environmental impact is to be analysed while conducting studies of development projects.
Health Sector Policy	One of the objectives of Rwanda Heath Sector Policy is to improve the quality of life and demand for services in the control of disease. The policy identifies the most common illnesses as a result of unhealthy living or working environment. The health sector policy required for the proposed infrastructure subprojects emphasis is put on ensuring quality environment and environmental control of the disease vector especially in marshland areas.
Land Policy	The Rwanda land policy calls for rational use and sound management of national land resources, and that land use be based on established master plans. The policy also provides development of land use plans based on suitability of the areas/lands thus distinguishing the different categories of land and their purpose. On the use and management of hillsides and marshlands, the policy stipulates that marshlands meant for agriculture should be cultivated after adequate planning and Environmental Impact Assessment.
Water and Sanitation Policy	The Water and Sanitation Sector is based on vision 2020, millennium development goals and poverty reduction strategy. The policy provides for decentralization in line with the national decentralization policy, institutional aspects, integrated watershed management, monitoring and assessment and participatory approach to water and sanitation among other sectoral reforms in Rwanda.
National Water Resources Management Policy	The water policy aims at fair and sustainable access to water, improvement of the management of water resources, etc. through reforestation on hillsides and water catchments areas. This policy would seem in conflict with other sector policies including agriculture and marshland development. The policy also calls for a holistic approach to the management of water resources while integrating other policy provisions related to forests, wetlands, agriculture and land.
Urbanization and Rural Settlement Sector Strategic Plan (2013 – 2018)	This plan is a comprehensive strategic action plan that lays the foundation for sustainable urban and regional development in Rwanda and seeks to address the key issues faced due to urbanization pressures in the country. It is aligned with the key national strategies of Rwanda related to economic development, human development and environment. Key objective of the strategic plan is to ensure that development planning policies and processes are fully functional at local government level through clear guidelines and regulatory

	frameworks, and putting in place defined roles and responsibilities for the various stakeholders. Special focus is reserved for the harmonization of the development plans at various levels, strengthening coordination of different agencies involved in the sector, revitalising the role of private sector in service delivery and investment, comprehensively addressing cross-cutting themes such as, *capacity building, regional integration, environment and climate change, social inclusion etc.,* through their inclusion within the unified urban and rural development sector, fostering community participation in the urbanization process, strengthening financial management at local government level for budgeting and preparing capital improvement plans urban projects; and operationalise monitoring and evaluation of implementation efforts to check compliance with sectoral targets.
National Biodiversity Strategy and Action Plan	This strategy defines the objectives and priorities for the conservation and sustainable management of biodiversity. The plan includes hillsides and wetlands and protected areas as some of the areas that need to be conservation. The strategy focuses on five major areas i.e. improved conservation of protected areas and wetlands; sustainable use of biodiversity in natural ecosystems and agro-ecosystems; rational use of biotechnology; development and strengthening of policy, institutional, legal and human resources frameworks; and equitable sharing of benefits derived from the use of biological resources. Upgrading of road infrastructure should therefore not impact biodiversity negatively.
National Poverty Reduction Strategy	The National Poverty Reduction Strategy identifies the transformation of the subsistence agriculture, into a modernized agriculture, which is market oriented as one of the priority sectors. Other priority areas include human development which covers the actions of improving living conditions of the poor, economic infrastructure, governance, development of the private sector and the institutional reinforcement which includes transport sector.
District Development Plans (DDP)	District Development Plans are aligned to EDPRS II, which is contributing to its implementation and consequently to the revised Vision 2020 targets. The aim and purpose of the District Development Plans is to create a platfoam for Districts to reflect on the past achievements and potentials and to come up with the priorities that will drive the development of district for the next five years and to meet the social economic development and needs of the population without contradicting with the national priorities. This project is in line with the DDP priority in promoting urbanization and facilitating access to basic infrastructure.

2.3 Legal Framework

Law	Relevance
The Constitution of the Republic of Rwanda, 2003	The Constitution of the Republic of Rwanda as promulgated in 2003 makes clear the requirement for equitable and participatory development for all citizens of the country, and makes quality and healthy environment as a basic right with every citizen required to protect, safeguard and promote a healthy environment. In this regard there are principally two articles among other provisions that are basis for environment regulatory framework as detailed below:

	▪ Article 45 of the constitution states that all citizens have the right to participate in government of the country, whether directly or through freely chosen representatives in accordance with the law. All citizens have the right of equal access to public service e.g. Roads in accordance with their competence and abilities. ▪ Article 49 states that every citizen is entitled to a healthy and satisfying environment. Every person has the duty to protect, safeguard and promote the environment. The state shall protect the environment. The law determines the modalities for protecting, safeguarding and promoting the environment.
Law on Environmental Protection - Organic Law nº 08/2005 of 08/04/2005	The Law on Environment Protection sets the modalities for protection, conservation and promotion of the environment in Rwanda. The law gives right to every natural or legal person in Rwanda to live in a healthy and balanced environment while obligating each and every citizen to contribute individually or collectively to safeguard country's natural, historical and socio-cultural heritage. The framework of the law on the protection and management of natural resources centers on avoiding and reducing the disastrous consequences on environment. It measures result from an environmental evaluation of policies, programs and projects, aimed at preventing the consequences of such activities. It provides for a right to a healthy and productive life in harmony with nature and to equitably meet the needs of the present and future generation in infrastructure development e.g upgrading of roads and construction of drainage channels.
Ministerial Order determining the length of land on shores of lakes and rivers transferred to public property - N° 007/16.01 of 15/07/2010	This law sets the boundary for development and settlement activities next to water bodies. This Order aims at setting aside the length of land on shores of lakes and rivers affected in the public domain for environmental protection. The land within a distance of fifty (50) meters from the lakeshore is public property. The land within a distance of ten (10) and five (5) meters from the shore of big rivers and small rivers respectively is public property. The length set is calculated beginning from the furthest line reached by water depending on successive flooding record; and such land is statutorily regarded as a protected area and not is allowed to erect private property on such land. The only activities aimed at protecting the water bodies are permitted in these protected areas. Specifically the following are protected: dumping solid wastes; and dumping liquid wastes. Additional relevant laws in ensuring environmental quality and sustainable resource utilization in regards to the proposed subprojects include: ▪ Law and statutory guidelines on Environmental Impact Assessment ▪ The Law on Waste Management ▪ The Law on Protection against Environmental Noise ▪ The Law on natural water resources and discharges/effluents ▪ The Law and guidelines on Occupational Safety and Health ▪ Law N° 43/2013 of 16/06/2013 governing land in Rwanda ▪ Law N° 13/2014 of 20/05/2014 on mining and quarry operations ▪ Law Nº47bis/2013 of 28/06/2013determining the management and utilization of forests in Rwanda ▪ Ministerial Order N° 001/16.01 of 03/01/2012 on explosives used in mining, quarrying and infrastructure activities ▪ Law N°55/2011 of 14/12/2011governing roads in Rwanda ▪ Ministerial Order Nº008/MINIRENA/2015 of 18/06/2015 establishing a list of protected trees

	▪ Law N° 32/2015 of 11/06/2015 relating to expropriation in the public interest ▪ Law N° 70/2013 of 02/09/2013 governing biodiversity in Rwanda ▪ Ministerial Order N°003/16.01 of 15/07/2010 preventing activities that pollute the atmosphere ▪ Prime Minister's Instructions N° 005/03 of 27/12/2013 preventing air pollution caused by vehicular emissions and machines using petroleum products in Rwanda
Law N° 32/2015 of 11/06/2015 Relating to Expropriation in the Public Interest	The Expropriation Law provides for public dissemination on the importance of the project to be established and the need for expropriation. Article 12 of the Expropriation Law stipulates that the relevant Land Committee, after receiving the request for expropriation, shall examine the basis of that project proposal. In case it approves the basis of the project proposal, the relevant Land Committee shall request, in writing, the District authorities concerned to convene a consultative meeting of the population where the land is located, at least within a period of thirty (30) days after receipt of the application for expropriation, and indicating the date, time and the venue where the meeting is to be held. The relevant Land Committee shall take a decision within a period of at least fifteen (15) days after the consultative meeting with the population. Article 3 stipulates that it is only the Government that shall order expropriation in the public interest, and must be done with prior and fair compensation. The law also bars anybody from interfering of stopping expropriation "on pretext of self-centred interests". Accordingly Article 3 provides for any underground or surface activity carried out with in public interest on any land but with due and fair compensation to the land owner. Article 4 requires that any project, at any level, which intends to carry out acts of expropriation in the public interest, must budget and provide funding for valuation of the property of the person to be expropriated and for fair compensation.
Law N°62/2008 of 10/09/2008 Putting In Place The Use, Conservation, Protection And Management Of Water Resources Regulations	Article 69 provides for Conveying water resources where; Water may be moved fron one place to another. The beneficiary applies for it and pays indemnity to any damages caused.

2.4 Institutional Framework

The existing institutional arrangement corresponding to the secondary cities (urban areas) are presented in table below. Whereas District Local Governments are the main institute responsible for the provision of access to basic services, including Roads & Drainages, water, sanitation and solid waste management, the other institutions linked with District Local Governments in various roles and responsibilities are also described here.

Institution	Roles and Responsibilities

MININFRA	Formulation of national policies and strategies; sector oversight, budgeting and resource mobilisation; overall sector performance monitoring for the country including urban areas and secondary cities under which this project is proposed.
Rwanda Transport Development Agency (RTDA) Law N°02/2010 OF 20/01/2010	Implement Government policy on roads, railways, cable car and waterways transport infrastructures; manage and control national road network with a view to achieving road safety and maintenance; manage and control waterways transport infrastructure with a view of ensuring their value added; develop railway and cable car infrastructure in Rwanda; develop public transport service within the country on road and waterways. RTDA manages all the National Roads with in the secondary cities. RTDA is also the technical advisor to the District for planning and development of road networks in secondary cities
MINIRENA	MINIRENA has the responsibility for developing land utilization policies (including surveying, land classification, land laws and land tenure); the development of environmental policies and procedures (including impact assessments), protection of natural resources (water, land, flora, and fauna), environmental legislation, biodiversity, and other environmental aspects informed by the Environment Law among others. Chapter IV of the Organic Law Article 65 clearly calls for the need to subject projects to mandatory Environmental Impact Assessment. Article 65: Further specifies that every project shall be subjected to environmental impact assessment prior to its commencement. It shall be the same for programs, plans and policies likely to affect the environment. Specific details of projects referred to in this Article shall be spelt out by the order of the Minister in charge of environment. Article 66 states that Environmental Impact Assessment (EIA) shall include at least the following: ▪ A brief description of the project and its variants. ▪ Analysis of direct and indirect foreseeable consequences on the environment. ▪ Analysis of the initial state of the environment. ▪ Measures envisaged reducing, preventing or compensating for the consequences. ▪ Reasons for the choice. ▪ A summary of requisitions from clause1 to 5 of this article; ▪ A definition of the evaluation and monitoring methods used regularly and environmental indicators before (initial state), during and after implementation of the project or, as the case may be, at the final evaluation stage of the project; ▪ A financial evaluation of measures recommended preventing, reducing or compensating for the negative effects of the project on the environment and measures for regular monitoring and control of relevant environmental indicators.
Rwanda Environment Management Authority	With regards to the management of the bio-physical environment throughout Rwanda, the overall responsibility lies with the Rwanda Environment Management Authority. In November 2003, the Government of Rwanda approved the law establishing the Rwanda Environment Management Authority (REMA). The functions of REMA include; ▪ To advise the Government on legislative and other measures for the management of the environment or the implementation of relevant

	international conventions, treaties and agreements in the field of environment, as the case may deem necessary. ▪ To take stock and conduct comprehensive environmental audits and investigations, to prepare and publish biannual reports on the state of natural resources in Rwanda. ▪ To undertake research, investigations, surveys and such other relevant studies in the field of environment and disseminate the findings. ▪ To ensure monitoring and evaluation of development programs in order to control observance of proper safeguards in the planning and execution of all development projects, including those already in existence, that have or are likely to have significant impact on the environment. ▪ To participate in the set up of procedures and safeguards for the prevention of accidents and phenomena which may cause environmental degradation and propose remedial measures where accidents occur. ▪ To render advice and technical support, where possible, to entities engaged in natural resource management and environmental protection. ▪ To provide awards and grants aimed at facilitating research and capacity-building in matters of environmental protection.
Rwanda Development Board (RDB)	This is a one stop institution bringing together several government bodies in Rwanda focussed on promoting investment in Rwanda. RDB has a department responsible for EIA processes including reviewing all projects EIA reports before approval of the implementation of the projects, a duty that was previously undertaken by REMA.
Rwanda Housing Authority (RHA) Law N°40/2010 OF 25/11/2010 *Official Gazette no 09 of 28/02/2011*	▪ Serve as overall project manager on behalf of the State for all projects related to housing and construction including road and drainage infrastructure; ▪ Advise the Government on the formulation of the policy on housing, urban development and construction; conduct regular and thorough assessment of the status of urban areas and construction in Rwanda and survey requirements for additional housing; promote and facilitate the provision of urban housing in Rwanda; advise the Minister in charge of urban housing and construction on the formulation of systems and procedures for the development of construction in Rwanda in accordance with the law; ▪ Enforce compliance with the law on environmental protection aiming at developing urban housing and construction; obtain, maintain, operate, update and disseminate scientific, socio-economic, and environmental data pertaining to urban construction; maintain and update a database of all public fixed and movable assets; advise Government on all mechanisms that may be used to improve urban spontaneous settlements; advise Government on recommended standards for urban construction; provide advice on all aspects of urban building including suitability, cost, use of local materials, construction procedures adapted to earth structures; develop programmes and make proposals for the development of urban housing and implement such programmes as approved by the Minister in charge of housing; update the relevant Minister on the status of construction in rural and urban areas and provide advice on appropriate improvements; contribute to establish and promote grouped settlement
The Local Administrative Entities Development	Finance development activities in local administrative entities with legal personality; serve as an intermediary between local administrative entities with legal personality and donors especially those involved in financing development activities in those entities; put in place mechanisms of distributing financial

Agency (LODA) And Determining Its Mission, Organisation And Functioning (*Official Gazette nº 41 of 14/10/2013)* LODA: by Law N°62/2013 Of 27/08/2013 Establishing	support in local administrative entities with legal personality; monitor the use of funds allocated by LODA to development activities in the local administrative entities with legal personality; approved by decentralized entities; monitor the use of funds allocated by LODA to development activities in the local administrative entities with legal personality; establish strategies for creation of high intensive labour and assistance to those unable to perform such jobs and who are approved by decentralized entities; contribute to sensitizing population and building their capacities in analysing and solving their problems; contribute to sensitizing population to participate in development activities meant for them; to contribute to sensitizing population on the culture of making savings and using the services of banks and micro-finance institutions; build capacities of local administrative entities with legal personality within the scope of LODA mission; coordinate Government's development activities in local administrative entities with legal personality; mobilize and collect funds.
Ministry of Finance and Economic Planning (MINECOFIN)	Coordinates the national budgeting, planning and financing framework.
Ministry of Local Government (MINALOC	The Ministry of Local Government play a key role in the decision making process, particularly through territorial management as the authority at decentralized level, in the Districts, as well as urban areas.
RALGA	The Rwandese Association of Local Government Authorities (RALGA) which constitutes a framework of dialogue of cities will be involved in the approval of urban housing development programs, coordinate their implementation, and ensure their monitoring and evaluation.
District Local Governments	Responsible for the provision of access to basic services, including Roads, water, sanitation and solid waste management. Local governments have financial autonomy (fiscal decentralisation); own the Top center infrastructure; are in charge of implementing urban projects; are encouraged to contract private operators for infrastructure O&M; prepare and implement consolidated district development plans
Civil society / NGOs	Contribute to the implementation of Urban projects; participate in the Sector-Wide Approach and in coordination mechanisms at the district and national level; play a major role in solid waste management.
Communities	To be involved in project identification, planning and commissioning, as a matter of policy; form user committees to represent consumer interests; are in charge of the operation and maintenance of certain water infrastructures (community management). Collective sewerage projects (condominial type) will actively involve communities in planning, Operation & Management and possibly construction. Villages may assume a major role for the provision of sanitary facilities and local solid waste management.

2.5 World Bank Safeguard Policies

The objective of the World Bank's environmental and social safeguard policies is to prevent and mitigate undue harm to people and their environment during the development process. These policies provide guidelines for bank and borrower staff in the identification, preparation, and implementation of programs and projects. Safeguard policies provide a platform for the participation of stakeholders in project design, and are an important instrument for building ownership among local populations (World Bank, 2006). The triggered safeguard policies are presented in the sub-sections below.

2.5.1 OP/BP 4.01 - Environmental Assessment

The World Bank's environmental assessment (EA) policy and recommended processing are described in Operational Policy (OP)/Bank Procedure (BP) 4.01: Environmental Assessment (Table 1). Its purpose is to improve decision making, to ensure that all options under consideration are sound and sustainable, and that potentially affected people have been properly consulted. Environmental Assessment (EA) is one of the 10 environmental, social, and legal Safeguard Policies of the World Bank. EA is used in the World Bank to identify, avoid, and mitigate the potential negative environmental impacts associated with Bank lending operations. This policy is considered to be the umbrella policy for the Bank's environmental 'safeguard policies'.

Table 1: WB OP/BP 4.01 Environmental Assessment

Objectives	Operational Principals
To help ensure the environmental and social soundness and sustainability of investment projects.	1. Use a screening process for each proposed project, as early as possible, to determine the appropriate extent and type of environmental assessment (EA) so that appropriate studies are undertaken proportional to potential risks and to direct, and, as relevant, indirect, cumulative, and associated impacts. Use sectorial or regional environmental assessment when appropriate.
	2. Assess potential impacts of the proposed project on physical, biological, socio-economic and physical cultural resources, including trans-boundary and global concerns, and potential impacts on human health and safety.
	3. Assess the adequacy of the applicable legal and institutional framework, including applicable international environmental agreements, and confirm that they provide that the cooperating government does not finance project activities that would contravene such international obligations.
	4. Provide for assessment of feasible investment, technical, and siting alternatives, including the "no action" alternative, potential impacts, feasibility of mitigating these impacts, their capital and recurrent costs, their suitability under local conditions, and their institutional, training and monitoring requirements associated with them.
	5. Where applicable to the type of project being supported, normally apply the Pollution Prevention and Abatement Handbook (PPAH). Justify deviations when alternatives to measures set forth in the PPAH are selected.
	6. Prevent and, where not possible to prevent, at least minimize, or compensate for adverse project impacts and enhance positive impacts through environmental management and planning that includes the proposed mitigation measures, monitoring, institutional capacity development and training measures, an implementation schedule, and cost estimates.
	7. Involve stakeholders, including project-affected groups and local nongovernmental organizations, as early as possible, in the preparation process and ensure that their views and concerns are made known to decision makers and taken into account. Continue consultations throughout project implementation as necessary to address EA-related issues that affect them.
	8. Use independent expertise in the preparation of EA where appropriate. Use independent advisory panels during preparation and implementation of projects that are highly risky or

	contentious or that involve serious and multi- dimensional environmental and/or social concerns.
	9. Provide measures to link the environmental assessment process and findings with studies of economic, financial, institutional, social and technical analyses of a proposed project.
	10. Provide for application of the principles in this Table to subprojects under investment and financial intermediary activities.
	11. Disclose draft EA in a timely manner, before appraisal formally begins, in an accessible place and in a form and language understandable to key stakeholders.

Relevance: The Project triggers this policy because although there is justification for the proposed road and drainage infrastructure, there are also environmental impacts associated with the construction and operation of these infrastructures. OP 4.01 requires an Environmental Assessment (EA) of projects proposed for WB financing to ensure that they are environmentally sound and sustainable, and thus to improve decision making. In this regard, a comprehensive Environmental and Social Impact Assessment has been undertaken by the Proponent to establish a detailed Environmental Management Plan that will provide guidelines for environmental stewardship of the construction and operational phases of the Project.

2.5.2 OP/BP 4.04 - Natural Habitats

This OP seeks to ensure that World Bank-supported infrastructure and other development projects take into account the conservation of biodiversity, as well as the numerous environmental services and products which natural habitats provide to human society. The policy strictly limits the circumstances under which any Bank-supported project can damage natural habitats (land and water areas where most of the native plant and animal species are still present). Specifically, the policy prohibits Bank support for projects which would lead to the significant loss or degradation of any Critical Natural Habitats, whose definition includes those natural habitats which are either:

- Legally protected,
- Officially proposed for protection, or
- Unprotected but of known high conservation value.

Table 2: WB OP/BP 4.04 Natural Habitats

Objectives	Operational Principals
To promote environmentally sustainable development by supporting the protection, conservation, maintenance, and rehabilitation of natural habitats and their functions.	1. Use a precautionary approach to natural resources management to ensure opportunities for environmentally sustainable development. Determine if project benefits substantially outweigh potential environmental costs.
	2. Avoid significant conversion or degradation of critical natural habitats, including those habitats that are (a) legally protected, (b) officially proposed for protection, (c) identified by authoritative sources for their high conservation value, or (d) recognized as protected by traditional local communities.
	3. Where projects adversely affect non-critical natural habitats, proceed only if viable alternatives are not available, and if appropriate conservation and mitigation measures, including those required maintaining ecological services they provide, are in place. Include also mitigation measures that minimize habitat loss and

Objectives	Operational Principals
	establish and maintain an ecologically similar protected area.
	4. Whenever feasible, give preference to siting projects on lands already converted.
	5. Consult key stakeholders, including local nongovernmental organizations and local communities, and involve such people in design, implementation, monitoring, and evaluation of projects, including mitigation planning.
	6. Provide for the use of appropriate expertise for the design and implementation of mitigation and monitoring plans.
	7. Disclose draft mitigation plan in a timely manner, before appraisal formally begins, in an accessible place and in a form and language understandable to key stakeholders.

Relevance: The Project triggers this policy as it will involve the alteration of terrestrial habitats; this will mainly occur as a result of vegetation clearing for both upgrading roads and drainage systems although to a very minimum extent.

2.5.3 OP 4.36 – Forests

The Bank's forests policy aims to reduce deforestation, enhance the environmental contribution of forested areas, promote reforestation, reduce poverty, and encourage economic development. Combating deforestation and promoting sustainable forest conservation and management have been high on the international agenda for two decades. However, little has been achieved so far and the world's forests and forest dependent people continue to experience unacceptably high rates of forest loss and degradation. Success in establishing sustainable forest conservation and management practices depends not only on changing the behaviour of all critical stakeholders, but also on a wide range of partnerships to accomplish what no country, government agency, donor, or interest group can do alone.

Table 3: WB OP/BP 4.36 Forests

Objectives	Operational Principals
To realize the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development, and protect the vital local and global environmental services and values of forests.	1. Screen as early as possible for potential impacts on forest health and quality and on the rights and welfare of the people who depend on them. As appropriate, evaluate the prospects for new markets and marketing arrangements.
	2. Do not finance projects that would involve significant conversion or degradation of critical forest areas or related critical natural habitats, or that would contravene applicable international environmental agreements.
	3. Do not finance natural forest harvesting or plantation development that would involve any conversion or degradation of critical forest areas or related critical natural habitats.
	4. Support projects that adversely impact non-critical natural forests or related natural habitats only if viable alternatives to the project are not available and only if appropriate conservation and mitigation measures are in place.
	5. Support commercial, industrial-scale forest harvesting only when the operation is certified, under an independent forest certification system, as meeting, or having a time-bound action

	plan to meet, internationally recognized standards of responsible forest management and use.
	6. Ensure that forest restoration projects maintain or enhance biodiversity and ecosystem functionality and that all plantation projects are environmentally appropriate, socially beneficial and economically viable
	7. Give preference to small-scale community-level management approaches where they best reduce poverty in a sustainable manner
	8. Support commercial harvesting by small-scale landholders, local communities or entities under joint forest management where monitoring with the meaningful participation of local communities demonstrates that these operations achieve a standard of forest management consistent with internationally recognized standards of responsible forest use or that they are adhering to an approved time-bound plan to meet these standards.
	9. Use forest certification systems that require: a) compliance with relevant laws; b) recognition of, and respect for, legal or customary land tenure and use rights as well as the rights of Indigenous Peoples and workers; c) measures to enhance sound community relations; d) conservation of biological diversity and ecological functions; e) measures to maintain or enhance environmentally sound multiple benefits from the forest; f) prevention or minimization of environmental impacts; g) effective forest management planning; h) active monitoring and assessment of relevant forest management areas; and i) independent, cost effective, third-party assessment of forest management performance against measurable performance standards defined at the national level and compatible with internationally accepted principles and criteria of sustainable forest management through decision making procedures that are fair, transparent, independent, designed to avoid conflict of interest and involve the meaningful participation of key stakeholders, including the private sector, Indigenous Peoples, and local communities.
	10. Disclose any time-bound action plans in a timely manner, before appraisal formally begins, in an accessible place and in a form and language that are understandable to key stakeholders.

Relevance: The policy is not triggered for this project.

2.5.4 OP 4.11 - Physical Cultural Resources

Cultural resources are important as sources of valuable historical and scientific information, as assets for economic and social development, and as integral parts of a people's cultural identity and practices. The loss of such resources is irreversible, but fortunately, it is often avoidable. The objective of OP/BP 4.11on Physical Cultural Resources is to avoid, or mitigate, adverse impacts on cultural resources from development projects that the World Bank finances.

Table 4: WB OP/BP 4.11 Physical Cultural Resources

Objectives	Operational Principals
To assist in preserving physical cultural resources and avoiding their destruction or damage. PCR includes resources of archaeological, paleontological, historical, architectural, and religious (including graveyards and burial sites), aesthetic, or other cultural significance.	1. Use an environmental assessment (EA) or equivalent process to identify PCR and prevent or minimize or compensate for adverse impacts and enhance positive impacts on PCR through site selection and design. 2. As part of the EA, as appropriate, conduct field based surveys, using qualified specialists 3. Consult concerned government authorities, relevant non-governmental organizations, relevant experts and local people in documenting the presence and significance of PCR, assessing the nature and extent of potential impacts on these resources, and designing and implementing mitigation plans. 4. For materials that may be discovered during project implementation, provide for the use of "chance find" procedures in the context of the PCR management plan or PCR component of the environmental management plan. 5. Disclose draft mitigation plans as part of the EIA or equivalent process, in a timely manner, before appraisal formally begins, in an accessible place and in a form and language that are understandable to key stakeholders.

Relevance: The activities of the Project have the potential to trigger this policy as earth graveswhich are of cultural significance however, the proposed sub projects will be implemented in existing road and drainage systems thus very minimal and can be relocated if need be.

2.5.5 OP 4.12 - Involuntary Resettlement

This policy is triggered in situations involving involuntary taking of land and involuntary restrictions of access to legally designated parks and protected areas. The policy aims to avoid involuntary resettlement to the extent feasible, or to minimize and mitigate its adverse social and economic impacts. It promotes participation of displaced people in resettlement planning and implementation, and its key economic objective is to assist displaced persons in their efforts to improve or at least restore their incomes and standards of living after displacement. The policy prescribes compensation and other resettlement measures to achieve its objectives and requires that borrowers prepare adequate resettlement planning instruments prior to Bank appraisal of proposed projects.

Table 5: WB OP/BP 4.12 Involuntary Resettlement

Objectives	Operational Principals
To avoid or minimize involuntary resettlement and, where this is not feasible, to assist displaced persons in improving or at least restoring their livelihoods and standards of living in real terms relative to pre-displacement levels or to levels prevailing prior to the beginning of project	1. Assess all viable alternative project designs to avoid, where feasible, or minimize involuntary resettlement 2. Through census and socio-economic surveys of the affected population, identify, assess, and address the potential economic and social impacts of the project that are caused by involuntary taking of land (e.g., relocation or loss of shelter, loss of assets or access to assets, loss of income sources or means of livelihood, whether or not the affected person must move to another location) or involuntary restriction of access to legally designated parks and protected areas. 3. Identify and address impacts also if they result from other activities that are:

implementation, whichever is higher.	a) directly and significantly related to the proposed project, b) necessary to achieve its objectives, and c) Carried out or planned to be carried out contemporaneously with the project.
	4. Consult project-affected persons, host communities and local nongovernmental organizations, as appropriate. Provide them opportunities to participate in the planning, implementation, and monitoring of the resettlement program, especially in the process of developing and implementing the procedures for determining eligibility for compensation benefits and development assistance (as documented in a resettlement plan), and for establishing appropriate and accessible grievance mechanisms. Pay particular attention to the needs of vulnerable groups among those displaced, especially those below the poverty line, the landless, the elderly, women and children, Indigenous Peoples, ethnic minorities, or other displaced persons who may not be protected through national land compensation legislation.
	5. Inform displaced persons of their rights, consult them on options, and provide them with technically and economically feasible resettlement alternatives and needed assistance, including: a) prompt compensation at full replacement cost for loss of assets attributable to the project; b) if there is relocation, assistance during relocation, and residential housing, or housing sites, or agricultural sites of equivalent productive potential, as required; c) transitional support and development assistance, such as land preparation, credit facilities, training or job opportunities as required, in addition to compensation measures; d) cash compensation for land when the impact of land acquisition on livelihoods is minor; and e) Provision of civic infrastructure and community services as required.
	6. Give preference to land-based resettlement strategies for displaced persons whose livelihoods are land-based.
	7. For those without formal legal rights to lands or claims to such land that could be recognized under the laws of the country, provide resettlement assistance in lieu of compensation for land to help improve or at least restore their livelihoods.
	8. Disclose draft resettlement plans, including documentation of the consultation process, in a timely manner, before appraisal formally begins, in an accessible place and in a form and language that are understandable to key stakeholders
	9. Apply the principles described in the involuntary resettlement section of this Table, as applicable and relevant, to subprojects requiring land acquisition.
	10. Design, document, and disclose before appraisal of projects involving involuntary restriction of access to legally designated parks and protected areas, a participatory process for: a) preparing and implementing project components; b) establishing eligibility criteria; c) agreeing on mitigation measures that help improve or restore livelihoods in a manner that maintains the sustainability of the park or protected area; d) resolving conflicts; and e) Monitoring implementation.

	11. Implement all relevant resettlement plans before project completion and provide resettlement entitlements before displacement or restriction of access. For projects involving restrictions of access, impose the restrictions in accordance with the timetable in the plan of actions
	12. Assess whether the objectives of the resettlement instrument have been achieved, upon completion of the project, taking a count of the baseline conditions and the results of resettlement monitoring.

Relevance: The activities of the Project will trigger this policy as the road and drainage infrastructure will be located in areas where people were conducting mostly side road businesses and fecing activities for houses. However, apart from involuntary resettlement with respect to socio-economic activities on land, there will not be resettlement of people from their settlements to other places.

2.6 Regional and International Agreements

Rwanda has signed and/or ratified several international agreements and conventions relating to the environment both at regional and global level such as ones below. However, due to the low environmental sensitivity of the project sites no impact associated with these conventions are anticipated as shown below:

i) EAC Protocol on Environment and Natural Resources Management, 2006. Article 3 of this Protocol states that it is a protocol of general application and shall apply to all activities, matters and areas of management of the environment and natural resources of the Partner States, including environmental impact assessment and environmental audits;
ii) East African Transport Strategy And Regional Road Sector Development Program, 2011.
iii) The EAC Regional Environment Impact Assessment Guidelines for shared ecosystems, 2005;
iv) 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;
v) The CARTAGENA protocol on biodiversity to the Convention on 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;
vi) The United Nations framework Convention on Climate Change, signed in RIO DE JANEIRO in BRAZIL on 5 June 1992, as approved by Presidential Order No 021/01 of 30 May 1995;
vii) The KYOTO Protocol to the framework on climate change adopted at KYOTO on March 6, 1998 as authorized to be ratified by Law No 36/2003 of December 2003;
viii) The RAMSAR International Convention of February 2, 1971 on Wetlands of International importance, especially as water flows habitats as authorized to be ratified by Law No 37/2003 of 29 December 2003;
ix) 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;
x) The BASEL Convention on the Control of Trans boundary 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;
xi) The MONTREAL International Conventional on Substances that deplete the Ozone layer, signed in LONDON (1990), COPENHAGEN (1992), MONTREAL (1997), BEIJING (1999), especially in its article 2 of LONDON amendments and Article 3 of COPENHAGEN, MONTREAL and BEIJING amendments as approved by Presidential Order no 30/01 of 24 August 2003 related to the membership of Rwanda.

The foregoing notwithstanding, the contractor and MININFRA will have a contractual obligation to avoid impacts that may violate above conventions, wherever encountered.

3. APPROACH AND METHODOLOGY

3.1 Introduction

In this chapter, the approach and methodology used to identify and assess the characteristics of impacts associated with upgrading of roads and drainage systems is presented. The methods employed to document biophysical and socio-economic baseline which was used to predict impacts of the proposed roads upgrading and drainage system are also presented.

3.2 Determination of Baseline Conditions

Baseline conditions were documented to establish prevailing biophysical and socio-economic situation upon which impacts were assessed and also provide a basis for future monitoring. Baseline conditions were established using a combination of methods including detailed document review, observation, and interviews, biological and social surveys.

3.3 Mammals and Birds

Survey points were located along roads and drainage sub projects at a spacing of 5 km apart. At each of these points, assays were made to undertake species inventory of birds and mammals. Additional points were randomly selected in other areas of interest, such wetlands, areas of core forest and at streams or river crossings.

3.4 Flora Assays

Existing roads and drainage systems served as transect for identification of plant species. Along this transect, nested plots were laid at an interval of 1 km. In each sampling plot, vegetation was stratified into three main layers based on plant height: trees (> 5 m), shrubs (1 – 5 m) and herbs (0 – 1 m) layers. The following plot sizes were then employed in a nested way: 20m × 20m to for trees, 15m × 15m for shrubs and 2m × 2m for herbs. Within unique areas such as wetlands, plots were placed to assay species specific to these areas.

3.5 Review of Policy, Legal, Institutional Framework and International Guidelines

This was done to determine if the proposed project was in line with national policies and met environmental laws and regulations, to achieve this, the following actions were undertaken:

i) Review of national environmental laws, policies and institutional framework.
ii) Review of World Bank Group guidelines on environment.

3.6 Impact Identification and Analysis

3.6.1 Impact Description

Describing a potential impact involved an appraisal of its characteristics, together with the attributes of the receiving environment. Relevant impact characteristics included whether the impact is:

- Adverse or beneficial;
- Direct or indirect;
- Short, medium, or long-term in duration; and permanent or temporary;
- Affecting a local, regional or global scale; including trans-boundary; and

- Cumulative (such an impact results from the aggregated effect of more than one project occurring at the same time, or the aggregated effect of sequential projects. A cumulative impact is "the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions").

Each of these characteristics is addressed for each impact. Consideration of the above gives a sense of the relative **intensity** of the impact. The **sensitivity** of the receiving environment was determined by specialists based on the baseline data collected during the study.

3.6.2 Impact Evaluation

Each impact is evaluated using the criteria listed in Table 8. To provide a relative illustration of impact severity, it is useful to assign numerical or relative descriptors to the impact intensity and receptor sensitivity for each potential impact. Each is assigned a numerical descriptor of 1, 2, 3, or 4, equivalent to very low, low, medium or high. The severity of impact was then indicated by the product of the two numerical descriptors, with severity being described as negligible, minor, moderate or major, as illustrated in Table 8. This is a qualitative method designed to provide a broad ranking of the different impacts of a project. Illustrations of the types of impact that were assigned the different grades of severity are given in Table 9.

Table 6: Classification of impact evaluation

	Classification	Description
1	Extent:	Evaluation of the area of occurrence/influence by the impact on the subject environment; whether the impact will occur on site, in a limited area (within 2 km radius of the site); locally (within 5 km radius of the site); regionally (district wide, nationally or internationally).
2	Persistence/Duration:	Evaluation of the duration of impact on the subject environment, whether the impact was temporary (<1 year); short term (1 – 5 years); medium term (5 – 10 years); long term (>10); or permanent.
3	Social Context / Sensitivity or Potential for Stakeholder Conflict:	Assessment of the impacts for sensitive receptors in terms of ecological, social sensitivity and such things as rare and endangered species, unusual and vulnerable environments, architecture, social or cultural setting, major potential for stakeholder conflicts. The sensitivity classification is shown below: ***High sensitivity:*** Entire community displacement, destruction of world heritage and important cultural sites, large scale stakeholder conflict, etc. ***Medium sensitivity:*** Displacement of some households, moderate level of stakeholder concern ***Low sensitivity:*** No displacements, no potential for stakeholder conflict.
4	Regulatory and Legal Compliance:	Evaluation of the impact against Local and International legislative requirements. ***High:*** Prohibition terms for specific activities/emissions. Major breach of regulatory requirements resulting in potential prosecution or significant project approval delays.

		Medium: Potential breach of specific regulatory consent limits resulting in non-compliance. ***Low:*** No breach of specific regulatory consent limits anticipated.
5	Overall Impact rating (Severity):	Using a combination of the above criteria, the overall severity of the impact was assigned a rating Severe, Substantial, Moderate, Minor and negligible. **Note:** These are just guidelines that will constitute professional judgement required in each individual case.

3.6.3 Intensity of Impact

The scale of intensity is defined on the basis of ecological-toxicological studiesand expert judgment and is presented in Table 9.

Table 7: Intensity scale gradation for environmental impacts

Scale of Impact Intensity	Criterion	Score
Very low	Environmental changes are within the existing limits of natural variations	1
Low	Environmental changes exceed the existing limits of natural variations. Natural environment is completely self-recoverable.	2
Medium	Environmental changes exceed the existing limits of natural variations and results in damage to the separate environmental components. Natural environment is remains self-recoverable.	3
High	Environmental changes result in significant disturbance to particular environmental components and ecosystems. Certain environmental components lose self-recovering ability.	4

3.6.4 Impact Significance

Impact significance is determined from an impact significance matrix (Table 10) which compares severity of the impact with probability of its occurrence. Impact significance criteria are as follows:

- ***Major:*** These denote that the impact is unacceptable and further mitigation measures must be implemented to reduce the significance. Shaded red in the Table 10.
- ***Moderate:*** Impacts in this region are considered tolerable but efforts must be made to reduce the impact to levels that are as low as reasonably practical. Shaded orange in the impact significance matrix.
- ***Minor:*** Impacts in this region are considered acceptable. Shaded blue.
- ***Negligible:*** Impacts in this region are almost not felt. Shaded green.

3.7 Cumulative Impacts

Cumulative effects manifest when socio-environmental conditions are already or will be affected by past or reasonably probable future development or activities. The EIA identified current, past and probable future similar activities that may compound socio-environmental conditions in the project area.

Table 8: Determination of impact severity

		Sensitivity of receptor			
		Very low	**Low**	**Medium**	**High**
		1	**2**	**3**	**4**
Intensity of impact	**Very low 1**	1 Negligible	2 Minor	3 Minor	4 Minor
	Low 2	2 Minor	4 Minor	6 Moderate	8 Moderate
	Medium 3	3 Minor	6 Moderate	9 Moderate	12 Major
	High 4	4 Minor	8 Moderate	12 Major	16 Major

More details of impact significance are presented in Table 11.

3.8 Mitigation of Environmental Impacts

Mitigation measures are designed in order to avoid, reduce, mitigate, or compensate for adverse environmental and social impacts and inform the Environmental and Social Management Plan (ESMP).

Table 9: Illustration of significance values that would apply to various impacts

	Major impact	**Moderate impact**	**Minor**
Legislative compliance	Expected non-compliance with national regulatory standards or good industry practice (e.g. IFC Performance Standards)	Potential for non-compliance with national regulatory standards or good industry practice.	Expected compliance with national regulatory standards or good industry practice, or no regulations apply
Biophysical environment	▪ Impairment of ecosystem with no expectation of recovery within 20 years. ▪ Effect contrary to the objectives of management plans for internationally or nationally protected populations, habitats or sites with no expectation of recovery within 5 years. ▪ Environmental changes giving rise to issues of public or international concern. Impacts that harm human health, or damage a site of historic, cultural or archaeological value. ▪ Long-term (>10 years) and widespread changes to habitat or ecosystems features or functions that reduce its integrity, affect the ability to sustain valued components and may require extensive intervention. The	▪ Impairment of ecosystem with expectation of recovery within 10 years. ▪ Effect contrary to the objectives of management plans for internationally or nationally protected populations, habitats or sites with expectation of recovery within 1-5 years. ▪ Disturbance of a sufficient portion of the biogeographic population of a species to cause a decline in abundance, distribution or size of the genetic pool such that the population of the species, and other species dependent on it, will not recover within several generations. ▪ Major loss or major alteration to a locally designated site whereby key elements will be fundamentally changed.	▪ Impairment of Forest ecosystem with expectation of recovery within 5 years. ▪ Ecosystem change is within the range of natural variation, but may be detectable; or ecosystem change that is unlikely to be noticed; or change resulting in positive, desirable of beneficial effects on an ecosystem. ▪ Reduction in ecosystem or habitat integrity, but recovery to baseline state is expected within 2-5 years with minimal intervention. ▪ Disturbance of a bio-geographic population or individuals of a species resulting in a decline in abundance or distribution over one or two generations, but that does not change the integrity of

	Major impact	Moderate impact	Minor
	habitat/ecosystem may not recover to its baseline state. ▪ Disturbance of a sufficient portion of the biogeographic population of a species to cause a decline in abundance, distribution or size of the genetic pool such that the population of the species, and other species dependent on it, will not recover naturally to former levels. ▪ Major loss or major alteration to an internationally designated site whereby key elements will be fundamentally changed. ▪ Incident that requires mobilization of international response equipment and crews. ▪ Injury or death of an IUCN listed "Endangered" species. ▪ Major change to the visual quality, setting and feeling associated with a rare or unique (inter)nationally recognized landscape. ▪ Widespread and permanent change to hydrology and hydrogeology in an internationally or nationally designated site.	▪ Injury or death of an IUCN listed "Vulnerable" species. ▪ Incident that requires mobilization of national/company response equipment. ▪ Major change to the visual quality, setting and feeling associated with a rare or unique locally recognized landscape. ▪ Fundamental change to hydrology and hydrogeology resulting in temporal changes to the watershed.	the population of the species or populations of other dependent species. ▪ Incident that requires mobilization of onsite response equipment and crews. ▪ A noticeable but not fundamental change to hydrology or hydrogeology. ▪ The development will not affect the key characteristics that contribute to the distinctiveness and/or value of the landscape.
Social environment	▪ Damage to social, cultural or economic activity considerably beyond programme lifetime. ▪ Long term or life threatening health effects that may increase mortality rates. ▪ Physical resettlement (as defined in IFC PS 5) of a community. ▪ Changes that differentially negatively affects the life chances (access to health care/medicines) of vulnerable groups (disabled, elderly, female-headed households and those living below officially	▪ May adversely affect the economic and social wellbeing of residents for the duration of the programme. ▪ Raises issues of limited public concern. ▪ Physical resettlement (as defined in IFC PS 5) one or more household/businesses. ▪ Reduction in assets, or access to assets, such that economic displacement (as defined in IFC PS 5) affects five or more individuals, households or businesses. ▪ Job losses in small communities very limited	▪ Negative effect within existing fluctuation of the society or economy. ▪ Reduction in assets, or access to assets, such that economic displacement (as defined in IFC PS 5) affects 1-4 individuals, households or businesses. ▪ Job losses in a community able to adapt and provide alternative job opportunities in the near – medium term (within one year). ▪ Short-term (<1 year) financial loss to owners of businesses where recovery is likely.

	Major impact	Moderate impact	Minor
	poverty or subsistence levels). ▪ Damage to a site of international cultural importance or national site where damage is likely to provoke protest/unrest. ▪ Damage to a site of national cultural importance or local site where damage is likely to provoke protest/unrest. ▪ Unplanned in-migration flows sufficient to cause exceedance of the capacity of numerous components of physical or social infrastructure. ▪ Increases of cultural conflict likely not to be contained within existing social control norms.	alternative opportunities in the near – medium term (within one year of job losses). ▪ Changes likely to prejudice success of an existing policy or plan. ▪ Changes that differentially affects the livelihoods of vulnerable groups (disabled, elderly, female-headed households and those living below poverty or subsistence levels). ▪ Damage to a site of local or regional cultural importance. ▪ Medium to long-term (>1 year) financial loss to businesses where recovery may be difficult. ▪ Unplanned in-migration flows sufficient to cause exceedance of the capacity of at least one component of infrastructure. ▪ Increases in incidences of cultural conflict, but expected to be contained within existing social control norms. ▪ Movement of development traffic through very sensitive areas (e.g. near schools, hospitals) or that may exceed carrying capacity of roads. ▪ Movement of development traffic through community areas or having the potential to add unsuitable loadings to the infrastructure. ▪ Increased public exposure to health threats that may increase morbidity rates.	▪ Unplanned in-migration not expected to cause infrastructure capacity exceedance. ▪ Decline in access to health care facilities and acquisition of treatment.

3.9 Stakeholder Analysis and Identification

A "stakeholder" can be defined as: *Any individual, group, or institution with a vested interest in the natural resources of the project area and/or who potentially will be affected by project activities and have something to gain or lose if conditions change or stay the same.* Stakeholders are all those who need to be considered in achieving project goals and whose participation and support are crucial to its success. Stakeholder analysis identifies all primary and secondary stakeholders who have a vested interest in the project. Stakeholder analysis is a process of systematically gathering and analyzing qualitative information to determine whose interests should be taken into account when developing

and implementing a project. The analysis includes stakeholder characteristics such as *knowledge* of the project, *interests* related to the project, *position* for or against the project, potential alliances with other stakeholders, and ability to affect the project process (through power and/or leadership). A stakeholder analysis will help the road project identify:

- Interests of all stakeholders who may affect or be affected by the program/project;
- Potential conflicts or risks that could jeopardize the project;
- Opportunities and relationships that can be built on during implementation;
- Groups that should be encouraged to participate in different stages of the project;
- Appropriate strategies and approaches for stakeholder engagement; and
- Ways to reduce negative impacts on vulnerable and disadvantaged groups.

Three essential steps in stakeholder analysis below were utilized:

- Identifying key stakeholders and their interests (positive or negative) in the project;
- Assessing influence of, importance of, and level of impact upon each stakeholder;
- Identifying how best to engage stakeholders.

3.9.1 Identification of Key Stakeholders and their Interests

Identification of stakeholder groups started with investigating specific threat and opportunity factors and developing a list of stakeholders associated with each. This was based on key questions below:

- Who will the road project benefit/ affect?
- Who are key players in development and implementation of the road project?
- What key resources will be impacted?
- Who is most dependent on these resources?
- Who has claim on resources to be affected – including legal jurisdiction or customary rights?
- Are several government sectors and ministry departments involved?
- Are there national and/or international bodies involved either as funding agencies or because of specific laws or treaties?
- Which agencies license certain aspects of the road project or are most knowledgeable about, and capable of dealing with project impacts or resources to be affected (forestry, wetlands, wildlife areas)? Who is managing these resources?
- Are there major events or trends currently affecting the stakeholders (e.g. development initiatives, migration, population growth)?

4. ENVIRONMENT AND SOCIO-ECONOMIC BASELINE

4.1 Introduction

This section describes environmental and social baseline conditions of the project areas in which the proposed roads and drainage subprojects are to be located and in which the impacts of the implementation and operationalization of these subprojects may be experienced. The description is designed to enable identification of particularly sensitive receptors and resources around the proposed project sites that may be vulnerable to impacts arising from the respective subprojects under RUDP in seven cities.

4.2 Nyagatare

4.2.1 Physical environment

4.2.1.1 Geographical location

The City of Nyagatare is located in Nyagatare District, one of the seven districts comprising the Eastern Province (Nyagatare District Development Profile (2013 – 2018)). The District covers an area of 1920.11 km^2 and neighbours Rwanda in the North, Tanzania in the East, Gatsibo District in the South and Gicumbi District in the West. The District population was reported to be 466,944 inhabitants with an average of 243 inhabitants per square kilometer. Nyagatare City lies in the central part of the District at approximately 80 Km from Kigali; and is strategically located on the major road connecting Rwanda to Tanzania and Uganda. The Master Plan boundary of Nyagatare City covers a planning area of 12,000 ha and is comprised of five Sectors including Nyagatare, Rwimiyaga, Rwempesha, Tabagwe and part of Rukomo Sector; and comprises of total of 11 cells and 27 villages with a total of 20,577 inhabitants and 10,856 households (Census, 2012), It is one of the most populous settlements in the Eastern Province along with Rwamagana and Kibungo, and a point of milk collection for several milk producers such as Inyange Industries Ltd. Milk from Nyagatare area is marketed throughout Rwanda. The main economic activities of the catchment of the City of Nyagatare include dairy production; rice production; agro-processing; and stone quarries (granite). The City has one of the highest annual population growth rate standing at 6% on average compared to other secondary cities for instance Rubavu with 3%, Huye with 2%, and Rusizi, Muhanga, Musanze all with below 2% (Census Report, 2012). The high population growth rates could potentially be explained by among other issues, the availability of land and job opportunities, trade and training centres in the City of Nyagatare.

4.2.1.2 Climate

The City of Nyagatare experiences relatively low quantity of rains which are unevenly spread throughout the year. The City is found in the region which is characterized as hot region of Rwanda with relatively high temperatures; having two main seasons: one long dry season that varies between 3 and 5 months with an annual average temperature varying between 25.3 °C & 27.7 °C. The monthly distribution of the rains varies from one year to another. Annual rain falls are both very weak (827 mm/annum) and very unpredictable to satisfy the needs in agriculture and livestock.

Month	Jan	Feb	Marc	April	M	June	J	Aug	Sept	Oct	N	Dec
Monthly Rainfall -	No Data Available			69.5	150.2	4.6	0	6.2	53.2	94	63.2	31.5

Monthly Rainfall -	71.6	74.2	132.8	93.5	41.8	38.9	0	48.4	102.7	89.8	58	72.7
Monthly Rainfall -	19.9	23.3	109.7	11	137.4	20.8	3	27.3	75.8	14	129.4	89.7
Monthly Rainfall -	3	43.9	125.5	92	63.4	0	0	31.6	53.2	113.5	106.5	62.6

Monthly Rainfall for Nyagatare District

Source: Meteorogical Department, Government of Rwanda (Rwanda Urban Development Program & Preliminary Designs for Infrastructure, 2015 by Voyants Solutions PVT. LTD.& HICE Consult

4.2.1.3 Site Description

The projects are located in the sectors of Nyagatare at a glance, major issues in terms of existing deficiencies of the project roads and their preventive measures which need attention during design stage are listed in Table 12.

Plate 1: At R23 in Mirama Village the land is still being used for agriculture

Once R23A is rehabilitated, it will open up accessibility and bring other developments within the area thus Nyagatare City will spread out as opposed to confinement within CBD. Small scale farming was also observed i.e. growing of maize, sorghum, ground nuts and beans. Animal rearing was also observed within Nyagatare Cell i.e. goats, cattle and sheep. However, along R23A there were cultivated food crops that might be affected by construction works.

Plate 2: R2B in Nyagatare 1 Village where small businesses along the road were observed from Main road to Nyagatare District Hospital

There are small businesses selling airtime products and conducting motorcycle (boda boda) transportation observed along the stretch of the proposed road routing. These will be disrupted only during road updrades and will benefit from the upgaraded road once the works are complete. No physical displacement and involuntary resettlement is envisaged as it is an existing road and enough to accommodate the proposed road width. The trees along the road are outside the road reserve, thus no trees should be cut down during construction activities.

Plate 3: Most of the drainage systems planned for rehabilitation including road side drainage drain into River Muvumba.

R11 which starts in Nyagatare cell and crosses to Barija Cell will be a continuation from where the National Road Tarmac ends on the way to Nyagatare Sector Office. Although the drainage systems are in place e.g. D1, they need to be rehabilitated for accessibility and to prevent them from being damaged by storm water. Agricultural activities are also observed upstream of the drainage system. This has resulted in clogging of drainages with sand and silt as shown in Plate above.

Plate 4: Drainage systems D1, D4, D5 and D6 need to be rehabilitated as their current state has resulted into storm water eating into the roads R2 and R1.

Generally, all the storm water in Nyagatare town drain into River Muvumba through the major existing and proposed drains, including D1, D4, D5 and D6. These drains are currently carrying a lot of soil thus could result into sedimentation of the river and the associated marshlands if the roads R23A, R2B, R11, R1 and R2 are not rehabilitated. In rehabilitating the above mentioned roads, no involuntary resettlement is envisaged as roads R23A, R2B, R11, R1 and R2 are already existing and wide enough not to displace or require any any properties that would require relocation.

Plate 5: Drainage systems D1, D4, D5 and D6 need to be rehabilitated as their current state has resulted into storm water eating into the roads R2 and R1.

Storm water is widening the existing drainage systems as shown above thus there is an urgent need to rehabilitate them in order to mitigate storm water damaging the roads especially R2 and R1. During the final designs and implementation of both the road works and rehabilitation of the drains, it is important to note that utility service lines like water pipes and electrical cables cross the planned roads and drainage that need to be attended to during construction activities; these should be shifted first to avoid denying locals access to water and electricity. These can also be potential hazards leading to electrocution and drowning of children.

Table 10: Exiting deficiencies & their preventive measures

No.	Deficiencies	Proposals
1.	Insufficient and irregular carriageway width	Provision of uniform carriageway to suit the applicable cross section with absolute minimum resettlement
2.	Existing gravel road with poor riding quality	Construction of asphalt road
3.	Existing pavement (mostly earthen) condition is poor to fair and is structurally inadequate	Construction of new pavement with asphalt to cater to design loading
4.	Poor horizontal geometry at many locations	Geometric improvement (as far as possible with absolute minimum resettlement and land acquisition)

5.	Poor vertical geometry at many locations	Improvement of vertical geometry with optimum cut-fill quantity
6.	Absence of proper connectivity at few locations	Provision of proper connectivity with construction of road of proper and sufficient carriageway width
7.	Insufficient and improper cross slope	Provision of proper cross slope as per applicable cross section
8.	Traffic congestion and insufficient turning radius at intersection locations	At-grade intersection improvement
9.	Presence of insufficient nos. of cross drainage structures causing inconvenience to pedestrians. It is also creating accident prone zones.	Provision of proper cross drainage structures.
10.	Use of road component (mainly the portion just by the side of carriageway) by local people for household purposes almost at all built-up areas	Provision of raised walkway wherever possible considering resettlement issues
11.	Absence of proper roadside drains	Provision of rectangular lined drains alongside the road
12.	Absence of proper road signs, pavement markings, safety features and street lighting	Provision of road signs, pavement markings, safety features and street lighting

The total urban planning area of Nyagatare city as referred from the LUDP (2009) is approximately 12,000 Ha. The predominant landuse in the urban planning area is agriculture with more than 83% of the total area, residential area covers only 4% of the total area, around 3% covers the hilly area while around 5% is covered by Muvumba River and surrounding wetland while transportation covers approx 2% which includes airstrip, bus park and roads. The city, unlike other parts of the country is built on relatively flat terrain, which offers real potential for spatial development and establishment of basic infrastructure at a lower cost. The total unplanned area in the Nyagatare urban area is approximately around 60 Ha. Due to rapid development and the growing demand for housing in urban areas, planning and organized settlement is becoming a complicated issue. Upgrading of unplanned settlements with the provision of adequate basic infrastructure facilities should be one of the major focuses in urban development and management of Nyagatare City. The growth direction of the city shows that year 2015 growth expansion from the year 2005 built up area while the growth is prominent on the western part of the city. The proposed planned development by RHA in year 2009 is towards the eastern part of the city, however, the recent Implementation plan of 3 site detailed planning is west and south part of the city as shown in the map. During the last decades the growth has expand from 300Ha in year 2005 to 840Ha in Year 2014.

4.2.1.4 Hydrology

The landscape of the City of Nyagatare is characterized as hilly with ground levels exceeding 1500 m asl only at a few places. The area of Nyagatare is a part of the Mutara plateau. This is a vast plain with reduced relief where the altitudes vary between 1300m and 1500 m asl. The river valleys have gentle slopes only interrupted by some valleys with steep slopes where the heights reach 1550 to 1600 m asl like in the East of Nyagatare.

The main river is Muvumba passing from SW to NE until the confluence with Warufu River south of City of Nyagatare, and then changing its direction to North running more or less parallel to Akagera River in the East to which it finally connects. The River Muvumba cuts across Nyagatare District, while the Akagera and Umuyanja Rivers passes the District constituting its limits with Tanzania and Rwanda. Few of the rivers such as Nyiragahaya, Kayihenda, Karuruma, Nayagasharara and Kaborogota in

Nyagatare District side are erratic and intermittent. The eastern part of these districts is in Akagera National Park, with the Kagera River forming the border with Tanzania.

Nyagatare area and around the hydro graphic net is branchlike with slow water velocities. The valleys are wide and swampy. The region of Nyagatre is dominated by two perennial rivers, Muvumba and Warufu, whose confluence is around 1,5 km South of Nyagatare. Muvumba then passes Nyagatare on the western side and continues on its path to the north. A multitude of small rivers flow into Warufu and Muvumba, which come out of the hills flanking both rivers east and west. Many of them are not perennial

4.2.1.5 Soils and Geology

Geologically nearly the whole area around Nyagatare is covered by the granites of the intrusive massif of Mutara. This massif is encircled by sedimentary and meta sedimentary rocks connected to the Supergroup of Rwanda which belongs to the kibarien orogenese and is of age middle Proterozoic. The magmatic rock outcrops (granite) are always of porphyric type, containing white feldspars and often two types of micas.

The texture is often like gneiss with the foliation oriented parallel to the border of the massif. Some enclaves are present which are formed by quartzite or schist, locally with mica schist and quartz heavily recrystallized. The valley floors consist of weathering products of the granite rock and widespread deposits of sand and silt & clay occur along the rivers. They are the base of an intensive agricultural industry

4. 2.2 Biological environment

The Vegetation of Nyagatare region is dominated by savannah grasslands represented by *Themedatriandra*and *Hyparrheniafilipendula*. Within the Nyagatare Town, River Muvumba cuts across the city and the forest around Muvumba consists of Acacia, polycantha Acacia, Albizia petersiana, sapuin ellepticus reclinate and Phoenix. The flora is dominated by herbaceous grazing areas by herbivores. The rest of the city consists of cactus forests scattered on hills, lowland areas are used for food crops including banana plantations. The project area is devoid of any natural/indigenous vegetation and floral species as it is not prisitine. The main vegetation of the area consists of crops such as maize, beans, and potatoes. The predominat land use patterns of Nyagatare city are highlighted as:

	Residential (%)	Commercial (%)	Public, institutional & infrastructural facilities (%)	Mixed use area (%)	Agriculture and fallow or open land (%)	Wetlands (%)	Forests & hills (%)
Nyagatare	4.19	0.21	0.78	1.05	83.32	4.88	3.37

4.2.3 Socio economic Environment

Major economic activities in the region are livestock keeping and agriculture. Nyagatare district is the major milk-producing and cattle keeping area of Rwanda. Other livestock kept include sheep, goats, poultry, pigs, bees and fish. Major crops grown in the project area include Maize, Beans, Sorghum, Banana, Cassava, Sun flour, Vegetables (cabbages, egg plants, onions, and carrots) and Potatoes. The region intends to promote the cultivation and processing of rice, cassava and banana-based products. It has fertile land and lush pastures supporting the crop production and cattle keeping

making it a secure food producing region and a major milk producing area for Rwanda, as well as for raising domestic sheep, goats and poultry.

The overall employment rate is 85% of the resident population aged 16 and above in Nyagatare District; the unemployment rate is 0.2% and the economic activity rate is 15%. Figure below presents the industry of usual main jobs in Nyagatare District. Agriculture is seen as the main industry for 79.6% of the population aged 16 and above, followed by Trade with 7.4%. According to the 2014 Establishment Census there were 1805 establishments in the Urban Sectors, 21% more than in 2011. Five of Nyagatare's Urban Sector establishments in the 2014 census were "medium," having more than 451 employees, up from zero in the 2011 Census. Fourteen were "small," having 207 employees, up from 10 in 2011; and the remaining 1786 were "micro" having the highest employees with 3063. The main economic activities of Nyagatare Town is retail trade, second main activity includes manufacturing, the third main activities is accommodation and food service activities and the fourth main activity includes other activities like professional, scientific and technical activities, administration, education and so on as shown in the figure below including the employment employed in the activities. The projected urban population growth of Nyagatare indicates that by 2030 as per the Target growth factor it will increase to 185,692 from 29,690 in 2015 as per the projection of UN Habitat Rwanda analysis, 2012.

4.2.3.1 Gender Context

Majority of the population of the City of Nyagatare is young, with 84.4% of the population aged less than 40 years old. People aged 65 years and above make up only 1.8% *Rwanda Establishment Census, 2014.* The average household size of Nyagatare District is 5.1 while Nyagatare city has an average household size of 4.3. Females outnumber males in Nyagatare District with males comprise 209,000 and females 215,000, meaning females outnumber males by 6,000. In the Sectors that make up Nyagatare City the percentage of females is represented as, in Nyagatare (70.1%), Rwimiyaga (70.5%), Rwempasha (54.3%), Tabagwe (65.1%), and Rukomo Sector (83.3%).

4.3 Musanze

4.3.1 Physical Environment

4.3.1.1 Geographical location

The City of Musanze is located in Musanze District, one of the five districts comprising the Northern Province and covering an area of 530.4 km^2. is the District neighbours Rwanda and Democratic Republic of Congo (DRC) to the North through Virunga National Park (60 Km2), Gakenke District to the South, Burere District to the East, Nyabihu District in the West and Ruhondo lake (28 Km2) in the South West. The District population is reported to be 466,944 inhabitants with an average of 243 inhabitants per square kilometre (Census, 2012).

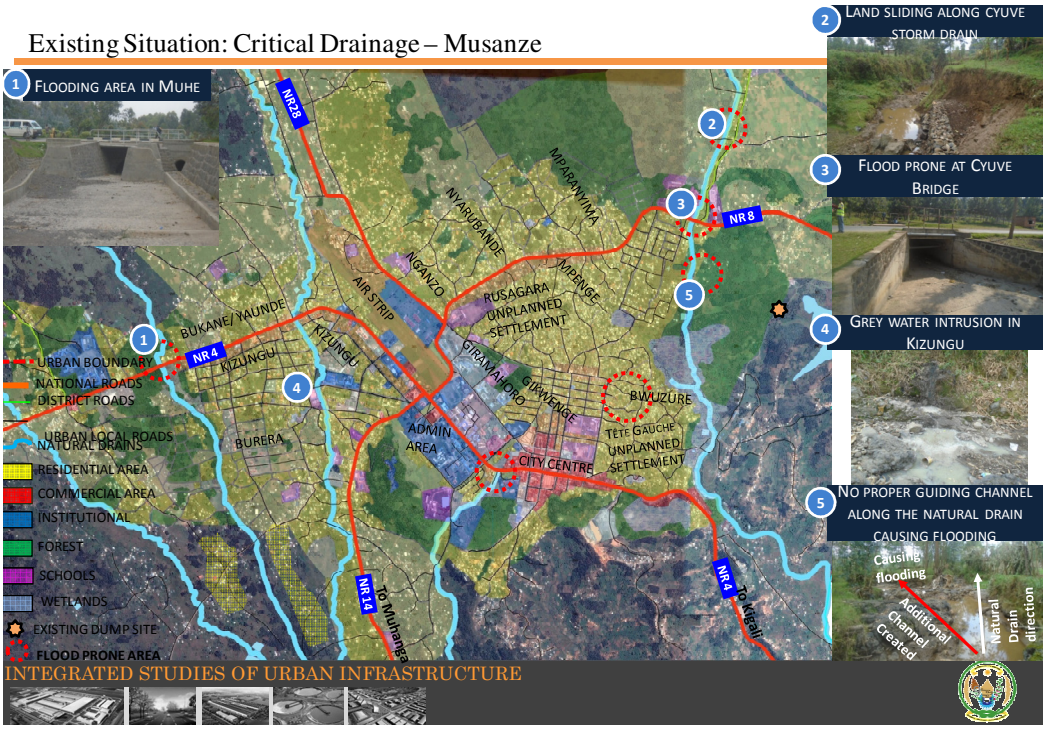
The City of Musanze is one of those designated and targeted to be developed as secondary cities of Rwanda, with a total urban planning area of 7,500 ha. The City comprises of seven (7) Sectors including Muhoza, Kimonyi, Cyuve, Musanze, and parts of Muko, Shingiro and Gacaca Sectors; and a total of 21 cells and 91 villages. It is crossed by three major National and trans-border roads including NR 28 to the Volcanoes National Park; NR 8 road to Cyanika; and NR 4 from City of Kigali through the City of Musanze and the City of Rubavu to DR Congo City of Goma. The City of Musanze has a population of 99,387 inhabitants within 20,260 households as per the 2012 National Census.

4.3.1.2 Climate

Situated at an altitude of 1,850m, Musanze has one of the most agreeable climates in Rwanda (an average temperature of 20°C). The climatic relief of Musanze as shown by data from meteo Rwanda shows that the District and the region experience heavy rainfall amounting to over 1200mm/yr with the months of March, April and May having the highest rainfall.
Situated at an altitude of 1,850m, the City of Musanze Is characterized by warm and breezy days that are followed by cooler nights; making it a common feature of the residents to be clad in light sweaters. However the rainy season can be pretty intense in the City. April and May normally have the heaviest rains, whereas October and November have a much more moderate rainy period. The Average amount of rainfall during the rainy seasons is 1,000-1,200mm per month (Meteorogical Department, Government of Rwanda (Rwanda Urban Development Program & Preliminary Designs for Infrastructure, 2015 by Voyants Solutions PVT. LTD.& HICE Consult).

4.3.1.3 Site description

The project area of RUDP in Musanze District will be exclusively the City of Musanze, that is crossed at different parts by three volcanic rivers including Rwebeya River, which have divided the City into parts with the deep gorges and gullies left behind by the three rivers. The proposed RUDP subprojects for the City of Musanze are located in Mpenge Cell for rehabilitation and upgrading of Karere-Mpenge-Sonrise road (R24, R33A & R 42) and construction of a new drain, D4; Ruhengeri Cell for rehabilitation and upgrading of road in Kizungu area (R 49) and stabilization of gullies and drain on Rwebeya River through Kizungu area; and Kigombe Cell for rehabilitation and upgrading of Sopyrwa-National Police Centre-Taxi park road (R48).
The agriculture practiced on the slopes of hills around the City, the poor road drainage coupled with deforestation has caused extensive land degradation and soil erosion. As shown in the picture below there are no proper guiding channel along the natural drains which causes flooding in the downstream area and the next picture shows the frequent landslides along the Cyuve cell storm water drains.



Source: Rwanda Urban Development Program & Preliminary Designs for Infrastructure, 2015 by Voyants Solutions PVT. LTD.& HICE Consult

4.3.1.4 Hydrology

The hydraulic network of the City of Musanze, like elsewhere for most of Musanze District, is formed by temporary torrents and permanent watercourses. Torrents surge during strong storms, and they are triggered by water coming downhill from the volcanoes, some 20 Km away. These torrents cause severe erosion, sedimentation and crop losses. The main torrents identified are Susa, Muhe, Rwebeya, Rungu, Cyuve, Kansoro and Mudakama. The district is drained by two main permanent watercourses, which origin is the water table. There is the Mpenge spring, with a rate of flow of 2.3 m3 per second, and the Kigombe spring, with a rate of flow of 0.7 m3 per second. The district is also crossed by the Mukungwa River, which drains Ruhondo Lake. All these watercourses belong to the Nile basin, and they converge into the river Mukungwa, which, in turn, discharges into the Nyabarongo River, which is an affluent of the Akagera River. The general topography of Musanze city in particular has a series of hills and valleys. It has steep slopes up to 1 in 10. Most of the settlements in the city are on hills and along steep slopes. Formation and maintenance of roads and drainages in steep terrain is challenging task.

3.2.1.5 Soils and Geology

Musanze has a landscape divided in two main areas: the volcanic plains and the mountain range. The volcanic plains covers the central and North part of the district, including the Musanze, Muhoza, Muko, Kimonyi and Cyuve sectors; its average altitude is 1,860 m. The mountain range is located in the South-East of the district, covering over a third of the total surface of the district. Its altitude ranges from 1,900 m to 2,000 m, covering the Muhoza, Cyuve, Gacaca, Rwaza, Gashaki, Remera and Nkotsi sectors. The highest peaks are Kalisimbi (4,507 m), Muhabura (4,127 m), Bisoke (3,711 m), Sabyinyo (3,574 m), and Gahinga (3,474 m). The City of Musanze falls largely in the volcanic plains.

The soils of the City of Musanze can be categorized as being volcanic on moderate to steeply slopes with volcanic ash soils and volcanic lava predominated with stones and shallow rocks. Musanze City is a gateway to the five of the eight famous volcanoes mountain ranges – the Vurunga Volcanoes.

4.3.2 Biological environment

With the majority of the Districts population working in agriculture, most of Musanze's jagged countryside has been stripped off its foliage and farmed to grow pyrethrum, sorghum, potatoes, etc The Volcanoes National Park is still a rich and luscious habitat of green vegetation and animal life, but farmers outside the park have taken over the land all the way up to the park boundaries. Improved road and drainage system will promote tourism due to improved accessibility.

The current land use in the subproject area of Musanze City is dominated by agriculture and open land at 67.70%, and wetland make up 1.25% and forest at 4.57%.

	Residential (%)	Commercial (%)	Public, institutional & infrastructural facilities (%)	Mixed use area (%)	Agriculture and fallow or open land (%)	Wetlands (%)	Forests & hills (%)
Musanze	22.40	0.25	1.82	0.87	67.70	1.25	4.57

4.3.3 Socio economic Environment

The main economic activities of the City of Musanze is retail trade, second main activity includes manufacturing, the third main activities is accommodation and food service activities and the fourth

main activity includes other activities like professional, scientific and technical activities, administration, education and so on as shown in the figure below including the employment employed in the activities. According to the 2014 Establishment Census there were 3,494 establishments in the Urban Sectors, but lesser than in year 2011 with 4116. However, the total employment has increased from 8,151 in 2011 to 9,853 in 2014 with the 2 new large size economic activities.

A total of 2,122 retail trade are found in Musanze city alone and contributes to the main core economic activity. The City offers marketing opportunities through the small trading centers for the local agro-pastoralists products; as well as administrative, health and education services, and employment opportunities among others to the area residents.

As a gateway to five of the eight volcanoes of the Virunga chain (Karisimbi, Bisoke, Sabyinyo, Gahinga and Muhabura) and being in Musanze District where most of Rwanda's mountain gorillas are found, teh City of Musanze has become the most popular tourist destination in Rwanda. According to Rwanda's 2014 Statistical Yearbook, in 2013 there were 51 hotels in Musanze District comprising 821 rooms, up from 17 hotels and 362 rooms in 2009. There were 25,199 visitors to Volcanoes National Park in 2013, up from 19,783 in 2008.
The City has a number of shanty settlements that are mostly informal and unplanned. The unplanned settlements that standout in the City are found in two areas, in the City centre area parts of Tete Gauch and Rusagara, and in parts of Nyarubande and Mparanyima (marked circle in the map) where access to basic services including roads, drainage, sanitation, water supply and solid waste management are serious challenging owing to poor condition of existing physical infrastructure or lack thereof.

The growth of the city in Musanze is spreading from Muhazo settlement and growing all along the National Road 4 towards all direction of the city.

4.3.3.1 Gender Context

Majority of the population of Musanze district is young, with 84% of the population aged less than 40 years old. People aged 65 years and above make up only 2%. The average size of the household is 4.8 for Musanze district, which is the same as the national average while Musanze city has an average household size of 4.9. Musanze district has 118 females per 100 males, which is above the national average of 111.

4.4 Rubavu

4.4.1 Physicalenvironment

4.4.1.1 Geographical location

The City of Rubavu is the main town of Rubavu District, which is one of the seven districts comprising the Western Province of Rwanda. The District has a population of 422,348 inhbitants with an average density of 1,041 per sq.km. The City of Rubavu lies in the western part of the District at approximately 145km from the City of Kigali, and the only point of exist to Dr Congo in Northern Rwanda. The City has a population of 110,161 residents within 23,032 households. The City is made up of four Sectors, namely Rubavu, Rubavu, Rugerero and Nyamyumba, and a total of 21 cells and 135 villages. 50% of the population of the City of Rubavu resides in Rubavu Sector. Rubavu city sits along the littoral of Lake Kivu at the western edge of the Rwanda. Rubavu City is the most developed city in the western province, and is less than an hour's drive from Volcanoes National Park. It is set on a sandy beach lined with swaying palms, modern and colonial-era hotels that exude an atmosphere of tropical languor. The northern shore of the lake on which Goma and Rubavu lie is a flat plain featuring lava formations from the eruptions of nearby Mountain Nyiragonga In contrast to Goma, Rubavu escaped

the lava flows of both the 1977 and the 2002 eruptions, which destroyed between 15 and 40% of the former. The centre of Rubavu City lies by foothills at the northeast corner of the lake, and low-density expansion is taking place in the hills, which are expected to be safe from future eruptions.

4.4.1.2 Climate

Rubavu District is one of the seven Districts that makeup the Western Province, characterized by an average temperature of 21.5 ° C and an annual rainfall of about 1200 mm to 1300 mm fairly well distributed throughout the year except for the period of long dry season which extends from June to mid-September.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Year	66.2	195.	237.	139.	139.	75.1	3.8	35.6	118	202.	154.	109.
Year	80.4	53.4	170.	111.	132	86	29.7	107.	174.	114.	126.	122.
Year	17.5	54.7	104.	229.	159.	40.4	53.2	68.9	178.	247.	131.	73
Year	38.5	81.2	222.	136.	42.6	5.9	9.2	158.	169.	86.5		132.
Year	141.	105.	123.	96.1	3.7	117.	15.8	97	105.			139.

Monthly Rainfall for Rubavu (2010-2014) *Source: Meteorogical Department, Government of Rwanda/FS Study Report*

Monthly Temperature for Giseny (2014) *Source: Meteorogical Department/Government of Rwanda/FS Report*

Rubavu has an average maximum temperature of 25°C and average minimum temperature of 15°C. The hottest month is observed in May. The climatic relief of Rubavu as shown by data from meteo Rwanda shows that the region experiences heavy rainfall amounting to over 1200mm/yr. March, April and October have the highest rainfall.

4.4.1.3 Site description

The City of Rubavu will be exclusively the project site for RUDP subprojects in the District of Rubavu. The actual project sites where the proposed subprojects are basically for rehabilitation and upgrading

of three roads from murram to asphalt top roads together with associated drainage works cutting across three Sectors of Rubavu, Rubavu and Rugerero. Rubavu city has two borders with Goma, the "Petite Barrière" and the "Grand Barrière". These names are a little misleading because the Petite Barrière is physically larger and features much higher traffic volumes. About 6,000 people crossed the Petite Barrière daily during 2011. On the Rubavu side, a large customs and immigration office was built with a large capacity, not yet matched by the Congolese facilities. Similarly, the road to the Petite Barrière is paved on the Rwandan side, but not on the Congolese side. The Grande Barrière is paved on both sides and receives more of the heavy truck traffic. It is also a diplomatic border.

4.4.1.4 Hydrology

Rubavu is served by numerous river networks that include Pfunda river, Sebeya among other rivers feeding into Lake Kivu.

4.4.1.5 Soils and Geology

The soils in the project area are mainly composed of the rich, shallow volcanic and composed lava and deep, but poor, often acidic sandy clay that are easily leached by high erosion.

4.4.2 Biological environment

The urban limit of Rubavu presents two main relief categories: a plain area and a mountainous area. These two zone types strongly condition the development of the city. Plain area: The flat area in which the current town is situated is the most favorable area to the town extension because it has the least expensive development costs. However, this area is currently cultivated. The urban development would therefore be made at the expense of food crops.
Mountainous area: The mountainous area is made up of massif of Mount Rubavu on one hand, and the steep slopes in the south east of the site in the Nyamyumba and Rugerero sectors, on the other hand. This mountainous area which has slopes of more than 15% hinders the growth. Furthermore, the areas with steep slopes require costly and requires specific developments. Sensitive area such as Lake Kivu: The Lake is a fragile and sensitive zone which must be protected by appropriate measures from being polluted with increase urbanization. Areas with steep slopes: Zones of more than 15% slopes which are at immediate proximity of the urban or urbanizable perimeter and constitute sensitive zones because of their fragility towards erosion and risks of landslide. These areas are to be protected. Forest area: The forest zones existing in the study perimeter are reducing. Between 1988 and 2005, the forest cover within urban limit has decreased to more than 42%. Protecting the forest zone is important.

The current land use in the subproject area of Rubavu City is dominated by residential (41.02), agriculture and open land at 30.98%, and forests and hills make up 25.08%.

	Residential (%)	Commercial (%)	Public, institutional & infrastructural facilities (%)	Mixed use area (%)	Agriculture and fallow or open land (%)	Wetlands (%)	Forests & hills (%)
Rubavu	41.02	0.12	2.80	-	30.98	-	25.08

4.4.3 Socio economic Environment

Its tourist infrastructure including restaurants and hotels are relatively better developed. The city features a resort on the shores of Lake Kivu with several hotels and three sandy beaches. The area is also known for water sports. Rubavu is also home to Bralirwa, the only brewery in Rwanda, which manufactures various local beers — Primus, Mützig, Amstel, and Guinnes and as well as a range of Coca Cola–branded soft drinks. Rubavu is a small town compared to neighbouring Goma in the DRC, though Rubavu is growing quickly. In 2011, a new multistorey shopping mall began construction over

an old bus station. As of 2011, the main roads of the town are paved, and sidewalks are nearing completion for most of them as well.

4.4.3.1 Gender Context

In the Sectors that make up Rubavu City the perecentage of females is represented as, in Rubavu (39.0%), Rubavu (43.8%), Rugerero (51.6%) and Nyamyumba Sector (68.8%).

4.5 Muhanga

4.5.1 Physicalenvironment

4.5.1.1 Geographical location

Muhanga Secondary City is located about 50km from the CoK. According to the Master Plan boundary the City of Muhanga covers a planning area of 5,000ha, and is made up of three sectors, namely Nyamabuye, Shyogwe and Cyeza; and parts of Muhanga Sectors. For Cyeza Sector it is only one cell that is wholly and forms part of Muhanga City, that is, Makera Cell. The city is located mainly in the agroecological climatic region called the "Granite Ridge".

4.5.1.2 Relief and Climate

The City of Muhanga, as the rest of the District, is climatically located in a high rainfall area ranging from isohyets 1,100mm to isohyets 1,200mm with the least amount of rainfall occurring in the month of July averaging 11mm rainfall; while the month of April has the highest amount of rainfall, averaging 201 mm (See the Figure below). In terms of relief, the City of Muhanga is characterized by elevated hills with flat tops, moderate depressions and low unevenness, with the altitude ranges from 1750 to 1950 meters above the sea level; The slopes generally vary from 0% to 15% gradient. This kind of relief constitutes a seemingly favourable site for urban area extension with best places for residential purposes and other infrastructures such as roads with gentle slopes.

In terms of seasonality, the City of Muhanga enjoys four climatic seasons that include two rainy seasons and two dry periods including a short rainy season extending from October to December; a short dry season that runs from January to February; a longer rainy season from March to June; and a another but longer dry season running from June to August or early September.

Figure 3: Monthly climate data of Muhanga (*Source: Feasibility Study Report*)

The temperature is cool and varies from 11°C and 28°C (REMA 2005). The average annual temperature in Muhanga is 18.6 °C. This climate does not cause particular challenges to the urbanization of this study area as it is favourable for human settlement in the area.

4.5.1.3 Site description

The City of Muhanga is the exclusive project area for RUDP in Muhanga District, one of the eight districts comprising the Southern Province. The City is strategically located at the crossrods of Rwanda's major roads connecting the CoK with the City of Huye in the South, and the City of Karongi in the west, and forms part of the Muhanga-Ruhango-Nyanz Corrridor. The City has a total of 9 cells and 41 villages with a total population of 50,608 inhabitants within 11,601 households (National Census, 2012).

Plate 6: D1 above as an existing drainage along R15 and R 16 road at Kavumo Village, Gitarama Cell

All existing drainage systems both proposed for rehabilitation i.e. D1, D2 and road side drainages need to be rehabilitated to improve on storm water management to mitigate stagnant water as bleeding grounds for mosquitoes, flooding people's houses and damaging roads. R43A connects to R84 at Kamazuri Village, Gahogo Cell and serves a Hospital, Kabgayi Diocese and schools. No land take or involuntary resettlement is envisaged as the road is wide enough. However, there is no proper drainage system in place and improvement of this road would improve the drainage system but also create accessibility to the public. Some fences fall within the road reserve area, thus will be affected by the project especially R16.

Plate 7: Existing drainage D2 along R 16 road that traverses National Road to Huye at Gitarama Cell, Muhanga

The existing drainage systems D2 which is proposed for rehabilitation i.e. in addition to the road side drainages need to be rehabilitated to improve on storm water management to mitigate stagnant water as bleeding grounds for mosquitoes, flooding people's houses and damaging roads. R84 that traverses

behind the Maternity Ward, that there are 2 septic tanks and wall fence that need to be relocated to pave way for the road development as shown below.

Plate 8: Septic tank and wall fence that will be affected by the development of R84 behind Maternity Ward

Plate 9: R19 and R85B will give access to the Handcraft Center, Mpanda Vocational Training Center and the proposed Muhanga industrial park

Proposed roads R19 and R85B drain into Rugiramigozi marshland where food crops like maize, beans and rice are currently being grown thus there is need to rehabilitate the road side drainage systems to divert water to specific places to avoid flooding the marshland and crops. 25Ha have already been acquired by Muhanga City adjacent to the handcraft center at Ghuma Village, Gahogo Cell as shown in Plate above. Rehabilitating these roads will therefore ease access to the two important economic activities.

4.5.1.4 Hydrology

Muhanga City is partly sorrounded by rugeramigozi marshland and rugeramigozi stream. Rugeramigozi marshland is laregly under large scale rice cultivation.

4.5.1.5 Soils and Geology

The District has the following large rivers: Nyabarongo which makes the District hydrographical belt (it crosses six sectors) and collects alone more than 90% of runoff/small rivers; Its tributaries are Miguramo, Muhanga, Ururumanza, Sagarara, Kiryango, Base, Akabebya, Mukunguri and pours into Akanyaru. In general, water is abundant in the District, especially in its northern part.(Muhanga 2007).

4.5.2 Biological environment

Generally, the city of Muhanga enjoys a diverse **floral** community with many natural attractions that include Kabwayi marshlands and a tourist lake. However, within the project area there exist almost no natural plant ecosystems, only crops and artificial small forests are available. The crops consist of banana, avocado, sweet potatoes, cassava, rice, maize, and other food crops.

	Residential (%)	Commercial (%)	Public, institutional & infrastructural facilities (%)	Mixed use area (%)	Agriculture and fallow or open land (%)	Wetlands (%)	Forests & hills (%)
Muhanga	12.00	0.03	1.00	1.00	71.70	14.00	-

4.5.3 Socio economic Environment

The active population of Muhanga District is 86.4% against 13.4% of inactive population and 0.3% of unemployed. The majority of the population of Muhanga District (78.5%) is in agriculture coupled with farmer's livestock (76.9% of households). The main crops include beans (grown by 83.4% households), sweet potatoes (94.0%), cassava (70.7%), maize (62.2%), banana (67, 9%), soybeans (58.2%), rice (11.7%) and potatoes (34.6%). The cultural practice is archaic and production is insufficient to get surplus for the market; only 10.3% of the productions of food crops are sold against 16.3% for fruits and vegetables.In Muhanga City, the unemployment rate is at 0.3%, inactivity at 13.4 %, farm wage employment at 3.8% and non-farm wage is at 12.8%, independent farm is at 74.5% and non-independent farm at 7.8%, Public services at 8.4%, Parastatal at 2.3%, Private Formal is at 17.4% and finally private informal is at 71.9%**.**

4.5.3.1 Gender Context

In the Sectors that make up Muhanga City the perecentage of females is represented as, in Nyamabuye (64,1%), Shyogwe (63,8%), Muhanga (82,9%) and Cyeza Sector (76,5%).

4.6 Huye

4.6.1 Physicalenvironment

4.6.1.1 Geographical Location

Situated in the south, in Southern Province, with a population of just over 80 000, Huye City is especially known for its university, its scientific and cultural academic institutions and for the finest national museum in Africa. Huye (former Butare) was the largest and most important city in Rwanda prior to 1965 when the more centrally located Kigali 135km to its north, became the capital of independent Rwanda.

4.6.1.2 Climate

The project area is characterized by sub-equatorial temperate climate with an average temperature fluctuating around 20oC. Huye city has an average temperature of 190C.

Figure 4**:** Average annual Temperature (^{0}C) – Butare (Source: Feasibility Study Report)

Huye City has an annual rainfall of 1160 mm. It has 4 climatic seasons: long period of rainfall (mid-February –May); long dry period (June-mid September); short rainy period (mid September-December) and a short dry season (January-mid February). The rainy season is characterized by high rainfall averaging 1400 mm per year. Huye city has an average precipitation of 1147 mm annually. The least amount of rainfall occurs in July. In April, the precipitation reaches its peak, with an average of 183 mm with 21 average rainfall days.

Average annual Rainfall & Rainy days – Butare (year 2000-2012)
Source: Feasibility Study Report

4.6.1.3 Site Description

Today as the site of the country's largest university, the National University of Rwanda, home of the National Museum of Rwanda, and a main stopover point en route to the nearby Nyanza Royal Palace, Huye is regarded as the intellectual and cultural pulse of Rwanda. It is also an attractively compact and sedate town with shady avenues emanating from a main street lined with comfortable small hotels and breezy terrace restaurants. It is also an attractively compact and sedate town with shady avenues emanating from a main street lined with comfortable small hotels and breezy terrace restaurants. The selected project sites are basically existing roads that require upgrading from earthen to asphalt with proper drainage:

Plate 10: R21 and R43 proposed for rehabilitation at Impuhwe and Gahora Villages, Tumba Sector

R43 at Gahora Village, Tumba Sector serves as an access road to Umurenge wa Tumba Memorial site adjacent to Agateme round about. The proposed roads for rehabilitation already exist but with poor drainage system as indicated above in Plate, and are not well drained thus allowing storm water to flow on the road surface. This creates gullies within the roads and regular maintenance has to be done to backfill the potholes. Several feeder roads do not have drainage systems thus drain into R21 and some fences at R21 fall within road reserve area thus will be affected by the project. However, housing units will not be affected.

Plate 11: Umurenge wa Tumba Geneocide Memorial site adjuscent to Agateme round about served by R43

Plate 12: R31 proposed for rehabilitation to Mbazi Sector Office at Gatobotobo Cell and linking to National Road along Huye – Kigali Highway

The proposed R31 is part of an existing road which is wide enough. However, due to lack of a proper drainage system, a lot of soil is washed down into the drainage thus need to rehabilitate the road and also improve side drainage system.

4.6.1.4 Hydrology

The city of Huye is located in the northern part of Migina catchment, 260 sq.km area located in the southern province of Rwanda. The Migina catchment is drained by perennial streams. The main flow direction in the catchment is from north to south. The main stream is located in the eastern part of the catchment. Therefore, most of the valleys drain from north-west to south-east towards the main stream. In the northern part, the three main rivers are called Ruranga, Ndobogo and Rwantama. Those rivers drain into the Cyenzubuhoro, which is the river in the valley that is situated east from Huye. The Kadahokwa drains through the Mukura into the Migina, which is the name of the river until the outlet into the Akanyaru. South of Kadahokwa catchment, a river called the Kagera drains the water coming from the surrounding area into the Migina. Upstream the Kagera gains water from three smaller streams: Musizi, Umukura and Nyiranda. The Migina catchment drains into the Akanyaru river, which forms the border between Rwanda and Burundi. The discharge of the Akanyaru river is 21 m^3s^{-1} on average, based on measurements from a monitoring weir between 1971 and 1988. The discharge follows the seasonality of precipitation and is highest in April (29 m^3s^{-1}) and lowest in the month of August (16 m^3s^{-1}). In the whole Migina catchment, open springs are present. Most of them are located at the contact between the hillslope and the valley. The springs flow throughout the year, also in the dry season.

4.6.1.5 Soils and Geology

The Soils in Huye are generally humus-enriched kaolin, turned slightly reddish by the presence of iron oxide, and like most of Rwanda were derived from schistose, sandstone and quartzite formations. The soils at the proposed site are murram and pockets of cotton soil.

4.6.2 Biological Environment

By nature of the project area, there are no natural or pristine biological resources that would be affected by the proposed sub projects. The current land use in the subproject area of Huye City is dominated by agriculture and open land at 38.00%, residential 20%, commercial 2%, wetland make up 19% and forest at 8.00%.

	Residential (%)	Commercial (%)	Public, institutional & infrastructural facilities (%)	Mixed use area (%)	Agriculture and fallow or open land (%)	Wetlan ds (%)	Forests & hills (%)
Huye	20.00	2.00	1.00	2.00	38.00	19.00	8.00

4.6.3 Socio Economic Environment

Huye city has over 54,000 urban population and estimated 1.9% growth rate. The urban poor account for over 47%. In terms of business, there are over 1,876 firms with a growth rate of 46%, 8 large firms and 50 medium sized firms, 77 cooperatives and off-farm jobs employ 24%. Huye has established an Investment group and an Industrial park /Agakiriro Center adjacent. Huye city has an active business development fund (BDF) and also has over 7 TVET centers.

4.6.3.1 Gender Context

In the Sectors that make up Huye City the perecentage of females is represented as, in Mbazi Sector 74.9 % are females, Mukura Sector (74.1%), Ngoma Sector (60.1%) and Tumba Sector (55.5%).

4.7 Rusizi

4.7.1 Physicalenvironment

4.7.1.1 Geographical Location

City of Rusizi is main town in Rusizi District, which is one of the seven districts of Western Province in Rwanda. It is limited to the South West by the Mururu sector and Lake Kivu, and to North East by Nkanka and Giheke Sectors. Rusizi city is comprised of three Sectors including Gihundwe, Kamembe and Mururu, with two cells in the latter; with a total of 13 cells and 78 villages.

4.7.1.2 Climate

Rusizi City has an average temperature of 25 ° C and an average minimum of 15ºC, with hottest month being that of July. The average annual rainfall is put at 1,200 mm to 1,300 mm fairly well distributed throughout the year except for the period of long dry season which extends from June to mid-September. The highest rainfall recorded being 1,500mm in the months of March, April and November.

Year	Ja	Feb	Mar	Apr	May	Jun	Ju	Aug	Sep	Oct	Nov	Dec
Year	135.	174	168.	160.	137.	10.1	9.	31.6	166.	224.	201.	130.
Year	136.	141.	149.	146.	104.	24	1.	21.5	116.	102.	82.8	96
Year	214.	190.	185.	162	77.1	81.4	81.4	56.9	113.	210	113.	257
Year	54.2	98.9	230.	281.	125.	36.3	0	76.9	163.	222.	151	165
Year	137.	133.	335.	64.1	105.	0.	0	21.3	195.	92	247.	145.

M onthly Rainfall for Kamembe (2009-2019) (Source: Feasibility Study report)

4.7.1.3 Site Description

The projects are located within Kamembe and Gihundwe Sectors. Its estimated area is 60.4 km², which is about 6.3 % of the **total area** of Rusizi district estimated at 94 095 km^2. It is located within the 'Impala' agro-climatic zone characterized by mountainous terrain and dissected slopes on basaltic rocks, which border the fault lines bounding the Lake Kivu basin eastward. The altitude ranges between 1200 and 1800 m.

Plate 13: R2 serving the RDF Detach and Huye District Offices and R1 and R3 linking to National Road

R1 connects Stade Rusizi, Cyangugu Cell and Prisons to the national road. In some areas the road side drainage systems do not exist thus will need to be created and existing ones rehabilitated. Some sections of R1 are paved with stones but will be rehabilitated. All the drainage systems will be draining into wetlands around Lake Kivu at Cyangugu Cell. There is no involuntary resettlement envisaged as the roads and reserve areas are free of encroachment and there is enough area to accommodate the proposed road width.

Plate 14: Wetland where storm water is drained from Huye District Offices along R2 linking to National Road

4.7.1.4 Hydrology

The **hydrology** of the city is dense and is dominated by Kivu Lake and its effluents including Rubondwa (running through Mururu and Kamembe), Kaburandwe (running through Mururu) ,Gafuka (within Kamembe), Kavabuye (running through Gihundwe, Kamembe) ,Ryamabuye, Rugeme (running through Gihundwe), Rwamivugo(running through Kamembe, Mururu), and Kamabuye (that runs through Kamembe, Mururu, Gihundwe.

4.7.1.5 Soils And Geology

The **soils** are generally comprised of deep clay soils that are moderately altered. The soils of the lowlands are more or less peaty alluvial deposits of varying depth.

4.7.2 Biological Environment

The current land use in the subproject area of Rusizi City is dominated by agriculture and open land at 64.32%, and wetland make up 0.66% and forest at 15.42%.

	Residential (%)	Commercial (%)	Public, institutional & infrastructural facilities (%)	Mixed use area (%)	Agriculture and fallow or open land (%)	Wetlands (%)	Forests & hills (%)
Rusizi	12.91	1.03	5.57	-	64.32	0.66	15.42

4.7.3 Socio Economic Environment

Rusizi City is largely dependent on primary agricultural activity. According to the latest NISR EICV3 (2013), the crops produced in Rusizi City include cassava, banana, sorghum, and peas. In addition to the above mentioned crops, Rusizi grows French beans and avocadoes with 42.5% and 42.8% of households engaged in the production of these two items. In Rusizi employment is put at 77.9% for the population above 15 years, while unemployment rate is given as 0.6%, inactivity as 21.6%, wage farm as 37.1%, wage non-farm as 16.4%, independent farm as 60.0%, independent non-farm as 14.0%, formal Public as 8.4%, Parastatal 2.3%, Private Formal as 17.4%, and Private informal as 71.9%. Hours to work are as follows: 1 to 5 (3.6%), 6 to 15 (14.8%), 16 to 25(19.4%), 26 to 35(22.1%), 36 to 45(18.4%), 46 or more (21.7%). This implies that, for the most part, the population is assessed as under employed. Rusizi City has 25 crafts production centres meant as a means of organizing craftsmen and women into cottage industry to allow for a better bargain rather than when done individually.

4.7.3.1 Gender Context

In the Sectors that make up Rusizi City the perecentage of females is represented as, in Kamembe (56.7%), Gihundwe (67.5%), Mururu Sector (71.1%).

4.8 Agatare of CoK

4.8.1 Physicalenvironment

4.8.1.1 Geographical Location

Kigali City comprises of 3 districts, namely Gasabo, Kicukiro and Nyarugenge. Nyarugenge District is located in the West of the City, with an area of 134.2 km2 which makes it the smallest of the three districts,covering a sixth of the City's land area. The District is bounded by Nyabarongo River which runs along almost the entire western and southern edge of the District. The proposed City Centre at Gahanga lies to the east of Mageragere Sector, one of Nyarugenge District's pre-urban sectors. The existing International Airport lies about 7km to the east and the new International Airport proposed

to be developed in Bugesera lies about 15 km to the south of the District. A national highway connecting the District to Kigali International Airport and eastern parts of the City runs east west between Kanyinya and Kigali Sectors. Another national highway connecting the District to the town of Musanze and other northern parts of the country passes through Kanyinya Sector. Another important road runs along the western and southern edge of the District, crossing Nyabarongo River, offering connections to southern towns such as Muhanga and Huye. Major paved roads only occur in the urbanized areas of the District. The rural areas have roads mostly in the form of mud tracks. Nyarugenge District of CoK comprises of 8 sectors of Nyarugenge, Muhima, mageregere, Kanyinya, Kimisagara, Nyakabanda, Rwezameyo, and Nyamirambo (Figure 13). The study area is located in Nyarugenge sector and it covers the cells of Biryogo, Agatare, Rwampara and Kiyovu. The total area of the study is 86 ha compared to the sector which covers 456ha. In contrast 84% of the population of Nyarugenge sector lives in the study area. Figure 3 below shows the study area in national and local context.

4.8.1.2 Climate

Kigali City has a tropical climate with almost uniformly high temperatures and humidity and moderate rainfall. Seasonal variations in temperatures are slight. Although the temperature never gets dangerously high, the combination of heat and humidity can at times seem oppressive. The annual average air temperature measured at different times of the day is:

- At 7:00 a.m.: 16.1 oC
- At 12:00 p.m.: 27.7 oC
- At 17:00 a.m.: 23.3 oC

The minimum recorded being 14.2 oC and maximum of 23.4 oC

The average annual rainfall in Kigali city is generally over 900 mm. The rainfall pattern is erratic with no fluctuation in average rainfall and intensity. No rain occurs between June and September while high precipitation occurs during April to May. Humidity is relatively high, averaging 72% from October through May and 57% for the drier months of June to September as shown by Kanombe International Weather Station.
The eco – zone's climatic characteristics are as follows:

- Long rainy from mid March to mid June. This period receives about 40 -60% of the total annual precipitation;
- Long dry from mid June to mid September
- Short rainy from September to late December; and
- Short dry from late December to mid March.

4.8.1.3 Site Description

Agatare Area is generally hilly with the slopes ranging from 5% to 30%. Lowest point is at 1,405m AMSL in Rwampara River and the highest 1,535m AMSL in Biryogo Cell. About 20ha are estimated to have slopes of more than 30%. The area is largely characterized by a very undulating topography, with Mount Kigali, the highest point in the City, located nearby. 69% of Nyarugenge's District's land lies in areas of natural constraints, either within steep unbuildable slopes or covered by forests and wetlands. The project study area exemplifies this condition, as it is located along a steep slope that leads directly into the wetland.

The overall area includes some well-designed and constructed key distributor roads but is generally characterized by a lack of infrastructure/public services and few organized systems for pedestrian circulation, drainage and slope management.

Plate 15: Gikondo Mashland where all the drainage systems drain into River Rwampara before draining into River Nyabugogo and Akagera

Given the terrain of most of the project area, there is a lot of storm water going downhill and flooding was reported to occur during the rainy season within the flood plain of River Rwampara. There are generally, several drainage systems (both natural and constructed) that currently drain into this marshland, and the unconstructed ones have created gaping gullies along the storm water path.
There are unplanned settlements within the floodplain that are often flooded due to increased run-off from the areas of Kiyovu, Agatare, Rwampara, Biryogo Cells in Nyarugenge District. The natural buffer zone needs to be maintained by the city of Kigali by controlling upcoming encroachment; otherwise both the people and the down stream ecosystem are exposed to various magnitudes of risk.
The river Rwampara marshland system is of high importance as it drains into River Nyabugogo which drains into the Akagera catchment thus acts as a purification system for the runoff which carries pollutants. This makes this system to be of extra importance as it forms part of a transboundary network through the Akagera system.

Plate 16: AS29 at Kiyovu Cell where water and electricity utilities are within the road reserve planned for expansion

The nature of the area exposes a lot of utility lines such as water and electricity to damage and there will be need to relocate water and electricity reticulation systems as there are some that are currently within the planned corridors for road upgrading i.e. 8m of planned AS29.

Plate 17: AS43 and MD4 proposed for rehabilitation draining into R. Rwampara

MD4 drainage system has been damaged/ washed away due to increased runoff thus requires backfilling and construction of a retaining wall as part of rehabilitation as it drains into the mashland of R. Rwampara. The drainage system is generally weak and might be washed down into the mashland together with the house and shop structures erected along the drainage system.

Plate 18: Prposed FP89 and AS31 traverses the drainage system at SD3

Several drainage systems are within this area thus putting the housing units at risk at Rwampara Cell. There are water and electricity reticulation systems within the proposed area for the road and drainage systems, these will require relocation before commencement of construction activities as construction activities would deny locals access to water and electricity. Within 80 -100m, it was observed that

farming activities are currently on-going within the marshland and R. Rwampara e.g. Banana plantations, maize, Irish potatoes etc as shown below in Plate 5.

Plate 19: Cultivation activities within Rwampara River thus encroachment on wetland ecosystem reducing on capacity to control runoff within Rwampara Cell

Plate 20: They are many drainage systems including SD1 within the Kiyovu Sector making both transport and housing difficult.

Plate 21: At MD3 children were found to be playing in stagnant water and drinking dirty water and contaminated with waste.

Waste management is a big problem within the project area. Solid and liquid waste (possibly sewage) is carried by storm water through people's compounds in Rwampara Cell into the marshland, which has been encroached on by agricultural activities. The drainage systems including MD1, MD2 and MD4 have been widened by storm water to about 5m deep and 4m wide. This is a hazard to children especially playing around these unstable shoulders of the drainage system and roads as they could fall into and result into fatal injuries.

Plate 22: In Kiyovu Sector they are electrical cables and water pipes that are running above the ground crossing AS21, FP34 and AS22.

Utilities like water pipes and electrical cables cross the planned roads for rehabilitation and during construction activities, there will be need to shift them first to avoid denying locals access to water and electricity. These can also be potential hazards leading to electrocution and drowning of children.

4.8.1.4 Hydrology

The hydrology of the District of Nyarugenge mainly consists of rivers and brooks which belong to the Akagera River basin, the beginning of the Nile River. The principal rivers of Nyarugenge District are:

- The Nyabarongo River which flows from the north-east and runs along the west and south of Nyarugenge District, eventually emptying into the Akagera River basin;
- The Nyabugogo River which originates from Lake Muhazi basin and flows into Nyabarongo River.
- The Agashiha, which originates in Gikondo and flows into Nyabugogo River.
- The Rwampara brook which originates in Nyarurama hill and flows into Nyabugogo River.
- The Mpazi brook which originates in Nyamirambo and flows into Nyabugogo River.

4.8.1.5 Soils and Geology

Granitic and meta-sedimentary rocks underlie the City of Kigali; these include schists, sandstones and siltstones (Surbana 2012). Lateritic soils, rich in iron and aluminium, dominate the city's hillside surfaces while alluvial soils (fertile soil deposited in river valleys) and organic soils are found in the lowlands and wetlands. Inappropriate development on Kigali's hilly slopes has caused extensive soil erosion in some areas. According to the Rwanda National Land Use Development Master Plan (LUDMP), Kigali's land area is classified as being within a zone of medium-to-high risk for soil erosion and soils on slopes with more than a five per cent incline are susceptible to heavy erosion (Surbana 2012). Where soil erosion is heavy, there has been a loss of soil fertility while the accumulation of heavy silt loads in the valleys is reducing river and wetland habitats.

4.8.2 Biological Environment

The current land use in the subproject area of Nyarugenge Sector is dominated by residential use at 50.15%, followed by agriculture and open land at 18.66%, public institutions and infrastructure facilities at 16.75%, commercial is at 12.73% and mixed use area at 3.76%.

	Residential (%)	Commercial (%)	Public, institutional & infrastructural facilities (%)	Mixed use area (%)	Agriculture and fallow or open land (%)	Wetlands (%)	Forests & hills (%)
Agatare Area	50.17	12.73	16.75	3.76	18.66	-	-

4.8.3 Socio Economic Environment

The predominant land-use in the area is serving as a residential zone with pockets of small commercial shops along the access footpaths. Some residential houses are also used for home-based business activities e.g. tailoring, weaving, boutiques, salons etc. Other land-use activities include cultivation of commercial crops in Rwampara wetland and dairy farming (see photo below). The area is a high density residential area with plots measuring between 300-400m2 (61 out of 226 responses) followed by 200-300m2. The cause of congestion is not in the sizes of plots but rather in the densification of structures. In Nyarugenge District of the CoK, 53% of the work population is non-farm wage earners and paid wages/salaries for non-farm services; 14.3% are independent farmers while 22.5% are independent non-farmers. 4.8% of Nyarugenge population are unpaid non-farmers, meaning they work in informal sector.

4.8.3.1 Gender Context

CoK in the Nyarugenge Sector the males are much higher than the females with 54% of the residents as males and 46% as females – a ratio in line with that of the CoK was established at 106:100 (males to females) as per national census of 2012 (NISR, 2012).

5. PROJECT DESCRIPTION

5.1 Roads

The roads subprojects in the first phase of RUDP will involve mainly rehabilitation of existing roads by upgrading them from murram to asphalt (tarmac) roads, and to minor extent construction of new roads to hard surface (likely tarmac or cobblestone roads) within the cities. These will increase the accessibility and connectivity between settlements and city centres or CBDs. The roads targeted are mostly those regarded as city roads under the urban authorities not those linked to the national grid under the Roads and Transport Authority (RTD), the agency responsible for national roads. The salient proposals for upgradation and improvement of the priority roads are classified into the following engineering, environmental health and safety aspects.

i. Construction of asphalt road over existing soil/subgrade.
ii. Widening of existing formation width to suit the applicable cross section
iii. Improving the horizontal geometry of the existing road as far as possible within available space.
iv. Improvement of all major and minor intersections within available space.
v. Rehabilitation and widening of the existing structures including bridges, culverts etc. and design of new ones as necessary.
vi. Provision of retaining wall as slope protection measures.
vii. Provision of comprehensive road furniture for complete road safety.

5.1.1 Geometric Design Standards

This project is essentially an urban development project involving construction of new asphalt road over existing/widened formation. Broad geometric design standards for improvement are enumerated in Table 13.

Table 11: Geometric Design Standards for Road-works

Attributes	Geometric Design Standards
Design Speed	40-50 kmph in general (except at few locations to avoid land acquisition).
Carriageway Width	4.5m/6.0m
Width of Earthen Shoulder	1 x 1.0m (on valley side in general)
Width of Walkway	1 x 1.5m (on valley side in general)
Camber	
a) Carriageway	2.5%
b) Shoulder	3.0%
b) Walkway	
Width of Drain	1 x 1.1m (on hill side in general)
Embankment Slope	
a) Hill Side	1 (H) : 1 (V)
b) Valley Side	3 (H) : 2 (V)

5.1.2 Widening Proposal

Normally concentric widening has been followed. However, minor realignments have been incorporated at few locations for geometric correction without any major resettlement. Attempts have been made to avoid realignments at built up locations.

5.1.3 Cross-section for Improved Facility

Cross-section for the improved facility should be adequate to cater to the traffic expected over the design period and offer safe and convenient traffic operation at speeds consistent with the terrain conditions and functional classification of this road.

Four nos. typical cross sections have been envisaged for the roads under 1st priority (i.e R2, R2B, R1, R23A an R11) as mentioned below. These have been prepared on the basis of site reconnaissance and design guidelines.

TCS –1 :	Typical cross section of single lane road at urban stretches (with walkway)
TCS –2 :	Typical cross section of single lane road at urban stretches (without walkway)
Walkway)	Typical cross section of 2-lane road at urban stretches (with walkway)
TCS –4 :	Typical cross section of 2-lane road at urban stretches

5.1.4 Pavement

Following pavement composition (Table below) has been considered for the study and analysis. The pavement composition has been considered as per design of Masaka-Kabuga section (provided by RTDA) which has been checked with AASHTO guidelines.

Table 12: Proposed Pavement Composition

Pavement Composition (mm)			
Pavement Layers	**Asphalt Surface**	**Cobble Stone Surface**	**Concrete Surface**
Asphalt	40		
Cobble Stone		100	
PQC			150
DLC			250
Base	150	150	
Sub-base	250	250	250
Subgrade	500	500	500
Total	940	1000	1150

As per the above pavement composition, the proposed pavement widths for different cross sections have been calculated and are presented in Table 15.

Table 13: Proposed Pavement Widths

TCS Types	Surface Material	Pavement Layers	Pavement Widths
TCS-1	Asphalt	Asphalt	4.50
		Base	4.50
		Subbase	4.75
		Subgrade	5.25
	Cobble Stone	Cobble Stone	4.50
		Base	4.50
		Subbase	4.75
		Subgrade	5.25
	Concrete	PQC	4.50
		DLC	4.50
		Subbase	4.75
		Subgrade	5.25
TCS-2	Asphalt	Asphalt	4.50
		Base	4.50

		Subbase	5.63
		Subgrade	6.00
	Cobble Stone	Cobble Stone	4.50
		Base	4.50
		Subbase	5.63
		Subgrade	6.00
	Concrete	PQC	4.50
		DLC	4.50
		Subbase	5.63
		Subgrade	6.00
TCS-3	Asphalt	Asphalt	6.00
		Base	6.00
		Subbase	6.25
		Subgrade	6.75
	Cobble Stone	Cobble Stone	6.00
		Base	6.00
		Subbase	6.25
		Subgrade	6.75
	Concrete	PQC	6.00
		DLC	6.00
		Subbase	6.25
		Subgrade	6.75
TCS-4	Asphalt	Asphalt	6.00
		Base	6.00
		Subbase	7.13
		Subgrade	7.50
	Cobble Stone	Cobble Stone	6.00
		Base	6.00
		Subbase	7.13
		Subgrade	7.50
	Concrete	PQC	6.00
		DLC	6.00
		Subbase	7.13
		Subgrade	7.50

As per district demand all Phase-1 roads are proposed with asphalt surface.

5.1.5 Other Road Facilities

The objective of a high speed facility includes providing safe, efficient and economic movement to motorized traffic with comfort and pleasing environment during the journey. This requires certain miscellaneous provisions for traffic guidance and safety. However, it is evident that after implementation of the project, high speed environment will make the areas more accident-prone unless proper safety controls are exercised. The Consultants propose to rectify any geometric and engineering deficiency existing along the critical stretches. The following safety measures are suggested:

- Traffic signs - mandatory, cautionary and informatory
- Road Markings
- Crash barriers
- Guard posts

- Pedestrian crossings at major intersection locations
- Speed breaker
- Walkways for safe pedestrian movements

5.1.6 Landscaping and Arboriculture

The aim of landscaping will be conservation of existing natural or manmade features e.g. water bodies, historical buildings and scenic vistas along the roads. Landscaping will address the issue of drainage to ensure minimum disturbance to the natural drainage and at the same time ensure protection of natural surfaces from erosion. Proper landscaping will be provided for road alignment, to fit-in with surroundings for pleasing appearance, reducing adverse environmental effects such as air pollution, noise pollution and visual intrusion. Landscaping will include stabilization of embankment by pitching and/or turfing/ plantation. The treatment of embankment slopes along the highway will be as per recommendations of applicable guidelines of the country, depending upon soil type involved. Pitching of slopes of high embankment (Ht.>3m) with chute drains at 30m interval shall be provided for controlling of erosion due to weathering action for stability of slopes. Compensatory afforestation as per applicable rules were used.

Table 14: List of Priority Projects including Drains under Phase-1 Funds - Nyagatare

Road/Drain Code	Existing Condition	Type	Proposed Width in meters	Type of road recommended	Length (M)
R2	Earthen Road	Main Feeder Road	9.6	Asphalt	1400
R2B	Earthen Road	Main Feeder Road	8.1	Asphalt	475
R1	Earthen Road	Main Feeder Road	8.1	Asphalt	30
R14	Earthen Road	Main Feeder Road	11.1	Asphalt	340
R11	Earthen Road	Main Feeder Road	9.6	Asphalt	1360
Sub Total					**3605**

Table 15: List of Priority Projects including Drains under Phase-1 Funds - Muhanga City

Road/Drain Code	Existing Condition	Type	Proposed Width in meters	Type of road recommended	Length (M)
R14	Earthen Road	Main Feeder Road	9.6	Asphalt	700
R15	Earthen Road	Main Feeder Road	8.1	Asphalt	770
R16	Earthen Road	Main Feeder Road	9.6	Asphalt	460
R40	Earthen Road	Link Road	8.1	Asphalt	175
R73	Earthen Road	Link Road	8.1	Asphalt	70
R43A	Earthen Road	Main Feeder Road	8.1	Asphalt	430
R84	Earthen Road	Main Feeder Road	8.1	Asphalt	725
R19	Earthen Road	Main Feeder Road	9.6	Asphalt	1050
R85A	Earthen Road	Main Feeder Road	8.1	Asphalt	350
R85B	Earthen Road	Link Road	8.1	Asphalt	110
R85C	Earthen Road	Link Road	8.1	Asphalt	120
Sub Total					**4,960**

Table 16: List of Priority Projects including Drains under Phase-1 Funds - Rusizi City

Road/Drain Code	Existing Condition	Type	Proposed Width in meters	Type of road recommended	Length (M)
R14	Cobble Stone Road	Main Feeder Road	8.1	Asphalt	350
R15	Earthen Road	Main Feeder Road	8.1	Asphalt	2870
R16	Earthen Road	Main Feeder Road	8.1	Asphalt	380
R40	Earthen Road	Link Road	9.6	Asphalt	1075
Sub Total					**4,675**

Table 17: List of Priority Projects including Drains under Phase-1 Funds - Rubavu City

Road/Drain Code	Existing Condition	Type	Proposed Width in meters	Type of road recommended	Length (M)
R2	Earthen Road	Main Feeder Road	8.1	Asphalt	300
R3	Earthen Road	Main Feeder Road	8.1	Asphalt	1250
R7	Earthen Road	Main Feeder Road	11.1	Asphalt	1100
R8	Earthen Road	Main Feeder Road	9.6	Asphalt	815
R20	Earthen Road	Main Feeder Road	8.1	Asphalt	500
Sub Total					**3965**

Table 18: List of Priority Projects including Drains under Phase-1 Funds - Musanze City

Road/Drain Code	Existing Condition	Type	Proposed Width in meters	Type of road recommended	Length (M)
R48	Earthen Road	Main Feeder Road	8.1	Asphalt	1533
R49	Earthen Road	Main Feeder Road	8.1	Asphalt	1399
R24	Earthen Road	Main Feeder Road	9.6	Asphalt	631
R33A	Earthen Road	Main Feeder Road	11.1	Asphalt	139
R44	Earthen Road	Main Feeder Road	11.1	Asphalt	887
Sub Total					**4,589**

Table 19 : List of Priority Projects including Drains under Phase-1 Funds – Huye City

Road ID	Length (m)	Type	Proposed Width in meters	Type of road recommended	Length (m)
R17	Earthen Road	Main Feeder Road		Asphalt	6800
R18	Earthen Road	Main Feeder Road		Asphalt	1050
R23	Earthen Road	Main Feeder Road		Asphalt	970
R21	Earthen Road	Main Feeder Road		Asphalt	4100
R22	Earthen Road	Main Feeder Road		Asphalt	1500
R26	Earthen Road	Main Feeder Road		Asphalt	3200

5.2 Drainage System

Storm water drainage is part of the essential infrastructure of a modern city. While in the past, the term 'drainage' was widely associated with 'sewerage' and vice versa, now it is dealt with in broader perspective, separately from sewerage. Frequent floods cause damages to roads & property. It also disturbs the economic and social activities of the Nyagatare city. Proper storm water drainage system is essential to have safe and sustainable growth. The general topography of Nyagatare city has a series of hills and valleys. It has steep slopes up to 1 in 10. Most of the settlements in the city are on hills and along steep slopes. Formation and maintenance of roads and drainages in steep terrain is challenging task. Unlike in the past when storm water drainage was given relatively less emphasis compared to water supply and sewerage, it has now become an essential for the infrastructure of every city.

Due consideration has been given to the very important aspect of drainage while preparing the design. All the cross-sections incorporate the roadside drains proposed at various stretches of the roads taking into account the existing and natural conditions as well as the future situation. Uncovered rectangular drain sections have been proposed. The drains shall discharge into the nearest outfall. As drains are proposed at hill side, cross drainage arrangements (in form of pipes) have been taken into account for passing of this drain water into valley side.

Basis of estimation of design runoff for storm water drainage system is that, the part of the rainfall that reaches the drains depends on the ratio of the impervious to the relatively absorbent surface, the intensity and duration of rainfall, the character, shape and the slope of the drainage area.In the design

of storm water drainage system, it depends on the location and ground levels of the area; the decision is to be taken about:

- Drain size to carry the design runoff
- Shape
- Available slope
- Material to be adopted for construction of drains.

Manning's formula is widely used through out the world for open flow channels. While designing storm water drains, it is to be ensured that a minimum velocity is maintained in the drains even during minimum flow conditions for self-cleansing and at the same time velocity should not be excessive to cause erosion. RTDA Drainage Manual recommends maintaining a minimum velocity of 0.6 m/s while not exceeding 2.5 m/s. The frequency of storm for which the drainage system is to be designed, depends on the importance of the area to be drained. The proposed drains are secondary drains and mainly in the residential areas. Hence, it is recommended rainfall intensity of 2 years return period for design of the drains. Intensities for different durations for 2 year return period is given in the following table

Table 20: Intensities for different durations for 2 year return period considered

Duration (min)	2 year (mm/hr)
15	72
30	52
45	39.50
60	31.10
75	25.70
90	21.90

Source: Hydrological and Hydraulic Report -2014

Lists for priority drainage systems are presented below:

Table 21: List of Priority Projects under Phase-1 Funds - Nyagatare

Road/Drain Code	Existing Condition	Type	Proposed Width in meters	Type of road recommended	Length (M)
D1	Existing drain to be totally rehabilitated	Without cover	1.0x1.0	Concrete Base &R Walls	480
D2	Existing drain to be totally rehabilitated	Without cover	0.75x075	Concrete Base &R Walls	450
D3	Existing drain to be totally rehabilitated	Without cover	1.0x1.0	Concrete Base &R Walls	90
D4	Existing drain to be totally rehabilitated	Without cover	0.6x0.6	Concrete Base &R Walls	350
Sub Total					**2180**

Table 22: List of Priority Projects under Phase-1 Funds - Muhanga City

Road/Drain Code	Existing Condition	Type	Proposed Width in meters	Type of road recommended	Length (M)
D1	Existing drain to be totally rehabilitated	With cover	1.0x1.0	Concrete Base &R Walls	185
D2	Existing drain to be totally rehabilitated	With cover	1.0x1.0	Concrete Base &R Walls	190
D3	Existing drain to be totally rehabilitated	With cover	0.75x075	Concrete Base &R Walls	280
D4	Existing drain to be totally rehabilitated	Without cover	1.5x1.5	Concrete Base &R Walls	220
D5	Existing drain to be totally rehabilitated	With cover	0.75x075	Concrete Base &R Walls	195

D6	Existing drain to be totally rehabilitated	Without cover	0.75x075	Concrete Base &R Walls	70
Sub Total					**1,140**

Table 23: List of Priority Projects under Phase-1 Funds - Rusizi City

Road/Drain Code	Existing Condition	Type	Proposed Width in meters	Type of road recommended	Length (M)
D1	Existing drain to be totally rehabilitated	With cover	1.0x1.0	Concrete Base &R Walls	275
D2	Existing drain to be totally rehabilitated	Without cover	1.25x1.25	Concrete Base &R Walls	100
Sub Total					**375**

Table 24: List of Priority Projects under Phase-1 Funds - Rubavu City

Road/Drain Code	Existing Condition	Type	Proposed Width in meters	Type of road recommended	Length (M)
D1	Existing drain to be totally rehabilitated	Without cover	1.0x1.0	Concrete Base &R Walls	160
D2	Existing drain to be totally rehabilitated	Without cover	1.5x1.5	Concrete Base &R Walls	325
D3	Existing drain to be totally rehabilitated	Without cover	2.0x2.0	Concrete Base &R Walls	260
D4	Existing drain to be totally rehabilitated	Without cover	2.0x2.0	Concrete Base &R Walls	290
D5	Existing drain to be totally rehabilitated	Without cover	2.0x2.0	Concrete Base &R Walls	700
Sub Total					**1735**

Table 25: List of Priority Projects under Phase-1 Funds - Musanze City

Road/Drain Code	Existing Condition	Type	Proposed Width in meters	Type of road recommended	Length (M)
D1	Existing drain to be totally rehabilitated	Without cover	2.0x2.0	Concrete Base &R Walls	780
D4	New drain to be totally constructed anew	Using underground culverts	1.5m diameter culverts	Concrete Base &R Walls	250
Sub Total					**1,030**

5.3 Construction and Post-Construction Activities

Road construction will entail procurement or quarrying of materials and their haulage from sources to road sites. It ought to be noted that while the design engineer can identify preliminary borrow or quarry sites for gravel and aggregate, final choice of material sources rests with the road construction contractor who then would be responsible for preparing project briefs for borrow sites and full EIA for quarry sites chosen. Sections below outline activities that will be undertaken during project development.

5.3.1 Construction Activities

Upgrading the road will entail improvement of the carriageway and associated drainage and safety infrastructure along the existing alignment. Construction activities planned are:

- Stripping away existing wearing gravel surface as per design specifications
- Earthworks involving cut and fill operations
- Excavation of gravel and soils from borrow areas
- Rock blasting and crushing to obtain aggregate
- Natural gravel/crushed rock base construction
- Bituminous construction
- Stone pitching of drains in cut and urban areas

- Gabion construction for erosion protection
- Planting grass on side slopes/ embankments
- Reshaping of borrow pits and decommissioning them
- Construction of retaining walls where necessary on steel embankments
- Installing road furniture including traffic signs, guard rails and road markings

5.3.2 Road Construction Materials

Materials to be required by the project are:

- ***Gravel*** for filling will be obtained from borrow areas along the project road.
- ***Crushed rock / aggregate***: will be required for base and surface bituminous courses and concrete works. The rock will be procured from identified quarries where stones will be crushed to provide stone products.
- ***Sand:*** for concrete works, 2 sand sources have been identified about 4km off the project road.
- ***Cement:*** The cement will be used mainly for concrete works and will be imported.
- ***Steel:*** The steel will be required mainly for structural work and will be imported.
- ***Bitumen:*** will be required for bituminous surface and will be imported.
- ***Water:*** for construction and use in workers' camps.

5.3.3 Gravel Sources

While final choice of material source is a responsibility of the road construction contractor, possible locations of borrow sites should be identified along the existing road by design engineers possibly within road reserve areas.

5.3.4 Aggregate Sources

Possible sources of aggregates were not identified by design engineers thus the Contractor should carry out this activity before construction works. Samples from these sites should be tested for Aggregate Impact Value, Aggregate Crushingvalue, Water absorption, bitumen Affinity/Stripping Value, Specific gravity and soundness using sodium sulphate. All samples should be found to be suitable for road and concrete works. Operations at rock quarry sites should be undertaken in accordance with the *organic law* after approval of a separate EIA prepared by the contractor for each quarry site selected. Additionally, quarry EIAs should recognize requirement of *The Mining law* limiting human settlement to a radius of not less than 500 meters from active quarry sites.

5.3.5 Sources of Road Construction Water

The project areas are traversed by a number of rivers and streams and these are possible sources of water for road construction activities and domestic use in contractors' or workers' camps. Contractors shall be required to comply with the Water legislation which requires them to obtain permits for water abstraction during road construction in accordance with the Law N°62/2008 Of 10/09/2008 Putting In Place The Use, Conservation, Protection And Management Of Water Resources Regulationse.g. Article 69 on Conveying water resources.

5.3.6 Workers Camps, Machine Workshops and Equipment Yards

A workers' camp, machine maintenance workshop and equipment yard need to be identified by the Contractor as the Design Consultant did not establish this. The exact location is a responsibility of the contractor and choice will be base d environmental considerations. All towns/Cities have reasonable infrastructure, commercial and worship areas to offer acceptable living conditions to construction workers. Before and during road construction, the contractor will provide facilities outlined below at the workers' camp. The camp should have Ventilated Improved Pit (VIP) latrines at a ratio of 1 stance per 5 employees.

The camp will generate about 0.1 kg of wastes per person per day leading to an estimated quantity of 10 kg per day for a camp occupancy of 40 -100 workers. Most local laborers are expected to commute from home hence this waste estimate could be lower than actual operational volumes. For onsite waste collection and temporary storage, bins will be provided to ensure onsite segregation into recyclable and non-recyclable streams.

A maintenance workshop and equipment park yard will be established adjacent to the workers' camp. The site will be equipped with a temporary office block, maintenance bays, parking yard and materials store.

6. PROJECT NEED AND ANALYSIS OF ALTERNATIVES

6.1 Roads and Drainage

6.1.1 No-Project Option

This option will perpetuate poverty and impede development of the entire project areas. The proposed upgrading of roads and associated drainage system has deteriorated in many parts and the current roads attract incremental costs in repairs. Frequent maintenance and gravel quarrying poses financial and environmental costs. Due to the bad road, road safety is low, travel times are unduly long and journeys cumbersome and uncomfortable. Farmers have also found it difficult to transport their commodities to markets due to the current status of roads.

The No Project Option Alternative which in essence refers to not implementing the proposed project at all. This alternative would imply that the current status quo would continue. Project actions predicted in the zero alternative will comprises routine maintenance works and activities aimed at preserving the current asset using recurrent expenditure. It is important to note that this zero alternative is the baseline against which all other alternatives and the development proposal have been assessed. The No-option will not register any of the impacts (both positive and negative) associated with any specific alternative or the development proposal. Assessing the other alternatives would therefore inadvertently provide an assessment of the No-option. In addition to the direct implications of retaining the status quo there are certain other indirect impacts, which may occur should the No-option alternative be followed. The No-option will entail continued poor road conditions perpetuating long duration traffic hold ups, road flooding in some areas, frequent repairs and clogged drainage whenever it rains. Such bad road carriage conditions will perpetuate slow connectivity.

The No Project Option Alternative would imply that the current status quo would continue which is both lack of proper drainage systems and existing poor drainage systems leading to flooding of residential and commercial structures, flooding of roads thus making accessibility to some areas difficult, pollution of existing ecosystems e.g. Lake Kivu in Rubavu. Project actions predicted in the zero alternative will comprises routine maintenance works and activities aimed at preserving the current asset using recurrent expenditure. The No-option will register some of the impacts (especially negative) associated with any specific alternative or the development proposal. In addition to the direct implications of retaining the status quo there are certain other indirect impacts, which may occur should the No-option alternative be followed. The No-option option will entail continued poor drainage conditions thus impacting on roads conditions, houses and road flooding in some areas, frequent repairs and clogged drainage whenever it rains. Poor drainage systems will also culminate into environmental pollution as pathways.

6.2 Project Alternatives and Criteria

The Feasibility Study report identified a long list of potential project in each of the six project secondary Cities, and Agatare of CoK. The long list contained mainly existing roads and drainages that needed upgrading and rehabilitation. The process of selecting the potential projects involved consultation with community and various stakeholders where different suggestions and solutions were proposed for upgrading the roads and the drainage projects. In order to sieve and prioritize them, it was prudent to develop evaluation criteria. The following criteria were used for selection of the roads that were presented to the stakeholders in a stakeholder workshop:

- Stake Holder Opinion
- Connectivity of the roads
- Positive Economic Development
- Intended Benefits (Wide Coverage)
- Minimum resettlement
- Minimum land acquisition
- Traffic
- Pavement and Drainage Condition
- Cost of the projects in consideration of the available funds from the bank

The Safeguards Consultant conducted a rapid assessment of all subprojects on the long list to assess the potential social and environmental impacts of the proposed subprojects in each of the six secoandary cities and Agatare of CoK. A rapid assessment tool was based on the following parameters relating to the potential social and environmental impacts ;

- Disruption or relocation of formal and informal business
- Resettlement and/or land Acquisition
- Loss of Crops, Fruit Trees and Household Infrastructure
- Block of access and routes or disrupt normal operations in the area
- Environmentally sensitive areas or threatened species

The rapid assessment was done to inform the respective cities in making final decisions for selecting the final projects and phasing of subprojects for phase 1 and phase 2 ; but also potentially phase 3. Screening of all subprojects on the long list was done based on the priorities of the respective secondary Cities and CoK taking into account the implementation time and the funds available and the expropriation requirements. The finding of this rapid assessment was submitted in the initial process of environmental assessment.

As a result of the rapid assessment, a short-list of subprojects for phase 1 funding was decided upon and other subprojects were grouped into phase 2 & 3 by the respective cities of Huye, Muhanga Rusizi, Musanze, Rubavu, Nyagatare and Agatare of CoK. This was done in a consultative meeting involving local community and local leaders in the project areas.

Alternative 1: Grouping of priority projects as follows:

Phase-1: These are subprojects to be implemented immediately under World bank funds already sanctioned

Phase-2: will be taken upon completion of phase-1 , under world bank funds already committed

Phase-3: will be taken up as long term based on funds availability for the districts

Phase-1 priority projects are projects with limited or no displacement/expropriation and will be implemented in a period of 2 years while phase 2 subprojects are projects that will be implemented in a period of over 3 years after the completion of phase 1 projects. In deciding on project alternatives, projects with high expropriation budget and displacement were grouped into phase 2 projects while projects with limited expropriation cost were categorized as phase 1 projects. Citizens engagement meetings were held in all the secondary cities and CoK and phase 1 subprojects were presented to the community and were given chance to participate in the planning process.

Alternative 2: Subproject site location:

In general following criteria were applied:

- The project was mandated by District with an objective of improving the living conditions of the people
- The project must serve a wide coverage of the study area and was ranked highly by the community
- The project provides an important safety benefit (e.g. drains)
- The project would have positive economic development impacts or is supported by the community as a priority for economic reasons.
- The project serves different categories of community members (youth, men and women, the elderly, traders, farmers practicing agriculture in the wetland etc)
- The project's impacts will trickle down to other related projects (e.g. access streets will improve garbage collection)
- The project will provide a link between various public facilities that are within and outside the study area.
- The project has considered the cultural aspects of the community and its cost implication is justifiable in nature.

Alternative 3: Road design in terms of width

At first, consultants tried to select roads on the basis of some engineering parameters. Then during Rapid assessment of the long list of proposed investments in each of the secondary Cities and Agatare of CoK, additional subproject selection criteria were added and used for evaluation of roads and drainages under various phases.

The width of the different roads were a basis of arriving on or evaluating whether the planned road will fall within the existing road boundaries, including the road reserves and will thus not require expropriation or will not involve destroy natural habitats, including avenue trees. Based on this criteria, the width of the different roads were set as indicated in in the chapter on project.

Where the roads were evaluated as being important and qualifying for phase 1 implementation, but were considered to narrow, and would need very high expropriations costs, the option of having the roads as one way was selected; this applied on roads located in Muhanga City

Alternative 4: Design for the drainages

The key considered alternative in the design of the drainage was whether to have open or covered drains. On most drains that are running along the road sides, and in areas such as Agatare of CoK, the covered design option was preferred and this was based on the need to provide to have the drainage systems double as pedestrain walk ways without reducing the road width to create seprate drainage and walk ways.

7. POTENTIAL IMPACTS AND MITIGATION MEASURES

7.1 Introduction

Key potential environmental and social impacts of the road upgrade project for each stage of the project cycle are assessed in this chapter and an Environmental and Social Management Plan (ESMP) provided (Chapter 9). The ESMP seeks to translate mitigation measures into actions. Prediction and analysis of possible positive and negative impacts of upgrading the existing gravel road ("the project") are discussed. Since the road has existed for many years, most socio-environmental impacts associated with the upgrading project will be direct in nature and mostly resulting from construction activities. Impact analysis involved determination of nature of impact, its magnitude, extent, duration of potential impacts. For the proposed development, potential positive and negative impacts were identified both for the construction phase and operation phases. Throughout this report, impacts have been characterized as:

a) ***"Positive"*** when they;
- Enhance socio-economic welfare e.g. health, employment,
- Enhance quality of existing environment.

b) ***"Negative"*** when they;
- Reduce socio-economic welfare of people,
- Reduce quality of existing environment,
- Reduce economic value e.g. of surrounding property.

c) ***"First order"*** (or direct) impacts;
- Are directly caused by a specific action as the primary effects.
- Occur at the same time and location as the action.

d) ***"Second order"*** (or indirect) impacts result from effects of the first order impacts.

e) ***"Third order"*** impacts are result from incremental effects of second order impacts.

f) ***"Reversible"*** impacts can be completely reversed while **"Irreversible"** impacts cannot be completely reversed.

g) ***"Short-term"*** impacts last only a short duration probably a few days or months.

h) ***"Medium-term"*** impacts could last a few years.

i) ***"Long-term"*** impacts would persist for many years or decades.

7.2 Construction Phase Impacts

7.2.1 Positive Impacts

7.2.1.1 Employment opportunities

The design, feasibility and planning phase provided financial benefit and employment for local consultants. This was a positive but short-term and reversible socio-economic impact. Contract provisions for road construction require 30% of the labourforce to be drawn from the local population with particular emphasis on women. Since construction is estimated to take one year, this phase will provide short-term job opportunities for local people along the road.

Impact enhancement: The contractor should involve local leaders in recruitment process to ensure full and fair participation of local communities.

7.2.1.2 Short-term roadside business opportunities for women

Road construction will stimulate roadside businesses commonly associated with road construction projects and mostly owned by women, such as vending food stuff to construction workers. Although short-term and reversible, this is a positive impact to women (and their households) who would be involved in roadside businesses.

Impact enhancement: The contractor shall control dust during road construction to avoid effect to roadside businesses and markets especially ones involved in vending foodstuff.

7.2.1.3 Sourcing of construction materials

Road construction will require considerable volume of materials including gravel (murram), aggregate (stone) and marking paint. Other materials include lime, bitumen, water, cement and steel especially for bridges. Procurement of these resources connotes income to suppliers and owners of land where quarry sites will be located. This is a positive but short-term and reversible impact.

Impact enhancement:

- Earth materials shall be procured from legal / licensed quarries, or, as a contractual obligation contractors should restore all depleted quarry sites upon closure.
- Site restoration should utilize native vegetation species and replanting undertaken during rain seasons to ensure high revegetation success.

7.2.1.4 Rental income for workers camp and equipment yard site owners

Land will be required on which to set up temporary workers' camp and equipment yard. Owners of land on which these facilities will be erected will earn a rental income negotiated with contractors. This is a positive but short-term and reversible benefit ceasing with project completion or whenever such facilities are no longer required in a given location. Impact duration will be short-term for each site used as workers' camp or yard and likelihood of occurring is high but benefit will be to a few landowners hence minor impact significance.

Impact enhancement:

As a contractual obligation, contractors should clean up sites where temporary facilities had been erected when their use ceases. All waste thereon should be removed and responsibly disposed of in compliance with national laws and World Bank (*WBG EHS Guidelines: "Waste management" April 30, 2007*)". Any contaminated areas on site should be cleaned up as part of site restoration.

7.2.2 Negative Impacts

7.2.2.1 Impacts of equipment yard and workers camp

Although the design consultant can propose location of the workers camp, the final decision lies with the contractor but any selected site would have to be approved by RDB.

Although a workers' camp and equipment yard would cover a relatively small area, they can cause significant environmental damage for a considerable time if not controlled. Land clearing will lead to loss of vegetation. The major causes are pollution (due to all forms of waste/ litter), high water demand, indiscriminate fuel wood collection, soil erosion, spillage of oils and fuel, fire and explosion hazard at fuel storage/ refueling areas. Lack of emergency medical capability at the camp can pose life threatening situations even from relatively simple incidents such as snakebites.

Socially, if the contractor does not maintain a strict "no fraternization" policy, workers' camps could be hotspots for prostitution or illicit sexual relationships, breaking marriages and causing disquiet in adjoining community.

Camp and equipment yard will require land to develop, temporarily altering landuse. Their operation will generate domestic and hazardous waste (waste oil) which if improperly managed will contaminated local environmental resources (soil, water) and pose public health risks. Livestock could die from feeding on camp waste such as peeling commingled with plastic carrier bags. Unrestored camp and yard sites would cause aesthetic blight and remnant contamination from fuel, oil or unused bitumen. Workers camps are also associated with fuel storage and dispensing, vehicle maintenance areas and workshops, offices and generator houses, vehicle wash bays and waste management/disposal. All these have potential for environmental contamination.

Other potential impacts from camp and equipment yards include light pollution when floodlights are not directed downwards. Derelict equipment left by contractors at improperly restored camp or equipment yards pose environmental and public health risks.

Duration of impacts is short-term; extent is local but likelihood high. Due to the small footprint, impact severity on receptor community will be moderate (medium) if sites are left contaminated rendering overall impact significance to be moderate.

This impact will occur where site camp and equipment yard are located (note that this will be a responsibility of the contractor and specific locations are not known at this point). The likely receptors will include:

- Owners of sites left contaminated.
- Soil and water resources near storage sites.
- Communities near camp site.
- Road construction crews (in case of OHS accidents and fire outbreak).

Mitigation:

i) The contractor shall establish workers camps outside ecologically sensitive areas e.g. Mashlands
ii) Contractor shall develop a waste management plan as a contractual obligation.

The waste management plan should present likely sources of waste, their type (liquid, solid, domestic etc) and quantity estimates based on proposed equipment and workers. Based on the type of wastes generated, treatment and disposal mechanisms should be presented. Measures for waste reduction, treatment and disposal should be implemented. Record of all disposal locations and potential disposal locations which require approval of the Supervising Engineer are to be presented. These should necessarily include details of:

- Disposal of cut-to-spoil indicating quantity generated, disposal and disposal locations / potential locations with photographs,
- Trees cut during the progress of clearing and grubbing or other activities should be presented,
- Waste concrete, bitumen, lime and lime bags indicating quantity expected to be generated and disposed,
- Waste oils from service bay and oil spills as well as oil from cleaning of service bay
- Oil and grease from vehicle washing bays,
- Kitchen waste indicating quantity generated, quantity disposed and location of disposal,
- Sanitary waste management.

Camp waste shall be segregated and stored in separate containers. Plastic waste should be kept on site until collected and hauled to Kigali Plastic Recycling facility. Waste that cannot be recovered for reuse or recycling will be landfilled at site safely remote from potential risk for surface and groundwater contamination and covered with a daily cover of soil at end of each day. Road contractor should collect and store waste oil on site awaiting collection by a licensed entity. The road contractor should however obtain storage a license from RDB and use a licensed waste contractor to haul used oil to a licensed facility for disposal.

- Contractor should sensitize workers about potential for environmental contamination due to improper waste management practices.
- The contractor should ensure waste types (organics, inorganic, hazardous, medical etc) are segregated and responsibly disposed of. Containers should be provided for safe onsite waste containment and segregation before final disposal.
- Wood fuel for workers camps should be extracted from approved woodlots and not gazetted conservation areas.
- Camp site and yard should have adequate sanitation facilities (latrines) that are gender friendly. Living quarters should be gender friendly as well.
- Contractor should provide clean water at camp, ensuring that water abstraction is permitted by Rwanda Natural Resources Authority (RNRA).
- Contractor should not dump waste oil in watercourses, drains or on land but collected and sent for recycling or reuse.
- Onsite combustion of waste shall not be done at camp.

- Smoking in communal areas at camp and near fuel storage areas should be prohibited and signs to this effect posted in visible areas.
- A site clinic should be set up with a medical practitioner and medical facilities including condoms for HIV/AIDS control.
- HIV/AIDS sensitization programmes shall be conducted at the camp as per methodology and schedule devised by the HIV/AIDS Sensitization and Control service providers
- On completion of the project, contractor should remove structures and sites restored to pre- project condition or give them to local communities/ land owners for use. Exposed areas shall be replanted with indigenous tree or vegetation species.
- For fire safety, contractor should provide fire extinguishers and signage in camp including refueling areas.
- Contractor should ensure that potentially contaminated runoff from storage areas should be drained through oil traps.
- All buildings on site should have approved electrical wiring for safety of occupants.
- xvii) At end of camp and equipment yard useful life, these sites should be remediated and all equipment and waste carried away for disposal by RDB-licensed entities. This is especially in regard to:
    - Waste tires
    - Containers originally containing bitumen
    - Containers originally containing road marking paints

Residual Impact: Following mitigation, residual impact of workers camps and equipment yards will be of minor or moderate significance.

7.2.2.2 Social ills of construction labour

The influx of workers, typically young males seeking road construction jobs will be associated with a series of social challenges such as crime, alcoholism/illicit drug abuse and prostitution. These are often related to the spread of sexually transmitted diseases including HIV/AIDS. Vices such as drug abuse and prostitution would affect social coherence and security in project communities tarnishing the image and intent of an otherwise good project.

a) **Crime, drug abuse and prostitution**

Unless sensitization of all workers is undertaken by contractor, the likelihood of the impact occurring is medium (considering some level of awareness among general populace). Duration of above-mentioned social ills will be short-term ending with completion of road construction but associated social and health effects can be long-term and irreversible, especially new HIV infections. The risk HIV makes this impact of high significance and likely to affect road construction workers and roadside local communities.

Mitigation:

i) The contractor shall involve local leaders in labour recruitment to ensure people hired have no criminal record.
ii) Local governments and the contractor shall collaborate with police to contain criminal activities.

b) **HIV/AIDS Risk**

The influx of male workers into the project area will increase the risk of HIV/AIDS transmission. The prevalence rate has stabilized somewhere between 6.2% and 6.4% of adult population aged between 15 and 49 years nationally. Like elsewhere in the country, new infections are occurring in the 40^{+} more than the younger age groups. The concentration of young males in worker's camps may lead to illicit and unsafe sexual behavior that may push up infection rates in the local areas. However since most of the labour force will be below 40 years, it is expected that behavioral change will help stabilize the infection rate. This is therefore a **moderate** impact.

Mitigation

i) Contractor shall provide condoms and an HIV/AIDS poster to workers in privately convenient places such as toilets/latrines in camp.
ii) MININFRA shall procure a service provider for professional HIV/AIDS activities.
iii) The contractors shall put in place worker place committees to oversee implementation of HIV/AIDS control activities.

Residual Impact: Following mitigation, residual impact will be of low significance.

Impact management:

- As a contractual obligation, the contractor should have an HIV/AIDS Policy and action plan to implement it for this project.
- Through posters, flyers or weekly sensitization sessions continually provide HIV/AIDS awareness to road construction workers.

7.2.2.3 Occupational health & safety risks for workers

Road works will have the following occupational health and safety risks with potential to cause serious injuries to workers:

- Burns (handling hot bitumen, welding/hot works, etc)
- Falls from working at heights or wet surfaces
- Electrocution
- Injury from fly rock e.g. at quarry sites or debris when demolishing affected buildings
- Noise and body vibration from equipment

Some typical road construction machinery and their noise levels (in dBA, measured 15 m away)

- Power saw- 110
- Dump truck- 88
- Portable air compressor- 81,
- Concrete mixer- 85
- Bull dozer- 87,
- Rock drill- 98
- Pneumatic tools- 85

Construction noise is a major source of environmental noise pollution and a cluster of equipment at construction sites can produce a steady roar from morning to evening hours. Lack of hand wash water and mobile toilet facilities at work sites could also pose considerable health risk to workers (and local communities traversed).

OHS impacts will potentially occur at any point during road construction and while some accidents could be minor, others might be grave leading to disability or loss of life of construction workers.

Rwandan regulations require that workers exposed to a noise level greater than 85 dB(A) for a duration of more than 8 hours per day wear hearing protection. Related OHS safeguards are comprised in (Rwanda's) Occupational Safety & Health and Employment legislation. The World Bank regulations on the other hand reguire that the noise level does not increase 70 dB(A), thus superceding the national guidelines. This presents the regular practice under the World Bank projects, when in case of discrepancies between national and WB guidelines the more stringent apply.

Duration of the impact will be short-term occurring only during the construction phase. Extent of the impact will be local or national depending on origin of construction workers. Likelihood of the impact occurring is high considering the usually low level of safety at construction sites in Rwanda. Significance of this impact is therefore predicted to be high.

Impact mitigation

The contractor will develop a comprehensive OHS plan with clear assignment of responsibilities which should among others address the following:

- Provision of all workers with requisite protective gear (see Table below).
- Provision of onsite toilet and washing water for workers.
- Provision of "No smoking" signs in office, communal places construction camps as well as high risk areas prone to fire hazards e.g. near fuel tanks.
- Ensure adequate fire safety, fire exists and fire assembly points at camp.
- Provision of signage reminding use of PPE at appropriate locations in the project area including ancillary work sites.

Besides the foregoing, the "*General Specifications for Road and Bridge Works 2005*" (Series 1000- General, Section 1800, pg 1000-43) require contractors to comply with national byelaws related to HIV/AIDS, OHS, gender equity as follows:

- OHS- Public Health, Workers Compensation, Employment,
- HIV/AIDS: National Multi-sectoral HIV/AIDS Policy,
- Gender equity: National Gender Policy.

The specifications require contractors to ensure the following:

- safe constructional plant, equipment and work methods
- safe handling, storage, transport and disposal of materials in a way that avoids risk to workers
- provision of protective gear
- hiring a full time "Accident prevention officer" or safety officer e) conducting safety awareness among all workers
- control harmful insects/ vectors (including mosquitoes and houseflies)
- reporting accidents to supervising engineer and police
- control contagious diseases (e.g. Cholera) through proper sanitation and awareness i) control occupational hazards related to:

- Physical hazards (noise, vibrations, high temperature)
- Chemical hazards
- Mechanical hazards (moving equipment)
- Electrical/ explosion hazards
- Ergonomic injuries (poor working postures, heavy loads, etc)
- Poor sanitation in workplace or living environment of workers

Contractor will also develop HIV/AIDS and gender management plans.

Residual Impact: Following mitigation, residual impact will be of low significance.

Table 26: Personal protective equipment according to hazard

Objective	Workplace hazards	Suggested PPE
Eye and face protection	Flying particles	Safety glasses
Head protection	Falling objects, inadequate height clearance, and overhead power cords	Plastic hard hats with top and side impact protection
Hearing protection	Noise	Ear plugs or muffs
Foot protection	Falling or rolling objects, pointed objects	Safety shoes and boots
Hand protection	Hazardous materials, cuts or lacerations	Gloves made of rubber or synthetic materials
Respiratory protection	Dust, lime operations, stone quarries	Facemasks filters for dust removal

Body/leg protection	Hazardous materials, biological agents, cuttings and lacerations.	Overalls /coveralls

Impact management

Project supervising engineers should inspect contractors' compliance with safety precautions during construction.

7.2.2.4 Sourcing of road construction materials (gravel and stone)

Construction of the road will require two types of earth materials:

i) Sub-base material (natural gravel or murram)
ii) Base course material (hard rock /"crushed rock"/ aggregate or "stones").

It will be a responsibility of the contractor to select preferred sources (location/ sites) of aforementioned earth materials that meet design specifications. Unless materials are obtained from existing quarries and borrow pits which need not be restored upon completion of the road, where these materials are obtained from, method of their extraction, haulage and state in which sites are left upon project completion all have potential for socio-environmental impacts below:

- Clearing of vegetation to create access to material sources,
- Excessive noise, vibrations and dust from stone blasting and crushing. Noise would affect local communities and quarry workers and vibrations will crack structures and affect health of especially elderly people. Commonly around stone quarries, local communities allege low milk and egg yields due to blasting noise and vibrations.
- Fly rock which damages crops, dwellings/ structures or injures people and livestock,
- Haulage impacts, for example, accident risks and road dust,
- Safety and public health risks of un-restored quarries and borrow pits.

Quarrying of earth materials has potential to disinter artifacts or other resources of archaeological and cultural significance. Direct and secondary effects (noise, vibrations, dust, fly rock injuries, etc) associated with stone/ rock quarrying and excavation of gravel can pose negative and sometimes irreversible social impacts. Gaping pits due to unrestored pits cause visual blight and scarring of landscapes besides posing public health and safety risks. Some secondary impacts of stone blasting and quarrying such as injury or death caused by fly rock are irreversible. Damage to dwellings near quarries would be a considerable social impact in rural poor communities. Unless a firm contractual commitment is made by the contractor, leaving unrestored quarry sites is a common practice in Rwanda and likelihood of this impact occurring is high. Impact severity is medium (or even low) except when quarries are located close to communities, an unlikely situation unless alternative sites cannot be found. Impact significance is therefore moderate.

Impact receptors will be Quarry workers, local communities near quarries (and their structures, crops, livestock, health and safety), people living near unrestored or improperly rehabilitated quarry or borrow sites which pond water and harbor disease vectors, for example, mosquitoes.

Mitigation:

All stone quarry sites will be subjected to a standalone EIA by contractors while borrow pits should undertake a Project Brief as these are new sites that will be opened upIt should be a contractual requirement for the contractor to integrate quarry restoration plans in the general project implementation. To this effect, the contractor should ensure:

i. Contractor must not quarry gravel in ecologically sensitive areas e.g. Mashlands.
ii. That site restoration as road construction commence concurrently so that cut to spoil is used to fill up quarry sites.
iii. Height and orientation of the quarry face need to be controlled if reinstatement is to be effective.
iv. Excess soil (overburden) from road excavations should be stockpiled at quarry sites to be used during site restoration.

v. Access road to quarries if not needed by local community should be scarified and revegetated.
vi. Site restoration should utilize native vegetation species and replanting undertaken during rainy season to ensure high revegetation success.
vii. Rock blasting should utilize licensed blasters and all explosives handled as per national security requirements.
viii. Quarry operator should warn local communities before scheduled blasts by using sirens or drive-by announcements with a megaphone.
ix. After a day's blasting operations, the quarry operator should assess any property damages in communities neighbouring quarry and commit to effecting equitable compensation.

Specific mitigation measures for contractors to undertake against cultural heritage impacts encountered at material source (borrow pits and quarry sites) sites are:

i. The first two days of excavation of quarry sites should be witnessed by an official (archaeologist) from the Department responsible for museum and monuments. During this time, bulk earthworks and excavations must be monitored by a professional archaeologist. Archaeological monitoring is an important component of conserving and managing archaeological and historical resources that might be uncovered or exposed during road construction.
ii. Should any human remains be disturbed, exposed or uncovered during excavations and earthworks, these should immediately be reported to the archaeologist. Burial remains should not be disturbed or removed until inspected by the archaeologist.
iii. Once identified, all proposed borrow pits should be investigated for archaeological remains. Cost of this monitoring has been provided in ESMP.
iv. Prohibit collection of archaeological artifacts by road construction crews.
v. Avoid undue disturbance to areas outside approved construction areas.
vi. Limit worker and vehicle access to construction areas only.

Residual Impact: Following mitigation, residual impact will be of low significance.

Impact management:

- Compensate any accidents to people or injurious damage to structures due to fly rock from stone/ rock blasting.
- Resident Engineer should not issue completion certificate to contractor or payments withheld until quarry sites are satisfactorily rehabilitated.
- Any unsuccessful vegetation regrowth should be replaced during contractor's defect liability period.
- Existing gravel and stone quarries can be used if meeting required material specifications to avoid opening new ones.
- Workers should be provided with protective gear (muffs, hard hats, overalls, foot protection).
- Control dust by good housekeeping practices and process control
- Ensuring that corrective actions are undertaken for all incidents and accidents, including "near miss.

7.2.2.5 Haulage of earth construction materials

Road construction will necessitate transportation of materials from sources to worksites. Haulage of gravel (murram) and crushed stone (aggregate) from sources to road construction work site will be associated with the following impacts:

- Possible roadkill along stretch through,
- Staining of households and goods in roadside shops by dust,
- Traffic accidents involving people and livestock,
- Traffic noise from haulage fleet,

Although never compensated, staining of trade commodities in roadside shops (especially foodstuffs: salt, sugar, flour, etc) with dust translates into a financial loss for local business owners. Excessive dust in

dwellings poses health impact especially to children and elderly people. Unless speeds are controlled, material haulage poses a risk of road accidents especially near school crossings, livestock crossings and in trading centres. Haulage traffic noise is not expected be a significant impact except near schools or health centres.

Risk of this potential impact actually occurring is highest in trading centres or through settlements with considerable population but largely impact extent is along entire length of the road. Material haulage will be short-term ceasing with completion of construction activities but secondary effects (if they occurred) such as accidents (hence disability or death) have negative, long-term and possibly irreversible socio-economic impact. If mitigation recommendations are implemented, likelihood of impact occurring is medium but impact severity high especially when accidents involve loss of lives. Disabled people, children, women and elderly people are especially at risk of road accidents. Significance of road dust will be comparatively highest through trading centres where goods and foodstuff in shops could be contaminated. Overall impact significance is therefore high.

Mitigation:

i. The contractor shall control road dust by watering wherever necessary.
ii. Contractor shall provide temporary road signage during construction and ensure drivers observe speed limits and for safety of other road users.
iii. Contractor should deploy traffic guides warning signs where necessary, such as at approach to trading centres.
iv. Contractor shall provide temporary and permanent speed reducing devices e.g. humps.
v. Contractor shall prohibit haulage activities at night to avoid accidents in high population settled areas and trading centres.
vi. Contractor shall erect temporary signs along routes used by haulage trucks.
vii. Construction crews should take care to watch out for and avoid animals.
viii. The contractor should station traffic guides at potentially high accident risk locations to warn/ guide road users. An Emergency Response Plan be developed.
ix. To avoid excessive haulage traffic noise at sensitive facilities, the contractor should not install temporary speed reduction features (humps) adjacent to schools or healthcare centres. This would avoid noise associated with high speed deceleration and acceleration at humps.

Residual Impact: Following mitigation, residual impact will be of low significance.

Impact management:

- The contractor should sensitize project drivers on accident risk and control measures.
- The contractor should compensate victims of accidents.

7.2.2.6 Impacts of storage of construction materials

During road construction, there will be need to stockpile and store assorted materials at or near construction site to ensure uninterrupted access to supplies. This could lead to pollution of land and watercourses by spilling and washaway of materials. This impact can occur anywhere along the road and receptors are soil and water resources near storage sites, land owners and local communities dependent on affected environmental resources. This impact is negative with a medium likelihood of occurrence but will be short-term only occurring during the construction period and local in extent. However, spills in watercourses can impact remote/ distant downstream communities. Severity is therefore assessed as medium. Impact significance will be minor or moderate since material loss is a financial loss to the contractor and they would take makes to avoid it.

Mitigation:

i) Contractor shall protect material stockpiles from stormwater erosion (e.g. by excavating a cut-off ditch around stockpiles to keep away stormwater).
ii) Contractor shall provide bunded storage for fuel.
iii) Contractor shall cover material stockpiles with fabric or other materials.

iv) Contractor shall avoid stockpiling material near waterways/wetlands or on slopes.

Residual Impact: Following mitigation, residual impact will be of low significance.

Impact management:

Application of good engineering practices in design and construction should ensure that water sources are not affected by road upgrade works. The most likely source of watercourse contamination is loose soil being washed into rivers and streams during construction of drainage structures and bridges. This impact is not expected to be serious but if considerable contamination is likely, then the resident engineer must instruct the contractor to construct silt traps to avoid sediment entrainment in water. Additionally, the contractors should have a contractual obligation to develop and implement a construction management plan (CMP) and spill response plan, to include the following:

- Basic training to workers, where required, to ensure effective implementation of the
- CMP.
- Installation of secondary containment measures in areas where fuels, oils or lubricants are stored, loaded or unloaded, including filling points.
- Equipment and materials not to be stored within or near watercourses;
- Potential contaminants stored on site should be properly isolated and bunded.
- Contractor should have a portable spill control pack (comprising absorbent pads/pillows, rolls, blankets, etc) on site to contain and clean up fuel spills.

7.2.2.7 Improper management of cut to spoil

The proposed road upgrading will involve excavation of spoil and the amounts were not established at Design stage. Management of large volumes of cut to spoil can constitute a major disposal challenge when improperly planned. Receptors of this impact are expected to be watercourse and communities where spoil is improperly dumped by contractors. Some road contractors often illegally dispose cut to spoil in wetlands leading to secondary socio-environmental impacts of impaired drainage and environmental degradation.

Where such practices occur, duration of impact is short- to medium-term. Extent of the impact is often local limited to immediate neighborhood of disposal sites on land but considerable extent downstream of deposition site in watercourses. Therefore impact severity can be high leading to major significance.

Impact mitigation: As a priority, cut to spoil materials should be used in restoration of quarry and burrow sites rather than improper disposal in wetlands or on private farmlands.

Residual Impact: Following proper mitigation, residual impact will be of low significance.

7.2.2.8 Demolition of structures within reserve of proposed road

Design engineers determined that upgrading the road would affect some buildings including commercial and residential structures but partially.

This impact is certain and likelihood of it occurring, high. Since compensation will be provided to replace affected structures, severity of this impact will be medium resulting in a moderate overall significance level.

Mitigation: MININFRA commits to providing due compensation to all affected owners to ensure post-project conditions do not make them worse off than they were before the project, as required by the Rwandan laws and World Bank safeguard policies.

Residual Impact: When equitable compensation is provided as required by World Bank to restore livelihoods of and property of affected, residual impact of involuntary resettlement will be of low or moderate significance.

Impact management:

i. MININFRA should provide adequate vacation notice to affected people before construction commences. This will also allow affected property owners to plan appropriately or take any salvageable material from their demolished structures without delaying contractor's work.
ii. MININFRA should institute a strong grievance committee so that complaints and dissatisfactions about the resettlement/ compensation process do not unduly delay contractors progressing works. A grievance procedure has been developed in the resettlement action plan.

7.2.2.9 Impact on existing utilities along the road

Widening the existing roads and drainage will in some sections necessitate relocation of power lines, especially in corners. Relocation of power lines would cause temporary disruption of supply to consumers, public inconvenience and financial loss to utility operators.

Disruption of utility services will be short-term occurring only during the relocation period. Extent of the impact will be local limited to consumers with access to grid electricity. This impact is inevitable so likelihood of it occurring is high. Since these utilities are relatively new, consumer sensitivity to disruptions is likely to be high. Overall, this impact has only moderate significance since grid electricity coverage is small and not many people have access to it.

Impact mitigation

MININFRA shall discuss modalities and costs of relocation of power grid owner and any operator thereof.

Residual Impact: Following mitigation, residual impact will be of low significance.

7.2.2.10 Traffic diversion during road construction

Inevitably, road construction will necessitate diversion of traffic from sections being worked on to allow fast and safe road works or continued use of the road. Diversions will cause temporary delays in transportation of goods and passengers, traffic congestions or accidents (especially for heavily laden trucks) along detour roads that may not have been constructed properly. Impact is negative but temporary (short-term) and reversible (note that effects of accidents such as loss of life are irreversible). Likelihood of this impact occurring is high; however it will be short-term ceasing with end of construction hence medium severity. Additionally, not all road sections will necessitate diversions hence impact severity is medium and overall impact significance is therefore moderate.

Impact receptors:

- Communities traversed by diversions/detours,
- Road users,
- Vehicle owners,
- Traders who might lose merchandise in accidents on improperly constructed diversions.

Mitigation:

i) Contractor should place signs warning road users about traffic detours.
ii) Contractor should have guides at detours to organize traffic.

Residual Impact: Following mitigation, residual impact will be of low significance.

Impact management: Wherever practical**,** contractor should provide communities with information and plans of intended diversions in good time.

7.2.2.11 Asphalt plant impacts

Surfacing the roads will require bitumen. Location of the plant, bitumen preparation, storage and application could have socio-environmental impacts. Littering due to poor housekeeping at the asphalt

plant or improper disposal of unused bitumen and aggregates or bitumen spills would have the localized impact of contaminating environmental resource (soil and water). This impact is negative, temporary and reversible but likelihood of it occurring is low since ingredients of asphalt (bitumen and aggregate) represent a financial cost to the contractor and waste is unlikely. Since contamination impact would often be localized, spatial extent is small. For the foregoing reasons impact significance is moderate.

Mitigation:

i) Locate the plant away from sensitive ecological areas or resources.
ii) Ensure good housekeeping to avoid onsite and offsite environmental contamination by bitumen.
iii) The contractor shall collect leftover bitumen and aggregates properly keeping it for use on other sections of the road.
iv) Contractor shall use bitumen emulsion where feasible. In hilly areas with steep road gradients, cut-back bitumen should be used.
v) Contractor shall not discharge bitumen into road side drains.
vi) Contractor shall collect and store empty bitumen drums at equipment yards and not abandon them along the road.

Residual Impact: Following mitigation, residual impact will be of low significance.

Impact management: MININFRA should ensure hired contractor has appropriate equipment and would not use woof fuel to heat bitumen.

7.2.2.12 Disruption of school and business activities

The roads will pass a number of schools and business near the road and heavy earth moving equipment might attract inquisitive children and people to construction sites. Besides being a safety risk, noise and dust from road construction activities and equipment might temporarily disrupt school and business activities. If due caution is not taken by drivers, haulage trucks and road construction equipment might be an accident risk to school children and passerby.

Mitigation:

- Wherever practical, the contractor should schedule construction near schools on weekends.
- Wherever this risk exits, the contractor should screen off schools and shops to avoid accidents.
- The contractor should engage local school administrators to sensitize pupils about risks associated with road construction and necessary precautions they need to undertake.

7.2.2.13 Physical cultural impacts

The road project would have both positive and negative impact on cultural resources. Archaeologically there were no surface finds in the corridor of the existing roads. All potential sites were found outside the current road reserves.

a) Positive Impacts

Upgrading of the road will enhance access to cultural sites in various Districts thus improving tourism. The communities are eagerly waiting for the road development as it will trigger off different types of developments in the area.

b) Negative impacts

In the event that any cultural place is discovered during excavations, construction works pose a risk of damaging them, if due caution is not taken. For example, due to their age, historical monuments and buildings could be cracked by vibrations from road equipment (e.g. compactors). Damage to cultural resources would be a long-term negative and significant impact.

Mitigation:

- The road reserve should be narrowed in areas where physical-cultural resources exist near the road.
- Good construction practices should ensure that physical-cultural resources near the road are not defaced, soiled or damaged.
- Any damages to physical-cultural resources must be repaired and restored to pre-project condition by the contractor.

Impact management:

The contractor must be aware of the presence, historical value and importance of physical- cultural resources along the road and appropriately sensitize workers to conserve them during road construction.

7.2.2.14 Gender Impacts

Negative gender impacts would arise from discrimination in hiring road construction workers if preference is given to men who are perceived to be stronger and more resilient. Road construction could also result into constrained access to homes, gardens, water sources, places of worship and schools, especially for women, children, elderly and disabled people. Temporary "bridges" improvised to abate this impact are often inadequate and unsafe for use by vulnerable people.

Mitigation:

- Ensure "positive discrimination" in job allocation to road construction workers whereby women are given tasks they would do best, based on their potential.
- Where access to private property or public resources/ places is severed, the contractor should provide safe temporary access that is both gender-friendly and usable by disabled persons. In this regard, temporary culverts instead of wood planks would be more appropriate.
- Workplace environment including tools and fixtures should be gender-friendly.

7.2.2.15 Improperly finished road sites

Good road finishing practices should aim to avoid residual impacts at work sites. Abandoning stockpiles of construction materials (e.g. gravel, aggregate, asphalt, sand) can pose aesthetic and ecological impacts at affected sites. Embankments that are regressed are prone to soil erosion and silting of stormwater drainage systems. Detour roads created during construction are an unsure if not restored upon project completion.

Mitigation:

- Contractor should ensure good housing-keeping to avoid material wastage.
- Contractor should remove all stockpiles of unused material upon project completion.
- Contractor should regrass all embankments to avoid erosion and siltation of stormwater drains.
- Contractor should scarify and restore all detour roads to pre-project conditions.
- Any other temporary access facilities and workspaces should be restored to pre-project conditions. For in-filled gravel on banks of watercourses should be removed and sites appropriately restored.

7.3 Post Construction Phase Impacts

7.3.1 Positive Road Use Impacts

7.3.1.1 A safer road and reduced social cost of transport

Improvement of the road will have positive, significant and long-term local, national socio-economic impacts that include:

- **Lower travel cost:** An improved road is expected to attract more operators of public transport and ensuing competition would lower fares for both goods and passenger transport.
- **Reduced vehicle wear/ tear**

- **Safer journeys with reduced accident risk** (design will remove sharp corners and steep inclines). Accident rates change following improvement in road geometry and pavement. Paving a gravel road will improve visibility, reduce braking distances and have road signs installed where none existed. Although speeds are expected to increase, there is evidence that overall, paving a gravel road reduces accident rates and fatalities.
- **Reduced travel time**

Duration of this impact will be long-term and likelihood of occurring high after road improvement. Benefit to road users will be of local and national spatial extent, hence high impact significance.

Impact enhancement:

MININFRA shall ensure that road design provide facilities and signage for safe pedestrian crossing.

7.3.1.2 Increased economic activity and gender benefits

A good road will enhance access to markets of agricultural produce, improving local and regional economies. Road improvement could also stimulate development of businesses along the road, for example, roadside markets and secondary job opportunities from new businesses. Of specific benefit to women could be greater participation in less strenuous household income activities with examples including roadside retail trading or vending of food and agricultural produce, art and craft to travelers (and even road construction workers). This would be a long- term benefit, especially for rural women most of whom currently earn a living working long hours in tea plantations.

Duration of this impact will be long-term and likelihood of occurring is high after road upgrade. Increased economic activity in local economies would benefit all communities along the road hence high impact significance.

Impact enhancement: As is its mandate, MININFRA shall ensure continual road maintenance to sustain mentioned benefits.

7.3.1.3 Improved access to social services

An improved road will ease access to social services, most vitally healthcare. This will especially benefit women by way of improved maternal health, reduced infant and maternal mortality and general public health improvement in communities traversed by the road. The above are significant, positive and long-term socio-economic cumulative impact impacts.

Impact enhancement: MININFRA shall ensure continual road maintenance to sustain road benefits.

7.3.1.4 Benefit to tourism

Improved travel time, reduced dust during dry seasons and easy accessibility during wet season could increase number of tourist visitors to these new Cities. Cultural tourism, which currently benefits from visits by tourists, could also be stimulated or enhanced by an improved road, if travelers are confident that such detours would not significantly increase time to their final destinations. Benefit to tourism would be a positive long-term cumulative impact.

7.3.1.5 Appreciation of property value

Upgrading the road will open up areas along the road to commercial businesses and investments. Increased commercial activities might lead to an appreciation of land/ property value.

7.3.2 Negative Road Use Impacts

7.3.2.1 Possible fatal injuries

Drivers on a newly improved road commonly excitedly drive faster than is often safe risky behavior common on new road in Rwanda and could result into fatal injuries. This usually happens in the first few months of commissioning a new road and is associated with frequent road accidents, especially at pedestrian crossings, sharp corners and blind spots, often leading to loss of life or commercial goods. These impacts can be minimized with safe road use practices, and short-term if concerted effort is expended in sensitization of road users and local communities before and after commissioning of the upgraded or new roads. Likelihood of impact occurrence is medium but severity high where accidents lead to loss of life. Impact significance is therefore high.

Mitigation:

i) Potential accident hotspots will be marked with appropriate road signs.
ii) Road design should provided necessary road signs.

Residual Impact: Even after mitigation, residual impact can still be of moderate or high significance.

Impact management: MININFRA and respective district local governments should undertake road safety campaigns for at least 1 month before and 1 month after commissioning the road.

7.3.2.2 Induced development

Induced development can be a positive as well as negative cumulative impact. If not planned to conform to local physical plans, it can lead to urban sprawl and slums with attendant vices such as prostitution, drug abuse and social ills of low quality housing and public health risks. This impact might likely occur at trading centres traversed along the road. Slums and urban sprawl due to unplanned induced development are negative and medium to long-term impacts that are costly to reverse. If it occurred, duration of this impact would be long-term and its likelihood of occurrence high considering laxity of local government administrations in enforcing requirements for proper physical planning. Vices (prostitution, drug abuse) associated with slums lead to long-term societal degeneration. This together with low quality housing and public health risks make this impact to have high significance.

Impact mitigation: District local governments should develop physical plans for their towns where none exist to ensure planned development. These they should enforce/ implement to avoid unplanned development in trading centres traversed by road.

Residual impact: Even after proposed mitigation, significance of residual impact of cumulative unplanned development could still be high, due to factors unrelated to the road project, for instance high population growth and weak enforcement of proper planning.

8. ENVIRONMENTAL & SOCIAL MONITORING PLAN

8.1 Introduction

Environmental monitoring will be carried out to ensure that construction activities comply and adhere to environment requirements. Clear monitoring plan is associated with the management plan of the following chapter. In addition, implementation of mitigation measures in the EIA report and Certificate of EIA approval conditions will have to be implemented. The core monitoring tool the Contractor will use is a stand alone Environmental Monitoring Plan. This will serve as a reference document for planning, implementation, monitoring and reporting. Both the Contractor and the Supervising Engineer will have competent staff in the field of environmental and social management to ensure that commitment in the EIA report are implemented. Monitoring will involve measurements, observations, evaluations, assessment and reporting on the following variables during the implementation phases of the proposed project. Among others, implementation of the following will be monitored;-

- Impact on ecosystems, e.g. roadkill of fauna and damage to trees.
- Accidents during road construction.
- Socio-economic impacts of the project (e.g. impacts on roadside markets, water sources, impact on schools, etc).
- Environmental impacts and restoration of material sources (specifically borrow and quarry sites).
- Impact on physical cultural resources.
- Construction waste management.
- Measures for mitigation of air quality regularly.
- Measures for protection of water quality regularly.
- Measures for control of noise levels regularly.
- Measures for control of land degradation on a regular basis.
- Measures for Occupational Safety and Health.

Monitoring activities associated with afore mentioned issues should be documented and reported regularly to MININFRA and other key stakeholders.

8.2 Environment Monitoring and Incidence Reports

This section describes the monitoring program and reporting required for ensuring effective implementation of the Environment and Social Monitoring Plan (ESMP), including assignment of responsibilities and environmental performance monitoring to be conducted as part of the project. The locations for monitoring are specified as following:

- Noise level exposure – at sensitive receptors in the nearby settlements
- Landslide and soil erosion – at landslide prone areas identified next to proposed project infrastructure
- Pedestrian and traffic safety – in settlements along project roads and next to active construction sites (access roads)
- Air quality – at sensitive receptors – health care centers, schools, community and religious places.
- Water resources depletion and water scarsity – at community water sources next to proposed project infrastructure

8.2.1 Construction Commencement Report

The Supervising Engineer and Contractor will document the physical, biological and cultural features and values in the area where the project will be implemented. This will be achieved using photographs and topographical maps as appropriate. This task should be completed just before handing over the site to the Contractor. The Supervising Environmentalists will mark sensitive areas so the proposed mitigation plan can be implemented during construction. This data shall be included in inspection reports and submitted to MININFRA as part of the progress reports.

8.2.2 Routine Reports

The Supervising Environmentalist will inspect the works for compliance with the contract specifications, proposed construction mitigation measures and all relevant environmental regulatory requirements concerning the project on a continuous basis. The Environmentalist will also conduct random inspections while construction activities are occurring on site. Inspection/supervision will include all construction work, pits, excavations, waste collection and disposal areas, access roads and other project structures. The inspection will include but not be limited to:

- Inspection of past work carried out for compliance with contract specifications;
- Inspection of construction areas for signs of environmental spills or emergencies;
- Inspection of the markers used to fence off sensitive areas and no disturbance areas; and
- Inspection of construction equipment for oil and fuel leaks.

8.2.3 Emergency/ Environmental Response

For monitoring emergencies, the Supervising Environmentalist will target the following:-

- The contractor's activities for non-compliance with environmental specifications
- Grounds for non-compliance and notify the Supervising Engineer. If non-compliance is not rectified and the significance of the non-compliance warrants it, the procedure to halt construction will be initiated.

The Environmentalist can instruct the contractor to halt work if:

- Construction activities are unexpectedly and significantly affecting environmentally sensitive areas or features;
- There is likelihood or actual ocurrance for an environmental emergency;
- A government agency has ordered the work to halt to enable supervision of remedial activities before work can commence.

8.2.4 Progress Reporting

A monthly Inspection Summary Report and detailed monthly Environmental Report with clear illustrations will be prepared and submitted to MININFRA. The Detailed Environmental Report will form an appendix to the monthly and quarterly inspection and summary report. A copy of all written documentation and records of verbal communication will be submitted as

part of the detailed monthly report which will result from a compilation of Weekly Reports. The weekly reports will also include:

- General progress of the project with special emphasis on work in environmentally sensitive areas;
- Routine mitigation measures being used and monitoring of effectiveness; and
- Environmental concerns encountered including community concerns, recommendations made and new mitigation measures taken (if any) including a list and record of all parties notified of any changes.

8.2.5 Final Mitigation Report

In line with the General Specifications for Road and Bridge Works, a Final Mitigation Report will be prepared with the full involvement of Environmentalists of the Supervising Engineer and the Contractor. The report will among others include:

- A summary of all work in environmentally sensitive areas, including procedures used and success thereof;
- Routine mitigation measures used and mitigation effectiveness;
- Explanation of all design changes implemented for environmental reasons and/or recommended design changes;
- Summary of environmental concerns encountered and new mitigation measures taken;
- A summary of all correspondence and communication with Government agencies and the contractors (s); and
- A copy for all reports for halted works or environmental emergencies.
- An opinion on compliance with environmental requirements.

8.2.6 Institutional Arrangements and Roles

The MININFRA will be the project executing Ministry with the key role of coordinating the key stakeholders involved with RUDP (MININFRA, MINALOC, MINIRENA, MINECOFIN, RHA, RTDA, LODA, CoK, and Districts with six secondary cities and CoK) and other key players including Provincial Administrations with the concerned Districts, RGB, WASSAC, RRA, REMA & RDB among others. MINECOFIN will act on behalf of the borrower (GoR) to enter into agreement and receive funds on behalf of GoR for RUDP, which funds shall be passed to LODA and limited part of it to MININFRA for national level activities. LODA will be responsible for coordination of the implementation of the RUDP and the management and disbursement of the project funds to the implementing agencies, and will host the Single Project Implementation Unit (SPIU). The SPIU will manage and the implementation of the subprojects by the beneficiary Districts and the CoK. The project implementing agencies will include the Districts of the six secondary cities and the CoK. The roles of the implementing agencies will include:

- Contracting and implementing physical works, according to agreed procurement procedures
- Managing sub accounts (SOEs, etc.) according to agreed FM arrangements
- Providing quarterly financial reports on physical and financial progress
- Environmental and Social Safeguards Implementation
- Informing and engaging citizens
- Ensuring availability of district officers

Under the Districts, the District Council will be responsible for the policy decisions on the implementation of the RUDP, while the District Executive Secretary will be designated as the

Project Coordinator. The Director of the one stop centre in the beneficiary districts will be designated as the project manager and will be responsible for overseeing the day to day activities of the implementation of the respective subprojects for the specific city. The Project Manager will be assisted by the urban physical planning engineers, environmentalists and sociologists to ensure that all planned activities are undertaken as per technical, environmental and social specifications and safeguards.

Contractors are strongly encouraged to follow the Code of Conduct provided in Annex 2.

a) Who monitors and how:

Monitoring will be undertaken by MININFRA and District Environmental Officers on behalf of RDB and REMA at the local administration level. Monitoring by RDB is "third party monitoring" but this is its regulatory mandate and no funding is expected from MININFRA. Another government agency that may undertake "third party monitoring" is the Department responsible for Gender, Labour & Social Development. This unit has authority to inspect any facility for compliance with national requirements on safety in workplaces. The project shall not provide funding for this activity since this is provided for in its annual budget.

Monitoring will be done through site inspection, review of grievances logged by stakeholders and ad hoc discussions with potentially affected persons. For each monitoring visit, a discussion with a chairperson of the local environment committee of the area's local leadership at District level could provide insight into grievances a given community has about the project. Monitoring will be undertaken by an interagency committee involving local government offices and key institutions mandated for these roles including RTDA.

LODA will host the Single Project Implementation Unit – SPIU. This will include a Municipal Engineer as the RUDP Coordinator, Financial Management Specialist, Social and Environmental Safeguards. The SPIU is not yet in place and persons to hold those positions are not yet recruited. These persons will be recruited as part of the project preparation activities after the appraisal of the project. The SPIU will be supported by consulting services as the lean staff will essentially be coordinating activities and supervising of the project implementation. Services such ensuring inclusion of social aspects regarding vulnerable people; capacity building of implementing agency staff, and technical assessment of the performance of the project will be undertaken through consulting services.

b) Frequency of Monitoring and Reporting

Monitoring will be undertaken monthly over the construction period. Detailed monthly monitoring reports with clear illustrations of implementation of mitigation measures shall be compiled by the contractor's environmental officer under oversight of the supervising engineer (SE). The reports will be based on records kept as per requirements of the General Specifications of the Road & Bridge Works (pg 1000-38). These detailed reports with evidence of compliance shall be prepared and appended to summary monthly reports.

8.2.7 Obligations of the Contractor

The roads and drainage construction contractor is required to develop a (1) Contractors Environmental & Social management Plan (CESMP) – which should include a relevant

Emergency Response Plan, (2) Occupational Health and Safety Plan, (3) Construction Hazardous Waste Management Plan and (4) Gender Management Plan. MININFRA enforces implementation of provisions of the CESMP through the supervising *consultant Engineer* (SE) and Contractor. In addition to monitoring of implementation of environmental provisions by the SE's Environmental personnel, MININFRA's Environmental Specialist, Sociologist and Land Acquisition Specialist will oversee effective implementation of measures suggested through the Engineer and Contractor. For HIV awareness, a specialist organization tasked with implementation of HIV/AIDS sensitization and control will be procured by MININFRA. The Contractor is expected to implements its own HIV/AIDS prevention campaign at every construction camp put in place. At field level, the Contractors' *Environmentalist and Health and Safety Officer* will be responsible for implementing the CESMP and developed Emergency Response Plan. Monitoring sequencies to be agreed upon with contractor before commencement of works. In general, contractor is responsible for conducting samples for noise, air, water and soil, with the results to be shared with SPIU and REMA.

9. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

This environmental and social management plan (ESMP) is a generic ESMP for all the districts; however, specific ESMPs for each district are presented as annex 1. The proposed road upgrading and drainage system construction is presented in Table below. We would like to emphasize that the cost or budget for implementing the ESMP is part of the civil works contract.

The following guidelines will be used for Air Quality Assessments:

Table 27: Air Quality Guidelines

Determinant	Averaging Period	Guideline value in mg/m3
Sulfur dioxide (SO2)	24-hour 10 minute	125 (Interim target-1) 50 (Interim target-2) 20 (guideline) 500 (guideline)
Nitrogen Oxides (NO_x)	1-year 1-hour	40 (guideline) 200 (guideline)
Particulate Matter PM_{10}	1-year 24-hour	70 (Interim target-1) 50 (Interim target-2) 30 (Interim target-3) 20 (guideline) 150 (Interim target-1) 100 (Interim target-2) 75 (Interim target-3) 50 (guideline)
Particulate Matter $PM_{2.5}$	1-year	35 (Interim target-1) 25 (Interim target-2) 15 (Interim target-3)

	24-hour	10 (guideline) 75 (Interim target-1) 50 (Interim target-2) 37.5 (Interim target-3) 25 (guideline)
Ozone	8-hour daily maximum	160 (Interim target-1) 100 (guideline)

WB/IFC, 2007 - International Finance Corporation/World Bank, Environment, Health and Safety guidelines, 2007[1]

The Noise measurements will be taken at the identified noise receptors as per the ISO 1996 Parts 1, 2, 3 standards. The survey entailed:

- Inspection of the monitoring locations and the implicated activities
- Compiling photographic reports of the monitoring locations and surroundings.
- Identification of the measurement points.
- Calibration of the sound level meter before and after each measurement.
- At all positions the measurement was taken about 1.5m above ground level.
- Noise levels expressed in decibels, A-weighted sound pressure level dB (A).

Noise levels were determined using a Class 1 Integrating Averaging Sound Level Meter. The sound level meter was calibrated before and after the measurements as per method and standard requirements. Calibration certificates for the acoustic instruments are appended to this report.

Table 28: Noise Level Guidelines

Area	**One Hour L_{Aeq} (dBA)**	
	Daytime 07:00-22:00	**Nighttime 22:00-7:00**
Residential, institutional, educational	55	45
Industrial Commercial	70	70

WB/IFC, 2007-International Finance Corporation/World Bank, Environment, Health and Safety guidelines.[1]

The Project will also monitor a number of parameters to try to minimize water pollution generated from project construction activities:

Table 29: Water Pollution Monitoring

Parameter	**Control Options / Principle**	**Common End of Pipe Control Technology**
pH (6-9)	Chemical, Equalization	Acid/Base addition, Flow equalization

[1] World Bank Group EHS Guidelines (2007)
http://www.ifc.org/wps/wcm/connect/532ff4804886583ab4d6f66a6515bb18/1-1%2BAir%2BEmissions%2Band%2BAmbient%2BAir%2BQuality.pdf?MOD=AJPERES

Oil and Grease (< 5.0 mg/L)	Phase separation	Dissolved Air Floatation, oil water separator, grease trap
Emissions – Odors and VOCs	Capture – Active or Passive; Biological; Adsorption, Oxidation	Biological : Attached growth; Chemical oxidation, Thermal oxidation, Activated Carbon
Toxicity	Adsorption, Oxidation, Size Exclusion, Concentration	Chemical oxidation, Thermal oxidation, Activated Carbon, Evaporation, crystallization, Reverse Osmosis

Table 30: Environmental and Social Management Plan

	Impact and Mitigation/Enhancement Commitments	Desired Outcomes	Monitoring/ performance Indicators/Targets or acceptance criteria	Timing	Responsible party	Incremental Costs	Capacity Building and Training Requirements
A	**Construction Phase**						
	Positive Impact						
1	***Impact:*** **Employment opportunities**						
	Mitigations: • Establishment of recruitment centres at sub county level. • Publicise recruitment using appropriate media.	Local residents are employed in at all level & special attention to women is achieved	• Percentage of residents employed at various levels. • Percentage of women employed at various levels	Construction period	• Contractor • SPIU • Local Authorities	Negligible	Induction training on occupational health and safety Tooling in basic skills for different road construction tasks
2	***Impact:*** **Improved income generating opportunities**						
	Mitigations: • Encourage local residents especially women to form community cooperatives.	• Local residents benefit from the procurement process to supply construction material demands. • Appreciation in land and property values. • Emergence of small enterprise at campsite	• Number of cooperative established. • Number of local residents/groups transacting business with contractors. • Percent value of contracts awarded to local residents	Construction period	• Contractors • SPIU • Local Authorities	Negligible	
B	**OPERATIONAL PHASE**						

3	***Impact:*** **Shorter travel time & improved access to social services**						
	Enhancement: Local public transport travel associations shall be	Reduced time and safer travel. Increased access to	%ge drop in travel time on different road sections.	Operational Phase	- SPIU - Rwanda Police Traffic section - Local authorities	Negligible	Road use sensitization for school children
	encouraged to have travel schedules.	social services.	Number of accidents per month		- Schools authorities. - Local drivers' associations		Regular Refresher driving instruction to local commuter drivers
4	***Impact:*** **Increased tourist numbers**						
	Enhancement: Generate tourism potentials in the project areas to produce a rich itinerary.	Increased number of tourist arrivals in the project areas	No of tourist/ month, year visiting tourism potential sites	Operational Phase	- RDB	N/A	N/A
5	***Impact:*** **Soil erosion**						
	Mitigation: Plant grass on steep embankments	Rehabilitated landscape with improved aesthetic appeal	Area recovered and planted with trees	Construction and operational phase SPIU, Contractors, contractors		Part of contractor's bid	Tree management training for local residents and contractor personnel
6	***Impact:*** **Presence of Road Furniture**						
	Enhancement: Sensitize road users on road signage	Reduced accidents	Number of accidents recorded per year	Operational phase	- SPIU, - Traffic Police, - Local governments.	Limited costs	Train community members
7	***Impact:*** **Appreciation of Property Value**						
	Enhancement: Sensitize residents on land tenure	High premiums to land owners	% increase in land premiums over the years	Operational phase	Local authorities		
	Negative Impacts						

	Road Construction and Campsite Development Phase						
8	***Impact:*** **Destruction of vegetation**						
	Mitigation: Identify valuable local tree	▪ Ensure no trees are destroyed	Number of trees destroyed / felled	Construction Phase	- SPIU - Contractor	Negligible	None
	species for planting on private land and on the road reserve. Identify plants trees with socio-economic value (medicinal, timber, fruit etc) and conservation purposes. Recover valuable wood for use by the community				- RDB		
9	***Impact:*** **Improper management of cut to spoil, debris, stripped vegetation (overburden)**						
	Mitigation: Use soil spoils in backfilling. Use soil spoil for daily cover at disposal sites. Salvage vegetation for use by communities. Consult District Environment Officers on disposal of over burden	Elimination of blight due to unsightly heaps of overburden No illegal dumping of construction waste especially in wetlands	Rehabilitated sites using over burden	Construction phase	- Contractors - District environment offices	Negligible	None
10	***Impact:*** **Soil and surface water contamination by accidental spills of lubricants, fuels and other chemicals related to asphalt use**						

	Mitigation: Recycling lubricants, Design manual for handling waste oils etc, Gazette areas for refilling and repair of equipment, Sensitize workers on managing hazardous waste,	An elaborate construction/hazardous waste disposal plan indicating records of generated wastes and place where disposed off.	Levels of contamination of nearby surface water and soils	Construction and post construction phase	- RDB, - SPIU, - Contractors - District, - Environment Officers - RNRA.	Comprised in contractor's bid	None
	Draw up accident management plans.						
11	***Impact:*** **Impairment of drainage and in-filling of wetlands**						
	Mitigation: Schedule construction activities in wetlands during water stress periods. Improve geometric properties of roads in wetlands to take into account unexpected amounts of water. Install culverts with appropriate specifications. Provide temporary diversions such as with coffer dam when installing culverts.	No incidences of flooding due to construction activities.	Frequency of flooding at river/stream crossings	Construction and Operation phases.	- Contractors - SPIU - RDB - RNRA - District Environment Officers	Part of the contractors bid	None
12	***Impact:*** **Cliffs resulting from deep cuts**						

	Mitigation: Protect road embankments with stone walls Plant vegetation on graded embankments to improve aesthetic beauty.	Controlled erosion from road embankments. Improved aesthetic of road.	Rate of siltation in nearby surface water. Rate of rill formation on road sides Soil transport/creeps on embankments	Construction and operation phases	- Contractors - SPIU - District Environment Officers.	Part of contractors bid	None
13	***Impact:*** **Air pollution**						
	Mitigation: Enforce speed reduction on sections under construction Spray water to suppress dust release	Improved air quality with suspended particulate matter with WB limits.	Level of suspended particulate matter in air at areas under construction. Level of complaints from the public	Construction Phase	- Contractors - RDB - District Environment Officers	USD7500 (USD500 per month for air quality monitoring for 15 months)	None
	Cover trucks transporting construction materials						
14	***Impact:*** **Increased noise levels**						
	Mitigation: Schedule construction activities near school during weekends or during school holidays Ensure equipment maintenance schedules are followed.	Noise released does not exceed maximum permitted WB standards (Table 28)	Monitored noise levels at construction sites Level of complaints from the public	Construction phase	▪ Contractor ▪ SPIU ▪ RDB	None	None
15	***Impact:*** **Effects of operation of borrow pits and quarries**						
a	▪ ***Visual impairment***						

	Mitigation: Backfilling quarry pits with overburden. Disposal of cut to spoil in borrow pits Backfilled pits should be left to settle before tree planting takes place. Screen off quarry pits as recovery takes place.	Restored sites with aesthetic beauty restored. Cut to spoil not dumped in sensitive ecosystems like wetlands. No accidents involving community members and livestock	% age of sites restored. Accidents recorded at abandoned quarry sites Complaints from the public. Records of amounts of cut to spoil delivered and utilized in restoration of borrow pits	Construction phase	▪ Contractors ▪ SPIU ▪ District Environment Officers	Comprised in contractor's bid	None
b	▪ ***Suspended particulate matter (SPM) in air and water***						
	Mitigation: Establish cut off drains around material storage areas. Maintain surfaces free of debris.	Work area and neighborhood free of excessive dust	Levels of SPM in surrounding air and water	Construction	▪ Contractor ▪ RDB ▪ SPIU	Comprised in contractor's bid	None
	Suppress dust by water bousing. Plant grass on embankments.						
c	▪ ***Effects of excessive noise, fly rock and exlposives***						

	Mitigation: Rock blasting schedule should not disrupt community activities Design and train workers in blasting technologies that limit fly rocks. Use sirens or drive-by warning systems to warn residents of impending blasting activity All explosives should be handled by licensed blasters and stored at a local police station. After each blasting session, inspection shall be done to collected unexploded explosives which will be returned into Police custody.	Noise does not exceed acceptable limits Forestall community complaints No accidents resulting from fly rocks	Complaints on quarry noise and related traffic Accident reports involving fly rocks	Construction phase	▪ Contractor ▪ SPIU ▪ RDB ▪ District Environment Officers		None
d	▪ ***Disease vectors in abandoned borrow and quarry pits***						
	Mitigation: Backfill abandoned pits.	Elimination of vectors Restored and	Level of water retention at the restored site	During and after construction	▪ Contractor ▪ SPIU ▪ District Environment Officer	Negligible	None
	Planting vegetation on restored sites. Screen off quarry sites.	aesthetically attractive sites.					
e	▪ ***Impacts associated with access roads to borrow or quarry sites.***						

	Mitigation: Install speed humps. Dust control through application of water. Scarify and vegetate service routes after decommissioning	Accident free roads No pollution arising from excessive dust	Number of accidents involving construction traffic. Area scarified and vegetated.	Construction phase Decommissioning phase	▪ Contractor ▪ SPIU ▪ District Environment Officers	Part of contractor's bid	None
16	***Impact:*** **Effects of worker's camps and equipment yards**						
	Mitigation: Locate worker's camps and equipment yards away from sensitive ecosystems. Maintain a realistic buffer distance from the community. Screen off site to intrusion by community. Enforce buffer distance regulations from surface water sources. Develop waste management system. Management plan for construction waste.	Cordial relationships with the surrounding communities. High levels of sanitation at the campsite. No exposure to hazardous substances. Easy access to medical services when required Counseling services are easily accessed. Documentation requirements for applicants, requirement for contractors to maintain records of employees showing age	Reported complaints involving construction workers and local residents. Waste collection frequency. Reported incidences of exposure to hazardous wastes. Reported cases to health unit	Construction phase	▪ Contractor ▪ SPIU ▪ District Environment offices ▪ District health officers	Negligible	None

	Present hazardous waste management plan. Onsite sewage management system must be presented. Develop an elaborate primary health care programme and standby ambulance services. Provide drinking water at the campsite and different work stations. Design vehicle wash areas so as not to contaminate the environment . Vehicle wash bays should have anti-pollution equipment. Solid waste disposal sites will be located away from watercourses and have restricted access. Wherever feasible, waste recovery and reuse will be undertaken.						
17	***Impact:*** **Storage of construction materials, accidental spills and fires**						
	Mitigation: Establish a cut off drain on the upper slopes of the site Establish sediment	Pollutants resulting from warehouse activities do not contaminate the surrounding environment.	Regular audits on performance of pollution control systems	SPIU to perform audits every 3 months during the construction phase	▪ Contractor ▪ SPIU ▪ RDB	Negligible (Part of contractor's bid)	Training hazardous waste handling for warehouse personnel

	traps/basins on the lower slopes Avoid open stock piling Construct silos for long time storage Provide bunded storage for fuels Install fire suppression systems Design ware house safety manual Maintain a portable spill control pack.	Ensure worker safety at all times in the warehouse					
18	***Impact:*** **Occupational Hazards and Risks**						
	Mitigation: Contractors should provide induction training to all workers on OHS Design occupational safety reference manual Contractors should provide all workers PPE Institute peer counseling and monitoring. Install housekeeping signage in all work places Observe recommended working conditions for all workers	No injuries to workers. Reduced risks to the work force. A safe and productive work environment.	No of injuries reported in every month during the construction phase.	Construction phase	▪ Contractor ▪ SPIU ▪ District Environmental Officers.	USD 10000 for HIV/AIDS Awareness USD 15000 for PPE	Training in HIV/AIDS counseling

	Hire environmental safety officer Report accidents to police and supervising engineer. Provide onsite mobile toilet systems. Design an HIV/AIDS policy and strategies for awareness, counseling and support. Apply specifications contained in the General Specifications for Roads and Bridge works 2005 (series 1000 general section 1800 pg 1000-43)						
	Negative Socio-economic Impacts						
19	***Impact:*** **Destruction of socio-economic infrastructure**						
	Mitigation: The contractor should ensure that alternative water sources are availed to the community before construction works begin. Mobile water tanks should be acquired to service site workers on site. Preserve the community water supply at CVK	Community is availed alternative socio-economic infrastructure Provide potable water	Distance to sources of water by local people	Construction phase	Contractors SPIU		
20	***Impact:*** **Disruption of school and business activities**						

	Mitigation: Schedule construction activities near schools on weekends and school holidays. Screen off schools to reduce dust and unnecessary fraternization. Undertake sensitization programmes in schools	No interference in school activities	Complaints from school management	Construction phase	▪ Contractors ▪ SPIU ▪ Local Councils	None	None
21	***Impact:*** **Land take and temporary loss of livelihoods**						
	Mitigation: Give timely notice to affected business units.	Community welfare does not decline. Affected people find alternative livelihoods.	Level of litigation involving communities and road contractors	Construction phase	▪ Contractors ▪ SPIU ▪ Local authorities	USD 6000 in skills training course	None
	Follow relevant compensation procedures.				▪ Local CBOs And NGOs		
22	***Impact:*** **HIV/AIDS risk**						
	Mitigation: Design an HIV/AIDS policy and awareness program. Provide counseling and testing services. Semi-skilled and unskilled labour should be sourced from the local communities. Weekend offs for non-resident workers on pay weekends.	No infections of HIV/AIDS	Periodic voluntary testing at worker's camp	Construction phase	Contractors Road committees	None	None
23	***Impact:*** **Impacts on vulnerable groups**						

	Mitigation: Children below 18 years should not be recruited. Institute and enforce a sexual harassment policy. Provide access facilities for vulnerable (women, children, elderly, etc) people along the project area.	Preserve rights of vulnerable people	Complaints from vulnerable people	Construction and operation phase	▪ Contractor ▪ SPIU ▪ District Environment Officers	Part of contractor's bid	None
24	***Impact:*** **Public health and safety**						
	Mitigation: Enforce a strict blasting schedule and install a	No accidents are recorded due to project activities	Accident reports involving the public	Construction Phase	▪ Contractors ▪ SPIU	None	None
	community warning system Maintain a well equipped medical unit Sensitize the public on safety precautions. Install signage on the road to warn people of construction activities.						
25	***Impact:*** **Site restoration and tree planting**						

	Mitigation: Soil erosion from bare embankments. Residual contamination at unrestored sites. Community and health risks of open borrow and quarry sites. Grass and tree planting for erosion control and beautification undertaken along the road.	Embankment erosion prevented. Quarry and borrow sites restored to pre- project condition. Temporary access provided on banks of watercourses removed after construction. Camp sites decommissioned. All restored areas replanted with native vegetation. Road reserve planted with trees. No abandoned equipment, materials and waste left on sites.	All embankments grassed with appropriate erosion control grass species. Decommissioning plans for quarry and borrow sites prepared and implemented. All borrow sites landscaped (including revegetation), provided with good drainage and side slopes tempered to reduce risk to livestock and people. Decommissioning plans for camps prepared and implemented. Number of trees planted per kilometer. Nature and quantity of equipment/materials found on site.	Immediately upon completion of construction.	Contractor Resident engineer	USD20,000 for facilitation of monitoring of tree planting	None
26	**Internship**	One intern trained in implementation of ESMP	Monthly reports on actual training activities undertaken	Throughout construction period	SPIU	USD30000	All socio - environmental aspects of the project

27	***Impact:*** **Physical cultural impacts** ***Mitigation:*** Construction operations should comply with mitigation actions and Cultural Resources Management Plan	No impact on PCR during construction	No single PCR damaged throughout road construction	Throughout construction	SPIU, Contractors Dept of Museum & Monuments	USD20000	n/a
	NEGATIVE POST-CONSTRUCTION IMPACTS						
28	***Impact:*** **"New road effect" leading to heightened accident rate**						
	Mitigation: Install road signage. Coordinate with traffic police to ensure speed limits are observed. Design a road use sensitization programme. Introduce speed control humps in near schools, institutions, trading centers and settled areas. Prescribe a speed limit of 40 km per hour in . Mark out potential accident zones.	A drop in accident rate. Reduction in road kill	Number of accidents in a month.	Operational phase	▪ SPIU ▪ Traffic Police	None	None

10. PUBLIC CONSULTATION FINDINGS

10. Introduction

A work shop was held with the various stakeholders during World Bank mission on 08th Oct 2015, where the feasibility Consultant presented the list of projects to be considered for short term and long term implementation. Various stakeholders meetings were conducted after the workshop, the summary list of these meetings is provided below.

10.1 Summary of Citizen Engagement meetings

The citizen's engagement consultative meetings were conducted between 20th to 22nd October 2015. In general all the citizens' engagement meetings and discussions on the proposed subprojects went well in all the 6 secondary cities plus Agatare of CoK. The participation of community members was very impressive and a good turn-up was registered in almost all the 6 secondary cities plus Agatare (CoK). Summary reports per each meeting have been prepared and included in this report. In general all the selected subprojects for phase 1 in the 6 secondary cities posses limited expropriation issues. Subprojects with significant expropriation costs were shifted to second phase of funding. However, reasonable expropriation is expected for Agatare (CoK) subprojects. Therefore much of the work for RAP preparation is actually in Agatare area.

10.2 Stakeholder Identification and Analysis

Key stakeholders identified and consulted during EIA included: the City leadership and technocrats of Rubavu, Rusizi, Musanze, Muhanga, Huye and Nyagatare. Other key stakeholders included: affected communities, Local Government officials and the relevant Ministries (MINIRENA, MINICOM, RDB, REMA, MINIFRA, RNRA- RTDA, RHA, Private Sector Federation and RURA. Records of meetings held are annexed. Public consultations are an ongoing process and inputs from the stakeholders will be taken throughout the life of the project as part of the project information sharing/grievance redress system.

Table 31: Key issues from citizen's engagement/public consultation meetings

City	Issue raise	Comments/Remarks
Nyagatare	• District did not include the road from the market to Agakiriro community center.	• This project has two phases, and the remaining roads which are not on the current priority list will

	• why Nyagatare District didn't choose the road which directly connects the District One Centre to the University • replace the selected road connecting to the hotel under construction with another one which is beneficial to a wide community rather than serving only one economic facility - the hotel alone, with another that goes to Kagitumba Border that was currently not currently among those on the priority list • Whether they were allowed to paint their houses along some of the roads selected given that issues of expropriation may arise. He also inquired about the plans for expropriation in the first phase, and as to when the project will start so that they can equally start improving their houses that are within the vicinities of the selected roads	be considered for implementation in the second phase. • this particular road had been already chosen, and it was mentioned among the list read by the District Engineer • suggested road to Kagitumba Border goes beyond the administrative boundaries of the city; and that the selected road to the hotel will play major role not only to the citizen of Nyagatare but also all Rwandan in general, as the hotel will boost tourism and provide quality formal employment to the public • Painting is allowed by one thing that is not permitted is adding some new structures in the plot. He however assured residents that in the first phase they will not be any expropriation
Musanze	• Why Merez-Rwebeya road has been put to the first priority list and look like it is located in the wealthy neighbourhood, so she suggested that this road might not be at this 1st priority may be the second or third • the need to key environmental considerations in designing the drainages associated with the respective roads including the need for consideration of the topographical data, Geological data as well as pedological data	• Many factors including the environment enhancement, not requiring expropriate, and need to manage the River Rwebeya were key considerations which beats all other factors considered with other subprojects. the choice was also informed by the existing Musanze City Master Plan in which all citizens participated and ranked this subproject as a leading priority

	• the Sunrise Road should be in the first phase rather than the second phase since people in that area were far removed from the CBD, and they did not have any shops in the area and added that the bad road makes all things costly and in many times they can by them only in CBD • when the project will start and if the road through Sunrise will be in the second phase:1 • need to urgently build Rwebeya bridge and stabilize the walls of the gullies created by the river to mitigate flooding and serious problem of soil erosion, as the flooding in a number of times has led to death of people and destruction of people's property. The flooding also affects tourism as it prevents tourists from accessing Virunga mountains	• Have related data and they make a follow up of the feasibility study and make sure it was done properly. • The cost implications in terms of expropriation make it impossible for the District to consider that road through Sunrise in the first phase. However, the concerns were taken and the citizen promised that it is a top priority road for the second phase when they would have budgeted for ample expropriation in the coming budget cycle • informed that if all paper work and necessary approvals are received in time the implementation of the subprojects will start in July/August of next year • this project has two phases, the 1st phase has 4M USD so once we use this money efficiently and effectively, they will provide us 12M USD in the second phase, all other roads listed, we shall work on it in the second phase
Rubavu		
Muhanga	• All the roads should take into consideration lighting which is a standard for public-asphalt roads • We also need to look at the compensation requirements of the different roads e. g R1	• Preferred choice road is R19, but to add 700m to take into account the network in the market area. Reasons among others for R19, is that it feeds into the National Road and will connect the Akakiro centre and the industrial park.

		• 500m could be added on the 1.7km to make it 2.2km so as to be able to service the industrial park. Additionally, it is also possible to prioritise the 500m as part of Phase II investment. • The Road set R14, 15 and 16, there is a possibility of making all of them one way and reduce the width from 6m to 4m; this would also reduce the cost of the road by about 30%. R7 was considered as a good candidate road but it was urged that, it is a main road and cannot be converted into a one way and to re-develop it and keeping its current size or expanding it would have very high expropriation costs. With these considerations, it was agreed that this goes into phase II investment.
Huye	• to integrated local community(Top-down approach) especially those who will be affected by the project because are the ones who will be beneficiating it	• Some citizens who are affected by the priority projects gave away the proposed meters to be affected freely. However, people needed to be clarified to as to the exact extent of the land that will be required i.e they will have to give away for project implementation
Rusizi	• Limited funding and choice of roads for the second phase.	• Citizens were genrally unanimous on the choice of the subprojects but requested for a more consultative effort in the choice of roads in the second phase.
Agatare of CoK	• where exactly the 8m road starts and ends	• Starting point of road AS29 untill it joins AS 43. After this explanation the people in the meeting were very happy and clapped hands for this subproject

	• youth in the project area are given first opportunity for employment during project implementation phase • the exact date when the project is expected to commence. He also requested the community members present in the meeting room to own the project activities. • why some roads that were initially planned as 4m wide road have been reduced in some sections to 3m. He suggested that these roads should be constructed as initially planned on the Kigali City Urban Master plan. He also requested to know how exactly the deep drainages will be rehabilitated to reduce risks of accidents in the area by children falling into the drainage • how the proposed roads will be constructed in such a way that ensures proper drainage to avoid creating more problems to community members staying downstream of the constructed roads as this is the case with the new roads constructed in the area that do not have proper drainage causing problems to people staying downstream	• this will be taken into consideration during procurement and implementation of the project to ensure that the community members benefit (employment) from the investments in Agatare upgrade project • , the project is expected to start in July 2016 and will be for a period of 4 years • Road AS 27 crosses a deep valley at its end given the current available budget it's difficult to connect it to the other side of the hill as its very costly. Secondly, he mentioned that along this road AS 27 some people have constructed many houses in the right of way for a 4m wide road and therefore due to high expropriation cost this part of the road where there are many houses in the right of way has been reduced to a 3m wide road and in some sections converted into a footpath connecting to AS 7. Emphasized that in case of available future funding from other sources, upgrading these roads will continue beyond WB funding. Emphasized that if the project did not limit resettlement in this project the affected houses could have potentially been as much as 300 houses to be relocated but this has been mitigated as much as possible under this project • The proposed roads to be constructed will be designed in such a way that they have a proper

		drainage system interconnected and this will mitigate any potential impact from road drainage causing problems to downstream houses. Secondly, on the issue of construction of alternative houses for the affected community members as an alternative, he said that this is a concept that CoK and Nyarugenge District are still working out and the decision will be made soon on how it will be implemented

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Plate 23: Citizens visiting some of the project sites

Plate 24: Citizens' engagement at Nyarugenge Sector Office, CoK

The Grievance Redress Mechanism and expropriation

In all the project areas, the grievance redress mechanism was presented by the SSG consultants and briefly discussed with the citizens. In these meetings, it was requested of the District leadership to further sensitise the citizens about the grievance redress mechanism according to both the Rwandan law and the requirements of the World Bank. The expropriation procedures were also discussed and it was made clear that the World Bank funding does not cover expropriation costs. However, the expropriation costs will be covered instead by the Government of Rwanda.

CONCLUSIONS

Since road upgrade and drainage systems will largely follow existing alignments, EIA findings indicate that direct impacts will be fairly benign and limited to the alignment areas where road and drainage works will be undertaken. Direct negative impacts will include:

- Soil erosion especially during rainy season;
- Scouring of the landscape due to opening of borrow pits;
- Destruction of vegetation due to clearing right-of-way and inadequate revegetation;
- Dust emissions,
- noise and vibrations during road construction;
- Increased sediment loads to streams and rivers where road crossings occur.
- The project could further have impacts from improper disposal of cut to spoil and wastes.
- Other concerns include occupational safety hazards, traffic accidents and HIV/AIDS risk associated with construction labour.

Secondary beneficial impacts include among others:

- Improved accessibility,
- Reduced public transport costs,
- Road safety improvement,
- Improved access to social services,
- Improved local economies and induced development,
- Upgraded drainage systems will result in reduced risks of flooding and reduced soil loss in the residential areas.

Positive impacts from road improvement activities will occur and indeed justify this project. Other benefits include increase in value of agricultural products due to improved access to markets, stimulation and development of roadside economic activities, increased social mobility and access to social services especially health.

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ANNEXES

Annex 1: Site Specific Environment and Social Management Plans

A. Agatare of the CoK

No.	Anticipated Linkages and Sources	Management Actions and Target Areas	Responsibility and Timeframe	Targets to Achieve	Cost Estimates (USD)	Monitoring Parameters
	Construction Phase					

1	**Degradation of water sources and Gikondo wetland:** • Increased storm water runoff derived from the road networks construction activities and due to relatively steep topography of the project area • Construction water abstraction practices; • There are no surface water sources along the corridor • Abstraction of construction water risks other dependants of the same sources.	• Each houses/ building should have a rainwater harvest system with a water tank and use the water for various needs (Agatare, Kiyovu, Biryogo and Rwampara Cells) • Cover existing storm water drainage network in areas located in settled neighbourhoods and footpath crossings along drainage sections to be rehabilitated should be covered with concrete covers allowing easy crossing of the drainage • Implement RAP (separately prepared) • Obtain water abstraction permit from RNRA/IWRM Department (sources not yet established) • Ensure the public at target water sources gets priority on access to water for domestic use	• Nyarugenge District and CoK to liaise with FONERWA , MINERENA and other agencies like banks to providing water tanks especially at public institutions through a funding mechanisms • CoK and Nyarugenge District to ensure that all new developments as incorporate water harvesting • Contractor(s) Resident Engineer	• Reduced storm water runoff in the project site • Proper storm water drainage to downstream • Rainwater harvest system promoted in the project site • Compliance with Water Law • Minimal social conflicts on water sources	Approx. USD. 100.000 for the whole project period.	• Extent of storm water runoff impact in the project area (monthly or after significant rain) • Households using rain-water havervesting systems in the project area (monthly) • Water quality (table 29) (monthly) • Social conflicts (monthly with day to day collection of grievances)

2.	**Air quality due to excavations, machinery operations, construction vehicles and trucks, materials extraction, road use:** • Dust and particulate matter; • Visual disruption; • Surface depositions (buildings and commodities); • Public health problems • Material sourcing sites	• Ensure deviations and dry materials are kept damp at all times; • Materials extraction under damp conditions • Establish information flow process to the communities on dusty conditions. • Material delivery trucks to comply with established emission standards	• Contractor(s) Resident Engineer • During Construction Period	• Low visible particulate matter in the air through the road corridor and material sites.	Approx. USD. 1100 for road watering.	• Construction related dust level within the project (monthly); • Exhaust fumes from construction machineries. (every 6 months) • Undertake dust sampling for air quality in pre-identified locations every month during dry season. • This is a Project wide situation.
3	**Vegetation Cover Degradation:** • Very minimal loss of vegetation cover and trees along drainage systems and material sites, • No agricultural crop cover	• Plan for landscaping and beatification for the project corridor upon project completion (all sections of the road).	• Contractor(s) Resident Engineer • Adjacent Land Owners	• Vegetation cover along the road reserve that is also safe to the road users. • Landscaping and grassing on road reserves	USD. 2000 for landscaping, grassing and tree planting	• Greenery along the road corridors should be a priority. (monthly check on survival rate of species) • Landscape outlook

4	**Waste Management:** • Construction waste disposal (spoil, dry vegetation, concrete residues, asphalt concrete residues, etc.) • General Wastes (garbage, papers and cartons, plastics and polythene, wood and scrap metals); • Special Wastes (oil, grease and associated materials) • Liquid effluents • Aerial emissions, • Waste asphalt concrete • Sources include excavation areas, camp sites, batching plant yards and workshops, construction equipment, paved roads.	• Develop Standard Operating Procedures (SOPs) and schedules for the project works, • The Contractor(s) to develop waste management plans and provide appropriate facilities for their operations • Prepare signed agreements with landowners where spoil earth is to be disposed, • The spoil disposal sites should be approved by REMA before dumping commence • Consider re-use of used/waste asphalt concrete for public access roads in the neighboring area.	• Contractor(s) Waste handling Contractor(s)	• Minimal disruption to physical and biological environmental quality throughout the route. • Focus on entire road corridor. • Construction waste holding areas.	USD. 2500	• Pathways for materials from camp sites, service yards and material preparation yards. • Destinations for spoil disposal • Utilization of asphalt concrete materials and other recyclable wastes

5	**Land Use:** • Land use changes along road corridor is inevitable • Material sites land use may change. • Land values appreciation • Source: Disruption by construction activities; social and economic benefits associated with the road, Relocation of commercial and institutional premises to the road corridor	• Monitor emerging land use trends along the road during construction in liaison with planning department, • Land use planning and zoning to commence during the construction phase and enforced immediately • SPIU would encourage the local authorities on the provisions of social amenities along the corridor in light of changing social and economic development.	• SPIU • Local Government • Throughout the Construction Period	• Planned social and economic activities along the road corridor • Clear land use zones • All road sections.	No direct costs are anticipated on this item, it is an administrative aspect.	• Land use trends along the project corridors, (once at commencement) • Acceptability of land use zoning (once at commencement)
6	**Health and Safety** • Personal injuries (construction employees and residents); • Social ailments including Communicable diseases (including HIV/AIDS); • Potential accidents at material borrow areas and quarries; • Environmental diseases (Bronchial and eye problems). • Accidents involving construction trucks. • Sources: Construction activities	• Provide safety programmes for material sites and working areas including emergency response mechanisms; • Safety provisions (signage and lighting) for the work areas along the road corridor; • Appropriate information and warning signs shall be provided along all the deviation roads for enhanced safety; • Awareness, prevention and training on HIV/AIDS and other social diseases; • Adoption of pre-identified health centers within the road corridor • Provide PPEs for the construction workers and ensure application.	• Contractor(s) Resident Engineer • SPIU to provide guidelines and engage HIV/AIDS Consultants • Throughout the construction period	• Information flow and disseminatio n on health and safety. • Specific response to HIV/AIDS issues. • Safety provisions and enforcement mechanisms	• Approx. USD. 2000 on HIV/AIDS awarenes s, preventio n and training • UDS. 1800 for wellness centers	• Complaints on health safety aspects related to the road construction activities. • Trends in HIV/AIDS cases along the corridor, Special focus on material sites, road diversions routes. (monthly)

	Vibration to houses during construction phase of roads	• Aviod as much as posible using heavy compactors at road sections where the neighbouring houses are weak strucutures	• Resident Engineer	• To be part of the contract for the contractor for road construction	• Approx. 100,000 $	• Houses repaired and compensted that were affected by road compaction activities in Agatare area. (ARAP completion report)
7	**Impacts of Deviation Routes** • Conflicts with residents and local motorists on the movement disruptions. • Potential physical damages to the local access roads. • Risks of safety to the residents • (Especially children) and local motorists. • Dust emissions (Particulate • Matter) • Deviation routes to be identified by the Contractor in conjunction with the Resident Engineer	• Confine construction traffic to the construction road reserve to the extent possible (there will be 40M corridor available). • If deviations are unavoidable, inform the road users and residents in advance seeking for cooperation. • Install appropriate signage and information (including reflective barriers and signs) on the construction road and deviations for reduced conflicts and accidents. • Maintain the deviation roads in good motorable conditions at all times for efficient traffic flow. • Deviation roads should be maintained damp for dust control at all times (the roads are within proximity of social and economic activities).	• Contractor(s) Resident Engineer • Throughout the Construction Period	• Minimal conflicts with the deviation road users and local residents. • Minimal disruptions and accidents. • Minimal additional land take or encroachments into private land	No direct costs (integrated into the construction budgets).	• Public complaints • Dust levels, • Noise and vibration levels • Conflicts (accidents, congestion levels, conditions of the deviation roads). (monthly)

8	**Social and Economic:** • Temporary disruption of business activities along the road corridor; • Social relationships and contacts during construction; • Temporary disruption to the access into and out of adjacent premises; • Displacement of settlements • Displacement of small-scale traders • Noise to residents living along the route. • Safety issues • Community requirements (health, education, sanitation, water, access roads, etc.)	• Enhance collaboration with communities on construction activities affecting them through established Community Liaison Committees based on Administrative line, • Follow-up on the implementation of RAP. • The contractor to establish and manage environmental and social initiatives to oversee mitigation measures developed under this report. • Ensure effective signage and information to road users, especially on deviations and construction sections with obstacles. • Provide safe crossings and walkways during the construction works backed up with appropriate signage. • Provision for community improvement services under social responsibility including health, education, water supply, sanitation, access roads, etc.	• Contractor(s) Resident Engineer • SPIU • Property Owners, Traders and residents • Throughout the Construction Period	• Full implementation of RAP • An acceptable, sustainable and economically viable road with long term benefits to all. • Special attention along the high population sections of the project corridors.	• No direct costs	• Trends in socio-economic dynamics along the project road and its catchments. • Safety data and reports (weekly) • Intervention projects and relevance to community needs.

9	**Involuntary Resettlement:** • Encroachments within roads • Land acquisitions • Relocation of small scale traders. • Displacement of settlements • A Resettlement Action Plan Framework has been developed for the project	• All the PAPs should be identified and compensated before the project commences, • Consider monetary options for livelihood restoration of the PAPs on the face of shortage of free land space in the project area. • Avoid disruption of public institutions to the extent possible (schools, religious premises and health centers). • Ensure the design of the road is confined within the reserve corridor that is already available.	• SPIU • Local government • Throughout the Construction Period	Compensation of all PAPs before commencement of the works	Actual costs as per the RAP report.	• Settling PAPs entitlements appropriately • Effective relocation of small scale traders and restoration of their livelihoods, • Grievances and efficiency of redress. (weekly reports)
10	**Construction Camps and Material Sourcing Sites:** • Land degradation; • Loss of land vegetation cover; • Surface hydrology changes; • Access roads' damages; • Degradation of water sources.	• Undertake EIA on all material sites with comprehensive management plans and construction camp sites with comprehensive restoration plan and obtain relevant License. • Obtain relevant approvals and licenses for all material and construction camp sites. • Prepare comprehensive material procurement agreements for the materials sites with landowners; • Identify materials haulage routes and ensure maintenance of the roads, dust control and safety precautions.	• Contractor(s) • Throughout Construction Period	• Quarry sites • Borrow areas • Water abstraction points • Camp sites and operations. • Materials holding and batching yards sustainability	Contractor to do a BOQ for the assessments and rehabilitation.	• Implementation of parameters in the rehabilitation plans. • Valid Licenses materials sourcing • Implementation of material abstraction and/or procurement agreements (monthly)

11	**Decommissioning of Construction Installations:** • Removal of construction camps. • Rehabilitation of material sites • Materials batching yards. • Construction equipment removals, • Cleanup-up at fueling yards • Removal of the road pavement	• Carry out decommissioning audits for the camp sites • Prepare rehabilitation and restoration plans for all materials sites used for the project (quarry sites, borrow pits and spoil dumping areas). • Rehabilitate all material sites and materials preparation yards in accordance with the approved rehabilitation plans.	• Contractor(s) Resident Engineer • SPIU • Closure of the project	• Rehabilitated material sites, cleared material preparation yards and camps.	• USD. 2500 for Decommissioning Audits studies and development of decommissioning plans.	• Usability of the affected camps' and material sites. (every 3 months)
	Post-Construction Phase					
1	**Environmental Pollution:** • Water quality degradation; • Air pollution from vehicular emissions; • Solid waste dumping (road litter); • Vehicular related scraps; • Residuals from road construction waste. • Sources: Surface runoff drains from the road; Oils spills on road surface especially at accidents scenes; Road litter (from road users and roadside clearing); poorly maintained vehicles-higher related emissions.	• Introduce clean-up responsibilities and charges for the road users (e.g. spills from accident vehicle owners) to reduce road related environmental pollutants and visual nuisance; • Provide public waste receptacles at strategic locations along the route; • Drainage channels be kept clear at all times to prevent overloading with polluting materials. Drainage outfalls are to be acquired and kept free of encroachments • MININFRA to consider developing and enforce vehicular emission regulations in consultations with REMA.	• SPIU • Local Governments • Traffic Police • Throughout the road use	• No direct costs are anticipated (Initiative part of the road administration)	• Compliance with established environmental standards including waste management regulations.	• Complaints on the utilization of the roads. (monthly) • Environmental quality trends. • Compliance with road transport regulations. (every 6 months)

2	**Safety and Security:** • Increased road accidents; • General security aspects; • Road safety issues. • Vandalism of safety installations • Sources: Increased traffic and driving style along the routes; Social interactions; inadequate road safety signage and facilities.	• Establish road safety strategies for road section complete with sensitization programmes; • Liaise with the Traffic Police Department on ways to ensure compliance with road regulations; • Ensure maintenance of signage, crossings, speed breaks and other facilities at all times; • Involve community leaders and administration in ensuring usage and sustainable utilization of provisions for public safety.	• Traffic Police Department • Local Government • Traffic Police • An all time compliance	• No direct costs are anticipated	• Effective information and signage to enhance safe movement and use of the road	• Complaints from the residents and business operators. (weekly) • Recorded cases and categories of road accidents. • Replacement of signage continuously.
3	**Occupational Health** • Cases of HIV/AIDS and other social diseases, • Dust associated infections • Noise and vibrations;	• Enhance initiative for information and awareness as part of the road displays • Organize and implement HIV/AIDS Awareness programmes • Introduce vegetation cover (limited tree and shrubs) along the road reserve as noise buffer to the immediate riparian premises.	• SPIU • National HIV/AIDS Control Agencies • Ministry of Health Services • Local Government • An all time initiative	• Respective Ministries • Annually	• Impact on the local communities and road users • Co-existence of the road with the riparian residents	• Level of Use of the facilities • Noise trends and progressive impacts

4	**Social Aspects:** • Increased population; • Higher traffic volumes; • Road safety issues.	• Collaboration with Land Use Planning for Local Government to influence collaborated land use zoning, • Consider collaborated emergency response facilities within proximity of the road. • Encourage riparian landowners to maintain road reserve sections in front of their premises, including beautification, drainage maintenance and vegetation clearance. This will enhance ownership and responsible use of the road.	• SPIU • Local Governments • Local community small scale traders • All time	• No direct costs are anticipated	• Compatibility of the road with social and economic interests of the local business community, residents and other road users.	• Land use trends in time and along the route. • Population trends. • Complaints received from the local communities and the road users in general. (weekly)
5	**Economic Aspects** • Land use changes due to efficient transport; • Mixed economic activities (general trading, industrial, institutional, etc.) • Involve local youth on road maintenance to enhance income and ownership	• Collaborations for sustainable social and economic development; • Maintain truck parking yards on drainage, water supply, waste collection and lighting/security • Enhance income generation opportunities for the County Governments and the local communities	• MININFRA • Local Government • Local community small scale traders			

6	**Road Maintenance:** • Blockage of drainage and hindrance to free storm water flow; • Accumulating roadside litter collection; • Effects on road safety from inadequate facilities and signage maintenance; • Encroachment into the road reserve; • Illegal roadside land development practices.	• Establish modalities for the involvement of the residents in the maintenance of the road; • Install and maintain appropriate road signs; • Collaborate on the control of roadside billboards that are a safety risks; • Maintain trash bins at strategic locations along the roads including bus stops, foot bridge landings, under pass exits.	• SPIU • Local Governments • All time	• USD. 2000 for the initial maintenance period. • Other costs within the road maintenance budgetary allocations.	• Maintained high level quality of road surface, installations and components. • Focus on the entire road corridor.	
7	**Decommissioning Phase:** • Any decommissioning of the road section or its components should be preceded by preparation of removal plan.	• Undertake a decommissioning audit of part, sections or entire road and establish appropriate measures for prevention of environmental pollution and public safety risks. • Apply established decommissioning plan for the removal of part of all sections of the road.	• SPIU • Contractor • REMA for surveillance	• No direct cost estimates at this stage.	• None or minimum impacts to the environment and social well being.	

B. Nyagatare City

No.	Anticipated Linkages and Sources	Management Actions and Target Areas	Responsibility and Timeframe	Targets to Achieve	Cost Estimates (USD)	Monitoring Parameters
	Construction Phase					
1	**Degradation of water sources:** • Construction water abstraction practices; • There are no surface water sources along the corridor • Abstraction of construction water risks other dependants of the same sources.	• Obtain water abstraction permit from RNRA/IWRM Department (sources not yet established) • Ensure the public at target water sources gets priority on access to water for domestic use	• Contractor(s) Resident Engineer	• Compliance with Water Law • Minimal social conflicts on water sources	Approx. USD. 1500 for the whole project period.	• Water quality (table 29) (monthly) • Social conflicts (monthly)
2.	**Air quality due to excavations, machinery operations, construction vehicles and trucks, materials extraction, road use:** • Dust and particulate matter; • Visual disruption; • Surface depositions (buildings and commodities); • Public health problems • Material sourcing sites	• Ensure deviations and dry materials are kept damp at all times; • Materials extraction under damp conditions • Establish information flow process to the communities on dusty conditions. • Material delivery trucks to comply with established emission standards • Undertake sampling for air quality in pre-identified locations every 2 months for monitoring purposes.	• Contractor(s) Resident Engineer • During Construction Period	• Low visible particulate matter in the air through the road corridor and material sites.	Approx. USD. 1100 for road watering.	• Construction related dust level within the project; (monthly) • Exhaust fumes from construction machineries. (every 6 months) • Application of air emissions guidelines. (every 6 months) • This is a Project wide situa tion.

3	**Vegetation Cover Degradation:** • Very minimal loss of vegetation cover and trees along drainage systems and material sites, • No agricultural crop cover	• Plan for landscaping and beatification for the project corridor upon project completion (all sections of the road).	• Contractor(s) Resident Engineer • Adjacent Land Owners	• Vegetation cover along the road reserve that is also safe to the road users. • Landscaping and grassing on road reserves	USD. 2000 for landscaping, grassing and tree planting	• Greenery along the road corridors should be a priority. (monthly) • Landscape outlook
4	**Waste Management:** • Construction waste disposal (spoil, dry vegetation, concrete residues, asphalt concrete residues, etc.) • General Wastes (garbage, papers and cartons, plastics and polythene, wood and scrap metals); • Special Wastes (oil, grease and associated materials) • Liquid effluents • Aerial emissions, • Waste asphalt concrete • Sources include excavation areas, camp sites, batching plant yards and workshops, construction equipment, paved roads	• Develop Standard Operating Procedures (SOPs) and schedules for the project works, • The Contractor(s) to develop waste management plans and provide appropriate facilities for their operations • Prepare signed agreements with landowners where spoil earth is to be disposed, • The spoil disposal sites should be approved by REMA before dumping commence • Consider re-use of used/waste asphalt concrete for public access roads in the neighboring area.	• Contractor(s) Waste handling Contractor(s)	• Minimal disruption to physical and biological environmental quality throughout the route. • Focus on entire road corridor. • Construction waste holding areas.	USD. 2500	• Pathways for materials from camp sites, service yards and material preparation yards. • Destinations for spoil disposal (monthly) • Utilization of asphalt concrete materials and other recyclable wastes (monthly)

5	**Land Use:** • Land use changes along road corridor is inevitable • Material sites land use may change. • Land values appreciation • Source: Disruption by construction activities; social and economic benefits associated with the road, Relocation of commercial and institutional premises to the road corridor	• Monitor emerging land use trends along the road during construction in liaison with planning department, • Land use planning and zoning to commence during the construction phase and enforced immediately • SPIU would encourage the local authorities on the provisions of social amenities along the corridor in light of changing social and economic development.	• SPIU • Local Government • Throughout the Construction Period	• Planned social and economic activities along the road corridor • Clear land use zones • All road sections.	No direct costs are anticipated on this item, it is an administrative aspect.	• Land use trends along the project corridors, • Acceptability of land use zoning
6	**Health and Safety** • Personal injuries (construction employees and residents); • Social ailments including Communicable diseases (including HIV/AIDS); • Potential accidents at material borrow areas and quarries; • Environmental diseases (Bronchial and eye problems). • Accidents involving construction trucks. • Sources: Construction activities	• Provide safety programmes for material sites and working areas including emergency response mechanisms; • Safety provisions (signage and lighting) for the work areas along the road corridor; • Appropriate information and warning signs shall be provided along all the deviation roads for enhanced safety; • Awareness, prevention and training on HIV/AIDS and other social diseases; • Provide PPEs for the construction workers and ensure application.	• Contractor(s) Resident Engineer • SPIU to provide guidelines and engage HIV/AIDS Consultants • Throughout the construction period	• Information flow and dissemination on health and safety. • Specific response to HIV/AIDS issues. • Safety provisions and enforcement mechanisms	• Approx. USD. 2000 on HIV/AIDS awareness, prevention and training • UDS. 1800 for wellness centers	• Complaints on health safety aspects related to the road construction activities. (weekly) • Trends in HIV/AIDS cases along the corridor, Special focus on material sites, road diversions routes. (monthly)

7	**Impacts of Deviation Routes** • Conflicts with residents and local motorists on the movement disruptions. • Potential physical damages to the local access roads. • Risks of safety to the residents • (Especially children) and local motorists. • Dust emissions (Particulate Matter) • Deviation routes to be identified by the Contractor in conjunction with the Resident Engineer	• Confine construction traffic to the construction road reserve to the extent possible. • If deviations are unavoidable, inform the road users and residents in advance seeking for cooperation. • Install appropriate signage and information (including reflective barriers and signs) on the construction road and deviations for reduced conflicts and accidents. • Maintain the deviation roads in good motorable conditions at all times for efficient traffic flow. • Deviation roads should be maintained damp for dust control at all times (the roads are within proximity of social and economic activities).	• Contractor(s) Resident Engineer • Throughout the Construction Period	• Minimal conflicts with the deviation road users and local residents. • Minimal disruptions and accidents. • Minimal additional land take or encroachments into private land	No direct costs (integrated into the construction budgets).	• Public complaints (weekly) • Dust levels, (monthly) • Noise and vibration levels (monthly) • Conflicts (accidents, congestion levels, conditions of the deviation roads). (mothly)

8	**Social and Economic:** • Temporary disruption of business activities along the road corridor; • Social relationships and contacts during construction; • Temporary disruption to the access into and out of adjacent premises; • Displacement of settlements • Displacement of small-scale traders • Noise to residents living along the route. • Safety issues • Community requirements (health, education, sanitation, water, access roads, etc.)	• Enhance collaboration with communities on construction activities affecting them through established Community Liaison Committees based on Administrative line, • Provide deviations and slip accesses to the affected premises during construction throughout the corridor • The contractor to establish and manage environmental and social initiatives to oversee mitigation measures developed under this report. • Ensure effective signage and information to road users. • Provide safe crossings and walkways during the construction works backed up with appropriate signage. • Provision for community improvement services under social responsibility including health, education, water supply, sanitation, access roads, etc.	• Contractor(s) Resident Engineer • SPIU Property Owners, Traders and residents • Throughout the Construction Period	• An acceptable, sustainable and economically viable road with long term benefits to all. • Special attention along the high population sections of the project corridors.	• No direct costs	• Trends in socio-economic dynamics along the project road and its catchments. • Safety data and reports (weekly) • Intervention projects and relevance to community needs.

9	**Construction Camps and Material Sourcing Sites:** • Land degradation; • Loss of land vegetation cover; • Surface hydrology changes; • Access roads' damages; • Degradation of water sources.	• Undertake EIA on all material sites with comprehensive management plans and construction camp sites with comprehensive restoration plan and obtain relevant License. • Obtain relevant approvals and licenses for all material and construction camp sites. • Prepare comprehensive material procurement agreements for the materials sites with landowners; • Identify materials haulage routes and ensure maintenance of the roads, dust control and safety precautions.	• Contractor(s) • Throughout Construction Period	• Quarry sites • Borrow areas • Water abstraction points • Camp sites and operations. • Materials holding and batching yards sustainability	Contractor to do a BOQ for the assessments and rehabilitation.	• Implementation of parameters in the rehabilitation plans. • Valid Licenses materials sourcing (monthly) • Implementation of material abstraction and/or procurement agreements (monthly)
10	**Decommissioning of Construction Installations:** • Removal of construction camps. • Rehabilitation of material sites • Materials batching yards. • Construction equipment removals, • Cleanup-up at fueling yards • Removal of the road pavement	• Carry out decommissioning for the camp sites • Prepare rehabilitation and restoration plans for all materials sites used for the project (quarry sites, borrow pits and spoil dumping areas). • Rehabilitate all material sites and materials preparation yards in accordance with the approved rehabilitation plans.	• Contractor(s) Resident Engineer • SPIU • Closure of the project	• Rehabilitated material sites, cleared material preparation yards and camps.	• USD. 2500 for Decommissioning Audits studies and development of decommissioning plans.	• Usability of the affected camps' and material sites. (monthly)
	Post-Construction Phase					

1	**Environmental Pollution:** • Water quality degradation; • Air pollution from vehicular emissions; • Solid waste dumping • Vehicular related scraps; • Residuals from road construction waste. • Sources: Surface runoff drains from the road.	• Introduce clean-up responsibilities and charges for the road users to reduce road related environmental pollutants and visual nuisance; • Provide public waste receptacles at strategic locations along the route; • Drainage channels be kept clear at all times to prevent overloading with polluting materials. • MININFRA to consider developing and enforce vehicular emission regulations in consultations with REMA.	• SPIU • Local Governments • Traffic Police • Throughout the road use	• No direct costs are anticipated (Initiative part of the road administration)	• Compliance with established environmental standards including waste management regulations.	• Complaints on the utilization of the roads. (weekly) • Environmental quality trends. • Compliance with road transport regulations. (every 6 months)
2	**Safety and Security:** • Increased road accidents; • General security aspects; • Road safety issues. • Vandalism of safety installations • Sources: Increased traffic and driving style along the routes; Social interactions; inadequate road safety signage and facilities.	• Establish road safety strategies for road section complete with sensitization programmes; • Liaise with the Traffic Police Department on ways to ensure compliance with road regulations; • Ensure maintenance of signage, crossings, speed breaks and other facilities at all times; • Involve community leaders and administration in ensuring usage and sustainable utilization of provisions for public safety.	• Traffic Police Department • Local Government • Traffic Police • An all time compliance	• No direct costs are anticipated	• Effective information and signage to enhance safe movement and use of the road	• Complaints from the residents and business operators. (weekly) • Recorded cases and categories of road accidents. (monthly) • Replacement of signage continuously.

3	**Occupational Health** • Cases of HIV/AIDS and other social diseases, • Dust associated infections • Noise and vibrations;	• Enhance initiative for information and awareness as part of the road displays • Organize and implement HIV/AIDS Awareness programmes • Introduce vegetation cover (limited tree and shrubs) along the road reserve as noise buffer to the immediate riparian premises.	• SPIU • National HIV/AIDS Control Agencies • Ministry of Health Services • Local Government • An all time initiative	• Respective Ministries • Annually	• Impact on the local communities and road users • Co-existence of the road with the riparian residents	• Level of Use of the facilities • Noise trends and progressive impacts (monthly)
4	**Social Aspects:** • Increased population; • Higher traffic volumes; • Road safety issues.	• Collaboration with Land Use Planning for Local Government to influence collaborated land use zoning, • Consider collaborated emergency response facilities within proximity of the road. • Encourage riparian landowners to maintain road reserve sections in front of their premises, including beautification, drainage maintenance and vegetation clearance. This will enhance ownership and responsible use of the road.	• SPIU • Local Governments • Local community small scale traders • All time	• No direct costs are anticipated	• Compatibility of the road with social and economic interests of the local business community, residents and other road users.	• Land use trends in time and along the route. • Population trends. • Complaints received from the local communities and the road users in general. (weekly)

5	**Economic Aspects** • Land use changes due to efficient transport; • Mixed economic activities (general trading, industrial, institutional, etc.) • Involve local youth on road maintenance to enhance income and ownership	• Collaborations for sustainable social and economic development; • Maintain truck parking yards on drainage, water supply, waste collection and lighting/security • Enhance income generation opportunities for the County Governments and the local communities	• SPIU • Local Governmen t • Local community small scale traders			
6	**Road Maintenance:** • Blockage of drainage and hindrance to free storm water flow; • Accumulating roadside litter collection; • Effects on road safety from inadequate facilities and signage maintenance; • Encroachment into the road reserve; • Illegal roadside land development practices.	• Establish modalities for the involvement of the residents in the maintenance of the road; • Install and maintain appropriate road signs; • Collaborate on the control of roadside billboards that are a safety risks; • Maintain trash bins at strategic locations along the roads including bus stops, foot bridge landings, under pass exits.	• SPIU • Local Governmen ts • All time	• USD. 2000 for the initial maintenance period. • Other costs within the road maintenance budgetary allocations.	• Maintained high level quality of road surface, installations and components. • Focus on the entire road corridor.	

7	**Decommissioning Phase:** • Any decommissioning of the road section or its components should be preceded by preparation of removal plan.	• Undertake a decommissioning audit of part, sections or entire road and establish appropriate measures for prevention of environmental pollution and public safety risks. • Apply established decommissioning plan for the removal of part of all sections of the road.	• SPIU • Contractor • REMA for surveillance	• No direct cost estimates at this stage.	• None or minimum impacts to the environment and social well being.	

C. Muhanga City

No.	Anticipated Linkages and Sources	Management Actions and Target Areas	Responsibility and Timeframe	Targets to Achieve	Cost Estimates (USD)	Monitoring Parameters
	Construction Phase					
1	**Degradation of water sources:** • Construction water abstraction practices; • There are no surface water sources along the corridor • Abstraction of construction water.	• Obtain water abstraction permit from RNRA/IWRM Department (sources not yet established) • Ensure the public at target water sources gets priority on access to water for domestic use	• Contractor(s) Resident Engineer	• Compliance with Water Law • Minimal social conflicts on water sources	Approx. USD. 1500 for the whole project period.	• Water quality (table 29) (monthly) • Social conflicts (monthly)

2.	**Air quality due to excavations, machinery operations, construction vehicles and trucks, materials extraction, road use:** • Dust and particulate matter; • Visual disruption; • Surface depositions; • Public health problems • Material sourcing sites	• Ensure deviations and dry materials are kept damp at all times; • Materials extraction under damp conditions • Establish information flow process to the communities on dusty conditions. • Undertake sampling for air quality.	• Contractor(s) Resident Engineer • During Construction Period	• Low visible particulate matter in the air through the road corridor and material sites.	Approx. USD. 1100 for road watering.	• Construction related dust level within the project; (monthly) • Exhaust fumes from construction machineries. (every 6 months) • Application of air emissions guidelines. (every 6 months) • This is a Project
3	**Vegetation Cover Degradation:** • Very minimal loss of vegetation cover and trees along drainage systems and material sites, • No agricultural crop cover	• Plan for landscaping and beatification for the project corridor upon project completion (all sections of the road).	• Contractor(s) Resident Engineer • Adjacent Land Owners	• Vegetation cover along the road reserve that is also safe to the road users. • Landscaping and grassing on road reserves	USD. 2000 for landscaping, grassing and tree planting	• Greenery along the road corridors should be a priority. (monthly) • Landscape outlook

4	**Waste Management:** • Construction waste disposal (spoil, dry vegetation, concrete residues, asphalt concrete residues, etc.) • General Wastes (garbage, papers and cartons, plastics and polythene, wood and scrap metals); • Special Wastes (oil, grease and associated materials) • Liquid effluents • Aerial emissions, • Waste asphalt concrete • Sources include excavation areas, camp sites, batching plant yards and workshops, construction equipment, paved roads	• Develop Standard Operating Procedures (SOPs) and schedules for the project works, • The Contractor(s) to develop waste management plans and provide appropriate facilities for their operations • Prepare signed agreements with landowners where spoil earth is to be disposed, • The spoil disposal sites should be approved by REMA before dumping commence • Consider re-use of used/waste asphalt concrete for public access roads in the neighboring area.	• Contractor(s) Waste handling Contractor(s)	• Minimal disruption to physical and biological environmental quality throughout the route. • Focus on entire road corridor. • Construction waste holding areas.	USD. 2500	• Pathways for materials from camp sites, service yards and material preparation yards. • Destinations for spoil disposal • Utilization of asphalt concrete materials and other recyclable wastes (monthly)
5	**Land Use:** • Land use changes along road corridor is inevitable • Material sites land use may change. • Land values appreciation • Source: Disruption by construction activities.	• Monitor emerging land use trends along the road during construction • Land use planning and zoning to commence during the construction phase and enforced immediately	• SPIU • Local Government • Throughout the Construction Period	• Planned social and economic activities along the road corridor • Clear land use zones • All road sections.	No direct costs are anticipated on this item, it is an administrative aspect.	• Land use trends along the project corridors, • Acceptability of land use zoning

6	**Health and Safety** • Personal injuries (construction employees and residents); • Social ailments including Communicable diseases (including HIV/AIDS); • Potential accidents at material borrow areas and quarries; • Environmental diseases • (Bronchial and eye problems). • Accidents involving construction trucks. • Sources: Construction activities	• Provide safety programmes for material sites and working areas including emergency response mechanisms; • Safety provisions (signage and lighting) for the work areas along the road corridor; • Appropriate information and warning signs shall be provided along all the deviation roads for enhanced safety; • Awareness, prevention and training on HIV/AIDS and other social diseases; • Provide wellness centers at the construction camp sites • Provide PPE construction workers and ensure application.	• Contractor(s) Resident Engineer • SPIU to provide guidelines and engage HIV/AIDS Consultants • Throughout the construction period	• Information flow and dissemination on health and safety. • Specific response to HIV/AIDS issues. • Safety provisions and enforcement mechanisms	• Approx. USD. 2000 on HIV/AIDS awareness, prevention and training • UDS. 1800 for wellness centers	• Complaints on health safety aspects related to the road construction activities. (weekly) • Trends in HIV/AIDS cases along the corridor, Special focus on material sites, road diversions routes. (monthly)

7	**Impacts of Deviation Routes** • Conflicts with residents and local motorists on the movement disruptions. • Potential physical damages to the local access roads. • Risks of safety to the residents (Especially children) and local motorists. • Dust emissions (Particulate • Matter) • Deviation routes to be identified by the Contractor in conjunction with the Resident Engineer	• Confine construction traffic to the construction road reserve to the extent possible. • If deviations are unavoidable, inform the road users and residents in advance seeking for cooperation. • Install appropriate signage and information on the construction road and deviations for reduced conflicts and accidents. • Maintain the deviation roads in good motorable conditions at all times for efficient traffic flow. • Deviation roads should be maintained damp for dust control at all times (the roads are within proximity of social and economic activities).	• Contractor(s) Resident Engineer • Throughout the Construction Period	• Minimal conflicts with the deviation road users and local residents. • Minimal disruptions and accidents. • Minimal additional land take or encroachment s into private land	No direct costs (integrated into the construction budgets).	• Public complaints • Dust levels, • Noise and vibration levels • Conflicts (accidents, congestion levels, conditions of the deviation roads).

8	**Social and Economic:** • Temporary disruption of business activities along the road corridor; • Social relationships and contacts during construction; • Temporary disruption to the access into and out of adjacent premises; • Displacement of settlements • Displacement of small-scale traders • Noise to residents living along the route. • Safety issues • Community requirements (health, education, sanitation, water, access roads, etc.)	• Enhance collaboration with communities on construction activities affecting them through established Community Liaison Committees based on Administrative line, • Provide deviations and slip accesses to the affected premises during construction throughout the corridor • The contractor to establish and manage environmental and social initiatives to oversee mitigation measures developed under this report. • Ensure effective signage and information to road users, especially on deviations and construction sections with obstacles. • Provide safe crossings and walkways during the construction works backed up with appropriate signage. • Provision for community improvement services	• Contractor(s) Resident Engineer • SPIU Property Owners, Traders and residents • Throughout the Construction Period	• An acceptable, sustainable and economically viable road with long term benefits to all. • Special attention along the high population sections of the project corridors.	• No direct costs	• Trends in socio-economic dynamics along the project road and its catchments. • Safety data and reports • Intervention projects and relevance to community needs.

9	**Construction Camps and Material Sourcing Sites:** • Land degradation; • Loss of land vegetation cover; • Surface hydrology changes; • Access roads' damages; • Degradation of water sources.	• Undertake EIA on all material sites with comprehensive management plans and construction camp sites with comprehensive restoration plan and obtain relevant License. • Obtain relevant approvals and licenses for all material sites. • Identify materials haulage routes and ensure maintenance of the roads, dust control and safety precautions.	• Contractor(s) • Throughout Construction Period	• Quarry sites • Borrow areas • Water abstraction points • Camp sites and operations. • Materials holding and batching yards sustainability	Contractor to do a BOQ for the assessments and rehabilitation.	• Implementation of parameters in the rehabilitation plans. • Valid Licenses materials sourcing (monthly) • Implementation of material abstraction and/or procurement agreements (monthly)
10	**Decommissioning of Construction Installations:** • Removal of construction camps. • Rehabilitation of material sites • Materials batching yards. • Construction equipment removals, • Cleanup-up at fueling yards • Removal of the road pavement	• Carry out decommissioning audits for the camp sites • Prepare rehabilitation and restoration plans for all materials sites used for the project (quarry sites, borrow pits and spoil dumping areas). • Rehabilitate all material sites and materials preparation yards in accordance with the approved rehabilitation plans.	• Contractor(s) Resident Engineer • SPIU • Closure of the project	• Rehabilitated material sites, cleared material preparation yards and camps.	• USD. 2500 for Decommissioning Audits studies and development of decommissioning plans.	• Usability of the affected camps' and material sites. (monthly)
	Post-Construction Phase					

1	**Environmental Pollution:** • Water quality degradation; • Air pollution from vehicular emissions; • Solid waste dumping (road litter); • Vehicular related scraps; • Residuals from road construction waste. • Sources: Surface runoff drains from the road	• Introduce clean-up responsibilities and charges for the road users to reduce road related environmental pollutants and visual nuisance; • Provide public waste receptacles at strategic locations along the route; • Drainage channels be kept clear at all times to prevent overloading with polluting materials. Drainage outfalls are to be acquired and kept free of encroachments	• SPIU • Local Governments • Traffic Police • Throughout the road use	• No direct costs are anticipated (Initiative part of the road administration)	• Compliance with established environmental standards including waste management regulations.	• Complaints on the utilization of the roads. (weekly) • Environmental quality trends. • Compliance with road transport regulations. (every 6 months)
2	**Safety and Security:** • Increased road accidents; • General security aspects; • Road safety issues. • Vandalism of safety installations • Sources: Increased traffic and driving style along the routes; Social interactions; inadequate road safety signage and facilities.	• Establish road safety strategies for road section complete with sensitization • Liaise with the Traffic Police Department on ways to ensure compliance with road regulations; • Ensure maintenance of signage, crossings, speed breaks and other facilities at all times; • Involve community leaders and administration in ensuring usage and sustainable utilization of provisions for public safety.	• Traffic Police Department • Local Government • Traffic Police • An all time compliance	• No direct costs are anticipated	• Effective information and signage to enhance safe movement and use of the road	• Complaints from the residents and business operators. (weekly) • Recorded cases and categories of road accidents. (weekly) • Replacement of signage continuously.

3	**Occupational Health** • Cases of HIV/AIDS and other social diseases, • Dust associated infections • Noise and vibrations;	• Enhance initiative for information and awareness as part of the road displays • Organize and implement HIV/AIDS Awareness • Introduce vegetation cover (limited tree and shrubs) along the road reserve as noise buffer to the immediate riparian premises.	• SPIU • National HIV/AIDS Control Agencies • Ministry of Health Services • Local Government • An all time initiative	• Respective Ministries • Annually	• Impact on the local communities and road users • Co-existence of the road with the riparian residents	• Level of Use of the facilities • Noise trends and progressive impacts
4	**Social Aspects:** • Increased population; • Higher traffic volumes; • Road safety issues.	• Collaboration with Land Use Planning for Local Government to influence collaborated land use zoning, • Consider collaborated emergency response facilities within proximity of the road. • Encourage riparian landowners to maintain road reserve sections in front of their premises, including beautification, drainage maintenance and vegetation clearance. This will enhance ownership	• SPIU • Local Governments • Local community small scale traders • All time	• No direct costs are anticipated	• Compatibility of the road with social and economic interests of the local business community, residents and other road users.	• Land use trends in time and along the route. • Population trends. • Complaints received from the local communities and the road users in general. (weekly)

5	**Economic Aspects** • Land use changes due to efficient transport; • Mixed economic activities (general trading, industrial, institutional, etc.) • Involve local youth on road maintenance to enhance income and ownership	• Collaborations for sustainable social and economic development; • Maintain truck parking yards on drainage, water supply, waste collection and lighting/security • Enhance income generation opportunities for the County Governments and the local communities	• SPIU • Local Government • Local community small scale traders			
6	**Road Maintenance:** • Blockage of drainage and hindrance to free storm water flow; • Accumulating roadside litter collection; • Effects on road safety from inadequate facilities and signage maintenance; • Encroachment into the road reserve; • Illegal roadside land development practices.	• Establish modalities for the involvement of the residents in the maintenance of the road; • Install and maintain appropriate road signs; • Collaborate on the control of roadside billboards that are a safety risks; • Maintain trash bins at strategic locations along the roads including bus stops, foot bridge landings, under pass exits.	• SPIU • Local Governments • All time	• USD. 2000 for the initial maintenance period. • Other costs within the road maintenance budgetary allocations.	• Maintained high level quality of road surface, installations and components. • Focus on the entire road corridor.	

7	**Decommissioning Phase:** • Any decommissioning of the road section or its components should be preceded by preparation of removal plan.	• Undertake a decommissioning audit of part, sections or entire road and establish appropriate measures for prevention of environmental pollution and public safety risks. • Apply established decommissioning plan for the removal of part of all sections of the road.	• SPIU • Contractor • REMA for surveillance	• No direct cost estimates at this stage.	• None or minimum impacts to the environment and social well being.	

D. Huye City

No.	Anticipated Linkages and Sources	Management Actions and Target Areas	Responsibility and imeframe	Targets to Achieve	Cost Estimates (USD)	Monitoring Parameters
	Construction Phase					
1	**Degradation of water sources:** • Construction water abstraction practices; • There are no surface water sources along the corridor • Abstraction of construction water risks other dependants of the same sources.	• Obtain water abstraction permit from RNRA/IWRM Department (sources not yet established) • Ensure the public at target water sources gets priority on access to water for domestic use	• Contractor(s) Resident Engineer	• Compliance with Water Law • Minimal social conflicts on water sources	Approx. USD. 9,000 for the whole project period.	• Water quality (table 29) (monthly) • Social conflicts (monthly)

2	**Partiall demage to 5 houses and 1 fence**	• Compensation to the affected households	• Huye District	• All affected properties compensated	Approx **125,000** USD.	• Affected h/h
3.	**Air quality due to excavations, machinery operations, construction vehicles and trucks, materials extraction, road use:** • Dust and particulate matter; • Visual disruption; • Surface depositions (buildings and commodities); • Public health problems • Material sourcing sites	• Ensure deviations and dry materials are kept damp at all times; • Materials extraction under damp conditions • Establish information flow process to the communities on dusty conditions. • Material delivery trucks to comply with established emission standards • Undertake sampling for air quality in pre-identified locations every 2 months for monitoring purposes.	• Contractor(s) Resident Engineer • During Construction Period	• Low visible particulate matter in the air through the road corridor and material sites.	Approx. USD. 1100 for road watering.	• Construction related dust level within the project; (monthly) • Exhaust fumes from construction machineries. (every 6 months) • Application of air emissions guidelines. (every 6 months) • This is a Project wide situation.
4.	**Vegetation Cover Degradation:** • Very minimal loss of vegetation cover and trees along drainage systems and material sites, • No agricultural crop cover	• Plan for landscaping and beatification for the project corridor upon project completion (all sections of the road).	• Contractor(s) Resident Engineer • Adjacent Land Owners	• Vegetation cover along the road reserve that is also safe to the road users. • Landscaping and grassing on road reserves	USD. 2000 for landscaping, grassing and tree planting	• Greenery along the road corridors should be a priority. (monthly) • Landscape outlook

4	**Waste Management:** • Construction waste disposal (spoil, dry vegetation, concrete residues, asphalt concrete residues, etc.) • General Wastes (garbage, papers and cartons, plastics and polythene, wood and scrap metals); • Special Wastes (oil, grease and associated materials) • Liquid effluents • Aerial emissions, • Waste asphalt concrete • Sources include excavation areas, batching plant yards and workshops, construction equipment, paved roads	• Develop Standard Operating Procedures (SOPs) and schedules for the project works, • The Contractor(s) to develop waste management plans and provide appropriate facilities for their operations • Prepare signed agreements with landowners where spoil earth is to be disposed, • The spoil disposal sites should be approved by REMA before dumping commence • Consider re-use of used/waste asphalt concrete for public access roads in the neighboring area.	• Contractor(s) Waste handling Contractor(s)	• Minimal disruption to physical and biological environmental quality throughout the route. • Focus on entire road corridor. • Construction waste holding areas.	USD. 2500	• Pathways for materials from camp sites, service yards and material preparation yards. (monthly) • Destinations for spoil disposal (monthly) • Utilization of asphalt concrete materials and other recyclable wastes (monthly)
5	**Land Use:** • Land use changes along road corridor is inevitable • Material sites land use may change. • Land values appreciation • Source: Disruption by construction activities; social and economic benefits associated with the road, Relocation of commercial and institutional premises to the road corridor	• Monitor emerging land use trends along the road during construction in liaison with planning department, • Land use planning and zoning to commence during the construction phase and enforced immediately • MININFRA would encourage the local authorities on the provisions of social amenities along the corridor in light of changing social and economic development.	• SPIU • Local Government • Throughout the Construction Period	• Planned social and economic activities along the road corridor • Clear land use zones • All road sections.	No direct costs are anticipated on this item, it is an administrative aspect.	• Land use trends along the project corridors, • Acceptability of land use zoning

6	**Health and Safety** • Personal injuries (construction employees and residents); • Social ailments including Communicable diseases (including HIV/AIDS); • Potential accidents at material borrow areas and quarries; • Environmental diseases • (Bronchial and eye problems). • Accidents involving construction trucks. • Sources: Construction dust and emissions; Interaction of construction workers with communities; Pollution of water from construction activities; Material sites; Traffic deviations; Construction camp sites.	• Provide safety programmes for material sites and working areas including emergency response mechanisms; • Safety provisions (signage and lighting) for the work areas along the road corridor; • Appropriate information and warning signs shall be provided along all the deviation roads for enhanced safety; • Awareness, prevention and training on HIV/AIDS and other social diseases; • Provide wellness centers at the construction camp sites • Adoption of pre-identified health centers within the road corridor • Selected sites for parking yards; • Provide group medical insurance and personal Protective Equipments (PPEs) for the construction workers and ensure application.	• Contractor(s) Resident Engineer • SPIU to provide guidelines and engage HIV/AIDS Consultants • Throughout the construction period	• Information flow and dissemination on health and safety. • Specific response to HIV/AIDS issues. • Safety provisions and enforcement mechanisms	• Approx. USD. 2000 on HIV/AIDS awareness, prevention and training • UDS. 1800 for wellness centers	• Complaints on health safety aspects related to the road construction activities. (weekly) • Trends in HIV/AIDS cases along the corridor, Special focus on material sites, road diversions routes. (monthly)

7	**Impacts of Deviation Routes** • Conflicts with residents and local motorists on the movement disruptions. • Potential physical damages to the local access roads. • Risks of safety to the residents • (Especially children) and local motorists. • Dust emissions (Particulate • Matter) • Deviation routes to be identified by the Contractor in conjunction with the Resident Engineer	• Confine construction traffic to the construction road reserve to the extent possible (there will be 40M corridor available). • If deviations are unavoidable, inform the road users and residents in advance seeking for cooperation. • Install appropriate signage and information (including reflective barriers and signs) on the construction road and deviations for reduced conflicts and accidents. • Maintain the deviation roads in good motorable conditions at all times for efficient traffic flow. • Deviation roads should be maintained damp for dust control at all times (the roads are within proximity of social and economic activities).	• Contractor(s) Resident Engineer • Throughout the Construction Period	• Minimal conflicts with the deviation road users and local residents. • Minimal disruptions and accidents. • Minimal additional land take or encroachments into private land	No direct costs (integrated into the construction budgets).	• Public complaints (weekly) • Dust levels, (monthly) • Noise and vibration levels (monthly) • Conflicts (accidents, congestion levels, conditions of the deviation roads). (weekly)

8	**Social and Economic:** • Temporary disruption of business activities along the road corridor; • Social relationships and contacts during construction; • Temporary disruption to the access into and out of adjacent premises; • Displacement of small-scale traders • Noise to residents living along the route. • Safety issues • Community requirements (health, education, sanitation, water, access roads, etc.)	• Enhance collaboration with communities on construction activities affecting them through established Community Liaison Committees based on Administrative line, • Provide deviations and slip accesses to the affected premises during construction throughout the corridor • The contractor to establish and manage environmental and social initiatives to oversee mitigation measures developed under this report. • Ensure effective signage and information to road users, especially on deviations and construction sections with obstacles. • Provide safe crossings and walkways during the construction works backed up with appropriate signage. • Provision for community improvement services under social responsibility including health, education, water supply, sanitation, access roads, etc.	• Contractor(s) Resident Engineer • SPIU Property Owners, Traders and residents • Throughout the Construction Period	• An acceptable, sustainable and economically viable road with long term benefits to all. • Special attention along the high population sections of the project corridors.	• No direct costs	• Trends in socio-economic dynamics along the project road and its catchments. • Safety data and reports (monthly) • Intervention projects and relevance to community needs.

9	**Construction Camps and Material Sourcing Sites (borrow pits, quarries and dumping sites for soil): To assess the impact on the following,** • Land degradation; • Loss of land vegetation cover; • Surface hydrology changes; • Access roads' damages; • Degradation of water sources.	• Undertake EIA on all material sites with comprehensive management plans and construction camp sites with comprehensive restoration plan and obtain relevant License. • Obtain relevant approvals and licenses for all material and construction camp sites. • Prepare comprehensive material procurement agreements for the materials sites with landowners; • Identify materials haulage routes and ensure maintenance of the roads, dust control and safety precautions.	• Contractor(s) • Throughout Construction Period	• Quarry sites • Borrow areas • Water abstraction points • Camp sites and operations. • Materials holding and batching yards sustainability	Contractor to do a BOQ for the assessments and rehabilitation.	• Implementation of parameters in the rehabilitation plans. • Valid Licenses materials sourcing (monthly) • Implementation of material abstraction and/or procurement agreements (monthly)
10	**Decommissioning of Construction Installations:** • Removal of construction camps. • Rehabilitation of material sites • Materials batching yards. • Construction equipment removals, • Cleanup-up at fueling yards • Removal of the road pavement	• Carry out decommissioning audits for the camp sites • Prepare rehabilitation and restoration plans for all materials sites used for the project (quarry sites, borrow pits and spoil dumping areas). • Rehabilitate all material sites and materials preparation yards in accordance with the approved rehabilitation plans.	• Contractor(s) Resident Engineer • SPIU • Closure of the project	• Rehabilitated material sites, cleared material preparation yards and camps.	• USD. 2500 for Decommissioning Audits studies and development of decommissioning plans.	• Usability of the affected camps' and material sites. (monthly)
	Post-Construction Phase					

1	**Environmental Pollution:** • Water quality degradation; • Air pollution from vehicular emissions; • Solid waste dumping (road litter); • Vehicular related scraps; • Residuals from road construction waste. • Sources: Surface runoff drains from the road; Oils spills on road surface especially at accidents scenes; Road litter.	• Introduce clean-up responsibilities and charges for the road users (e.g. spills from accident vehicle owners) to reduce road related environmental pollutants and visual nuisance; • Provide public waste receptacles at strategic locations along the route; • Drainage channels be kept clear at all times to prevent overloading with polluting materials. Drainage outfalls are to be acquired and kept free of encroachments	• SPIU • Local Governments • Traffic Police • Throughout the road use	• No direct costs are anticipated (Initiative part of the road administration)	• Compliance with established environmental standards including waste management regulations.	• Complaints on the utilization of the roads.(weekly) • Environmental quality trends. • Compliance with road transport regulations. (every 6 months)
2	**Safety and Security:** • Increased road accidents; • General security aspects; • Road safety issues. • Vandalism of safety installations • Sources: Increased traffic and driving style along the routes; Social interactions; inadequate road safety signage and facilities.	• Establish road safety strategies for road section complete with sensitization programmes; • Liaise with the Traffic Police Department on ways to ensure compliance with road regulations; • Ensure maintenance of signage, crossings, speed breaks and other facilities at all times; • Involve community leaders and administration in ensuring usage and sustainable utilization of provisions for public safety.	• Traffic Police Department • Local Government • Traffic Police • An all time compliance	• No direct costs are anticipated	• Effective information and signage to enhance safe movement and use of the road	• Complaints from the residents and business operators. (weekly) • Recorded cases and categories of road accidents. (monthly) • Replacement of signage continuously.

3	**Occupational Health** • Cases of HIV/AIDS and other social diseases, • Dust associated infections • Noise and vibrations;	• Enhance initiative for information and awareness as part of the road displays • Organize and implement HIV/AIDS Awareness Introduce vegetation cover along the road reserve as noise buffer to the immediate riparian premises.	• SPIU • Ministry of Health • Local Government • An all time initiative	• Respective Ministries • Annually	• Impact on the local communities and road users • Co-existence of the road with the riparian residents	• Level of Use of the facilities • Noise trends and progressive impacts (monthly)
4	**Social Aspects:** • Increased population; • Higher traffic volumes; • Road safety issues.	• Collaboration with Land Use Planning for Local Government to influence collaborated land use zoning, • Consider collaborated emergency response facilities within proximity of the road. • Encourage riparian landowners to maintain road reserve sections in front of their premises, including beautification, drainage maintenance and vegetation clearance.	• SPIU • Local Governments • Local community small scale traders • All time	• No direct costs are anticipated	• Compatibility of the road with social and economic interests of the local business community, residents and other road users.	• Land use trends in time and along the route. • Population trends. • Complaints received from the local communities and the road users in general. (weekly)

5	**Economic Aspects** • Land use changes due to efficient transport; • Mixed economic activities (general trading, industrial, institutional, etc.) • Involve local youth on road maintenance to enhance income and ownership	• Collaborations for sustainable social and economic development; • Maintain truck parking yards on drainage, water supply, waste collection and lighting/security • Enhance income generation opportunities for the County Governments and the local communities	• SPIU • Local Government • Local community small scale traders			
6	**Road Maintenance:** • Blockage of drainage and hindrance to free storm water flow; • Accumulating roadside litter collection; • Effects on road safety from inadequate facilities and signage maintenance; • Encroachment into the road reserve; • Illegal roadside land development practices.	• Establish modalities for the involvement of the residents in the maintenance of the road; • Install and maintain appropriate road signs; • Collaborate on the control of roadside billboards that are a safety risks; • Maintain trash bins at strategic locations along the roads including bus stops, foot bridge landings, under pass exits.	• SPIU • Local Governments • All time	• USD. 2000 for the initial maintenance period. • Other costs within the road maintenance budgetary allocations.	• Maintained high level quality of road surface, installations and components. • Focus on the entire road corridor.	

7	**Decommissioning Phase:** • Any decommissioning of the road section or its components should be preceded by preparation of removal plan.	• Undertake a decommissioning audit of part, sections or entire road and establish appropriate measures for prevention of environmental pollution and public safety risks. • Apply established decommissioning plan for the removal of part of all sections of the road.	• SPIU • Contractor • REMA for surveillance	• No direct cost estimates at this stage.	• None or minimum impacts to the environment and social well being.	

E. Rusizi City

No.	Anticipated Linkages and Sources	Management Actions and Target Areas	Responsibility and Timeframe	Targets to Achieve	Cost Estimates (USD)	Monitoring Parameters
	Construction Phase					
1	**Degradation of water sources:** • Construction water abstraction practices; • There are no surface water sources along the corridor • Abstraction of construction water risks other dependants of the same sources.	• Obtain water abstraction permit from RNRA/IWRM Department (sources not yet established) • Ensure the public at target water sources gets priority on access to water for domestic use	• Contractor(s) Resident Engineer	• Compliance with Water Law • Minimal social conflicts on water sources	Approx. USD. 1500 for the whole project period.	• Water quality (table 29) (monthly) • Social conflicts (monthly)
2.	**Air quality due to excavations, machinery operations, construction vehicles and trucks, materials extraction, road use:** • Dust and particulate matter; • Visual disruption; • Surface depositions (buildings and commodities); • Public health problems • Material sourcing sites	• Ensure deviations and dry materials are kept damp at all times; • Materials extraction under damp conditions • Establish information flow process to the communities on dusty conditions. • Material delivery trucks to comply with established emission standards • Undertake sampling for air quality in pre-identified locations every 2 months for monitoring purposes.	• Contractor(s) Resident Engineer • During Construction Period	• Low visible particulate matter in the air through the road corridor and material sites.	Approx. USD. 10,000 for road watering.	• Construction related dust level within the project; (monthly) • Exhaust fumes from construction machineries. (every 6 months) • Application of air emissions guidelines. (every 6 months) • This is a Project wide situation.

3	**Vegetation Cover Degradation:** • Very minimal loss of vegetation cover and trees along drainage systems and material sites, • No agricultural crop cover	• Plan for landscaping and beatification for the project corridor upon project completion (all sections of the road).	• Contractor(s) Resident Engineer • Adjacent Land Owners	• Vegetation cover along the road reserve that is also safe to the road users. • Landscaping and grassing on road reserves	USD. 6000 for landscaping, grassing and tree planting	• Greenery along the road corridors should be a priority. (monthly) • Landscape outlook
4	**Waste Management:** • Construction waste disposal (spoil, dry vegetation, concrete residues, asphalt concrete residues, etc.) • General Wastes (garbage, papers and cartons, plastics and polythene, wood and scrap metals); • Special Wastes Liquid effluents • Aerial emissions, • Waste asphalt concrete • Sources include excavation areas, camp sites, batching plant yards and workshops, construction equipment, paved roads	• Develop Standard Operating Procedures (SOPs) and schedules for the project works, • The Contractor(s) to develop waste management plans and provide appropriate facilities for their operations • Prepare signed agreements with landowners where spoil earth is to be disposed, • The spoil disposal sites should be approved by REMA before dumping commence • Consider re-use of used/waste asphalt concrete for public access roads in the neighboring area.	• Contractor(s) Waste handling Contractor(s)	• Minimal disruption to physical and biological environmental quality throughout the route. • Focus on entire road corridor. • Construction waste holding areas.	USD. 5,000	• Pathways for materials from camp sites, service yards and material preparation yards. • Destinations for spoil disposal • Utilization of asphalt concrete materials and other recyclable wastes (monthly)

5	**Land Use:** • Land use changes along road corridor is inevitable • Material sites land use may change. • Land values appreciation • Source: Disruption by construction activities; social and economic benefits associated with the road, Relocation of commercial and institutional premises to the road corridor	• Monitor emerging land use trends along the road during construction in liaison with planning department, • Land use planning and zoning to commence during the construction phase and enforced immediately • MININFRA would encourage the local authorities on the provisions of social amenities along the corridor in light of changing social and economic development.	• SPIU • Local Government • Throughout the Construction Period	• Planned social and economic activities along the road corridor • Clear land use zones • All road sections.	No direct costs are anticipated on this item, it is an administrative aspect.	• Land use trends along the project corridors, • Acceptability of land use zoning
6	**Health and Safety** • Personal injuries (construction employees and residents); • Social ailments including Communicable diseases • Potential accidents at material borrow areas and quarries; • Environmental diseases • (Bronchial and eye problems). • Accidents involving construction trucks. • Sources: Construction activities.	• Provide safety programmes for material sites and working areas including emergency response mechanisms; • Safety provisions for the work areas along the road corridor; • Appropriate information and warning signs shall be provided along all the deviation roads for enhanced safety; • Awareness, prevention and training on social diseases; • Provide PPEs for the construction workers and ensure application.	• Contractor(s) Resident Engineer • SPIU to provide guidelines and engage HIV/AIDS Consultants • Throughout the constructio n period	• Information flow and disseminatio n on health and safety. • Specific response to HIV/AIDS issues. • Safety provisions and enforcement mechanisms	• Approx. USD. 2000 on HIV/AIDS awareness , prevention and training • UDS. 1800 for wellness centers	• Complaints on health safety aspects related to the road construction activities. (weekly) • Trends in HIV/AIDS cases along the corridor, Special focus on material sites, road diversions routes. (monthly)

7	**Impacts of Deviation Routes** • Conflicts with residents and local motorists on the movement disruptions. • Potential physical damages to the local access roads. • Risks of safety to the residents • (Especially children) and local motorists. • Dust emissions (Particulate • Matter) • Deviation routes to be identified by the Contractor	• Confine construction traffic to the construction road reserve to the extent possible. • If deviations are unavoidable, inform the road users and residents in advance seeking for cooperation. • Install appropriate signage and information on the construction road and deviations for reduced conflicts and accidents. • Maintain the deviation roads in good motorable conditions at all times for efficient traffic flow. • Deviation roads should be maintained damp for dust control at all times.	• Contractor Resident Engineer • Throughout the Constructio n Period	• Minimal conflicts with the deviation road users and local residents. • Minimal disruptions and accidents. • Minimal additional land take or encroachme nts into private land	No direct costs (integrated into the construction budgets).	• Public complaints (weekly) • Dust levels, (monthly) • Noise and vibration levels (monthly) • Conflicts (accidents, congestion levels, conditions of the deviation roads). (weekly)

8	**Social and Economic:** • Temporary disruption of business activities along the road corridor; • Social relationships and contacts during construction; • Temporary disruption to the access into and out of adjacent premises; • Displacement of settlements • Displacement of small-scale traders • Noise to residents living along the route. • Safety issues • Community requirements (health, education, sanitation, water, access roads, etc.)	• Enhance collaboration with communities on construction activities affecting them through established Community Liaison Committees based on Administrative line, • Provide deviations and slip accesses to the affected premises during construction throughout the corridor • The contractor to establish and manage environmental and social initiatives to oversee mitigation measures developed under this report. • Ensure effective signage and information to road users, especially on deviations and construction sections with obstacles. • Provide safe crossings and walkways during the construction works backed up with appropriate signage. • Provision for community improvement services under social responsibility including health, education, water supply, sanitation, access roads, etc.	• Contractor(s) Resident Engineer • MININFRA – CSR • Property Owners, Traders and residents • Throughout the Construction Period	• An acceptable, sustainable and economically viable road with long term benefits to all. • Special attention along the high population sections of the project corridors.	• No direct costs	• Trends in socio-economic dynamics along the project road and its catchments. • Safety data and reports (monthly) • Intervention projects and relevance to community needs.

9	**Construction Camps and Material Sourcing Sites:** • Land degradation; • Loss of land vegetation cover; • Surface hydrology changes; • Access roads' damages; • Degradation of water sources.	• Undertake EIA on all material sites with comprehensive management plans and construction camp sites with comprehensive restoration plan and obtain relevant License. • Obtain relevant approvals and licenses for all material and construction camp sites. • Identify materials haulage routes and ensure maintenance of the roads, dust control and safety precautions.	• Contractor • Throughout Constructio n Period	• Quarry sites • Borrow areas • Water abstraction points • Camp sites and operations. • Materials holding and batching yards sustainability	Contractor to do a BOQ for the assessments and rehabilitation.	• Implementatio n of parameters in the rehabilitation plans. • Valid Licenses materials sourcing (monthly) • Implementatio n of material abstraction and/or procurement agreements (monthly)
10	**Decommissioning of Construction Installations:** • Removal of construction camps. • Rehabilitation of material sites • Materials batching yards. • Construction equipment removals, • Cleanup-up at fueling yards • Removal of the road pavement	• Carry out decommissioning audits for the camp sites • Prepare rehabilitation and restoration plans for all materials sites used for the project (quarry sites, borrow pits and spoil dumping areas). • Rehabilitate all material sites and materials preparation yards in accordance with the approved rehabilitation plans.	• Contractor Resident Engineer • SPIU • Closure of the project	• Rehabilitated material sites, cleared material preparation yards and camps.	• USD. 2500 for Decommis sioning Audits studies and developme nt of decommis sioning plans.	• Usability of the affected camps' and material sites. (monthly)
	Post-Construction Phase					

1	**Environmental Pollution:** • Water quality degradation; • Air pollution from vehicular emissions; • Solid waste dumping (road litter); • Vehicular related scraps; • Residuals from road construction waste. • Sources: Surface runoff drains from the road.	• Introduce clean-up responsibilities and charges for the road users to reduce road related environmental pollutants and visual nuisance; • Provide public waste receptacles at strategic locations along the route; • Drainage channels be kept clear at all times to prevent overloading with polluting materials. Drainage outfalls are to be acquired and kept free of encroachments	• SPIU • Local Governments • Traffic Police • Throughout the road use	• No direct costs are anticipated (Initiative part of the road administration)	• Compliance with established environmental standards including waste management regulations.	• Complaints on the utilization of the roads. (weekly) • Environmental quality trends. • Compliance with road transport regulations. (every 6 months)
2	**Safety and Security:** • Increased road accidents; • General security aspects; • Road safety issues. • Vandalism of safety installations • Sources: Increased traffic and driving style along the routes; Social interactions; inadequate road safety signage and facilities.	• Establish road safety strategies for road section complete with sensitization programmes; • Liaise with the Traffic Police Department on ways to ensure compliance with road regulations; • Ensure maintenance of signage, crossings, speed breaks and other facilities at all times; • Involve community leaders and administration in ensuring usage and sustainable utilization of provisions for public safety.	• Traffic Police Department • Local Government • Traffic Police • An all time compliance	• No direct costs are anticipated	• Effective information and signage to enhance safe movement and use of the road	• Complaints from the residents and business operators. (weekly) • Recorded cases and categories of road accidents. (monthly) • Replacement of signage continuously.

3	**Occupational Health** • Cases of HIV/AIDS and other social diseases, • Dust associated infections • Noise and vibrations;	• Enhance initiative for information and awareness as part of the road displays • Organize and implement HIV/AIDS Awareness programmes • Introduce vegetation cover along the road reserve as noise buffer to the immediate riparian premises.	• SPIU • Ministry of Health Local Government • An all time initiative	• Respective Ministries • Annually	• Impact on the local communities and road users • Co-existence of the road with the riparian residents	• Level of Use of the facilities • Noise trends and progressive impacts (monthly)
4	**Social Aspects:** • Increased population; • Higher traffic volumes; • Road safety issues.	• Collaboration with Land Use Planning for Local Government to influence collaborated land use zoning, • Consider collaborated emergency response facilities within proximity of the road. • Encourage riparian landowners to maintain road reserve sections in front of their premises, including beautification, drainage maintenance and vegetation clearance.	• SPIU • Local Governments • Local community small scale traders • All time	• No direct costs are anticipated	• Compatibility of the road with social and economic interests of the local business community, residents and other road users.	• Land use trends in time and along the route. • Population trends. • Complaints received from the local communities and the road users in general. (weekly)

5	**Economic Aspects** • Land use changes due to efficient transport; • Mixed economic activities (general trading, industrial, institutional, etc.) • Involve local youth on road maintenance to enhance income and ownership	• Collaborations for sustainable social and economic development; • Maintain truck parking yards on drainage, water supply, waste collection and lighting/security • Enhance income generation opportunities for the County Governments and the local communities	• SPIU • Local Governmen t • Local community small scale traders			
6	**Road Maintenance:** • Blockage of drainage and hindrance to free storm water flow; • Accumulating roadside litter collection; • Effects on road safety from inadequate facilities and signage maintenance; • Encroachment into the road reserve; • Illegal roadside land development practices.	• Establish modalities for the involvement of the residents in the maintenance of the road; • Install and maintain appropriate road signs; • Collaborate on the control of roadside billboards that are a safety risks; • Maintain trash bins at strategic locations along the roads including bus stops, foot bridge landings, under pass exits.	• SPIU • Local Governmen ts • All time	• USD. 2000 for the initial maintenance period. • Other costs within the road maintenance budgetary allocations.	• Maintained high level quality of road surface, installation s and componen ts. • Focus on the entire road corridor.	
7	**Decommissioning Phase:** • Any decommissioning of the road section or its components should be preceded by preparation of removal plan.	• Undertake a decommissioning audit of part, sections or entire road and establish appropriate measures for prevention of environmental pollution and public safety risks. • Apply established decommissioning plan for the removal of part of all sections of the road.	• SPIU • Contractor • REMA for surveillance	• No direct cost estimates at this stage.	• None or minimum impacts to the environme nt and social well being.	

F. Musanze City

No.	Anticipated Linkages and Sources	Management Actions and Target Areas	Responsibility and Timeframe	Targets to Achieve	Cost Estimates (USD)	Monitoring Parameters
	Construction Phase					
1	**Degradation of water sources:** • Construction water abstraction practices; • There are no surface water sources along the corridor • Abstraction of construction water risks other dependants of the same sources.	• Obtain water abstraction permit from RNRA/IWRM Department (sources not yet established) • Ensure the public at target water sources gets priority on access to water for domestic use	• Contractor(s) Resident Engineer	• Compliance with Water Law • Minimal social conflicts on water sources	Approx. USD. 1500 for the whole project period.	• Water quality (table 29) (monthly) • Social conflicts (monthly)

2.	**Air quality due to excavations, machinery operations, construction vehicles and trucks, materials extraction, road use:** • Dust and particulate matter; • Visual disruption; • Surface depositions (buildings and commodities); • Public health problems • Material sourcing sites	• Ensure deviations and dry materials are kept damp at all times; • Materials extraction under damp conditions • Establish information flow process to the communities on dusty conditions. • Material delivery trucks to comply with established emission standards • Undertake sampling for air quality in pre-identified locations every 2 months.	• Contractor(s) Resident Engineer • During Construction Period	• Low visible particulate matter in the air through the road corridor and material sites.	Approx. USD. 1100 for road watering.	• Construction related dust level within the project; (monthly) • Exhaust fumes from construction machineries. (every 6 months) • Application of air emissions guidelines. (every 6 months) • This is a Project wide situation
3	**Vegetation Cover Degradation:** • Very minimal loss of vegetation cover and trees along drainage systems and material sites, • No agricultural crop cover	• Plan for landscaping and beatification for the project corridor upon project completion (all sections of the road).	• Contractor Resident Engineer • Adjacent Land Owners	• Vegetation cover along the road reserve that is also safe to the road users. • Landscaping and grassing on road reserves	USD. 2000 for landscaping, grassing and tree planting	• Greenery along the road corridors should be a priority. (monthly) • Landscape outlook

4	**Waste Management:** • Construction waste disposal (spoil, dry vegetation, concrete residues, asphalt concrete residues, etc.) • General Wastes (garbage, papers and cartons, plastics and scrap metals); • Special Wastes (oil, grease and associated materials) • Liquid effluents • Aerial emissions, • Waste asphalt concrete • Sources include excavation areas, camp sites, batching plant yards and workshops, construction equipment, paved roads	• Develop Standard Operating Procedures (SOPs) and schedules for the project works, • The Contractor(s) to develop waste management plans and provide appropriate facilities for their operations • Prepare signed agreements with landowners where spoil earth is to be disposed, • The spoil disposal sites should be approved by REMA before dumping commence • Consider re-use of used/waste asphalt concrete for public access roads in the neighboring area.	• Contractor Waste handling Contractor	• Minimal disruption to physical and biological environmental quality throughout the route. • Focus on entire road corridor. • Construction waste holding areas.	USD. 2500	• Pathways for materials from camp sites, service yards and material preparation yards. • Destinations for spoil disposal (monthly) • Utilization of asphalt concrete materials and other recyclable wastes (monthly)
5	**Land Use:** • Land use changes along road corridor is inevitable • Material sites land use may change. • Land values appreciation • Source: Disruption by construction activities; social and economic benefits associated with the road, Relocation of commercial and institutional premises to the road corridor	• Monitor emerging land use trends along the road during construction in liaison with planning department, • Land use planning and zoning to commence during the construction phase and enforced immediately • MININFRA would encourage the local authorities on the provisions of social amenities along the corridor in light of changing social and economic development.	• SPIU • Local Governmen t • Throughout the Constructio n Period	• Planned social and economic activities along the road corridor • Clear land use zones • All road sections.	No direct costs are anticipated on this item, it is an administrative aspect.	• Land use trends along the project corridors, • Acceptability of land use zoning

6	**Health and Safety** • Personal injuries (construction employees and residents); • Social ailments including Communicable diseases (including HIV/AIDS); • Potential accidents at material borrow areas and quarries; • Environmental diseases • (Bronchial and eye problems). • Accidents involving construction trucks. • Sources: Construction activities	• Provide safety programmes for material sites and working areas including emergency response mechanisms; • Safety provisions for the work areas along the road corridor; • Appropriate information and warning signs shall be provided along all the deviation roads for enhanced safety; • Awareness, prevention and training on social diseases; • Provide PPEs for the construction workers and ensure application.	• Contractor (s) Resident Engineer • SPIU to provide guidelines and engage HIV/AIDS Consultants • Throughout the construction period	• Information flow and dissemination on health and safety. • Specific response to HIV/AIDS issues. • Safety provisions and enforcement mechanisms	• Approx. USD. 2000 on HIV/AIDS awareness, prevention and training • UDS. 1800 for wellness centers	• Complaints on health safety aspects related to the road construction activities. (weekly) • Trends in HIV/AIDS cases along the corridor, Special focus on material sites, road diversions routes. (monthly)

7	**Impacts of Deviation Routes** • Conflicts with residents and local motorists on the movement disruptions. • Potential physical damages to the local access roads. • Risks of safety to the residents • (Especially children) and local motorists. • Dust emissions (Particulate • Matter) • Deviation routes to be identified by the Contractor in conjunction with the Resident Engineer	• Confine construction traffic to the construction road reserve to the extent possible • If deviations are unavoidable, inform the road users and residents in advance seeking for cooperation. • Install appropriate signage and information on the construction road and deviations for reduced conflicts and accidents. • Maintain the deviation roads in good motorable conditions at all times for efficient traffic flow. • Deviation roads should be maintained damp for dust control at all times.	• Contractor (s) Resident Engineer • Throughout the Construction Period	• Minimal conflicts with the deviation road users and local residents. • Minimal disruptions and accidents. • Minimal additional land take or encroachments into private land	No direct costs (integrated into the construction budgets).	• Public complaints (weekly) • Dust levels, (monthly) • Noise and vibration levels (monthly) • Conflicts (accidents, congestion levels, conditions of the deviation roads). (monthly)

8	**Social and Economic:** • Temporary disruption of business activities along the road corridor; • Social relationships and contacts during construction; • Temporary disruption to the access into and out of adjacent premises; • Displacement of settlements • Displacement of small-scale traders • Noise to residents living along the route. • Safety issues • Community requirements (health, education, sanitation, water, access roads, etc.)	• Enhance collaboration with communities on activities affecting them through established Community Liaison Committees based on Administrative line, • Provide deviations and slip accesses to the affected premises during construction throughout the corridor • Follow-up on the implementation of RAP. • The contractor to establish and manage environmental and social initiatives to oversee mitigation measures developed. • Ensure effective signage and information to road users. • Provide safe crossings and walkways. • Provision for community improvement services.	• Contractor (s) Resident Engineer • SPIU • Property Owners, Traders and residents • Throughout the Construction Period	• Full implementation of RAP • An acceptable, sustainable and economically viable road with long term benefits to all. • Special attention along the high population sections of the project corridors.	• No direct costs	• Trends in socio-economic dynamics along the project road and its catchments. • Safety data and reports • Intervention projects and relevance to community needs.

9	**Involuntary Resettlement:** • Encroachments within roads • Land acquisitions • Relocation of small scale traders. • Displacement of settlements • A Resettlement Action Plan Framework has been developed for the project	• All the PAPs should be identified and compensated before the project commences, • Consider monetary options for livelihood restoration of the PAPs on the face of shortage of free land space in the project area. • Avoid disruption of public institutions. • Ensure the design of the road is confined within the reserve corridor that is already available.	• SPIU • Local governme nt • Througho ut the Constructi on Period	Compensation of all PAPs before commencement of the works	Actual costs as per the RAP report.	• Settling PAPs entitlements appropriately • Effective relocation of small scale traders and restoration of their livelihoods, • Grievances and efficiency of redress. (once upon completion of the ARAP process)
10	**Construction Camps and Material Sourcing Sites:** • Land degradation; • Loss of land vegetation cover; • Surface hydrology changes; • Access roads' damages; • Degradation of water sources.	• Undertake EIA on all material sites with comprehensive management plans and construction camp sites with comprehensive restoration plan and obtain relevant License. • Obtain relevant approvals and licenses for all material and construction camp sites. • Prepare comprehensive material procurement agreements for the materials sites with landowners; • Identify materials haulage routes and ensure maintenance of the roads, dust control and safety precautions.	• Contractor (s) • Througho ut Constructi on Period	• Quarry sites • Borrow areas • Water abstraction points • Camp sites and operations. • Materials holding and batching yards sustainability	Contractor to do a BOQ for the assessments and rehabilitation.	• Implementation of parameters in the rehabilitation plans. • Valid Licenses materials sourcing (monthly) • Implementation of material abstraction and/or procurement agreements (monthly)

11	**Decommissioning of Construction Installations:** • Removal of construction camps. • Rehabilitation of material sites • Materials batching yards. • Construction equipment removals, • Cleanup-up at fueling yards • Removal of the road pavement	• Carry out decommissioning audits for the camp sites • Prepare rehabilitation and restoration plans for all materials sites used for the project (quarry sites, borrow pits and spoil dumping areas). • Rehabilitate all material sites and materials preparation yards in accordance with the approved rehabilitation plans.	• Contractor (s) Resident Engineer • SPIU • Closure of the project	• Rehabilitated material sites, cleared material preparation yards and camps.	• USD. 2500 for Decommissioning Audits studies and development of decommissioning plans.	• Usability of the affected camps' and material sites. (monthly)
	Post-Construction Phase					
1	**Environmental Pollution:** • Water quality degradation; • Air pollution from vehicular emissions; • Solid waste dumping; • Vehicular related scraps; • Residuals from road construction waste. • Sources: Surface runoff drains from the road; Road litter, poorly maintained vehicles-higher related emissions.	• Introduce clean-up responsibilities and charges for the road users to reduce road related environmental pollutants and visual nuisance; • Provide public waste receptacles at strategic locations along the route; • Drainage channels be kept clear at all times to prevent overloading with polluting materials. Drainage outfalls are to be acquired and kept free of encroachments	• SPIU • Local Governments • Traffic Police • Throughout the road use	• No direct costs are anticipated (Initiative part of the road administration)	• Compliance with established environmental standards including waste management regulations.	• Complaints on the utilization of the roads. (weekly) • Environmental quality trends. • Compliance with road transport regulations. (every 6 months)

2	**Safety and Security:** • Increased road accidents; • General security aspects; • Road safety issues. • Vandalism of safety installations • Sources: Increased traffic and driving style along the routes; Social interactions; inadequate road safety signage and facilities.	• Establish road safety strategies for road section complete with sensitization programmes; • Liaise with the Traffic Police Department on ways to ensure compliance with road regulations; • Ensure maintenance of signage, crossings, speed breaks and other facilities at all times; • Involve community leaders and administration in ensuring usage and sustainable utilization of provisions for public safety.	• Traffic Police Department • Local Government • Traffic Police • An all time compliance	• No direct costs are anticipated	• Effective information and signage to enhance safe movement and use of the road	• Complaints from the residents and business operators. (monthly) • Recorded cases and categories of road accidents. (monthly) • Replacement of signage continuously.
3	**Occupational Health** • Cases of HIV/AIDS and other social diseases, • Dust associated infections • Noise and vibrations;	• Enhance initiative for information and awareness as part of the road displays • Organize and implement HIV/AIDS Awareness programmes • Introduce vegetation cover (limited tree and shrubs) along the road reserve as noise buffer to the immediate riparian premises.	• SPIU • National HIV/AIDS Control Agencies • Ministry of Health Services • Local Government • An all time initiative	• Respective Ministries • Annually	• Impact on the local communities and road users • Co-existence of the road with the riparian residents	• Level of Use of the facilities (monthly) • Noise trends and progressive impacts (monthly)

4	**Social Aspects:** • Increased population; • Higher traffic volumes; • Road safety issues.	• Collaboration with Land Use Planning for Local Government to influence collaborated land use zoning, • Encourage riparian landowners to maintain road reserve sections in front of their premises, including beautification, drainage maintenance and vegetation clearance.	• SPIU • Local Governments • Local community small scale traders • All time	• No direct costs are anticipated	• Compatibility of the road with social and economic interests of the local business community, residents and other road users.	• Land use trends in time and along the route. • Population trends. • Complaints received from the local communities and the road users in general. (weekly)
5	**Economic Aspects** • Land use changes due to efficient transport; • Mixed economic activities (general trading, industrial, institutional, etc.) • Involve local youth on road maintenance to enhance income and ownership	• Collaborations for sustainable social and economic development; • Maintain truck parking yards on drainage, water supply, waste collection and lighting/security • Enhance income generation opportunities for the County Governments and the local communities	• SPIU • Local Government • Local community small scale traders			

6	**Road Maintenance:** • Blockage of drainage and hindrance to free storm water flow; • Accumulating roadside litter collection; • Effects on road safety from inadequate facilities and signage maintenance; • Encroachment into the road reserve; • Illegal roadside land development practices.	• Establish modalities for the involvement of the residents in the maintenance of the road; • Install and maintain appropriate road signs; • Collaborate on the control of roadside billboards that are a safety risks; • Maintain trash bins at strategic locations along the roads including bus stops, foot bridge landings, under pass exits.	• SPIU • Local Governments • All time	• USD. 2000 for the initial maintenance period. • Other costs within the road maintenance budgetary allocations.	• Maintained high level quality of road surface, installations and components. • Focus on the entire road corridor.	
7	**Decommissioning Phase:** • Any decommissioning of the road section or its components should be preceded by preparation of removal plan.	• Undertake a decommissioning audit of part, sections or entire road and establish appropriate measures for prevention of environmental pollution and public safety risks. • Apply established decommissioning plan for the removal of part of all sections of the road.	• SPIU • Contractor • REMA for surveillance	• No direct cost estimates at this stage.	• None or minimum impacts to the environment and social well being.	

G. Rubavu City

No.	Anticipated Linkages and Sources	Management Actions and Target Areas	Responsibility and Timeframe	Targets to Achieve	Cost Estimates (USD)	Monitoring Parameters
	Construction Phase					
1	**Degradation of water sources:** • Construction water abstraction practices; • There are no surface water sources along the corridor • Abstraction of construction water.	• Obtain water abstraction permit from RNRA/IWRM Department • Ensure the public at target water sources gets priority on access to water for domestic use	• Contractor(s) Resident Engineer	• Compliance with Water Law • Minimal social conflicts on water sources	Approx. USD. 1500 for the whole project period.	• Water quality (table 29) (monthly) • Social conflicts (monthly)
2.	**Air quality due to excavations, machinery operations, construction vehicles and trucks, materials extraction, road use:** • Dust and particulate matter; • Visual disruption; • Surface depositions (buildings and commodities); • Public health problems • Material sourcing sites	• Ensure deviations and dry materials are kept damp at all times; • Materials extraction under damp conditions • Establish information flow process to the communities on dusty conditions. • Material delivery trucks to comply with established emission standards • Undertake sampling for air quality in pre-identified locations.	• Contractor(s) Resident Engineer • During Construction Period	• Low visible particulate matter in the air through the road corridor and material sites.	Approx. USD. 1100 for road watering.	• Construction related dust level within the project; (monthly) • Exhaust fumes from construction machineries. (every 6 months) • Application of air emissions guidelines. (every 6 months) • This is a Project

3	**Vegetation Cover Degradation:** • Very minimal loss of vegetation cover and trees along drainage systems and material sites, • No agricultural crop cover	• Plan for landscaping and beatification for the project corridor upon project completion (all sections of the road).	• Contractor(s) Resident Engineer • Adjacent Land Owners	• Vegetation cover along the road reserve that is also safe to the road users. • Landscaping and grassing on road reserves	USD. 2000 for landscaping, grassing and tree planting	• Greenery along the road corridors should be a priority. (monthly) • Landscape outlook
4	**Waste Management:** • Construction waste disposal • General Wastes (garbage, papers and cartons, plastics and scrap metals); • Special Wastes (oil, grease and associated materials) • Liquid effluents • Aerial emissions, • Waste asphalt concrete • Sources include excavation areas, camp sites, batching plant yards and workshops, construction equipment, paved roads	• Develop Standard Operating Procedures (SOPs) and schedules for the project works, • The Contractor(s) to develop waste management plans and provide appropriate facilities for their operations • Prepare signed agreements with landowners where spoil earth is to be disposed, • The spoil disposal sites should be approved by REMA before dumping commence • Consider re-use of used/waste asphalt concrete for public access roads in the neighboring area.	• Contractor(s) Waste handling Contractor(s)	• Minimal disruption to physical and biological environmental quality throughout the route. • Focus on entire road corridor. • Construction waste holding areas.	USD. 2500	• Pathways for materials from camp sites, service yards and material preparation yards. (monthly) • Destinations for spoil disposal (monthly) • Utilization of asphalt concrete materials and other recyclable wastes (monthly)

5	**Land Use:** • Land use changes along road corridor is inevitable • Material sites land use may change. • Land values appreciation • Source: Disruption by construction activities; social and economic benefits associated with the road, Relocation of commercial and institutional premises to the road corridor	• Monitor emerging land use trends along the road during construction in liaison with planning department, • Land use planning and zoning to commence during the construction phase and enforced immediately • MININFRA would encourage the local authorities on the provisions of social amenities along the corridor in light of changing social and economic development.	• SPIU • Local Government • Throughout the Construction Period	• Planned social and economic activities along the road corridor • Clear land use zones • All road sections.	No direct costs are anticipated on this item, it is an administrative aspect.	• Land use trends along the project corridors, • Acceptability of land use zoning

6	**Health and Safety** • Personal injuries (construction employees and residents); • Social ailments including Communicable diseases (including HIV/AIDS); • Potential accidents at material borrow areas and quarries; • Environmental diseases • (Bronchial and eye problems). • Accidents involving construction trucks. • Sources: Construction dust and emissions; Interaction of construction workers with communities; Pollution of water from construction activities; Material sites; Traffic deviations; Construction camp sites.	• Provide safety programmes for material sites and working areas including emergency response mechanisms; • Safety provisions (signage and lighting) for the work areas along the road corridor; • Appropriate information and warning signs shall be provided along all the deviation roads for enhanced safety; • Awareness, prevention and training on HIV/AIDS and other social diseases; • Provide wellness centers at the construction camp sites • Adoption of pre-identified health centers within the road corridor • Selected sites for parking yards; • Provide group medical insurance and personal Protective Equipments (PPEs) for the construction workers and ensure application.	• Contractor (s) Resident Engineer • SPIU to provide guidelines and engage HIV/AIDS Consultants • Throughout the construction period	• Information flow and dissemination on health and safety. • Specific response to HIV/AIDS issues. • Safety provisions and enforcement mechanisms	• Approx. USD. 2000 on HIV/AIDS awareness, prevention and training • UDS. 1800 for wellness centers	• Complaints on health safety aspects related to the road construction activities. (weekly) • Trends in HIV/AIDS cases along the corridor, Special focus on material sites, road diversions routes. (monthly)

7	**Impacts of Deviation Routes** • Conflicts with residents and local motorists on the movement disruptions. • Potential physical damages to the local access roads. • Risks of safety to the residents • (Especially children) and local motorists. • Dust emissions (Particulate • Matter) • Deviation routes to be identified by the Contractor in conjunction with the Resident Engineer	• Confine construction traffic to the construction road reserve to the extent possible (there will be 40M corridor available). • If deviations are unavoidable, inform the road users and residents in advance seeking for cooperation. • Install appropriate signage and information (including reflective barriers and signs) on the construction road and deviations for reduced conflicts and accidents. • Maintain the deviation roads in good motorable conditions at all times for efficient traffic flow. • Deviation roads should be maintained damp for dust control at all times (the roads are within proximity of social and economic activities).	• Contractor (s) Resident Engineer • Throughout the Construction Period	• Minimal conflicts with the deviation road users and local residents. • Minimal disruptions and accidents. • Minimal additional land take or encroachments into private land	No direct costs (integrated into the construction budgets).	• Public complaints (weekly) • Dust levels, (monthly) • Noise and vibration levels (monthly) • Conflicts (accidents, congestion levels, conditions of the deviation roads). (weekly)

8	**Social and Economic:** • Temporary disruption of business activities along the road corridor; • Social relationships and contacts during construction; • Temporary disruption to the access into and out of adjacent premises; • Displacement of settlements • Displacement of small-scale traders • Noise to residents living along the route. • Safety issues • Community requirements (health, education, sanitation, water, access roads, etc.)	• Enhance collaboration with communities on construction activities affecting them through established Community Liaison Committees based on Administrative line, • Provide deviations and slip accesses to the affected premises during construction throughout the corridor • The contractor to establish and manage environmental and social initiatives to oversee mitigation measures developed under this report. • Ensure effective signage and information to road users, especially on deviations and construction sections with obstacles. • Provide safe crossings and walkways. • Provision for community improvement services under social responsibility including health, education, water supply, sanitation, access roads, etc.	• Contractor (s) Resident Engineer • SPIU • Property Owners, Traders and residents • Throughout the Construction Period	• An acceptable, sustainable and economically viable road with long term benefits to all. • Special attention along the high population sections of the project corridors.	• No direct costs	• Trends in socio-economic dynamics along the project road and its catchments. • Safety data and reports (monthly) • Intervention projects and relevance to community needs.

9	**Construction Camps and Material Sourcing Sites:** • Land degradation; • Loss of land vegetation cover; • Surface hydrology changes; • Access roads' damages; • Degradation of water sources.	• Undertake EIA on all material sites with comprehensive management plans and construction camp sites with comprehensive restoration plan and obtain relevant License. • Obtain relevant approvals and licenses for all material and construction camp sites. • Prepare comprehensive material procurement agreements for the materials sites with landowners; • Identify materials haulage routes and ensure maintenance of the roads, dust control and safety precautions.	• Contractor (s) • Throughout Construction Period	• Quarry sites • Borrow areas • Water abstraction points • Camp sites and operations. • Materials holding and batching yards sustainability	Contractor to do a BOQ for the assessments and rehabilitation.	• Implementation of parameters in the rehabilitation plans. • Valid Licenses materials sourcing (monthly) • Implementation of material abstraction and/or procurement agreements (monthly)
10	**Decommissioning of Construction Installations:** • Removal of construction camps. • Rehabilitation of material sites • Materials batching yards. • Construction equipment removals, • Cleanup-up at fueling yards • Removal of the road pavement	• Carry out decommissioning audits for the camp sites • Prepare rehabilitation and restoration plans for all materials sites used for the project (quarry sites, borrow pits and spoil dumping areas). • Rehabilitate all material sites and materials preparation yards in accordance with the approved rehabilitation plans.	• Contractor (s) Resident Engineer • SPIU • Closure of the project	• Rehabilitated material sites, cleared material preparation yards and camps.	• USD. 2500 for Decommissioning Audits studies and development of decommissioning plans.	• Usability of the affected camps' and material sites.
	Post-Construction Phase					

1	**Environmental Pollution:** • Water quality degradation; • Air pollution from vehicular emissions; • Solid waste dumping (road litter); • Vehicular related scraps; • Residuals from road construction waste. • Sources: Surface runoff drains from the road; Oils spills on road surface especially at accidents scenes; Road litter (from road users and roadside clearing); poorly maintained vehicles-higher related emissions.	• Introduce clean-up responsibilities and charges for the road users (e.g. spills from accident vehicle owners) to reduce road related environmental pollutants and visual nuisance; • Provide public waste receptacles at strategic locations along the route; • Drainage channels be kept clear at all times to prevent overloading with polluting materials. Drainage outfalls are to be acquired and kept free of encroachments.	• Local Governments • Traffic Police • Throughout the road use	• No direct costs are anticipated (Initiative part of the road administration)	• Compliance with established environmental standards including waste management regulations.	• Complaints on the utilization of the roads. (weekly) • Environmental quality trends. • Compliance with road transport regulations. (every 6 months)
2	**Safety and Security:** • Increased road accidents; • General security aspects; • Road safety issues. • Vandalism of safety installations • Sources: Increased traffic and driving style along the routes; Social interactions; inadequate road safety signage and facilities.	• Establish road safety strategies for road section complete with sensitization programmes; • Liaise with the Traffic Police Department on ways to ensure compliance with road regulations; • Ensure maintenance of signage, crossings, speed breaks and other facilities at all times; • Involve community leaders and administration in ensuring usage and sustainable utilization of provisions for public safety.	• Traffic Police Department • Local Government • Traffic Police • An all time compliance	• No direct costs are anticipated	• Effective information and signage to enhance safe movement and use of the road	• Complaints from the residents and business operators. (weekly) • Recorded cases and categories of road accidents. (monthly) • Replacement of signage continuously.

3	**Occupational Health** • Cases of HIV/AIDS and other social diseases, • Dust associated infections • Noise and vibrations;	• Enhance initiative for information and awareness as part of the road displays • Organize and implement HIV/AIDS Awareness programmes • Introduce vegetation cover (limited tree and shrubs) along the road reserve as noise buffer to the immediate riparian premises.	• SPIU • National HIV/AIDS Control Agencies • Ministry of Health Services • Local Government • An all time initiative	• Respective Ministries • Annually	• Impact on the local communities and road users • Co-existence of the road with the riparian residents	• Level of Use of the facilities (monthly) • Noise trends and progressive impacts (monthly)
4	**Social Aspects:** • Increased population; • Higher traffic volumes; • Road safety issues.	• Collaboration with Land Use Planning for Local Government to influence collaborated land use zoning, • Consider collaborated emergency response facilities within proximity of the road. • Encourage riparian landowners to maintain road reserve sections in front of their premises, including beautification, drainage maintenance and vegetation clearance. This will enhance ownership and responsible use of the road.	• SPIU • Local Governments • Local community small scale traders • All time	• No direct costs are anticipated	• Compatibility of the road with social and economic interests of the local business community, residents and other road users.	• Land use trends in time and along the route. • Population trends. • Complaints received from the local communities and the road users in general. (weekly)

5	**Economic Aspects** • Land use changes due to efficient transport; • Mixed economic activities (general trading, industrial, institutional, etc.) • Involve local youth on road maintenance to enhance income and ownership	• Collaborations for sustainable social and economic development; • Maintain truck parking yards on drainage, water supply, waste collection and lighting/security • Enhance income generation opportunities for the County Governments and the local communities.	• SPIU • Local Government • Local community small scale traders			
6	**Road Maintenance:** • Blockage of drainage and hindrance to free storm water flow; • Accumulating roadside litter collection; • Effects on road safety from inadequate facilities and signage maintenance; • Illegal roadside land development practices.	• Establish modalities for the involvement of the residents in the maintenance of the road; • Install and maintain appropriate road signs; • Collaborate on the control of roadside billboards that are a safety risks; • Maintain trash bins at strategic locations.	• SPIU • Local Governments • All time	• USD. 2000 for the initial maintenance period. • Other costs within the road maintenance budgetary allocations.	• Maintained high level quality of road surface, installations and components. • Focus on the entire road corridor.	
7	**Decommissioning Phase:** • Any decommissioning of the road section or its components should be preceded by preparation of removal plan.	• Undertake a decommissioning audit of part, sections or entire road and establish appropriate measures for prevention of environmental pollution and public safety risks. • Apply established decommissioning plan for the removal of part of all sections of the road.	• SPIU • Contractor • REMA for surveillance	• No direct cost estimates at this stage.	• None or minimum impacts to the environment and social well being.	

List of people consulted

№	Name	Occupation (local)	English	Sex
1.	Munyankindi Monique	Avocat	Laywer	W
2.	Ndobwaga Siadji	Umukuru w'umudugudu	LL	M
3.	Adidja Uwimana	Privet	Citizen	W
4.	Gasore Hamadi	E/S A Biryogo	CBO	M
5.	Murekatete Chantal	Presidente Urugaga	CBO	W
6.	Munyampeta Victor Emmanuel	Enseignant	Teacher	M
7.	Sheikh Bishokaninkindi Dawudu	Cur Nyarugenge	NGO	M
8.	Murego J. Paul	Umutekano/Nyiranuma	LL	M
9.	Uwimana Monique	Private/umudugudu ndangamirwa	Citizen	W
10.	Niyigena Regis	Business	Business	M
11.	Gakuba Suad	Umudugugudu	LL	M
12.	Landry Nkiriyumwami	Safeguard Consult	Consultant	M
13.	Rugwizangoga Appolinaire	Umukuru (umudugudu)	LL	M
14.	Banzubaze Amani	President njyanama Agatare	LL	M
15.	Nyangoma Mary	Socio Affaire	LL	W
16.	Kanyinamure Timothee	ASC	NGO	M
17.	Twizemungu Emmanuel	Iterambere Umudug. Agatare	LL	M
18.	Sibongo Saidi	Umutekano	LL	M
19.	Mukundende Hariata	C.N.F. Rwampara	CBO	W
20.	Kanyandorwa Selemani	Chairman Umuganda	NGO	M
21.	Kayitesi Samada	Vsp chairman Gabiro	LL	W
22.	Nyiraneza Nasabah	Iterambere	LL	W
23.	Mpobararezi Celestin	Iterambere	LL	M
24.	Rubayiza Hussein	Affaire Social	LL	M
25.	Mukashema Divine	Secretary	LL	W
26.	Ingabire Emmanuel	District Urban plan	DL Govt	M
27.	Pius Kahangirwe	Safeguard Consult GWC ltd	Consultant	M
28	Dr. Denis Byamukama	SSG-TL Green World Consult	Consultant	M

29	Dr. Mwanja Waiswa Wilson	Safeguard consult Green world consult	Consultant	M
30	Nkuranga George Bob	Green World Consult	Consultant	M
31	Abhinav Goel	Voyants Solution	Consultant	M
32	Richard Kyazze	RHA	TL	M
33	Karuganga Salim Fred	Mobilisation	LL	M
34	Hakizimana Emm.	Umutekano	LL	M
35	Inratsinze Isaie	Umutekano	LL	M
36	Rudasingwa Amani	Umukuru w'umudugu		M
37	Munyankiko Epimaque	Ngenzuzi	LL	W
38	Harerimana Francois	Umubitsi	LL	W
39	Kabuye Djuma	Umukuru w'umudugudu	LL	M
40	Mukaruzima Prisilla	Umukuru w'umudugudu	LL	W
41	Jean.Kalisa	Umukuru w'umudugudu	LL	M
42	Kaburimba Amza	Umukuru w'umudugudu	LL	M
43	Mukamana Sayina	Umukuru w'umudugudu	LL	W
44	Habumuremyi leonard	Umujyanama	LL	M
45	Mpambara Abdur kalim	Umurukuur w'umudugudu	LL	M
46	Gatete Emely	President w'umudugudu	LL	W
47	Umutesi Fracoise Hassima	V/Presidante	LL	W
48	Harerimana Emmanuel	Ushinzwe Umetekano	LL	M
49	Mukamusoni Immaculee	Coordinatrice wa CNF Biryogo	NGO	W
50	N.Nsengimana Shemssa	Pres abagore	LL	W
51	Nyirankindi JMV	Amakuru	LL	M
52	Mutabayire Safina	Umukuru w'umudugudu	LL	W
53	Buzimana Jean Yves	Umukuru w'umudugudu rugunga	LL	M
54	Umunyaneza Nyandwi	Umukuru w'umudugudu	LL	M
55	Ntalanira Djamari	Ushinzwe umutekano	LL	M
56	Gafaranga Omar	Perezida w'abunzi	LL	M
57	Kayiranga Mousa	Umtekano/Amajyambere	LL	M
58	Habimana Moussa	Iterambere/Rwampara	LL	M

59	Mutarugera assouman	Amakuru/ umudugudu gabiro	LL	M
60	Bushyikiro Andre	Amakuru	LL	M
61	Mukamana Mayimuna	Urugaga	LL	W
62	Mukakalisa Madino	amakuru	LL	W
63	Kayitani Amza	Ngenzuzi	LL	M
64	Batamuliza Idoga	CMF	NGO	W
65	Hakizimana Alima	V/Presidente urugaga	LL	W
66	Ntamushobora Falisa	V/Presidante	LL	W
67	Kayitesi zaituni	Imibereho	LL	W
68	Muhawenimana Francoise		Citizen	W
69	Niyonsaba jophrey		Citizen	M
70	Uwera Ashure		Citizen	M
71	Ndagijimana Emile		Citizen	M
72	Nturubiko Aimee		Citizen	W
73	Nsengimana E.		Citizen	M
74	Tuyisenge jacquis		Citizen	W
75	Nshimiyimana Muhamed		Citizen	M
76	Cogoza Habibu		Citizen	W
77	Munyaneza Nurudini		Citizen	M
78	Ntaganira Djamari		Citizen	M
79	Gafaranga Omar		Citizen	M
80	Kayiranga Mussa		Citizen	M
81	Uzanishaka		Citizen	M
82	Mbonyinshuti Ally		Citizen	M
83	Mukashyaka Jacqueline		Citizen	W
84	Mukansauye Pacifique		Citizen	M
85	N.nsengimana Shemssa		Citizen	W
86	Nyirinkindi JMV		Citizen	M
87	Nkanga Abdou-Nour		Citizen	M
88	Uwase Vanessa		Citizen	W
89	Nirere Sifa		Citizen	W
90	Ntanfurayishyira Felix		Citizen	M
91	Mpambara Abdam Kalia		Citizen	W
92	Gatete Emely		Citizen	W

93	Umutesi Francoise		Citizen	W
94	Mukamusoni immacule		Citizen	W
95	Ingabire Alexis		Citizen	M
96	Batamuliza Sharifa		Citizen	W
97	M.ntambara Ashula		Citizen	W
98	Mukakamari		Citizen	W
99	Nyirankima mariam		Citizen	W
100	Kayiranga Eugen		Citizen	M
101	Mukandahiro Amina		Citizen	W
102	Izamukunda Rehema		Citizen	W
103	Uwamahoro Rehema		Citizen	W
104	Mukantaganira Christine		Citizen	W
105	Dusabimana Mwamini		Citizen	M
106	Karigirwa Donatha		Citizen	W
107	Mukeshimana Hidaya		Citizen	W
108	Mukagasana Asia		Citizen	W
109	Kipusa.M. Salama		Citizen	W
110	Niyonzima Jean de Dieu		Citizen	M
111	Munyakarambi Charles		Citizen	M
112	Kankuyo Thaciana		Citizen	W
113	Karuranga Salim Fred		Citizen	M
114	Turatsinze Isaie		Citizen	M
115	Hakizimana Emm		Citizen	M
116	Rudasingwa Amani		Citizen	W
117	Uwineza Shella		Citizen	W
118	Murekatete Fausie		Citizen	W
119	Mutangana Venant		Citizen	M
120	Rurindana Wlliam		Citizen	M
121	Gasana Aloys		Citizen	M
122	Batamuliza Flavia		Citizen	W
123	Rutaraka		Citizen	M
124	Bahati John		Citizen	M
125	Bizimana Emile		Citizen	W
126	Mahirane Stany		Citizen	M
127	Uwimana Elene		Citizen	W

128	Kirezi Esperance		Citizen	W
129	Barigye Vital		Citizen	W
130	Kagoyine Francois		Citizen	W
131	Masingo David		Citizen	M
132	Nsaba venant		Citizen	M
133	Kibuka Venant		Citizen	M
134	Kabera Aloys		Citizen	M
135	Bizimana Didier		Citizen	M
136	Kayombya		Citizen	M
137	Gakwandi Alfred		Citizen	M
138	Ntahompagaze theonest		Citizen	W
139	Karambizzi innocent		Citizen	M
140	Iribagiza Roza		Citizen	W
141	Nangwanabake arivera		Citizen	M
142	Mukasine Esther		Citizen	W
143	Mupende David		Citizen	M
144	Rucamihigo Damascen		Citizen	M
145	Nkuranga Eugen		Citizen	M
146	Dusabimana syloste		Citizen	M
147	Gahinjori hamuduni		Citizen	M
148	Sobiti Bosco		Citizen	M
149	Mfitamahoro Sam		Citizen	M
150	Nteziyaremye Jean d'amour		Citizen	M
151	Kasaba Natha		Citizen	M
152	Muhire phillipe		Citizen	W
153	Rwamugira		Citizen	M
154	Nagate		Citizen	M
155	Byagatonda Samuel		Citizen	M
156	Basa Peter		Citizen	M
157	Gakwaya Altoni		Citizen	M
158	Sematare Stephan		Citizen	M
159	Mukayiranga Gerardine		Citizen	W
160	Kayesu Margarita		Citizen	W
161	Singirankabo seshoba		Citizen	M
162	Mutembeyi John		Citizen	M

163	Rutayisire Samuel		Citizen	M
164	Katurebe Servea		Citizen	M
165	Niyishobora		Citizen	W
166	Umubeyi Jolie		Citizen	W
167	Mukantabana Venansie		Citizen	W
168	Nduwamungu		Citizen	M
169	Mukarugema Marie		Citizen	W
170	Nyiramitavu Beatrice		Citizen	W
171	Mukamurenzi Annet		Citizen	W
172	Nkurunziza Anicet		Citizen	W
173	Mahirane Vicent		Citizen	M
174	Zirimwabega Matthias		Citizen	M
175	Ntihabose Leonard		Citizen	M
176	Nsengiyumva Celestin		Citizen	M
177	Yatahagije Mbete		Citizen	M
178	Munyeshuri Charles		Citizen	M
179	Rindiro Patrick		Citizen	M
180	Rurangwa Francis		Citizen	M
181	Ngambesi		Citizen	M
182	Ngabo Lambert		Citizen	M
183	PIUS Kahangirwe		Citizen	M
184	Musabyimana Deo		Citizen	M
185	Iyaturemye Aimee		Citizen	w
186	Karemera Kizito		Citizen	M
187	Bagabo Francis		Citizen	M
188	Kayibanda Damascen		Citizen	M
189	Buhinja Geofrey		Citizen	M
190	Muhinda James		Citizen	M
191	Pastor Mutera Augustin		Citizen	M
192	Rwakiza Stephan		Citizen	M
193	Gakwaya Augustin		Citizen	M
194	Mugabire Emmy		Citizen	w
195	Twahirwa J. Paul		Citizen	M
196	Nzabahimana George		Citizen	M
197	Nyamaswa Jean Damascen		Citizen	M

198	Twagirumukiza Issa		Citizen	M
199	Rusakaza Paul		Citizen	M
200	Kagabo Andrew		Citizen	M
201	Baijohe Augustin		Citizen	M
202	Mirenge James		Citizen	M
203	Musonera Viator		Citizen	M
204	Uwizeyimana Josian		Citizen	M
205	Mbareyimbabazi margard		Citizen	w
206	Rukinisha Alfred		Citizen	M
207	Baganizi Damascene		Citizen	M
208	Ntigurirwa Benon		Citizen	M
209	Nyirasangwa		Citizen	w
210	Cyatengwa Jacqueline		Citizen	w
211	Mukizamungu Thomas		Citizen	M
212	Mujawingoma Alexie		Citizen	M
213	Ingabire Christine		Citizen	w
214	Benimana Placidie		Citizen	w
215	Mbabazi Janet		Citizen	w
216	Mujida Jackson		Citizen	M
217	Dusabe Pascasie		Citizen	w
218	Kubwimana Cessar		Citizen	M
219	Gatete Philbert		Citizen	M
220	Mugisha Fred		Citizen	M
221	Bayingana Theonest		Citizen	M
222	Ruzibiza Jean de Dieu		Citizen	M
223	Mwesigye Patrick		Citizen	M
224	Mutabazi Emmanuel		Citizen	M
225	Umukunzi Solange		Citizen	M
226	Murenzi Isaac		Citizen	M
227	Ingabire Doren		Citizen	w
228	Nsengiyumva Jean Damascen		Citizen	M
229	Ngoga Frank		Citizen	M
230	Nizeyimana Yohana		Citizen	M
231	Senjara Fred		Citizen	M
232	Kabahizi Faustin		Citizen	w

233	N.nzabandora Claudine		Citizen	w
234	Rwagatera Genie		Citizen	w
235	Rurangirwa Juvenal		Citizen	M
236	Mugabo John		Citizen	M
237	Ndagijimana Alphonse		Citizen	M
238	Mururuhwere Peninch		Citizen	w
239	Ntaganzwa Alex		Citizen	M
240	Rugugana Christine		Citizen	w
241	Badege Joseph		Citizen	M
242	Mudenge Geofrey		Citizen	M
243	Sematama Elidard		Citizen	w
244	Mugeni Scovia		Citizen	w
245	Gatsinzi Tharcisse		Citizen	M
246	Gasana Francis		Citizen	M
247	Twagira Innocent		Citizen	M
248	Gasana Josua		Citizen	M
249	Ngajmije Nathan		Citizen	M
250	Musoni Tharcisse		Citizen	M
251	Bugenimana Valentin		Citizen	w
252	Mugabo Benhamin		NGO	M
253	Rambura R. Felicien		NGO	M
254	Bajen Mpumuro		NGO	M
255	Madjalina Mussa		NGO	M
256	Mukagakwaya Julien		Citizen	w
257	Nkorezi John	E.S Cyabararika	LD	M
258				
259	Rushiminana Samuel		NGO	M
260	Kanyoni Jacque	Umuturage	Citizen	w
261	Butunge Pascal	Umuturage, mu Kagari	Citizen	M
262	Gafishi Sebahagarara		Citizen	M
263	Nsengiyumva Vincent	Umuturage mu ka gorika Ruhengerti	Citizen	M
264	Mpano Thomas	Umuturage/Rwebeya	Citizen	M
265	Nyirarukundo	Chef de Village	LL	w
266	Hitimana Jean dieu	Chef de Village	LL	M

267	Murwashyaka	Umuturage	Citizen	M
268	Rura Ngusa Jean	Umuturage	Citizen	M
269	Ntahompagaze Faustin	Umutekaro Mu Mudugudu	Citizen	w
270	Nirere Jeannette	Umuturage/ Rwebeya	Citizen	w
271	Biziremye Jean Noel	F.S Consultant	Consultant	M
272	Muhongowe	F.S / Social Consultant	Consultant	M
273	Twagirimana Sandrine	Engineer/ WB/ RUDR	Consultant	w
274	Nkuranga George Bob	Green World Consult Environmentalist	Consultant	M
275	Dr. Denis Byamukama	Green World Consult/TL	Consultant	M
276	Nyirakindi Fulgence	Army	Govt	w
277	Lt Col Frank Basimaki	Army	Govt	M
278	DAO G. William Mudaheranwa	Dasso Muhanga	DL Govt	M
279	Ntawiha Fabrice	Feasilibity Consult	Consultant	M
280	Kabasindi Tharcice	Umujyanama	LL	M
281	Manirafasha Amos	Road maintenance Eng.	ML Govt	M
282	Uwanyagasani Dephly	Muhanga District	DL Govt	M
283	Kwizera Moses	Building inspector	DL Govt	M
284	Nzabonimpa onesphore	Dir of osc	DL Govt	M
285	Uhagaze Francois	UMED	NGO	M
286	Sebagabo S. Sebastien	FS	Consultant	M
287	Nsanzimana Djafari	LED Specialist/LODA	ML Govt	M
288	Kalisa John	Urban Economist WB/MININFRA	ML Govt	M
289	Musabyimana Tharicesse	WB Socio Safeguard Specialist	Consultant	M
290	Nkomezi Alain	GIS Expert	Consultant	M
291	Gasana Celestin	D.E.S	Consultant	M
292	Nkuranga George Bob	Green World Consult	Consultant	M
293	Dr. Denis Byamukama	Green World Consult	Consultant	M
294	Sebagabo Sebastien	FS Team	Consultant	M
295	G.William Mudaheranwa	Dasso	Consultant	M
296	Uwanyagasani Dephly	Muhanga District	DL Govt	M
297	Muhizi Elisee	Journalist	NGO	M

298	Rukazintanage Straton	I.C.K	NGO	M
299	Irafasha Jean Pierre	Internal Auditor	DL Govt	M
300	Kamangu Samuel	DDMO	DL Govt	M
301	Sibomana Jean Paul	Environmentalist	DL Govt	M
302	Muzungu Elen	E/S Gahogo Cell	LL	W
303	Lazare Kamarade	Nyamabuye Sector	LL Govt	M
304	Ndamye Felix	Agronome	DL Govt	M
305	Musabyimana J.Bosco	Umuyobozi w'umudugudu	LL	M
306	Nyirakamana M. Josee	E.S Makera Cell	LL	M
307	Irakiza Claude	President Mareba	LL	M
308	Harerimana Jean Bosco	M&E officer	DL Govt	M
309	Habimana Francois	SDA Church	NGO	M
310	Gashugi Innocent	Youth sport & Culture	DL Govt	M
311	Moses Kwizera	Building inspector	DL Govt	M
312	Gasana Celse	D.E.S	DL Govt	M
313	Uhagaze Francois	V.M.E.D	DL Govt	M
314	Nzabonimpa Onesphore	Div. of osex loud notous	DL Govt	M
315	Bizimana Eric	Dir od planning m&e	DL Govt	M
316	Manirafasha Amos	Road dvp& maintenance	DL Govt	M
317	Ntawiha Fabrice	Feasibility Consultant	Consultant	M
318	Mukamugema Felicite	ES Mbare	LL	M
319	Umugwaneza Flavie	SE Gitarama	LL	W
320	Harerimana J. de la Providence	R. Civil Society P.F	NGO	M
321	Nteziyaremye JMV	ES Mubuga Cell	LL	M
322	John Kalisa	Urban Economist	DL Govt	M
323	Musabyimana Tharcisse	Social safeguards	Consultant	M
324	Rwiyereka Roger	ES Cyeza Sector	LL	M
325	Niyonsaba Marie Grace	SEDO Gitarama	NGO	W
326	Samuel Haragirimana	SEDO Gahogo	NGO	M
327	Karasindi Tharcisse	Umujyanama	LL	M
328	Nyirinkindi Fulgence	Army	ML Govt	M
329	Manirarora Godfroid	E.S Ruli Cell	LL	M
330	Mutimukeye Aline	E/S kinini cell	LL	W
331	Mugunga Jean Baptiste	E/S Shyogwe sector	LL	M

332	Nsanzimana	Specialist Loda	ML Govt	M
333	Nkundwanayo Semathan	Human Resource	DL Govt	W
334	Uwimana Gaspard	Researcher	ML Govt	M
335	Rwasibo Stanislas	Teacher (PSVF)	Teacher	M
336	Muyagaramba Laurent	Karubanda	LL	M
337	Gatete Thacien	Private	Citizen	M
338	Marembo J. Claude	Teacher	Teacher	M
339	Nizeyimana Theonest	Medecin	Technical	M
340	N.Havugimana Vestine	Petit Seminaire	NGO	M
341	Muyango Felicien	Militaire	ML Govt	M
342	Kabagama Janvier	Civil servant	ML Govt	M
343	Egide Muziganyi	Director District pharmacy	DL Govt	M
344	Sindikubwabo Ddeny	Teacher	Teacher	M
345	Niyomugabo J. luc	Kacubanda	LL	M
346	Tuyisenge Eric	Public function	DL Govt	M
347	Ntaganda Viator	Agent de l'etat	NGO	M
348	Noel Rutambuka	Public servant	DL Govt	M
349	Tuyizere Aloys	Medecin	Technical	M
350	Aisha Inudahogora		Citizen	W
351	Mungarurire Emmanuel	Mecanicien	Technical	M
352	Bizimana Venuste	Umuturage	Citizen	M
353	Kazinguvu Ngweshi	Lecture	Teacher	M
354	Eric Sambwe	Director of ICT	DL Govt	M
355	Patrick Ndizihiwe	Senior officer	DL Govt	M
356	Habarurema Sylvain	Medical director	Technical	W
357	Nsanzimfura Safari	Medical Director	Technical	M
358	Chris Banes	Eng. WB	Consultant	M
359	John Kalisa	Urban Economist	DL Govt	M
360	Uwamwezi Gloriose	CNF Coordinator/District	NGO	W
361	Mapendo Tom Christian	Eng. Huye District	DL Govt	M
362	Enock Musabirwa	Eng. Huye District	DL Govt	M
363	Habinshuti Francois	Eng. Huye District	DL Govt	M
364	Mutwarasibo Cyprien	Vice Mayor Economics	DL Govt	M
365	Alphonse Mutsindashyaka	ES Mukura/Huye	LL	M

366	Claudine Mukamudenge	ES/Mbazi	LL	W
367	Sebagabo Jacque	E/S Huye Sector	LL	W
368	Tuyisenge Alfred	Land officer/Ngoma Sector	DL Govt	M
369	Kayitare leon Pierre	JADF officer/Huye	DL Govt	M
370	Mukasine Marthe	Bireau du CD/Huye	DL Govt	W
371	Nshimiyimana Vedast	SE	NGO	M
372	Sebagabo Sebastien	FS team	Consultant	M
373	Tharcisse Musabyimana	Socio safaguards specialist, WB	Consultant	M
374	Dr. Denis Byamukama	Green World Consult	Consultant	M
375	Nkomezi Alain	GIS expert	Consultant	M
376	Nsanzimana Safari	Program project specialist	DL Govt	M
377	Buranga Umulisa Assumpta	District Health M&E Officer	DL Govt	M
378	Ugirumurera cyprien	JADF Representative	DL Govt	M
379	Muhongire Jacqueline	Dr OSC/Huye	DL Govt	W
380	Kayitesi Noella	CNJ/secretary	NGO	W
381	Albert Bussumbigabo	CNJ coordinator	NGO	M
382	Christine Niwemugeni	V/M AFSO	NGO	W
383	Anglican Church of Rda Diocese Cyangugu	Administrator	NGO	M
384	Sebagabo Sebastien	FS/Voyant/Hice	Consultant	M
385	Ntawiha Fabrice	FS/voyant/Hice	Consultant	M
386	Alain Nkomezi	Social safeguard consult team	Consultant	M
387	Dr Denis Byamukama	SSG TM Green Worl Consult	Consultant	M
388	Ntawugurirwa Gervais	ES kamembe Sector	LL	M
389	Bapfakurera Benjamin	Pretre	LL	M
390	Catherine Uwamariya	Core Pr. Rusizi	NGO	W
391	Musoni Immaculee	Umujyanama com. Econ	LL	W
392	Ingabie Nadine	P.s of Sector/Gihundwe	LL	W
393	Ishimwe Honore	RBA Rusizi	LL	M

394	Mwumvaneza Innocent	Commencant	LL	M
395	Jeannette Uwihana	Tirw/District coord	NGO	W
396	Hakiziwera Patrick	Water Distribution officer	DL Govt	M
397	Manishimwe Patrick	Tech. REG-EUCL	NGO	M
398	Innocent Rugenerandekwe	PC	NGO	M
399	Munezero Emmanuel	Pasteur Advantist	NGO	M
400	Ndoli Sitio	Journalist	NGO	M
401	Musabwa Ephrem	Journalist	NGO	M
402	Habyarimana Deograthias	Etat Civil Mururu Sector	LL	M
403	Jean Luc Nsabayezu	Ad BEDE unity	NGO	M
404	Mukamulego Mediatrice	Presidente Njyanama	LL	M
405	Jeanne d'arc Niyonsaba	Program officer	DL Govt	M
406	Ferdinand Nzajyibwami	CDS Kamembe	NGO	M
407	Daniel Geferege	CDS Kamembe	NGO	M
408	N. Habimana Marie	Avocat	Technical	W
409	Ruzindana John	Umusirikare	Guard	M
410	Niyibizi Francois	Chef du village	LL	W
411	Nzamwita Pascal	Commerce and business man	Business	M
412	Nduwamariya Gakwandi M. Goretti	Umuturage	Citizen	W
413	Ndayisabye Albert	JADF Tresure	DL Govt	M
414	Sebagabo S. Sebastien	FS/voyant/Hice	Consultant	M
415	John Kalisa	WB Mininfra	Consultant	M
416	Nsanzimana djafari	LED Specialist	Consultant	M
417	Mukamana Gertude	Migration	ML Govt	M
418	Laurent Ndagijimana	Njyanama	LL	W
419	Harerimana Frederic	Mayor	DL Govt	W
420	Mushimiyimana Ephrem	Executive Secretary	DL Govt	M
421	Bimenyimana Alphonse	Infrastructure officer	DL Govt	M
422	Habarurema Venuste	Njyanama Gihundwe	LL	W
423	Napoleon Ntawuharuwe	Director of OSC	Consultant	M
424	Gatete Donatien	S GIS/ OSC	Consultant	M
425	Niyomwungeri Jean Bosco	SEDO Cyangugu	NGO	M

426	Sekanyambo Eusbert	DDC	DL Govt	M
427	Nsanzimfura Djafari	Program project specialist	ML Govt	M
428	John Kalisa	Urban Economist	ML Govt	M
429	Harerimana Frederic	Mayor	DL Govt	M
430	Laurent Ndagijimana	V/P Njyanama	LL	M
431	Tharcisse Musabyimana	Social safeguard specialist	Consultant	M
432	Kankinid leoncie	VIMED	DL Govt	M
433	Alain Nkomezi	Gis Expert	Consultant	M
434	Dr. Denis Byamukama	SSG. TL	Consultant	M
435	Ntawiha Fabrice	Feasibility	Consultant	M
436	Napoleon Ntawoharuwe	Director of OSC	DL Govt	M
437	Uwambaje Aimee Sandrine	S/E Sector Gashonga	LL	W
438	Ngahimana Maltide	E/S Sector	LL	W
439	Mukamana Esperance	E/Sector	LL	W
440	Uwirereye Lea	E/S	LL	W
441	Niwemugore M. Claire	E/S	LL	W
442	Muhire M. Innocent	Titulaire Gacuba II Health C,.	Technical	M
443	Gasuku Oscar	District OSC/Rubavu	DL Govt	M
444	Mwaisura Onore	E.S Gisenyi	LL	M
445	Kamana Kalisa Charles	Enteprener	Business	M
446	Nangamabwire leonidas	Essai Nyamyumba	LL	M
447	Nyamaswa R. Emmanuel	Concelor/Rubavu District	DL Govt	M
448	Munyankindi Benoit	President Njyanama Gisenyi	LL	M
449	Nsengimana Michel	ES. Rukoko	LL	M
450	Kimata Djuma	Isangano	LL	M
451	Dusingizimana Zacharie	Abafite ubumuga	LL	M
452	Karenzi Antoine	Umuturage/ Gisenyi	LL	M
453	Sandrine Twagirimana	Civil Engineer/WB/RUDA	ML Govt	M
454	Kayigamba Francoise	Environmental specialist	Consultant	M
455	Ndagiwenimana Steven	Umunyeshuri	LL	M
456	Buregeya Murcus	Umunyeshuri	LL	M

457	Iradukunda Kidumu	Umunyeshuri	LL	M
458	Iriboneye Venant	Camera man/ RBA	NGO	M
459	Mugarambe Theodore	Journalist/ Rubavu	NGO	M
460	Bizimana Epimaque	E.S Kanama	LL	M
461	Nsengiyumva Modest	ES/Buhaza cell	LL	M
462	Bizimana J. Pierre	Umutekano Amahoro	LL	M
463	Mupenzi Mbazabahizi	Umukuru w'umudugudu	LL	M
464	Olivier Gasasira	Citizen of Rubavu	Citizen	M
465	Babonampoza Moussa	President njyanama Mbugangari	LL	M
466	Uwamahoro M. Goretti	Sec. Njyanama Rubavu	LL	W
467	Barigira Nasoro	Umukuru w'umudugudu	LL	M
468	Hakizimana J. Damascene	President Njyanama	LL	M
469	Uwajeneza Jeanette	E.S Rugerero Sector	LL	W
470	Nsekuye Leonard	E.S Basa/ Rugerero	LL	M
471	Buregeya Evarist	Sector Land Management	DL Govt	W
472	N.Ntezimana Berancille	Secretaire njyanama y'akagari	LL	M
473	Nshimiyimana Vincent	VIP Njyanama ya kabiriza	LL	M
474	Zimulinda Jean Bosco	Disability mainstreaming	LL	M
475	Nshimiyimana R. Venuste	SEDE/Bugoyi Cell	NGO	M
476	Barigora Mwemere	SLM/Gisenyi	NGO	M
477	Mupenda Ismail	ES/ Munanira	LL	M
478	Banzekurwaho Joselyne	ES/Rubona Cellule	LL	M
479	Niyibizi Clementine	ES/Busoro	LL	M
480	Uwimana Eustach	E.S Kiraga Cell	LL	M
481	Rwamirambi Boaz	E.S/ Burushya Cell	LL	M

LL = Local Leader
DL Govt = Government staff at district level
ML Govt = Government staff at central government level
NGO & CBO = Civil Society Organizations

Annex 2

Environmental Guidelines for Contractors

General Environmental Management Conditions

General

1. In addition to these general conditions, the Contractor shall comply with any specific Environmental Management Plan (EMP) for the works he is responsible for. The Contractor shall inform himself about such an EMP, and prepare his work strategy and plan to fully take into account relevant provisions of that EMP. If the Contractor fails to implement the approved EMP after written instruction by the Supervising Engineer to fulfill his obligation within the requested time, the Owner reserves the right to arrange through the SE for execution of the missing action by a third party on account of the Contractor.
2. Notwithstanding the Contractor's obligation under the above clause, the Contractor shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance requirements specified in an EMP. In general these measures shall include but not be limited to:

    a) Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g. excavation, blasting) are kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.

    b) Ensure that existing water flow regimes in rivers, streams and other natural or irrigation channels is maintained and/or re-established where they are disrupted due to works being carried out.

    c) Upon discovery of ancient heritage, relics or anything that might or believed to be of archeological or historical importance during the execution of works, immediately report such findings to the Supervising Engineer so that the appropriate authorities may be expeditiously contacted for fulfillment of the measures aimed at protecting such historical or archaeological resources.

    d) Discourage construction workers from engaging in the exploitation of natural resources such as hunting, fishing, and collection of forest products or any other activity that might have a negative impact on the social and economic welfare of the local communities.

    e) Implement soil erosion control measures in order to avoid surface run off and prevents siltation, etc.
    f) Ensure that garbage, sanitation and drinking water facilities are provided in construction workers camps.

    g) Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long distance transportation.

    h) Ensure public safety, and meet traffic safety requirements for the operation of work to avoid accidents.

3. The Contractor shall adhere to the proposed activity implementation schedule and the monitoring plan /strategy to ensure effective feedback of monitoring information to project management so that Impact management can be implemented properly, and if necessary, adapt to changing and unforeseen conditions.
4. Besides the regular inspection of the sites by the Supervising Engineer for adherence to the Contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. State environmental Authorities may carry out similar inspection duties. In all cases, as directed by the Supervising Engineer, the Contractor shall comply with directives from such inspectors to implement measures required to ensure the adequacy rehabilitation measures carried out on the bio-physical environment And compensation for socio-economic disruption resulting from implementation of any works.

Work Site/Campsite Waste Management

5. All vessels (drums, containers, bags, etc.) containing oil/fuel/surfacing materials and other hazardous chemicals shall be bonded in order to contain spillage. All waste containers, litter and any other waste Generated during the construction shall be collected and disposed off at designated disposal sites in Line with applicable government waste management regulations.
6. Used oil from maintenance shall be collected and disposed off appropriately at designated sites or be re-used or sold for re-use locally.
7. Entry of runoff to the site shall be restricted by constructing diversion channels or holding structures Such as banks, drains, dams, etc. to reduce the potential of soil erosion and water pollution.

New Extraction Sites:

8. Vegetation clearing shall be restricted to the area required for safe operation of construction work. Vegetation clearing shall not be done more than two months in advance of operations.
9. Stockpile areas shall be located in areas where trees can act as buffers to prevent dust pollution. Perimeter drains shall be built around stockpile areas. Sediment and other pollutant traps shall be located at drainage exits from workings.
10. The Contractor shall deposit any excess material in accordance with the principles of these general conditions, and any applicable EMP, in areas approved by local authorities and/ or the Supervising Engineer.
11. Areas for depositing hazardous materials such as contaminated liquid and solid materials shall be approved by the Supervising Engineer and appropriate local and/or national authorities before the commencement of work. Use of existing, approved sites shall be preferred over the establishment of new sites.

Soil Erosion Prevention

12. To the extent practicable, the Contractor shall rehabilitate the site progressively so that the rate of rehabilitation is similar to the rate of construction.
13. Always remove and retain topsoil for subsequent rehabilitation. Soils shall not be stripped when they are wet as this can lead to soil compaction and loss of structure.
14. Re-vegetate stockpiles to protect the soil from erosion, discourage weeds and maintain an active population of beneficial soil microbes.
15. To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.

16. Identify potentially toxic overburden and screen with suitable material to prevent mobilization of toxins.
17. Ensure reshaped land is formed so as to be inherently stable, adequately drained and suitable for the desired long-term land use, and allow natural regeneration of vegetation.
18. Minimize the long-term visual impact by creating landforms that are compatible with the adjacent landscape.
19. Minimize erosion by wind and water both during and after the process of reinstatement.
20. Re-vegetate with plant species that will control erosion, provide vegetative diversity and, through succession, contribute to a resilient ecosystem. The choice of plant species for rehabilitation shall be done in consultation with local research institutions, forest department and the local people.

Water Resources Management

21. The Contractor shall at all costs avoid conflicting with water demands of local communities.
22. Abstraction of both surface and underground water shall only be done with the consultation of the local community and after obtaining a permit from the relevant Water Authority.
23. Abstraction of water from wetlands shall be avoided. Where necessary, authority has to be obtained from relevant authorities.
24. No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses.
25. Wash water from washing out of equipment shall not be discharged into water courses or road drains.
26. Site spoils and temporary stockpiles shall be located away from the drainage system, and surface run off shall be directed away from stockpiles to prevent erosion.

Traffic Management

27. Location of access roads/detours shall be done in consultation with the local community especially in important or sensitive environments. Access roads shall not traverse wetland areas.
28. Upon the completion of civil works, all access roads shall be ripped and rehabilitated.
29. Access roads shall be sprinkled with water at least five times a day in settled areas, and three times in unsettled areas, to suppress dust emissions.

Disposal of Unusable Elements

30. Unusable materials and construction elements such as electro-mechanical equipment, cables, accessories and demolished structures will be disposed of in a manner approved by the Supervising Engineer (SE). The Contractor has to agree with the SE which elements are to be surrendered to the Client's premises, which will be recycled or reused, and which will be disposed of at approved landfill sites.

Sites of Cultural Heritage

31. In the event that the Contractors or Proponent's staff encounter chance finds of physical cultural resources in the course of duty - during both construction and operational phases of the project, local responsible agency must be notified immediately and the resource protected from any interference or manipulation of any kind.

Health and Safety

32. In advance of the construction work, the Contractor shall mount an awareness and hygiene campaign. Workers and local residents shall be sensitized on health risks particularly of AIDS.
33. Adequate road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points.
34. Construction vehicles shall not exceed maximum speed limit of 40km per hour.
35. Conduct HIV/AIDS Awareness Raising Activities including:
    a. Posters, billboards and condoms in high-traffic areas throughout company facilities
    b. Messages included with condoms in pay cheque packages
    c. Posting the company HIV/AIDS policy in public places in the local languages
    d. Placing a 'Health Questions Box' in the canteen or other convenient locations so that employees can anonymously submit questions on health and HIV/AIDS
    e. Public posting of Q&A by the nursing staff via bulletin boards or flyers
    f. Taking advantage of local resources by bringing in trained counsellors from local hospitals and participating in government and NGO initiatives, including World AIDS Day on December 1st each year

Repair of Private Property

36. Should the Contractor, deliberately or accidentally, damage private property, he shall repair the property to the owner's satisfaction and at his own cost. For each repair, the Contractor shall obtain from the owner a certificate that the damage has been made good satisfactorily in order to indemnify the Client from subsequent claims.
37. In cases where compensation for inconveniences, damage of crops etc. are claimed by the owner, the Client has to be informed by the Contractor through the Supervising Engineer.
38. This compensation is in general settled under the responsibility of the Client before signing the Contract. In unforeseeable cases, the respective administrative entities of the Client will take care of compensation.

Contractor's Environment, Health and Safety Management Plan (EHS-MP)

39. Within 6 weeks of signing the Contract, the Contractor shall prepare an EHS-MP to ensure the adequate management of the health, safety, environmental and social aspects of the works, including implementation of the requirements of these general conditions and any specific requirements of an EMP for the works. The Contractor's EHS-MP will serve two main purposes:

    a) For the Contractor, for internal purposes, to ensure that all measures are in place for adequate EHS management, and as an operational manual for his staff.
    b) For the Client, supported where necessary by a Supervising Engineer, to ensure that the Contractor is fully prepared for the adequate management of the EHS aspects of the project, and as a basis for monitoring of the Contractor's EHS performance.

40. The Contractor's EHS-MP shall provide at least: a description of procedures and methods for complying with these general environmental management conditions, and any specific conditions specified in an EMP; a description of specific mitigation measures that will be implemented in order to minimize adverse impacts; a description of all planned monitoring activities (e.g. sediment discharges from borrow areas) and the reporting thereof; and the internal organizational, management and reporting mechanisms put in place for such.

41. The Contractor's EHS-MP will be reviewed and approved by the Client before start of the works. This review should demonstrate if the Contractor's EHS-MP covers all of the identified impacts, and has defined appropriate measures to counteract any potential impacts.

EHS Reporting

42. The Contractor shall prepare bi-weekly progress reports to the Supervising Engineer on compliance with these general conditions, the project EMP if any, and his own EHS-MP. An example format for a Contractor EHS report is given below. It is expected that the Contractor's reports will include information on:

    - EHS management actions/measures taken, including approvals sought from local or national authorities;
    - Problems encountered in relation to EHS aspects (incidents, including delays, cost consequences, etc. as a result thereof);
    - Lack of compliance with contract requirements on the part of the Contractor;
    - Changes of assumptions, conditions, measures, designs and actual works in relation to EHS aspects; and
    - Observations, concerns raised and/or decisions taken with regard to EHS management during site meetings.
    - Compliance with air quality standards
    - Compliance with noise level standards
    - Compliance with water quality standards
    - Incidences of construction accidents, diseases, new HIV cases

43. It is advisable that reporting of significant EHS incidents be done "as soon as practicable". Such incident reporting shall therefore be done individually. Also, it is advisable that the Contractor keep his own records on health, safety and welfare of persons, and damage to property.

44. It is advisable to include such records, as well as copies of incident reports, as appendixes to the bi-weekly reports. Example formats for an incident notification and detailed report are given below. Details of EHS performance will be reported to the Client through the Supervising Engineer reports to the Client.

Training of Contractor's Personnel

45. The Contractor shall provide sufficient training to his own personnel to ensure that they are all aware of the relevant aspects of these general conditions, any project EMP, and his own EHS-MP, and are able to fulfill their expected roles and functions. Specific training should be provided to those employees that have particular responsibilities associated with the implementation of the EHS-MP. General topics should be:

    - EHS in general (working procedures);
    - Emergency procedures; and
    - social and cultural aspects (awareness rising on social issues).

Cost of Compliance

46. It is expected that compliance with these conditions is already part of standard good workmanship and state of art as generally required under this Contract. The item "Compliance with Environmental Management Conditions" in the Bill of Quantities covers these costs. No other payments will be made to the Contractor for compliance with any request to avoid and/or mitigate an avoidable EHS impact.

Example Format: EHS Report

Contract: **Period of reporting:**

EHS management actions/measures:
Summarize EHS management actions/measures taken during period of reporting, including planning and management activities (e.g. risk and impact assessments), EHS training, specific design and work measures taken, etc.

EHS incidents:
Report on any problems encountered in relation to EHS aspects, including its consequences (delays, costs) and corrective measures taken. Include relevant incident reports.

EHS compliance:
Report on compliance with Contract EHS conditions, including any cases of non-compliance.

Changes:
Report on any changes of assumptions, conditions, measures, designs and actual works in relation to EHS aspects.

Concerns and observations:
Report on any observations, concerns raised and/or decisions taken with regard to EHS management during site meetings and visits.

Signature (Name, Title Date):
Contractor Representative

Example Format: EHS Incident Notification

Provide within 24 hrs to the Supervising Engineer

Originators Reference No: **Date of Incident:** **Time:**

Location of incident:

Name of Person(s) involved:

Employing Company:

Type of Incident:

Description of Incident:
Where, when, what, how, who, operation in progress at the time (only factual)

Immediate Action:

Immediate remedial action and actions taken to prevent reoccurrence or escalation

Signature (Name, Title, Date):

Contractor Representative
Example Format: Detailed EHS Incident Report

The Incident Notification should be follow-up by a Detailed EHS Incident Report Containing the following information where applicable

1. **Incident Summary**

2. **Specific Details**
Date

Time
Place
Weather/Visibility
Road conditions

3. **Persons Involved**

Name/s
Age/s
Experience
Date joined Company
Last Medical Check
Current Medical Treatment
Evidence of Drugs/Alcohol
Last Safety Meeting attended
Infringements/Incidents record

4. Equipment Involved

5. Description of Incident

6. Findings of Investigation Team Interim/Final
Investigation Team Members
Persons Interviewed
Recommendations & Remedial Actions
Investigation Methodology

7. Signature (Name, Title, Date):

8. Attachments
Photographs
Witness Statements and Incident Notification Report

ANNEX 3 –SAMPLE CHANCE FIND PROCEDURES

If the Contractor discovers archeological sites, historical sites, remains and objects, including graveyards and/or individual graves during excavation or construction, the Contractor shall:

- Stop the construction activities in the area of the chance find;
- Delineate the discovered site or area;
- Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities or the Institute of National Museum of Rwanda (INMR) take over;
- Notify the supervisory Project Environmental Officer and Project Engineer who in turn will notify the responsible local authorities and the INMR immediately (within 24 hours or less);

Responsible local authorities and the authorities of Institute of INMR would then be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed by the archaeologists of the INMR. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage, namely the aesthetic, historic, scientific or research, social and economic values.

Decisions on how to handle the finding shall be taken by the responsible authorities and the INMR. This could include changes in the layout (such as when finding irremovable remains of cultural or archeological importance) conservation, preservation, restoration and salvage.

Implementation for the authority decision concerning the management of the finding shall be communicated in writing by relevant local authorities.

-Construction work may resume only after permission is given from the responsible local authorities or INMR concerning safeguard of the heritage.

ANNEX 4 – ATTENDANCE OF PUBLIC CONSULTATIONS

Repubulika y'u Rwanda
Umujyi wa Kigali

Agatare Informal Settlement Project

Citizens Engagement List for City of Kigali

No	Amazina	Icyo Ukora	Contact	Signature
1.	Me Monique MUNYANKINDI	Avocat	0788350037	[signature]
2.	Ndalumga Sinodi	umukozi w'ibikorwa … sugezi	078886781-1	[signature]
3.	ABIDJA UWIMANA	PRIVE	0788332748	[signature]
4.	GASORE Hamali	E/S Biryogo	0788653919	[signature]
5.	Murekatete Chantal	presidente umujyaga	0783530781	[signature]
6.	MUNYARPETA Victor Emmanuel	Enseignant	0788587460	[signature]
7.	SHEIKH BISHOKANINKINDI DANIEL	CCL NYARUGENGE	0788517579	[signature]
8.	MUREGO J. Paul	umukozi nyirinzu	07884626511	[signature]
9.	UWIMANA Monique	Private Umudugudu Indangamirwa	0788444275	[signature]
10.	Nyirigena Régis	Business	0788636153	[signature]
11.	GAKERA Bad	umudugudu	0788537270	[signature]

Repubulika y'u Rwanda
Umujyi wa Kigali

	AMAZINA	Ucyo ukora	Contact	Signature
26.	INGABIRE Emmanuel	District urban plan	0788755255	[signature]
27.	Pius KAHANGIRWE	SAFEGUARD CONSULTANT GWC LTD.	872787856	[signature]
28.	Dr. Denis BYAMUKAMA	SSG - TL Green world consult	+256782519315	[signature]
29.	Dr. Mwanja WaiWa Wilson	Safeguard Consultant Green World Consult	0783095695	[signature]
30.	NKURANGA G. Bob	Green world consult	078835647[illegible]	[signature]
31.	ABHINAV GOEL	VOYANTS SOLUTION	+919599833099	[signature]
32.	Edward Kyazze	RHA	0788 574 374	[signature]
33.	KARURANGA SALIM FRED	Mobilisation	0788447589	[signature]
34.	HAKIZIMANA Emman	Umutekano	0788481243	[signature]
35.	TURATSINZE Tsolie	Umutekano	0788999977	[signature]
36.	RWASINGWA Amani	Umukuru w'Umudugudu w'Isoko	0782525726	[signature]
37.	Munyamahoro Theogimoque	Gabiro ngenzuzi	0783835955	[signature]
38.	Habimana François	Umuhitsi	0788626440	[signature]
39.	Kabuye Bgumo	Umukuru w'umudugudu	0788847301	[signature]

Repubulika y'u Rwanda
Umujyi wa Kigali

	AMAZINA	ICYO AKORA	CONTACT	SIGNATURE
12.	Landry NKIRIYUMWAMI	SAFEGUARD CONSULTANT	0788430403	[signature]
13.	RUGWIZANGOGA Appolinaire	Umukuru (Umudugudu)	0786872898	[signature]
14.	BANZUBAZE O. Amani	Présid Nyanung Agatare	0788746825	[signature]
15.	NYANGOMA MARY	SOCIAL AFFAIRS	0788773747	[signature]
16.	KAYINAMURA Timothée	ASC	0788403575	[signature]
17.	TWIZEYEMUNGU Emmanuel	Iterambere Umudug. Agatare	0788803081	[signature]
18.	Sibongo saïdi	Umutekano	0788676456	[signature]
19.	Mukundende HARIATA	C.N.F. Rwampala	0788414772	[signature]
20.	KANYANDORWA Sekimani	Chairman Umugoroba	0788688508	[signature]
21.	Kayitesi Jamada	VSP chairman Gabiro	0782952772	[signature]
22.	~~Nyiramenza NASABAH~~	~~Iterambere~~	~~0785017646~~	[signature]
23.	Mpabonezi Celestin	Iterambere	0788221243	[signature]
24.	Rubayiza Hussein	Affairs Social Nyirangoma	0788222478	[signature]
25.	MUKASHEMA Divine	Secretary (Umurenge)	0786179640	[signature]

Repubulika y'u Rwanda
Umujyi wa Kigali

	Amazina	Icyo ukora	Contact	signature
68.	Mukaruzima Prisilla	Umukuru w'Umudugudu	0788437735	[signature]
69.	Jean. KALISA	Umukuru w'Umudugudu	0788745840	[signature]
70.	Kabuimba. AMZA	Umukuru w'umudugudu	0788425673	[signature]
71.	Mukamana · Safina	Ubukungu. Mumudu	0788539243	[signature]
72.	Habumuremyi Léonord	Umujyanama	0788550431	[signature]
73.	MPAMBARA Abdul KAHIM.	UMUKURU W'UMUDUGUDU	0788748441	[signature]
74.	GATETE A Emely	Pr. w'UMUDUGUDU	0788468846	[signature]
75.	UMUTESI Françoise Hassina	V/Prezidante	0788837208	[signature]
76.	HAREZIMANA Emmanuel	ushinzwe UMUTEKANO	0782201822	[signature]
77.	MUKAMUSONI Immaculée	Coordinatri wa CNF BIRYOGO	0788829483	[signature]
78.	N. NSENGIMANA Shemssa	Prés. Abagore	0785529415	[signature]
79.	NYIRINKINDI J.M.V.	Amakuru	0788478876	[signature]
80.	Mutabazire SAFINA	Umukuru w'umudugudu	0782941895	[signature]
81.	BIZIMANA Jean Yves	Umukuru w'umudugudu RUGUNGA	0788513089	[signature]

Repubulika y'u Rwanda
Umujyi wa Kigali

	AMAZINA	ICYO UKORA	Contact	Signature
82.	MUNYANEZA Nuurdiin	Umukuru w'umudugudu	0788421279	[signature]
83.	NTAGANIRA DJAMARI	USHYINZWE UMUTEKANO MUMUDUGUDU	0788282084	[signature]
84.	GAFARANGA OMAR	perezida w'abunzi mukarere k'agatare	0783044557	[signature]
85.	KAVIRANGA MUSSA	UMUTEKANO MUMUDUGUDU AMAJYAMBERE	0788544560	[signature]
86.	HABIMANA MOUSA	ITERAMBERE UMUDUGUDU RWAMPARA	0789140914	[signature]
87.	Mutarugera Assouman.	Amakuru mu mudugudu Gahira	0788429091	[signature]
88.	BUShyikiro Andre	Amakuru	0788747709	[signature]
89.	Mukamana Mariamu	Urugaga	0783363594	[signature]
90.	Mukakalisa Madina	Amakuru	0788060208	[signature]
91.	KAYITANI - Amza	NGENZUZI	0787392366	[signature]
92.	Batamuliza Idaya	C.M.F.	0728870570	[signature]
93.	HAKIZIMANA ALIMA	V/Presidante (urugaga)	0783502488	[signature]
94.	NTAMUSHOBORA FALIDA	V/Presidante	0789429825	[signature]
95.	Kanyitesi Zaituni	imimibereho	0788531267	[signature]

REPUBULIKA Y'U RWANDA

UMUJYI WA KIGALI

AKARERE KA NYARUGENGE

UMURENGE WA NYARUGENGE

ABITABIRIYE INAMA YA MOBILISATION Y'ABATURAGE IBAGARAGARIZA IBYAVUYE MURI PROJET UMURENGE WA NYARUGENGE KUWA 23/10/2015

N°	AMAZINA	AKAGARI	UMUDUGUDU	Email	SIGNATURE
1.	N. NSENGIMANA Shemsa	BIRYOGO	BIRYOGO	0785529415	[signature]
2.	Uwimufindi Jumanne	AGATARE	UMURAVA	0788478876	[signature]
3.	NKANGA Abdou-Noor	Biryogo	Biryogo	0783597552	[signature]
4.	UWASE Vanessa	BIRYOGO	Gabiro	0788252831	[signature]
5.	NIRERE Sifa	Gatare	Inyambo	0783088945	[signature]
6.	NTAMFURAYISHYARI FELIX	BIRYOGO	UMURIMO	0788232310	[signature]
7.	Mbarushimana Nadimkalia	Biryogo	NYIRANDUMA	0788748141	[signature]

8.	GATETE Aimely	BIRYOGO	UMURIHO	0788468846	[signature]
9	UWAMUTESI Françoise Hassina	Biryogo	Biryogo	0783837208	[signature]
10	MUKAMUSONI Dummaculée	BIRYOGO	BIRYOGO	0788829483	[signature]
11	INGABIRE Alain	RWAMPARA	RWAMPARA	0788572300	[signature]
12	BAKAMULIZA Shaifa	Biryogo	BIRYOGO	0785780503	[signature]
13	M. ntabana Ashula	Biryogo	Biryogo	0782420492	[signature]
14	MUKAKAMARI Kurusamo	Biryogo	Biryogo	0786041368	[signature]
15	NYIRANKIMA Mariam	Agatare	~~Agatare~~ Amajyambere	0783731458	[signature]
16	KAYIRANGA Rubona	AGATARE	MURANGA	078847409 99	[signature]
17	MUKAMANA hi loamina	AGAtaRe	inyambo	0787609788	[signature]
18	UWAMUNUMDA Rehema	AGataRe	inyambo	0785810296	[signature]
19					
20					

ATTENDANCE LIST FOR DISTRICT AUTHORITY CONSULTATION

CITY......HUYE......

NO	NAMES	FUNCTION	PHONE NUMBER	SIGNATURE
1	NSANZIMFURA Innocent	program & project Specialist / LODA	0788633762	[signature]
2	BURANGA UMULISA Assumpta	District Health M&E officer	0788506050	[signature]
3.	UGIRUMUREZRA Cyprien	JADF Representative	0788618996	[signature]
4	MUHONGAYIRE Jacqueline	Dir OSC ou/Huye	0788610043	[signature]
5.	KAYITESI Noella	CNJ/Secretaire	0788522980	[signature]
6.	Albert BUSUMBIGABO	CNJ Coordinator	0788864789	[signature]
7	Christine Niwemugeni	VIM AFSO	0783858530	[signature]

ATTENDANCE LIST FOR DISTRICT AUTHORITY CONSULTATION

CITY: ..... HUYE .....

No	Names	Function	Phone Number	Signature
1.	SERAGABO Sébastien	FS/Voyom/HICE	0788838416	
2.	Tharcisse MUSABYIMANA	Social Safeguards Specialist, World Bank	0788640812	
3.	Dr. Denis BYAMUKAMA	Green world Consult Safeguards TL	+250782579315	
4.	NKOMEZI Alain	GIS & Surveyor	0788575502	

ATTENDANCE LIST FOR DISTRICT AUTHORITY CONSULTATION

CITY.........HUYE.........

NO	NAMES	FUNCTION	PHONE NUMBER	SIGNATURE
1.	Alphonse MUTSINDASHYAKA	ES MUKURA/HUYE	0788620306	[signature]
2	Claudine MUKAMUDENGE	ES / MBAZI	0788473618	[signature]
3	SEBAGABO Jacques	E/S Huye Sector	0784833949	[signature]
4	TUYISINGIZE Alfred	Land officer / Ngoma sector	0786898640	[signature]
5	KAYITARE Léon-Pierre	JADF Officer / Huye	0788557730	[signature]
6.	MUKASINE Marthe	Bureau du CD / Huye	0788626471	[signature]
7	Nshimiyimana Védaste	SE	[illegible]	[signature]

ATTENDANCE LIST FOR DISTRICT AUTHORITY CONSULTATION

CITY.....HUYE.....

NO	NAMES	FUNCTION	PHONE NUMBER	SIGNATURE
1	CHRIS BANGS	ENGINEER, WORLD BANK	0782297743	
2.	John KALISA	Urban Economist	0788 222292	
3.	Gloriose UWAMWEZI	CRF Coordinator/District	0788836361	
4	MAPENDO Tom christian	ENGINEER HUYE DISTRICT	0788568301	
5	Enock MUSABIRWA	Engineer HUYE District	0788602446	
6	François HABINSHUTI	Engineer Huye District	0785139850	
7.	Cyprien NIYIBIGIRA	Vice Mayor Economic	0788643971	

ATTENDANCE LIST FOR DISTRICT CITIZEN CONSULTATION

CITY........HUYE..........

NO	NAMES	FUNCTION	PHONE NUMBER	SIGNATURE
1	UWIMANA Gaspard	Researcher/KARUBANDA Inhabitant	0788473440	
2	Rwasibo Stanislas	teacher (PSVF)	0788642885	
3	MUTAGARAMBA Laurent	KARUBANDA	0788585629	
4	GATETE Thacien	Privé	0788469684	
5.	MAREMBO J. Claude	teacher (PSU Fidelis)	0788737576	
6	NIZEYIMANA Théoneste	Medecin	0788524280	
7.	NYIRAHAUMGIMANA Vestine	petit Séminaire	0786617677	
8.	Muyango Félicien	Militaire	0788517124	
9.	Kabagamba Jeannine	Civil servant	07887[illegible]	
10	EGIDE MUZIGANYI	Director District pharmacy	078875320	
11	Ndenga SINDIKUBWABO	Teacher (PSVF)	0788772125	
12	Nigomugabo J. Rc	Karubanda	07888335[illegible]	

ATTENDANCE LIST FOR DISTRICT CITIZEN CONSULTATION

CITY..... HUYE .....

NO	NAMES	FUNCTION	PHONE NUMBER	SIGNATURE
1	TUYISENGE ERIC	Public function.	0788465157	
2.	NTAGANDA Vialem	Agent de l'Etat	0788776238	
3.	Noël RWTAMBUKA	public servant	0788492585	
4.	TUYIZERE ALOYS	Medecin	0788634204	
5.	INGABIROGORA Aisha		0783950917	
6	Mungarurire Emmanuel	Mecanicien	0788561011	
7	BIZIMANA Kennedy	Umutekano ge	0783333498	

ATTENDANCE LIST FOR DISTRICT CITIZEN CONSULTATION

CITY.....HUYE.....

NO	NAMES	FUNCTION	PHONE NUMBER	SIGNATURE
1	KAZINGUVU Ngweshi	Lecturer	0788428235	
2	Eric SAMBU	Director of ICT	0788605277	
3	Patrick NDIZIHIWE	IT Senior Officer	+250788676777	
4	HABARUREMA Sylvain	Medical doctor	0788804259	

ATTENDANCE LIST FOR DISTRICT AUTHORITY CONSULTATION

on 20/10/2015

CITY: MUHANGA

No	Names	Function	Phone Number	Signature
1	NKURANGA George	Green world consult : Environmentalist	0788356473	
2	Dr. Denis BYAMUKAMA	Green world consult / TL	+256 782519315	
3	2LT Fulgence NYIRIMANZI	Army 963 Bn	0788538717	
4.	LT Col Frank M BAGUMAKI	Army Bn CO 63 Inf Bn	0788305321	
5	DAO G. William RUDAHERANWA	DASSO MUHANGA	0785008595	
6	NTAWIHA Fabrice	Feasability Consultant	0784709261	
7	KABASINDA Tharcie	Umujyanama	0788739707	
8	NANIRAFASHA Amos	Road Infr. Mainte nance Eng	0788626109	
9	Uwanyagasani Dephny.	Muhanga District (WSS)	0785033123	
10	Moses KWIZERA	Building Inspector	0784160452	

ATTENDANCE LIST FOR DISTRICT AUTHORITY CONSULTATION on 20th October, 2015

CITY: MUHANGA

No	Names	Function	Phone Number	Signature
1.	NZABONIMPA Aimé Plus	Dir of DSC	0788442729	
2.	UWAGAZE François	UM ED	0788892058	
3.	SEBAGABO S. Sebastien	FS	0788835416	
4.	MBARUBUKEYE Djafari	LED Specialist /LODA	0788633762	
5.	John KALISA	Urban Economist WB/MININFRA	58222292	
6.	Charcisse MUSABYIMANA	WB Social Safeguards Specialist	0788640812	
7.	NICOMEZI Alain	GIS & Surveyor at Green world c.	0788750229	
8.	GASANA Celse	D.E.S.	0788478855	

ATTENDANCE LIST FOR CITIZEN CONSULTATION on 20th October, 2015

CITY: MUHANGA

No	Names	Function	Phone Number	Signature
1.	NKURANGA George BBC	Green world consult Ltd	0788356973	
2.	Dr. Denis BYAMUKAMA	"	+256782519315	
3.	SEBAGABO S. Sebastien	FS/Voyant/Hike	0788838416	
4	G. William NDAHERANWA	ASSO	0785008595	
5	Mwanyaga Sam Joseph	Muhanga District.	0785033532	
6.	Muhizi Elysee	Journalist	0788530662	
7	Rukazintange Straton	I. C. K	0788482671	
8	IRAFASHA Jean Pierre	Internal Auditor	0788842823	
9	KAMANGU Samuel	DDMO	0783202412	
10	SIBOMANA Jean Paul	Environment	0782146680	

ATTENDANCE LIST FOR CITIZEN CONSULTATION on 20th October, 2015.

CITY: MUHANGA

No	Names	Function	Phone Number	Signature
01	MUZUNGU Elam	E/S Gahogo Cell	0783610105	[signature]
02.	Lazare KAZARADE	Umukozi w'Umurenge wa Nyamabuye	0788413084	[signature]
03.	NDAMYE Felix	Agronome	0788803235	[signature]
04	Musabyimana J Bosco	Umungobozi w'Umudugudu	0783799472	[signature]
05.	NYIRAKAMANA M. Josée	E.S Makera cell	0783189048	[signature]
06	IRAKIZA Claude	Président Njyanama Cell MAKERA	0785387938	[signature]
07	HARERIMANA J. Bosco	PMAE officer	0783264641	[signature]
08	HABIMANA François	S.D.A Church	0788771413	[signature]
09	GASHUGI Innocent	Youth sport & culture	0788510245	[signature]
10	Moses KWIZERA	Building Inspector	0784160452	Kwizera Moses

ATTENDANCE LIST FOR CITIZEN CONSULTATION on 20th October, 2015

CITY: MUHANGA

No	Names	Function	Phone Number	Signature
01	GASANA Celse	D.E.S.	0788487855	
02	UHAGAZE François	V M ED	0788892058	
03	NZABONIMPA Oreophore	Dir of ofeature Motors	0788442229	
04	BIZIMANA Eric	Dir. of planning M&E	0788858152	
05	MANIRAPASHA Amos	Board Dup & Maintenance Eng.	0788626109	
06	NTAWIHA Fabrice	Feasability consultant	0784705261.	
07	Mukamugema Félicité	ES mbare	0788504108	
08	UMUGWANEZA Gloriée	SE Gitarama	0783092021	
9.	HAKEHIMANA J. de la Providence.	R. Civil Society P.F	0788508701	
10	NTEZIYAREMYE J.M.Vianney	ES Tribuga cell	0788883932	

ATTENDANCE LIST FOR CITIZEN CONSULTATION on 20th October, 2015

CITY: ...MUHANGA.....

No	Names	Function	Phone Number	Signature
1.	John KALISA	Urban Economist	0788222292	
2	Charisse MUSABYIMANA	Social Safeguards specialist, World Bank	0788640812	
3	RWAYEREKA Roger	ES Cyeza Sector	0783490732	
4.	Niyonsaba M. Grace	SEDO Gitarama/Nyamb.	0788458726	
5	Samuel HARAGIRIMANA	S.E.D.O Gahogo	0787727930	
6.	KABAGENA Tharcie	Umujyanama	0788739707	
7	25 Fulgence NYIRIMINDI	Army Bnsg	0785357 17	
08.	Manirarora Godfroid	E-S RULI CELL	0785656236	
09	MUTIMUKEYE Aline	E-S Kabuga Cell	0782191913	
10	MUGUNGA Jean Baptiste	E/S Shyogwe Sector	0784576490	
11	NSANZIMFURA Joseph	LED Specialist / Local	0788633767	

ATTENDANCE LIST FOR CITIZEN CONSULTATION

on 20th October, 2015

CITY: ...MUHANGA.....

No	Names	Function	Phone Number	Signature
	NKUNDINEZA Jonathan	Human Resources	0788541416	

GREEN WORLD CONSULT LTD.
TIN: 101799622
P.O.BOX, 816
Kigali-Rwanda
Tel: 0788356473
Email:greenworldconsult162@yahoo.com

LIST OF DISTRICT AUTHORITY CONSULTION MEETING IN MUSANZE CITY HELD ON 21/10/2015

No	NAMES	POSITION	Telephone &E-mail	Signature
01.	Pius Kahangirwe	Safeguards Consultant	0788787856	
02.	KAYIGAMBA FRANCOISE	ENVIRONMENT SP. WB	0784611166	
03.	Sandrine Twagirimana	Engineer /WB/ RUDP	0788520881	
04.	Muhongerwa D. Judith	Social Consultant /GASABO	0788746552	
05.	Augustin KANYARUKATO	Director of Good Governance/Distr	0788352786	
06.	Mbabazi Rugema Immaculate	SE, SDP /MININFRA	0784748223	
07.	MUSABYIMANA J.Claude	VOI (ED) MUSANZE	0788612942	
08.	SEBASORE Javan	OSCL	0788486785	
09.	Mugisha Jackson	LODA	0788627446	
10.	MWANYIKA MAZWA WILSON	GREENWORLD CONSULT	0783095695	
11.	HAKIZIMANA François	Road development & Maintenance Eng.	0788552005	
12	BIZIYAREMYE Jean Noël	F.C consultant	0785482118	
13.	GISORE J.Bosco	CPO	0788663126	
14.	Vaudry NKIRIYUMWAMI	GIS - Expert	0788430403	
15.	Muvunyi Protais	AFNO	0788448293	
16.	TWIZERIMANA Clément	PRMCO	0788570983	
17.	RUTABUGANDE Bena	DIR HR & Admin	0788562564	
18.	UWAYO Irin	Journalist /RBA	0783154474	

GREEN WORLD CONSULT LTD.
TIN: 101799622
P.O.BOX, 816
Kigali-Rwanda
Tel: 0788356473
Email:greenworldconsult162@yahoo.com

LIST OF PARTICIPANTS IN THE CITIZEN ENGAGEMENT MEETING FOR MUSANZE CITY (21/10/2015

No	Names/ Amazina	Position/Icyo Akora	Telephone no.	Signature
01.	Bugenimana valentin	Soudeur	0783461769	[signature]
02.	MUGABO Benjamin	Countrycoordinator / IGCP	0788531708	[signature]
03.	RAMBURA R. Félicien	Prés. Comité / Eglise Catholique Diocese RUHENGERI	0788623136	[signature]
04.	BAJENI MPUHAMRO	PASTEUR ADEPER.	0788536057	[signature]
05.	MAAJALIWA MUSSA	IMAM / Islam of Dist. Musanze	0788749282	[signature]
06.	Mukagakwaya Julien	umuturange	0788770860	[signature]
07.	[illegible] Jonas	E.S. GABARARIKA	0788744963	[signature]
08.	RUSHIMIYIMANA Samuel	Pastor	0788728804 0786308841	[signature]
09.	Kanyoni Jacqus	Umuturage	0788847770	[signature]
10.	BUTUNGE Pascal	umuturage mu kagari ka Ruhengeri	0788424671	[signature]
11.	GAFISHI SEBAHAGARARA	"	0788609686	[signature]
12	NSENGIYUMUA Vincent	Umuturage mu kagari ka RUHENGERI	0788603109	[signature]
13.	IMPAMO THOMAS	UMUTURAGE W'RWEBEYA	0784480870	[signature]

GREEN WORLD CONSULT LTD,
TIN: 101799622
P.O.BOX. 816
Kigali-Rwanda
Tel: 0788356473
Email:greenworldconsult162@yahoo.com

No	Names/ Amazina	Position/Icyo Akora	Telephone no.	Signature
14.	Nyirarukundo Clementine	chef de village	0788879559	[signature]
15.	Hitimana Jadodiye	chef de village	0783556649	[signature]
16.	Mukamashyaka	Umuturage	0786595587	[signature]
17.	MANIRAKIZA J. Bosco	Umuturage	0786602749	[signature]
18.	RURANGWA Jean	KARAGOZI kimonyi	0726619496	[signature]
19.	~~NYIRARUKUNDO Clementine~~	~~chef de village~~	~~0788879559~~	[signature]
20.	NTAHOMPAGAZE Faustin	Umutekano mu mudugudu	0788640656	[signature]
21.	NIRERE Jeannette	Umuturage / RWEBESA	0788471776	[signature]
22.	BIZIYAREMYE Jean Noël	F.G consultant	0785482118	[signature]
23.	Muhongerwa M. Laetitia	F.G/Social consultant	0788746552	[signature]
24.	TWAGIRAMAHORO Sandrine	Engineer / WB/RUDP	0788520881	[signature]
25.				
26.				

ATTENDANCE LIST FOR CITIZEN CONSULTATION MEETING HELD ON 20/10/2015 AT NYAGATARE DISTRICT

NO	AMAZINA YOMBI	PHONE	AKAGALI	UMUKONO
1	RuRINDANA William	0788768724	NSHEKE	[signature]
2	Gasana Aloys	0783034885	NSHEKE	[signature]
3	BATAMULIZA FLAVIA	0783279855	Rutaraka	[signature]
8	Rutaroka	0788564[illegible]	Kabeuta	[signature]
9	BAHATI JOhn	078661378		[signature]
10	Bizimana Emile	0785481464	Nyagatare	[signature]
11	MAHIRANE SITANISIRASI	0788676999	MIRAMA	[signature]
12.	Uwimana Helène	0785006310	Balija	[signature]
13	Kirezi Esperance	0788633927	Balija	[signature]
14.	BARIGYE VITAL	0789013264	Nyagatare III	[signature]
15	Kagoyire FRANCOIS	072625[illegible]15	Nyagatare	[signature]
16	MISINGO David	0788823368	Rutaraka	[signature]
17	HSABA Vency	078837 2413	Rutaraka	[signature]
18	KIBUKA Vency		Rutaraka	[signature]
19	KABERA ALOYS	078892260[illegible]	RUTARAKA	[signature]
20	BIZIMINA. DIDIYE	0727165079	NYAGATARE	[signature]
21	KAYOMBA-	07816[illegible]	NSHEKE	[signature]

22	Malupane vi'cent	0788655667	Nyagatare	
23	ZiRiMWABegalaMatigesi	0783339110	Nyagatare	
24	Ntihabose Léonard	0788276311	NYAGATARE	
25	nsengiyumva selebe	0788433197	nyagatale	
26	gatarugira mBeté	0784228207	nyaBega	
27	MUNYESHURi.R. Charles	0783088582	NYAGATARE	
28	RUNDIRO PATRICK	0786228625	Nyagatare	
29	RURANGWA Francis	0785103393	NYAGATARE	
30	NGABESI MUNEZO	07260488	NYAGATARE	
31	NGABO Lambert	0788451344	Nyatare	
32	Pius KAHANGIRWE	0788313023	KIGALI	

ATTENDANCE LIST FOR CITIZEN CONSULTATION MEETING HELD ON 20/10/2015 AT NYAGATARE DISTRICT

NO	AMAZINA YOMBI	PHONE	AKAGALI	UMUKONO
1	KUBWIMANA CAESAR	0788169042	NYAGATARE I	[signature]
2.	GATETE Philbert	0788415641	NYAGATARE I	[signature]
3.	MUGISHA FRED	0788506823	NSHEKE	[signature]
4	BAYINGANA THEONEST	0788676696	BARIJA	[signature]
5.	SHEZIBIZAJ[illegible] Alex	0782309465	NSHEKE	[signature]
7	Mwesige Patrick	0788637762	Nyagatare	[signature]
8	MUTABAZI Emmanuel	0788702600	ATEAR / BYUMBA	[signature]
9	Umukunzi Solange	0781059444	nyagatare	[signature]
10	MURENZI Isaac	078872316[illegible]	Rutaraka	[signature]
11	INGABIRE Aaron	078867664 4	Barija	[signature]
12	NSENGIYUMVA J. Damascene	0786957204	Rutaraka	[signature]
13.	NGOGA Frank	0789077300	Rutaraka	[signature]
14.	NIZEYIMANA Johann	0781136325	RUTARAKA	[signature]
15.	SENJARA Fred	0787107050	RUTARAKA	[signature]
16.	KABAHIZA Faustin	0788542063	NYAGATARE	[signature]
17	Nzabandora Claudine	0783637026	Nyagatare	[signature]
18	Rwagatera Geni	0788756354	Ryabega	[signature]

19	Nagate	0783554834	Ryabega	[signature]
20	BYAGAFONDA SAMUEL	0787879621	RUGARAKA	[signature]
21	BASA PITA		RUTARAKA	[signature]
22	Gakwaya Antoni	0784678888	Rutaraka	[signature]
23	Semataro Sitefano		Rutaraka	[signature]
24	Mukayiranga Gerardine	0725988441	Rutaraka	[signature]
25	Kagesu margret	0788943766	Rutaraka	[signature]
26	SINGIRANKABO Seshoba	0783102703	Rutaraka	[signature]
27	MUTEMBEYI JOHN	0785685773	Burumba	[signature]
28.	RUTAYISIRE SAM	0787852074	RYABEGA	[signature]
29	Mentuweke Slevea	0780035293	Rutaraka	[signature]
30	Njichi Charles	0783035288	Rutaraka	[signature]
31	UMUBYEYI JOLLY	0788775366	Barija	[signature]
32	MUKANTABANA VENANSIYA	0783491876	RYABEGA	[signature]
33	Mukandayo Marge		Rutaraka	[signature]
34	MUKARUGEMA MARY		RYABEGA	[signature]
35	Nyiramitare Béatrice	0783145915	Nyagatare	[signature]
36	MUKAMURENZI Annet	0788640831	Nyagatare	[signature]
37	Nkurunziza Joseph	0788810067	Nyagatare	[signature]

ATTENDANCE LIST FOR CITIZEN CONSULTATION MEETING HELD ON 20/10/2015 AT NYAGATARE DISTRICT

NO	AMAZINA YOMBI	PHONE	AKAGALI	UMUKONO
01	MUSABYIMANA Deo	0785469346	Civil Society	
02	IYAKUREMYE Aimé	078860564	JADF chairman	
03	Karemera Kizito	0788568169	Barija	
04	BAGABO FRANCIS	078873145	Rutaraka	
05	KAYIBANDA Damas	0788673490	Nyagatare	
06	BUHINJA Geofrey	0788651862	Nyagatare	
07	mukinda James	078884607	Barija	
08	Pastor MUTERA Augustin	0788595341	Barija	
09	Rev Past Rwakiiza stephen	0788424568	BARIJA	
10	Rev Pastor Gakwaya Augustin	0788531817	Nyagatare	
11	MUGABIRE Emmy	0788353092	NYAGATARE	
12	TWAHIRWA J Paul	0788663062	BARIJA	
13	NZABAHIMANA George	0788796700	Rutaraka	
14	NYAMASWA J.DAMASCENE	0786280141	Nyagatare I	
15	TWAGIRUMUKIZA ISSA	0787154707	MIRAMA II	
16	RUSAKIZA PAUL	0788832583	Rutaraka	
17	KABALABO Andrew	0788301015	Ryabega	

18	Baijohe Augustin	07888999904	Nyeko	
19	Mirengee JAMES	0788687233	Nyagatare III	
20	Musomera Viateur	0789957537	Rutaraka	
21	Uwizeyi marasosiome	0781536961	Barijo	
22.	MBaleyimbabazi marigold	0789470222	Barijo	
23	Rukinisha Albert	0783512226	Rutaraka.	
24	BAGANIZI Dominique	078618947	Barija	
25	NTIGURIRWA BENON	0783366530	Barija	
26	Niyitera Sangwa	0786645848	Managers	
27	Cyatengwa Jackline	0788629025	Ryabega	
28.	HAKIZAMUNGU Thomas	0788440172	JADF officer	
29	Mujawingoma Alexie	0783665683	Rutaraka	
30.	INGABIRE Christine.	0788457426	Barija	
31	Bizimana Placidie	0788719773	Barija	
32.	Mbabazi Janet	0785127723	Rutaraka.	
33.	Mujiba Nelson	0788627746	LODA	
34	DUSABE Pascasie	0788308922	NYAGATARE	

ATTENDANCE LIST FOR CITIZEN CONSULTATION MEETING HELD ON 20/10/2015 AT NYAGATARE DISTRICT

NO	AMAZINA YOMBI	PHONE	AKAGALI	UMUKONO
1	GAKWANDI ALFRED	078864753	RUSHOGA	
2	NTAHOMPAGAZE [illegible]	0788548045	BARIJA	
3	KAGAMBIZI INNOCENT	0788687225	BARIJA	
4	Habiyaremye Roza	0783627278	Nyagatare	
5.	Nangwamahoro Olivera	0727622472	Nyagatare	
6.	Mukasine Esiteri	11	Rutaraka	
7	MUPENDE David	0788577775	11	
8.	RUCAMIHIGO DAMASCENE	0783836237	NYAGATARE	
9.	NKURANGA EUGENE	0788749128	BUSHOGA	
10	BUSABIMANA Ephrem	0783022167	BUSHOGA	
11	GAHUNGERI HAMUDUNI	0786330297	BARIJA	
12.	Sobiti Bosco	0788791509	Rutaraka	
13	Mfitamahoro Sam	0788416031	Nyagatare	
14.	NIZEYIMANA Team d'Amour	0783546006	Rutaraka	
15	Kagaba Natha	0787877048	Nyagatare	
16	MUHIRE Philippe	0788605197	NYAGATARE	
17	Rwamucyo	0788919026	NYAGATARE	

18.	Purangirwa juvénol	0783137756	Nsheke	[illegible]
19.	MUGABO JOHN	0788780776	Nsheke	[illegible]
20.	Ndagijimana Alphonse	0786356886	MIRama I	[illegible]
21	Mworukwere pauinch	0788667012	Nsheke	[illegible]
22	Niyogonziza Alex	0788472762	Barija B.	[illegible]
23	Rugugomo dysolome	0785449267	~~Rg~~ Rubaraka	[illegible]
24	BADEGE JOSEPH	0785183998	RUTARAKA	[illegible]
25	Mudenge Geofrey	0781282551	Rugendo	[illegible]
26	Sematama Elidard	0788543136	Nyagatale I	[illegible]
27.	mugeni SCOVIA	0787931019	nyagatare	
28.	GASANA Thorlisse	0788592001	Barija	[illegible]
29.	GASANA Fransis	0782259282	Barija	[illegible]
30	TWAGIRA Innocent	0788432671	Nyagatare	[illegible]
31	GASANA Josua	0788898937	Nyagatare	[illegible]
32	NGAMIJE NATHAN	0788677700	NSHEKE	[illegible]
33	Musoni Therlisse	0788842665	Nyagatare	[illegible]

ATTENDANCE LIST FOR DISTRICT AUTHORITY CONSULTATION MEETING HELD ON 20/10/2015 AT NYAGATARE DISTRICT

NO	NAME	POST	PHONE	EMAIL	SIGNATURE
1.	MBARAZI RUGEMA I	SE, SDP	0784748223	immaculate.mbarazi@minijuka.gov.rw	
2	SABITI A. Fred	Mayor	0788591398	Sabitifred24@yahoo.com	
3	Sandrine Twagirimana	Engineer/WB projet	0788520881	sisinan@yahoo.com	
4	KAYIGAMBA FRANCOISE	Environment SP/WB World bank	0784611166	fenkayigamba@gmail.com	
5	MWANJA WASWA WILSON	SAFEGUARD CONSULTANT	0783095695	wwmwanja@yahoo.com	
6.	Vandry NKURIYUMWAMI	SAFEGUARD consultant	0788313040[illegible]	nandex010@gmail	
7	BIZIYAREMYE JEAN NOEL	FC. consultant	0785482118	bijeanoel@gmail.com	
8	NZIYUMVIRA Innocent Lucien	District Engineer Nyagatare	0788787463	nzinnocent@yahoo.com	
9	MURINZI JOHN	District engineer	0788816244	murijohan@gmail.com	
10	[illegible]	PSP	07886[illegible]	[illegible]@gmail.com	
11.	BUGINGO Monica	Social protection	0788672318	mbugingo@yahoo.com	
12	Muhongerwa N. Laetitia	Social Consultant	0788746552	[illegible]@yahoo.fr	
13.	Pius KAHANGIRWE	SAFEGUARDS	0788313040[illegible]	Kpius@gmail.com	

GREEN WORLD CONSULT LTD,
TIN: 101799622
P.O.BOX, 816
Kigali-Rwanda
Tel: 0788356473
Email:greenworldconsult162@yahoo.com

No	Names/ Amazina	Position/Icyo Akora	Telephone no.	Signature
27.	UWAJENEZA Jeannette	E.S Rugerero Sector	0784277897	[signature]
28.	NSEKUYE Simon	E.S. BASA / RUGERERO	0784938170	[signature]
29.	BUREGEYA Eloriste	Sector Land Manager / Nyamyumba	0788634822	[signature]
30.	N. NTEZIMANA Béranélle	Secretaire wa Njyanama y'Akagali	0783148816	[signature]
31.	NSHIMIYIMANA VINCENT	VIP NJYANAMA YA KABIRIZI	0788238335	[signature]
32.	ZIMULINDA Jean Bosco	Disability Mainstreaming / Rubavu District	0783878749	[signature]
33.	NSHIMIYIMANA R. Venuste	SEDO / Bugoyi Cell	0788718535	[signature]
34.	BARIGORA Rwemera	SLM / Gisenyi	0788603158	[signature]
35.	MUPENDA Ismaël	ES / MUNANIRA	0788472244	[signature]
36.	BANZEKURWAHO Joselyne	ES / Rubona Cellule	0788418761	[signature]
37.	NIYIBIZI Clémentine	ES / Busoro	0784322834	[signature]
38.	UWIMANA EUSTACHE	E.S / KURAGA Cell	0788644972	[signature]
39.	RWAMIRAMBI Assa	E.S / Burushya Cell	0789301110	[signature]

GREEN WORLD CONSULT LTD,
TIN: 101799622
P.O.BOX, 816
Kigali-Rwanda
Tel: 0788356473
Email:greenworldconsult162@yahoo.com

LIST OF DISTRICT AUTHORITY CONSULTION MEETING IN RUBAVU CITY
HELD ON 22/10/2015

No	NAMES	POSITION	Telephone &E-mail	Signature
01.	MWANGANGE Mediatrice	ES OIC	mwangamediaro@gmail.com 0788539113	[signature]
02.	Rukaniko Leonard	Civil society President/RBV	rukaleo@yahoo.fr 0788559582	[signature]
03.	UGIRIRABINO Elisaphan	Umujyanama RUBAVU District	0788507376 elisafa2011@gmail.com	[signature]
04.	MURUTA Berthilde	Umujyanama / Rubavu	bertmes2007@yahoo.fr	[signature]
05.	MUGABOWINGOGA Bernard	Civil Society Member	bmugabowingoga@ymail.com 0788349746	[signature]
06.	Landry NKIRIYUMWAMI	SAFEGUARDS CONSULT LTD Green world Consult LTD	landry.nkiriyumwami@gmail.com 0788430403	[signature]
07.	MWANJA WASWA WILSON	SAFEGUARDS CONSULTANT GREEN WORLD CONSULTANTS LTD	greenworld162@yahoo.com	[signature]
08.	NKUBITO Charles	Chief ops Gisenyi Airport	0788460747 cnkubito@caa.gov.rw	[signature]
09.	Benoit MUNYANKINDI	RAB / RUBAVU Branch	benedigito80@gmail.com	[signature]
10.	UWAYEZU Janviere	Umujyanama / Rubavu	uwayezujanviere@gmail.com	[signature]
11.	NAKUNDWE Eliane	Umujyanama (Rubavu)	nakueliane@gmail.com	[signature]
12	HAMUDARA Bertin	Umujyanama (Rubavu)	dianfosseyhotel1@yahoo.com 0788305511	[signature]
13.	Dr CYEZE Emmanuel	Umujyanama (Rubavu)	cyezee@yahoo.ca 0788308792	[signature]

GREEN WORLD CONSULT LTD,
TIN: 101799622
P.O.BOX, 816
Kigali-Rwanda
Tel: 0788356473
Email:greenworldconsult162@yahoo.com

No	NAMES	POSITION	Telephone &E-mail	Signature
14.	Uwera-Aimante	Umujyanama /Rubavu	0788638583	[signature]
15.	MUKANGIRENTE Francine	Umujyanama /RUBAVU	0787274090 mukafra07@gmail.com	[signature]
16.	TUYIRINGIRE Joseph	BI/Ag CBO/Rubavu	0787442798 tuyijoseo7@yahoo.fr	[signature]
17.	NYAMASWA Emmanuel	Umujyanama Rubavu	0788681035	[signature]
18.	MABETE M. Dieudonné	PSF /Rubavu	0788627522	[signature]
19.	MANIRIHO J. Népomucène	Director/AMAHORO ANGLICAN SCHOOL	0788036060	[signature]
20.	AKUMBIMANA Espé	DJ HR&A	0789820731	[signature]
21.	Donat KARASIRA	Dir. of Finance	0788506588	[signature]
22.	E. Blaise HAKIZIMANA	Dir. A.N.R. (A)	078835 7304	[signature]
23.	Kayitsinga N. Innocent	Titulaire CS Murara	0788481715	[signature]
24.	Mugisha Jackson	PPP / LODA	0788627446	[signature]
25.	Sandrine Twagirimana	ENGINEER / WB / RUDP	0788520881	[signature]
26.	Pius KAMANYIRWE	SAFEGUARDS CONSULTANT	0722787856	[signature]

27. KAYIGAMBA FRANCOISE ENVIRONMENT SPECIALIST 0784611166 [signature]
28. GASUKU Oscar Director ODC / Rubavu 0788863097 [signature]
29. BAZITUNGA René RFR Eg. / Rubavu 0788871592 [signature]
30. ZAWADI MALUMU Gilbert ~~RENA~~ Director/Rubavu 0783464454 [signature]
31. Mukamugema M. Laetitia Social consultant / GAKENKE FC 0786746552 [signature]

GREEN WORLD CONSULT LTD,
TIN: 101799622
P.O.BOX, 816
Kigali-Rwanda
Tel: 0788356473
Email:greenworldconsult162@yahoo.com

LIST OF PARTICIPANTS IN THE CITIZEN ENGAGEMENT MEETING FOR RUBAVU CITY (22/10/2015)

No	Names/ Amazina	Position/Icyo Akora	Telephone no.	Signature
01.	Mukaze M. Innocent	Director Gacuba II Health Center	0788222222	[signature]
02.	GASUKU Oscar	Director OIC / Rubavu	0788863097	[signature]
03.	Mwaseta Honore	ES Gisenyi	078851292[illegible]	[signature]
04.	Kamana Kalisa charles	Entepreneur	0788534483	[signature]
05.	NANGAMABWORE Léonidas	ES of Nyamyumba	0788635273	[signature]
06.	Nyamarwa R. Emmanuel	Concelor/Rubavu District	0788681035	[signature]
07.	MUNYANKINDI Jansi	Pas. Nyarama Gisenyi	0788652971	[signature]
08.	NSENGIMANA Michel	ES Rukoko	0788876663	[signature]
09.	Sh. KIBAJA DJUMA	P. RUHOD-ISANGANO	0788437521	[signature]
10.	DUSINGIZIMANA Zacharie	Abafite ubumuga (UCC)	0788652294	[signature]
11.	Karenzi Antoine	Umuturage / Gisenyi	0788851666	[signature]
12	Sandrine Nyagahimana	Civil Engineer / WB / RLDA	0788520881	[signature]
13.	KAYIGAMBA FRANCOISE	Environment Sp / WB	0784611166	[signature]

GREEN WORLD CONSULT LTD,
TIN: 101799622
P.O.BOX, 816
Kigali-Rwanda
Tel: 0788356473
Email:greenworldconsult162@yahoo.com

No	Names/ Amazina	Position/Icyo Akora	Telephone no.	Signature
27.	UWAJENEZA Jeanne d'Arc	E Sa Rugerero Sector	0784277897	
28.	NSENGIYE Léonard	E.S. BASA / RUGERERO	0784938170	
29.	BUREGEYA Elorish	Sector Land Manager / Ayomuyobozi	0788634822	
30.	N. NTEZIMANA Béranéille	Secretaire wa Njyanama y'Akagali	0783148816	
31.	NSHIMIYIMANA VINCENT	VIP NJYANAMA YA KABIRIZA	0783239335	
32.	ZIMULINDA Jean Bosco	Disability Mainstreaming / Rubavu District	0783878749	
33.	NSHIMIYIMANA R. Venuste	SEDO / BUGOYI Cell	0788718535	
34.	BARIGORA Ruvemera	SLM / Gisenyi	0788603158	
35.	MUPENDA Ismaël	ES / MUNTANTRA	0788472444	
36.	BANZEKURWAHO Joselyne	ES / Rubona Cellule	0783418761	
37.	NIYIBIZI Clémentine	ES / Busoro	0784322834	
38.	UWIMANA EUSTACHE	E.S / KIRAGO Cell	0788644972	
39.	RWAMIRAMBI Boaz	E.S / Bumushya Cell	0789301110	

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GREEN WORLD CONSULT LTD,
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TIN: 101799622
P.O.BOX, 816
Kigali-Rwanda
Tel: 0788356473
Email:greenworldconsult162@yahoo.com

No	Names/ Amazina	Position/Icyo Akora	Telephone no.	Signature
14.	Ndagiwenimana Steven	Umunyeshuri	0728712668 0787398444	
15.	BUREGEYA Marcus	Umunyeshuri	0725772484	
16.	IRADUKUNDA KIDUMU	UMUNYEShuri	0787001736 0726472758	
17.	IRIBONEZE Venant	Cameraman / RBA	0788014277	
18.	MAGARAMBE Théodore	Journaliste/RBA Rubavu	0788850756	
19.	BIZIMANA Epimaque	Ex sec exé KANAMA	0788837262	
20.	NSENGIYUMVA MODESTE	ES/Buhoza cell	0788824411	
21.	BIZIMANA J. Pierre	UMUTEKANO AMAHORO	0784671573	
22.	MUPENZI MBABAZABAHIZI	UMUKURU W'UMUDUGUDU WA NYAKABUNGO	0785207293	
23.	Olivier GASASIRA	Citizen of Rubavu	0786587662	
24.	BABONAMPOZE Moussa	President/Njyanama MBUGANGARI	0788876381	
25.	UWAMAHORO M. Goretti	Sec/Njyanama RUBAVU	0783424637	
26.	BARIGIRA-NASORO	UMUKURU W'UMUDUGUDU WA GIRANEZA	0788647711	
27	HAKIZIMANA J. Damascene	Président/Njyanama Kabirizi cell	0783146738	

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02.	GASUKU Oscar	Director OIC / Rubavu	0788863097	[signature]
03.	Mwambita Honoré	ES Gisenyi	0788542228	[signature]
04.	Kamana Kalisa charles	Entepreneur	0788534483	[signature]
05.	NANGAMABWORE Léonidas	ES ai Nyamyumba	0788835273	[signature]
06.	Nyamanwa R. Emmanuel	Conselor/Rubavu District	0788681035	[signature]
07.	MUNYANKINDI Janvier	Pres. Nyarama Gisenyi	0788652971	[signature]
08.	NSENGIMANA Michel	ES Rukoko	0788876663	[signature]
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12	Sandrine Nyagisimana	Civil Engineer / WB / RNDA	0788520881	[signature]
13.	KAYIGAMBA FRANCOISE	Environment Sp / WB	0784611166	[signature]

ATTENDANCE LIST FOR DISTRICT CITIZEN CONSULTATION

CITY...RUSIZI...

NO	NAMES	FUNCTION	PHONE NUMBER	SIGNATURE
1	ANGLICAN CHURCH of Rwanda Diocese Cyangugu	ADMINISTRATOR	0788309730	[signature]
2	SEBAGABO S. Sébastien	FS/Voyant/HICE	0788838416	[signature]
3	NTAWIHA Fabrice	FS/Voyant/Hice	0784709261	[signature]
4	Alain NKOMEZA	Social Safeguard Consult Team	0788575022	[signature]
5.	Dr. Denis BYAMUKAMA	SSG Team Leader Greenworld Consult	+250782549315	[signature]
6.	Gervais NTWIGIRURWA	ES Kamembe Sector	0784634559	[signature]
7	A. Benjamin BAPFAKURERA	Vice/Pastorale - cathédrale	0788622092	[signature]
8	Catherine UWAMARIYA	CORE Pr./WVR, Rusizi Coord	0788305421	[signature]
9	Musoni Emmaculée	Umujyanama Com. Econ.	0788412210	[signature]
10	Madine Michelo IRABABIRO	ES of Sector/Gihundwe	0788679605	[signature]
11	ISHIMWE Honoré	RBA RUSIZI	0783237092	[signature]
12	Murumvaneza Innocent	Commerçant	0785324999	[signature]

ATTENDANCE LIST FOR DISTRICT CITIZEN CONSULTATION

CITY. RUSIZI ....

NO	NAMES	FUNCTION	PHONE NUMBER	SIGNATURE
1	Jeannette UWIMANA	TIRWI/District Coord/Rusizi	0788389434	
2	HAKIZUMWERA Patrick	AG WATER DISTRIBUCTION OFFICE WASAC	0785427176	
3-	MANISHIMWE Patrick	TECHNICIAN REG-Elech Rzi	0788581843	
4.	Innocent RUGENERANDEKWE	PC	0781571318	
5.	MUNEZERO Emmanuel	Pasteur Adventiste du 7J.	0788870220	
6.	NDOLI Sitio	Journalist	0785577612	
7	Musabwa Euphrem	Journalist	0788649991	
8.	Me HABYARIMANA Déogratias	Etat civil / MURURU Sector	0788864878	
9	Jean Luc NSABAYEZU	Ad BDE unity	0788475600	
10	Mukamuligo Médiatrice	Presidente Njyanama	0788540400	

ATTENDANCE LIST FOR DISTRICT CITIZEN CONSULTATION

CITY: RUSIZI

NO	NAMES	FUNCTION	PHONE NUMBER	SIGNATURE
01.	Jeanne d'Arc NIYONSABA	Program Officer	0788212421	[signature]
02	Ferdinand NZASYIBWAMI	CDE Kamembe	0784892771	[signature]
03	[illegible] Daniel	CDS Kamembe.	0788253393	[signature]
04	N. HABIMANA Marie	Avocat	0788692929	[signature]
05	RUZINDANA John	Umusilikare	0788662[illegible]	[signature]
06	NIYIBIZI François	Chef du village	0788587718	[signature]
07	NZAMWITA Pascal	Commerce or Business man	0784929790	[signature]
08	Nduwamariya Gakwandi M. Goretti	Umuturage	0788841170	[signature]
09	NDAYISABYE Adalbert	JANF Treasurer	0788852675	[signature]

ATTENDANCE LIST FOR DISTRICT CITIZEN CONSULTATION

CITY. RUSIZI

le 22/01/2015.

NO	NAMES	FUNCTION	PHONE NUMBER	SIGNATURE
01	HABARUREMA Venuste	Pres Nyyanama GIHUNDWE	0788750573	
02.	BIMENYIMANA Alphonse	Infrastructure officer	0788600623	
03	Napoleon NTAWUHARUWE	Ag. Director of OSC	0788791150	
04	GATETE Donatien	SGLS/OSC	0788758454	
05.	NIYONKUNGERI Jean Bosco	SEDO CYANGUGU Cell	0887275 24	
06	SEKANYAMBO Egbert	DDC.	0788592496	

ATTENDANCE LIST FOR DISTRICT CITIZEN CONSULTATION

CITY: RUSIZI

NO	NAMES	FUNCTION	PHONE NUMBER	SIGNATURE
1	NSANZIMFURA Djafari	Program & project Specialist	0788633767	[signature]
2.	John KALISA	Urban Economist	0788222292	[signature]
3.	HARERIMANA Frédéric	Mayor	0788746166	[signature]
4.	Laurent NDAGIJIMANA	V/P Njyanama	0788582721	[signature]
5.	Tharcisse MUSABYIMANA	Social safeguards Specialist World Bank	0788640812	[signature]

ATTENDANCE LIST FOR DISTRICT AUTHORITY CONSULTATION

CITY: RUSIZI

No	Names	Function	Phone Number	Signature
1	SEBAGABO S. Sebastien	ES / Vuyanut / HiCE	0788838416	[signature]
2.	John KALISA	WB-MININFRA	0788222292	[signature]
3.	NSANZIMFURA Djafari	LED Specialist / LODA	0788633762	[signature]
4	Gertrude MUKAMANA	Migration	0788434815	[signature]
5.	Laurent NDAGIJIMANA	V/P. Njyanama	0788582721	[signature]
6.	HARELIMANA Frédéric	Mayor	0788746166	[signature]
7.	Ephrem Ntihinyurwa	Executive Secretary	0788350653	[signature]
8	BIMENYIMANA Alphonse	Infrastructure officer	0788600623	[signature]

ATTENDANCE LIST FOR DISTRICT AUTHORITY CONSULTATION

CITY: RUSIZI

No	Names	Function	Phone Number	Signature
1.	KANKINDI Léonie	VIMED	0788491401	
2	Alain NKOMEZI	GIS Expert & Surveyor at GRW	0788745022	
3.	Dr. Denis RYAMUKAMA	SSG Team Leader Urban and Land Consultant	+256782529345	
4.	NTAWIHA Fabrice	Feasability Consultant	0784709261	
5.	Napoleon NTAWUHARUWE	Ag. Director of OSC	0788791150	
6.	UWAMBAJE Aimée Sandrine	S/G Sector Gashonga	0788728609	
7.	NYIRANCENGAMANA Mathilde	E/S Sector	0782832765	
8.	MUKAMANA Espérance	E/Sector	0785583269	
9	OLIVERETE Léa	E/S	0788850804	
10	NIYONKURIZA M. Claire	E/S	0784655567	