

THE REPUBLIC OF RWANDA



LOCAL ADMINISTRATIVE ENTITIES DEVELOPMENT AGENCY
(LODA)

Environmental and Social Impact Assessment (ESIA) Report

Second Rwanda Urban Development Project (RUDP II)

Phase 3 Works – Road and Drainage Channels in

Musanze Secondary City

Final Report
Revised by the WB



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PROJECT INFORMATION SHEET

PROJECT TITLE	ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE SECOND RWANDA URBAN DEVELOPMENT PROJECT (RUDP II) PHASE 3 WORKS – ROAD AND DRAINAGE CHANNELS IN MUSANZE SECONDARY CITY
CLIENT	LOCAL ADMINISTRATIVE ENTITIES DEVELOPMENT AGENCY
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LIST OF ABBREVIATIONS AND ACRONYMS

AASHTO:	American Association of State Highway and Transportation Officials
ACHO:	African Cultural Heritage Organisation
ACNR:	Association pour la Conservation de la Nature au Rwanda, ACNR
AIDS:	Acquired Immune Deficiency Syndrome
APHA:	American Public Health Association
ARAPs:	Abbreviated Resettlement Action Plan
BOD:	Biological Oxygen Demand
CBD:	Central Business District
CBD:	Convention on Biological Diversity
CBR:	California Bearing Ratio
CEDO:	Cell Development Officers
CFC:	Chlorofluorocarbons
CO:	Carbon Monoxide
CO ₂ :	Carbon Dioxide
COP:	Conference of the Parties
COVID 19:	Corona Virus Disease 2019
EA:	Environmental Assessment
EC:	Electrical Conductivity
ECOSAN:	Ecological sanitation
EDPRS:	Economic Development and Poverty Reduction Strategy
ESIA:	Environmental and Social Impact Assessment
ESMF:	Environmental and Social Management Framework
ESMP:	Environmental and Social Management Plan
ESIS:	Environmental and Social Impact Statement
ESS :	Environmental and Social Standards
ETEKA :	Ecole Technique de Kabgayi
EUCL:	Electricity Utility Corporation Limited
GBV:	Gender Based Violence
GCS:	Graded Crushed Stone
GEMS:	Global Environment Monitoring System
GIS:	Geographic Information System
GOR:	Government of Rwanda
GPS:	Global Positioning System
HIV:	Human Immunodeficiency Virus Infection
I &AP:	Interested and Affected Persons
IDA:	International Development Agency
IFC:	International Finance Corporation
INMR:	Institute of National Museums of Rwanda

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

ISDS:	Investor-State Dispute Settlement
IUCN:	International Union for Conservation of Nature
JV:	Joint Venture
KOPs:	Key Observation Points
LODA:	Local administrative Entities Development Agency
Ltd:	Limited
MINALOC:	Ministry of Local Government
MINECOFIN:	Ministry of Finance and Economic Planning
MININFRA:	Ministry of Infrastructure
MIDIMAR:	Ministry of Disaster Management and Refugee Affairs
MMI:	Modified Mercali Intensity
MOE:	Ministry of Environment
NGOs:	Non-governmental organization
NH ₃ :	Ammonia
NMTs:	Non-Motorized Transports
NO _x :	Nitrogen Oxides
NO ₂ :	Nitrogen Dioxide
NST1:	National Strategy for Transformation
OSH:	Occupational Safety and Health
PAPs:	Project Affected Persons
pH:	Potential of hydrogen
PPE:	Personal Protective Equipment
RAPs:	Resettlement Action Plans
RDB:	Rwanda Development Board
REG:	Rwanda Energy Group
REMA:	Rwanda Environment Management Authority
RHA:	Rwanda Housing Authority
RLMUA:	Rwanda Land Management and Use Authority
RMB:	Rwanda Mines, Petroleum and Gas Board
RoW:	Right-of-Way
RPF:	Resettlement Policy Framework
RTDA:	Rwanda Transport Development Agency
RUDP:	Rwanda Urban Development Project
RNP:	Rwanda National Police
RWB:	Rwanda Water Resources Board
RWFA:	Rwanda Water and Forest Authority
SACCOs:	Savings and Credit Cooperative Organization
SDA:	Seventh Day Adventist
SEP:	Stakeholder Engagement Plan

SGI Ingénierie S.A: European group of consulting engineers specializing in the fields of Civil Engineering, Construction, Water and Environment.

SO_x: Sulphur Oxides

SO₂: Sulphur Dioxide

STDs: Sexually Transmitted Diseases

SWOT: Strengths, Weaknesses, Opportunities and Threats

TA: Technical Assistance

ToR: Terms of Reference

UNFCCC: United Nations Framework Convention on Climate Change

UNEP: United Nations Environment Programme

USGS: United States Geological Survey

VEC: Valued Ecosystem Components

VIP: Ventilated Improve Pit Latrines

WASAC: Water and Sanitation Corporation

WB: World bank

WHO: World Health Organization

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TERMINOLOGY AND DEFINITIONS

Term	Explanation
Alternative	A possible course of action, in place of another, that would meet the same purpose and need but which would avoid or minimize negative impacts or enhance project benefits. These can include alternative locations/sites, layouts, processes, designs, schedules and/or inputs. The “no-project” alternative constitutes the ‘without project’ option and provides a benchmark against which to evaluate changes; development should result in net benefit to society and should avoid undesirable negative impacts.
Assessment	The process of collecting, organizing, analysing, interpreting and communicating information relevant to decision making.
Cumulative Impacts	In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.
Effect/Impact	Any change in the physical, natural or cultural environment brought about by a development Project. Effect and Impact are used interchangeably.
Environment	As defined in the organic law, Environment is a diversity of things made up of natural and artificial environment. It includes chemical substances, biodiversity as well as socio-economic activities, cultural, aesthetic, and scientific factors likely to have direct or indirect, immediate or long-term effects on the development of an area, biodiversity and on human activities.
Environmental Information	The information provided by a Developer to a Competent Authority on inter alia the Project and its environmental effects.
Environmental and Social Management Plan (ESMP)	A working document on environmental and socio-economic mitigation measures, which must be implemented by several responsible parties during all the phases of the proposed project.
ESIA Team	The team which carries out the Environmental Studies and prepares the Environmental information for submission to a Competent Authority.

Term	Explanation
Evaluation	The process of ascertaining the relative importance or significance of information, the light of people’s values, preference and judgments in order to make a decision.
Hazard	Anything that has the potential to cause damage to life, property and/or the environment. The hazard of a particular material or installation is constant; that is, it would present the same hazard wherever it was present.
Mitigate	The implementation of practical measures to reduce adverse impacts.
Project	The execution of construction works or of other installations or schemes and other interventions in the natural surroundings and landscape.
Public	Citizens who have diverse cultural, educational, political and socio-economic characteristics. The public is not a homogeneous and unified group of people with a set of agreed common interests and aims. There is no single public. There are a number of publics, some of whom may emerge at any time during the process depending on their particular concerns and the issues involved.
Review	The process of establishing whether an ESIA is adequate for the Competent Authority to use it to inform the decision on Development Consent. It is important to note that the decision will usually involve consideration of other information in addition to the environmental information, but the aim of review is to check that the environmental information is adequate.
Scoping Process	Process of identifying: issues that will be relevant for consideration of the application; the potential environmental impacts of the proposed activity; and alternatives to the proposed activity that are feasible and reasonable.
Screening	The process by which a decision is taken on whether or not EIA is required for a particular Project.
Significant Effect / Impact	An impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.
Stakeholders	A sub-group of the public whose interests may be positively or negatively affected by a proposal or activity and/or who are concerned with a proposal or

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Term	Explanation
	activity and its consequences. The term therefore includes the proponent, authorities (both the lead authority and other authorities) and all interested and affected parties (I&APs). The principle that environmental consultants and stakeholder engagement practitioners should be independent and unbiased excludes these groups from being considered stakeholders.

EXECUTIVE SUMMARY

1. Abstract

The Government of Rwanda (GoR) is implementing the Urban Development Project with financial support of the World Bank for civil works project in the six secondary cities and the City of Kigali. The civil works project has been divided into four (4) phases. Phase I was completed in 2018, Phase two is going on, while Phase 3 is in the design stage. In Musanze Secondary City, the proposed RUDP II Phase 3 project activities comprise of eight roads and the continuation of Rwebeya storm water drain (both upstream and downstream the formerly rehabilitated section). The nature and scope of the project makes it to fall under those projects that require an Environmental and Social Impact Assessment (ESIA) as provisioned by the Article 30 of Rwanda Environmental Law No. 48/2018, the Ministerial Order No 001/ 2019 of 15/04/2019 and the World Bank Environmental and Social Standards on Assessment and Management of Environmental and Social Risks (ESS 1).

The proposed project roads consist of Iposita – Excel School – Eveche - Yawunde Asphalt Road (MUZ3-1) (1.60 km), Nyamagumba –Regina Pacis Sec. School – Susa – Karisimbi Road (MUZ3-2) (2.38 km), MUZ 3-4 road (0.29 km), MUZ 3-5 road (0.26 km), MUZ 3-6 road (0.98 km), MUZ 3-7 road (0.37 km), MUZ 3-8 road (0.40 km) and MUZ 3-9 road (0.67 km), all of them located in Muhoza administrative sector. The Rwebeya storm water drain consists of Lower Rwebeya drain (0.87 km) in Muhoza Sector and Upper Rwebeya drain (2.08 km) in Cyuve sector. Along with the above project roads, side drains and culvert exits will be constructed to ensure the proper drainage of the area.

The project main impacts are related to land take from road widening purpose and disruption and limiting utility services and access to places along the project roads alignment during construction. The appropriate mitigation measures were proposed: A fair compensation at full replacement cost of all affected properties and lands will be undertaken, based on the WB Environmental and Social Framework (ESF), National Expropriation Law and the Musanze City expropriation procedures, with participation of owners and local administration in all compensation process.

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The project investment cost is 8,312,000,000 RwF (8,461,251.60 USD) and will generate employment for about 250 persons mainly local people. The cost for implementation of the environmental and Social Management has been estimated at 1,073,029,683.60 RwF, including RwF 857,929,683.60 for RAP implementation as specified in the Resettlement Action Plan (RAP) (see Table 1 for more details).

Table 1: Summary of the project cost and for the implementation of project ESMP (1 USD = 982.360577 RwF as per May 8, 2021)¹

Environmental and Social Management Items	Cost in local currency (RwF)	Cost in USD
RAP implementation as specified RAP	857,929,683.60	873,334.81
Waste management including dumping of soil spoil	50,000,000	50,897.81
ESMP Monitoring and supervision	40,000,000	40,718.25
Landscaping and greening (restoration)	20,000,000	20,359.12
Health and safety	36,000,000	36,646.42
Provision of water, hand washing points and eating areas	7,000,000	7,125.69
Capacity building (training)	4,000,000	4,071.82
Miscellaneous	28,100,000	28,604.57
Cost contingency	30,000,000	30,538.68
Total	1,073,029,683.60	1,092,297.18

2. Background and Need for the Project

Musanze City is one of the economic engines of the development of Rwanda due to its tourism potentiality, business and agriculture productivity in the surrounding rural area. Besides, the city is the crossroad between the axe Kisoro-Kampala (Uganda)- Goma (Democratic Republic of Congo) and Kigali. This explains the motivation for infrastructure development in this city. However, some informal settlements in the city are connected to sub-standard roads without adequate drainages that poorly facilitate the traffic and transportation of goods and services. It is in this regard that the Musanze District, as the overseeing organ for Musanze City, has proposed to asphalt the roads and construct the roads and standalone drain to improve the city standards and facilitate urban household’s access to livelihood, social, recreational, cultural and tourist assets in the Musanze City. It is anticipated that the project will have very limited impacts on the land, water, animal, plant, humans as it will be passing on existing roads right-of-way.

¹ https://www.bnr.rw/currency/exchange-rate/?tx_bnrcurrencymanager_master%5Baction%5D=list&tx_bnrcurrencymanager_master%5Bcontroller%5D=currency&cHash=4fb7571d4be4cafc4dc2859ca4996ea

3. Project Development Objectives and Scope

The project aims to improve access to sustainable services and strengthen urban management and resilience in low income areas of the Musanze City. The construction of the roads and drainages will reduce constraints in transport within the urban and semi-urban areas of the Musanze City. The roads will increase easy accessibility to schools (e.g. Excel, Regina Pacis schools), churches (e.g. EAR, ADEPR, SDA churches), local administrative offices (e.g. Ruhengeri and Susa Cell offices) and other facilities that would in turn boost the living standards of the community along the project lines and the country’s economy at large.

The proposed project roads and Rwebeya drain continuation will be developed within the areas of the informal settlement of Susa informal settlement and Kizungu in Musanze City. The Iposita- Excel School Eveche-Yaounde stretches from the Nyakinama Vunga Junction to NR4 (Kigali-Musanze-Musanze). This road has many connection and junctions, which are MUZ 3-4, MUZ 3-5, MUZ 3-6., MUZ 3-7, MUZ 3-8, MUZ 3-9 (Table 2\, Figure 1). This road and its junctions are located in Kizungu- planned settlement. These components will be equipped with side and exit drains, footpaths, utilities service spaces. The second road (MUZ 3-2) is located in Susa unplanned settlement. The construction of this road will require the construction of side and exit drains. Side drains will be covered to serve as pedestrian sidewalks. The road will also be equipped with streetlights. Two bridges are planned to be constructed on Rwebeya and Muhe rivers. The subproject MUZ 3-3 consists of the construction of Rwebeya Drain on the Rwebeya torrential river. The project investment cost is 8,312,000,000 RwF (8,461,251.60 USD).

Table 2: Roads and drain covered by RUDP II Phase 3 in the Musanze City

Road and drain name	Sector	Cell	Length (km)	Width (m)
Iposita – Excel School – Eveche - Yawunde Asphalt Road (MUZ3-1)	Muhoza	Ruhengeri	1.60	11.2
Nyamagumba –Regina Pacis Sec. School – Susa – Karisimbi Road (MUZ3-2)	Muhoza	Ruhengeri, Susa	2.38	10
MUZ3-4 (Road)	Muhoza	Ruhengeri	0.29	11.2
MUZ3-5 (Road)	Muhoza	Ruhengeri	0.26	10
MUZ3-6 (Road)	Muhoza	Ruhengeri	0.98	10
MUZ3-7 (Road)	Muhoza	Ruhengeri	0.37	10
MUZ3-8 (Road)	Muhoza	Ruhengeri	0.40	10
MUZ3-9 (Road)	Muhoza	Ruhengeri	0.67	10
Total (Roads)			6.95	
Lower Rwebeya Drain	Muhoza	Ruhengeri	0.87	16

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

Road and drain name	Sector	Cell	Length (km)	Width (m)
Upper Rwebeya Drain	Cyuve Musanze	Rwebeya Cyabagarura	2.08	16
Total (Drains)			2.95	

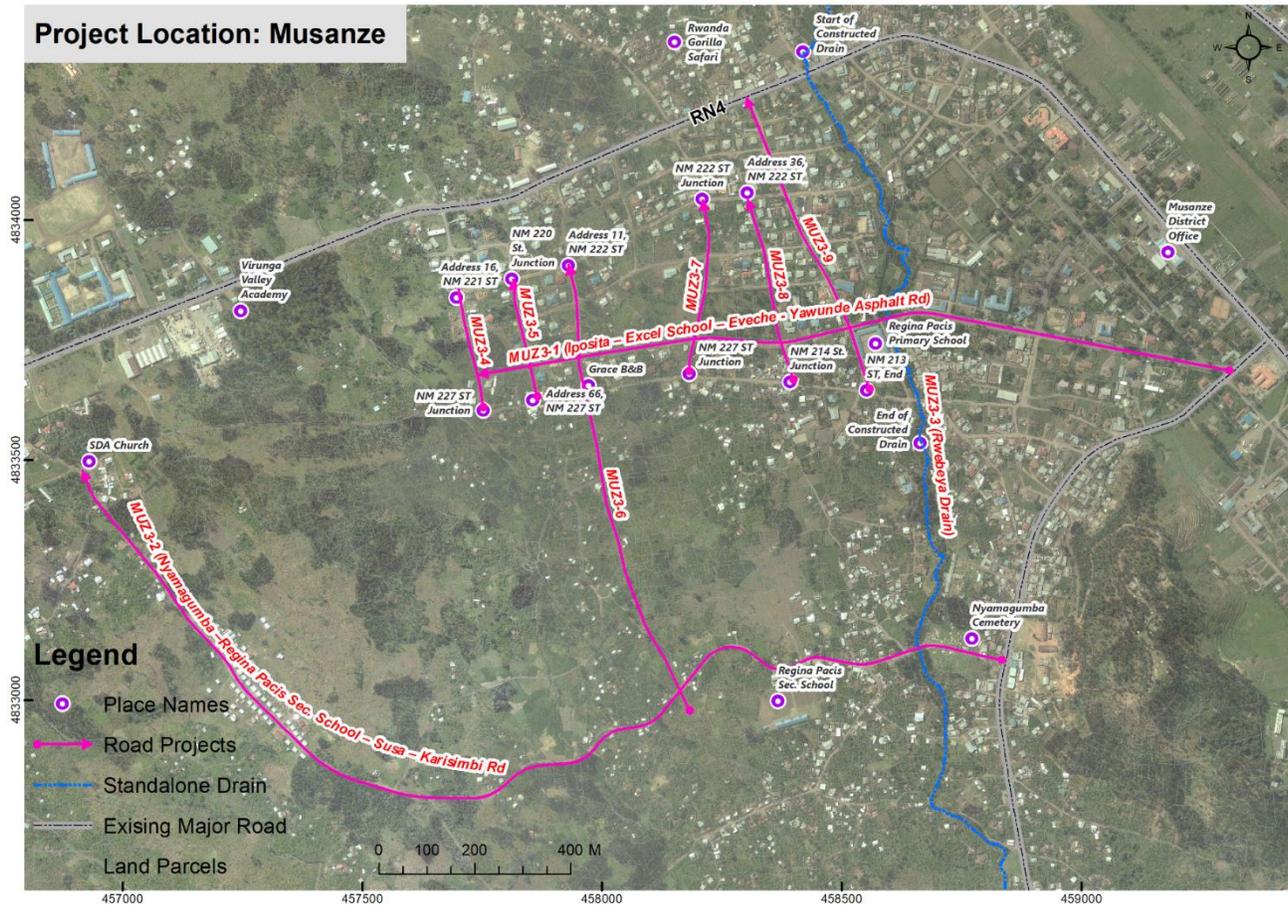


Figure 1: Location of the RUDP II Phase 3 in the Musanze City

4. Methodology of the ESIA

The assessment was guided by the terms of reference (ToR) provided by LODA and ToR approved by RDB and the project Environmental and Social Framework (ESF) instruments approved by the World Bank. The methodology was based on scientific qualitative and quantitative procedures required to conduct an ESIA with assurance to strict adherence to the relevant legislative framework and regulations governing the transport sector, construction, land, water, health and safety, cultural resources, pollution, mining (extraction of construction materials), labor and environment in Rwanda. The study methods included stakeholder

consultations, questionnaire administering, site visits/physical inspections, baseline surveys, integration and assessment of this information. The ESIA also consider different alternatives for the works in the Musanze City.

5. Roads and drainage cross sections

The main road cross-section elements include the roadway, bus bays/bus-stops, curbs, greening space, street lighting, non-motorized transport (NMT) facilities (sidewalks and cycle lanes), drainage facilities, cut/embankment slopes, and space for utility services, depending on available right-of-way. With regard to road cross section options, the project had four (4) options, and only two (2) were considered, all based on lowest expropriation cost and social displacement impacts:

- Option 1 (Figure 2): Two-way Roadway Street with cycle lane, greening and walkway on either side, Central reserve of 2 metres, complete with drain, street lighting and provisions for utility survives; right-of-way width 17 m to 24 m.
- Option 2 (Figure 3): Two-way Roadway Street with a walkway on both sides) one walkaway on top of the covered drain, drain on one side and provision of utilities survives (a provision of 1m). Right of the way width is 11. 20m.
- Option 3 (Figure 4): Two-way Roadway Street with a walkway on one side (on top of covered drain), drain one side and greening on one side, street lighting and provisions for utility survive; right-of-way width 9.757 m.

Based on consultations with the District, LODA and the Designing engineering team, option 1 and 2 was selected. Option 1 is applied to the Iposita-Excel School-Eveche-Yawunde Asphalt Road (MUZ3-1) from CH.0+000 to CH.1+0000 (Iposita to Rwebeya Bridge), while option 2 applies to the entire section of the Nyamagumba –Regina Pacis Secondary School-Susa-Karisimbi Road (MUZ3-2) and the MUZ 3-1 from CH.1+000 to CH.1+608.

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

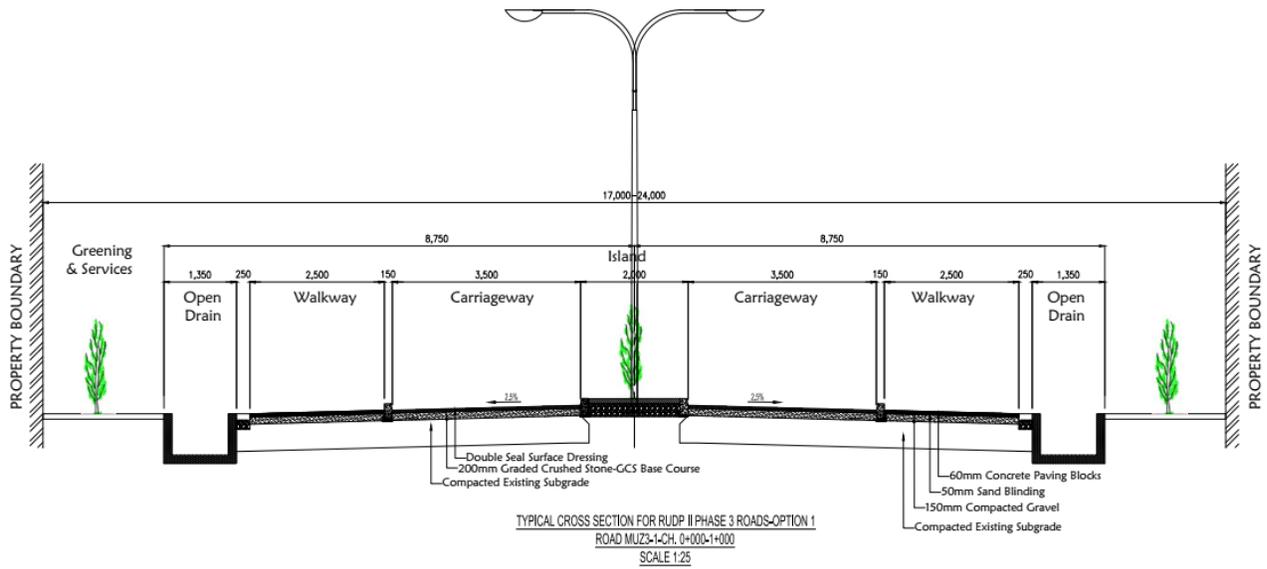


Figure 2: Typical Street Cross Section Option 2 (width 17m)

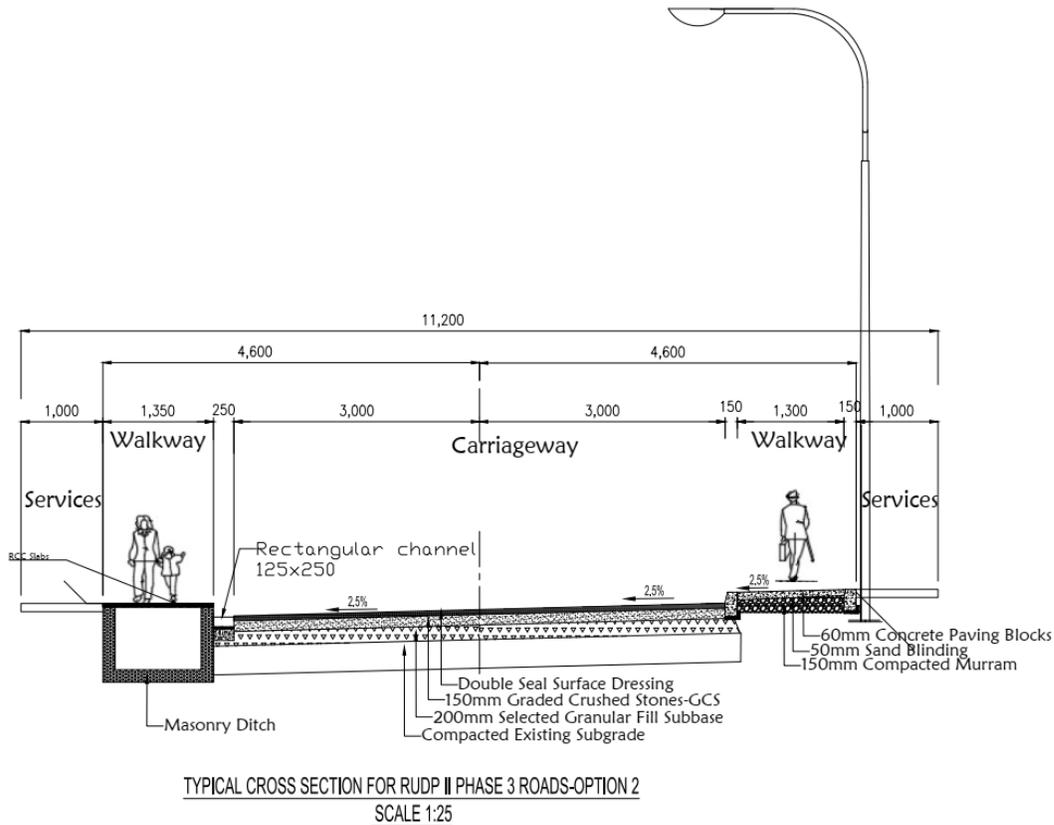


Figure 3: Typical Street Cross Section Option 2 (width 11.20m)

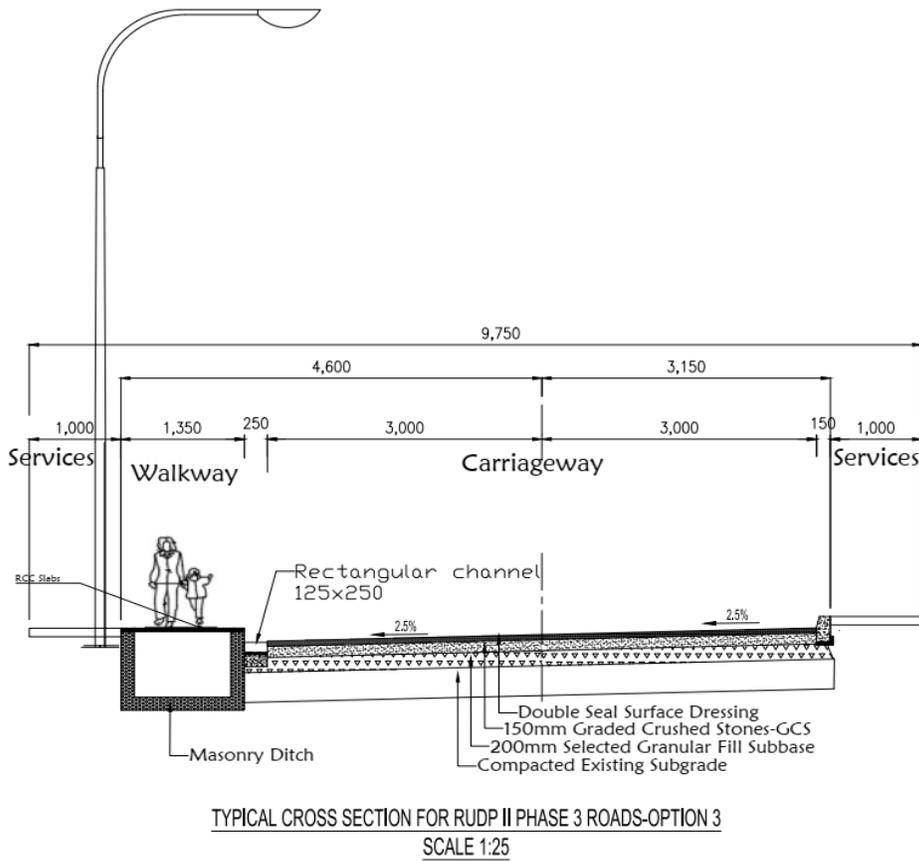


Figure 4: Typical Street Cross Section Option 2 (width 9.757m)

Drainage system was designed to remove the highest volume of storm/ rainwater from the road surface and its surrounding (Figure 5).

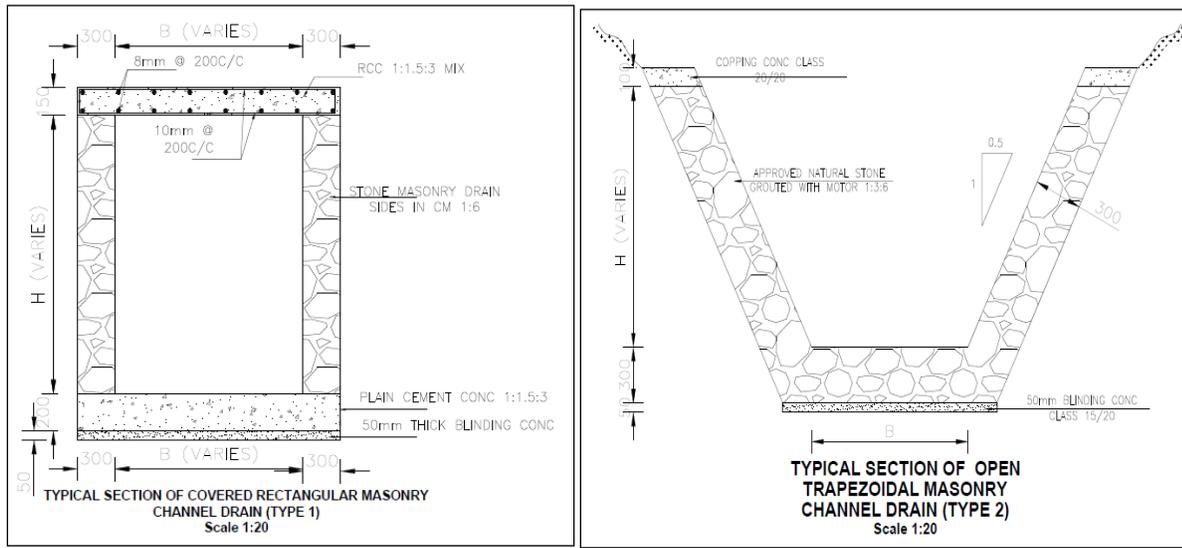


Figure 5: Typical cross section of drain with Rectangular or Trapezoidal masonry

6. Project Key impacts and Enhancement measures

The study has shown the project will have both positive and negative impacts to the natural and social environment. The positive project impacts include the employment opportunities, income generating opportunities, ease of transportation of goods and persons and safe storm water evacuation and reduced risk of uncontrolled runoff hazards. The project tends to achieve the objectives of the Vision 2020, Seven (7) Years Government Programme (National Strategy for Transformation 2017–2024, Rwanda vision 2035 and 2050 related to developing infrastructure in urban and rural areas.

The project will be implemented in Musanze City where natural vegetation disappeared long time ago due to human activities and settlements, hence the project impacts to flora and fauna will be limited to the clearance of some vegetation. However, road civil works, drainage works and dumping of the soil spoils and wastes can affect riparian areas and waterbodies if not appropriately undertaken. Other project impacts will be related to (1) loss or damages on land and properties thereon during land acquisition for access roads, quarry/borrow sites and dumpsites; (2) vegetation clearance and associated risks of erosion and landslide, (3) emission of dust, gas and wastes to the surrounding environment and (4) noise and traffic congestion; (5) safety issues to workers and local people during site clearance, excavation and civil works.

Prevention, Mitigation and compensation measures to minimize the project negative impacts have been proposed in Environmental and Social Management and Monitoring Plan. As part of mitigation measures, LODA, Musanze District and the contractor will:

Pre-construction period

- Ensure fair compensation at full replacement cost of properties and lands to be affected by the project, be based on the WB policy and National Expropriation Law and districts expropriation procedures. Ensure participation of owners and local administration in all compensation process;
- Ensure the recommendations from this ESIA are incorporated in the project design and incorporate standardized environmental and social clauses in tender documentation and contract documents so that potential bidders are aware of environmental and social performance requirements expected from them, are able to reflect that in their bids, and required to implement the clauses for the duration of the contract;

Construction period

The contractor will implement the standardized environmental and social clauses and all enhancement and mitigations measures for all project impacts. These include:

- Adopting proper mitigation measures with minimum impacts (sharing construction materials, dumpsites to minimize dust, noise, carbon emissions, waste generation);
- Education of construction workers to minimize social disturbance and cultural conflict;
- provision of temporary access to local traffic; timely compensation for the lost items;
- Proper maintenance of the existing community access roads, timely relocation of water pipes, communication lines and other utilities and timely restoration/strengthening of project sites upon completion of construction.

Operation period

Musanze District will ensure:

- Increased tree-planting by adding new native tree species in appropriate locations;
- Established and maintained the signboards near sensitive receptors like schools, places of worship, centres, etc.;

- Installed and maintained speed humps at selected places (e.g. near settlement, schools, university, markets, health centre, sharp curves or other accident hotspots) to slow down the traffic at those critical locations;
- Provision of adequate lighting facilities in project area;
- Local people are sensitized about best practices for the management of wastewater and solid wastes and are educated on avoiding discharging wastewater and scattering trashes on road pavements and drains;
- Provision of regular maintenance works of road and drainage infrastructures with regular services of cleaning and repairs

7. Public Involvement

Community participation and consultation were undertaken among people living within the project areas of influence and relevant district and sector road engineers. Training of the locals on public consultations and survey methods was conducted simultaneously between 09 November 2020 in Muhoza Sector along the project site (roads and standalone drain). In some case, road users such as moto taxi were joined at their parking sites. The trained locals then assisted in conducting the public consultation exercise, which was divided into three phases:

- The first phase entailed to conduct public awareness meetings with all Project Affected Persons (PAPs) in Muhoza sector;
- The second phase was the one by one interviews of the PAPs or what is often referred to as a door-to-door survey. PAPs were grouped in women, men, vulnerable, youth and road users;
- The third phase will be the validation workshops where all PAPS assembled to validate the data collected during the door to door interviews.

All consulted persons had high expectations from the project in terms of jobs, business and income opportunities, ease transport and connectivity to livelihood, social and commercial areas in the City. However, they insisted on the need for fair discussed and agreed on compensation and the need to give the priority to local people in the selection of employees. Male and female should be given equal chance during recruitment and payment should be done in due time.

As part of RUDP implementation, the Grievance Redress Mechanism (GRM) was implemented, but with different success stories according to phases. In RUDP I, although the Grievance Redress Committees were put in place but they were not operational, mainly due to the lack of the budget plan and incentives. In the ongoing phase (RUDP I Phase 2), the GRM is operational with regular monthly activities and reporting as a result of contractors' mobilization, regular monitoring and supervision by the safeguards team at LODA and other project implementers. The ESIA for this phase under preparation (RUDP II Phase 3) makes compulsory provisions of clauses related to the operation of the GRM in the tender document and bills of quantity to ensure the contractor understand and quote for the GRM activities.

8. Environmental and Social Management Plan (ESMP)

The purpose of this ESIA and ESMP is to ensure the application of country regulation (EIA, labor, biodiversity, water, etc) and the World Bank Environmental and Social Safeguards Standards to reduce environmental and social impacts during the construction and operational phases of the financed works under RUPD II (such as roads, drains and standalone proposed to be build) in the Musanze City. The ESMP therefore sets out the methods by which proper environmental, social, health and safety planning, measures and controls are to be implemented by the District and LODA and, the contractor based largely on the prevention, mitigation and compensation measures which are mandatory for the works to be financed. The ESMP is mandatory for all contractors and sub-contractors during construction and it also includes measures to be developed by the District and ensure that mitigation and enhancement measures continue throughout the operating life of the project. The ESMP implementation will be evaluated in future environmental audits to be done by the project to each district.

Thus, the ESMP ensures that the project implementation is carried out in accordance with design by taking appropriate mitigation measures to minimize impacts on the environment during construction and operation phases. It emphasizes how the development may impact on relevant environmental factors and how these impacts may be mitigated and managed according to National regulations and the approved ESF instruments by the World Bank that includes: ESMF,

ESCP, SEP, LMP, RAP and applicable guidelines.

9. Environmental and Social Monitoring plan

For the successful implementation of the project ESMP, it is mandatory to undertake periodic monitoring of the project activities to assess the project compliance to environmental and social parameters/indicators and ensure corrective actions are taken. Table 3 shows the monitoring parameters, time and locations, methods, responsibility and cost.

Table 3: Environmental Monitoring Plan

Parameter/ Activity	Location	Means of Monitoring	Frequency	Responsible Agency		Cost estimate (RfW)
				Implemented by	Supervised by	
During Project Implementation						
Stone/Sand Collection	At borrow pits/quarries sites/ rivers	Ecological (Biophysical) inspection of the sites before extraction activities of the stone/sand start	Weekly	Contractor	Consultant/ Environmental Specialist	2,500,000
Sediment quality for heavy metals	At any place in river or stream where construction materials will be extracted	Laboratory analysis for metals (lead, cadmium, chromium, copper, manganese, mercury and zinc) and oil/grease	Before sand extraction	Contractor at recognized national laboratory	Consultant/ Environmental Specialist	3,000,000
Soil pollution	Construction sites, Campsites, Material storage sites; Water drainage channel;	Visual inspection at filling area that no effluent/spills to soil/land/agricultural lands	Monthly	Contractor	Consultant/ Environmental Specialist	N/A
Stability of slopes	Cut, Filled, Embankment sites;	Visual inspection of erosion prevention measures, Retaining walls, Compacted area;	Monthly		District Engineer	N/A
Hydrocarbon and Chemical storage	At campsite, yards	Visual inspection at storage facilities	Monthly	Contractor	Consultant/ Environmental Specialist	N/A
Traffic Safety	Construction sites, Access roads, Pedestrian walkways,	Visual inspection of traffic signs/ flags persons placed/used for traffic management;	Monthly	Contractor	Consultant/ Environmental Specialist	N/A
Air Quality (dust, smoke)	Construction and extraction sites/ Material storage sites;	Visual inspection to ensure dust suppression measures (e.g., spraying of waters) are in place, equipment/machinery in use are in good standard/ condition;	Daily/ Monthly	Contractor	Consultant/ Environmental Specialist	N/A

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

Parameter/ Activity	Location	Means of Monitoring	Frequency	Responsible Agency		Cost estimate (RfW)
				Implemented by	Supervised by	
	Sensitive receptors (homesteads, schools, health centre, church, local administrative offices,...) along the road corridor;	Continuous monitoring using appropriate instruments and analyzers (for particulate matter, Carbon dioxide, Sulphur, Nitrogen oxides)	Quarterly	Contractor	Consultant/ Environmental Specialist	3,000,000
Noise	Construction and extraction sites;	Noise measurement (Noise levels on dB); Work restriction between 6:00 a.m.-17:00 p.m. close to sensitive sites;	Weekly	Contractor	Consultant/ Environmental Specialist	2,500,000
Surface Water Quality	Mukungwa river (at drainage outlets)	Water sampling, analysis (TDS, Turbidity, pH, dissolved oxygen, biological and chemical oxygen demand)	Quarterly	Contractor at recognized laboratory	Consultant/ Environmental Specialist	10,000,000
Groundwater quality	At tube-well installation (for workers camp), Water-wells (for contractor) for drinking;	Depth of tube-well to be more than 30m; Test water for arsenic iron and manganese before installing of casing. If the quality is found not suitable further deepening will be done. Laboratory analysis of all drinking water parameters specified in national standards	During drilling of wells; After development of wells	Contractor at recognized laboratory	Consultant/ Environmental Specialist	15,000,000
Tree-planting/ revegetation	Cleared/tree cut sites, Water drainage slopes,	Visual inspection for planted trees and taking care of them;	Monthly	Contractor	Consultant/ Environmental Specialist	N/A
Biodiversity	Natural sensitive sites: Mukungwa river	Sites monitoring in terms of biodiversity taxa;	Once the proposed roads construction is approved;	Biodiversity consulting firm	Consultant/ Environmental Specialist	2,000,000
Waste	Construction and	Visual inspection that solid waste is properly	Monthly	Contractor	Consultant/	N/A

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

Parameter/ Activity	Location	Means of Monitoring	Frequency	Responsible Agency		Cost estimate (RfW)
				Implemented by	Supervised by	
management	extraction sites, camp sites	disposed at construction and camp sites			Environmental Specialist	
Drinking water and sanitation	Construction and extraction sites, campsites, Laboratory,	Visual inspection that workers are provided with clean water and sanitation facilities (e.g., toilet paper, hand sanitizer,...);	Daily	Contractor	Consultant/ Environmental Specialist	N/A
Restoration of work sites	Work/ Cleared sites	Visual inspection of restored sites (e.g. by tree planting, filling of open borrow pits);	After completion of works	Contractor	District Engineer; Consultant/ Environmental Specialist	N/A
Safety of workers Monitoring and reporting accidents	At work sites	Inspection of use of Personal protective equipment (PPEs) and implementation of Occupational Health and Safety to workers;	Monthly	Contractor	Environmental and Social Specialist	2,000,000
Grievances (environmental issues)	Muhoza-Cyuve Project area	Number of grievances registered and addressed	Monthly	Protection implementation Unit (PIU)	Environmental Social Specialist	N/A
Stability of protection works	Slope sites, Resettlement sites	Visual inspection of erosion control	Monthly	RUDP II	Protection implementation Unit (PIU)	N/A
Total						40,000,000

1. INTRODUCTION

1.1 Project background

Road infrastructure development is one of the prerequisites for socio-economic development all over the world. In fact, an efficient road transport infrastructure facilitates trade, tourism, agriculture, health, education, and other sectors of the economy. The benefits from efficient road transport are felt at all levels of the society, directly or indirectly through easy access of people to road network, basic services such as schools, cultural and recreational sites administrative offices, as well as improved delivery of merchandise and commodities to market.

The Government of Rwanda is implementing the Second Urban Development Project with financial support of the World Bank. The civil works in the six secondary cities of Phase one were completed in 2018, that of Phase two are going on, while Phase three is under design stage. The current project aims to improve access to sustainable infrastructure and services and strengthen urban management and resilience in low income areas of Musanze City, where the project activities will comprise of eight roads (MUZ3-1, MUZ3-2, MUZ 3-4, MUZ 3-5, MUZ 3-6, MUZ 3-7, MUZ 3-8 and MUZ 3-9) and continuation of the Rwebeya standalone drain at both upstream and downstream the formerly rehabilitated section (Figure 2-1, Table 2-1). The construction of the roads and drainages will reduce constraints in transport within the urban and semi-urban areas of the Musanze City. The roads will increase easy accessibility to schools (e.g. Excel, Regina Pacis schools), churches (e.g. EAR, ADEPR, SDA churches), local administrative offices (e.g. Ruhengeri and Susa Cell offices) and other facilities that would in turn boost the living standards of the community along the project lines and the country's economy at large.

This Environmental and Social Impact Assessment (ESIA) is prepared as a requirement of the Article 30 of Rwanda Environmental Law No. 48/2018, the Ministerial Order No 001/ 2019 of 15/04/2019 and the World Bank Environmental and Social Standards on Assessment and Management of Environmental and Social Risks (ESS1).

The World Bank Environmental and Social Framework is not new to the project proponents. RUDP II builds on the work done in RUDP I, whose sub-projects involved Musanze District, LODA and the

Government of Rwanda (GoR). The lessons learnt and experience from RUDP I will be integrated into future best practice. Moreover, trainings on the WB ESF will be provided to the project proponents (key project staff from Musanze District, Contractor and Consultant) to get familiar with the RUDP II Framework.

As specified in the RUDP II ESMF, the Bank’s Environmental and Social Standards requires the Assessment and Management of Environmental and Social Risks and Impacts (ESS1). To this end an Environment and Social Impact Assessment (ESIA) for RUDP II Phase 3 is prepared to describes the project baseline conditions\, assess the impacts, propose mitigation measures and develop an Environmental and Social Management Plan (ESMP). This will allow the project to comply with local and national EIA regulations and the World Bank Environmental and Social Standards applicable to the Project.

The preparation of this ESIA ensured the effective environmental and social management, including involuntary resettlement (ESS4). Moreover, this ESIA will set up a proper monitoring and recording of impacts during project construction and will ensure that the Musanze District is prepared for avoiding and preventing unnecessary impacts of the project.

In carrying out this assignment, the Consultant took into consideration the nature of the proposed project development as well as the Environmental, Health and Safety and waste management regulations of Rwanda. In addition, the project has followed the application of the World Bank Environmental and Social Management Framework and its 8 Environmental and Social Standards relevant to RUDP II as agreed in the legal agreement with the government of Rwanda.

1.2 ESIA Objectives and Scope

The aim of this ESIA is to provide decision making information on environmental and social consequences of the proposed roads and standalone drain construction in the Musanze City and, contribute to sustainable urban development through the identification of enhancement measures to positive impacts and mitigation measures to adverse impacts. Specifically, the main objective is to develop an Environmental and Social Impact Assessment (ESIA) for construction of roads with associate drains, standalones and ponds civil works for RUDP II Phase 3 in Musanze City.

This ESIA was conducted based on Terms of Reference by the client (LODA) and Rwanda Development Board (RDB), REMA guidelines for EIA and views and concerns from the key stakeholders (Musanze District and potential affected people). Special attention was paid to ensure the EIA comply with World Bank Environmental and Social Standards. Figure 1-1 shows steps involved in the preparation of the EIA for this project.

As defined in the ToRs provided by LODA the ESIA aims to:

- i. Identify potential adverse environmental and social impacts of the investment sub-projects and propose measures for eliminating, minimizing, offset or compensate them; must apply the mitigation hierarchy as described in the ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS8 and ESS10.
- ii. Apply the ESMF, SEP, RF, ESCP measures and protocols as agreed and approved by the Bank in the appraisal of the project.
- iii. Analyze, interpret, and communicate information to decision making and local community about the impacts of the proposed project before decision for implementation is made;
- iv. Ensure the planning, evaluation and implementation of investment projects comply with National environmental and social legal framework as well as World Bank Environmental and Social Standards;
- v. Generate baseline data for monitoring, auditing and evaluation of how well mitigation measures were implemented during project implementation phases; include a monitoring plan as part of the ESMP.
- vi. Define safe mechanism for stakeholders to participate in project supervision or implementation (need to comply with ESS4 and ESS10) activities so as to stimulate sense of ownership of the project among local community;
- vii. Conduct public consultations involving project affected people, beneficiaries, local leaders in affected and neighboring communities to ensure their views and concerns about proposed investment projects are shared and considered as agreed in the SEP and the ESMF approved by the project;
- viii. Evaluate various alternatives to the project (when possible) because all works have been requested by the communities and district- the alternatives will be no on locations but in technical solutions to the issues.

- ix. Prepare an ESIA report in accordance with National general guidelines and procedures for EIA and relevant World Bank Environmental and Social Standards and the approved ESMF, SEP, ESCP, RF and other disclosed documents for the project by the Bank by appraisal of the project

The ESIA is carried out in compliance with:

- i) Government of Rwanda’s Law on Environment N°48/2018 of 13/08/2018 alongside Ministerial Order establishing the list of projects that must undergo EIA, instructions, requirements and procedures to conduct EIA and other national guidelines,
- ii) Labor, Health, Safety, waste management and pollution regulations;
- iii) World Bank Environmental and Social Standards.

1.3 Objective of the Project

The project aims to improve access to sustainable infrastructure and services and strengthen urban management and resilience in low income areas of Musanze City. The project will construct asphalt roads (6.95 km) and drains (2.95 km) in Musanze City to ensure their operational condition and facilitate the socio-economic and cultural development and improve living standard of people.

The specific objectives of the project include:

- To construct and manage the asphalt roads (6.95 km) and drains (2.95 km) in Musanze City;
- To contribute to the socio-economic and transport development by creation of jobs and income generating activities (operation of taxi services, establishment of shops, restaurants, construction of modern residential houses, ...) along the roads;
- To significantly reduce the cost and facilitate easy access to livelihood assets and potential markets, health centres, schools, churches, ..., of the Musanze City.

1.4 ESIA Content and Structure

The ESIA report integrates the project impacts, mitigation measures, management and monitoring plans. It tackles the environmental and social concerns and provides the practical advice on the mitigation of any potentially adverse social and environmental impacts of the project. The report highly considered comments, issues, views and concerns from the different project stakeholders.

This report has /or is arranged in the following sections:

- ✓ Chapter 1: Introduction
- ✓ Chapter 2: Policy, Legal and Institutional Framework
- ✓ Chapter 3: Approach and Methodology
- ✓ Chapter 4: Environmental and Socio-economic Baseline
- ✓ Chapter 5: Description of the Project
- ✓ Chapter 6: Analysis of Alternatives
- ✓ Chapter 7: Environmental and Social Impact Identification and Management
- ✓ Chapter 8: Public Consultation
- ✓ Chapter 9: Grievance redress mechanism
- ✓ Chapter 10: Environmental and Social clauses for Contractors
- ✓ Chapter 11: Conclusion
- ✓ References
- ✓ Annexes

2. DESCRIPTION OF THE PROJECT

The Government of Rwanda is implementing the RUDP II with financing from the World Bank through the Local Administrative Development Entities Authority (LODA) under the Ministry of Infrastructure. The main objective of the Second Rwanda Urban Development Programme (RUDP II) is to provide basic infrastructure through strategic identification, selection, and implementation of the identified investments in Musanze City. This also aims at promoting inclusive Musanze District through effective approaches to upgrading of unplanned settlements in addition to supporting the District to create enabling environments for local economic and social development.

A number of investments programmes were identified in Musanze City through a study conducted in 2016 namely the Feasibility Study and Preliminary Engineering Design of Musanze City-RUDP Phase 1. Some of selected projects were already under way in the project cities. The Musanze District Officials have since implemented the Phase 1 projects and proceeded to identify current investment priorities for implementation under RUDP II Phase 3 such as construction of asphalt roads and drainages.

2.1 Project Justification

Musanze City is one of the economic engines of the development of Rwanda due to its potential for tourism, business and agriculture productivity in the surrounding rural area. Besides, the city is the crossroad between the axe Kisoro-Kampala (Uganda)- Goma (Democratic Republic of Congo) and Kigali. This explains the motivation for infrastructure development in this city. However, some informal settlements in the city are connected to sub-standard roads and footpaths without adequate drainages that poorly facilitate the traffic and transportation of goods and services. It is in this regard that the Musanze District, as the overseeing organ for Musanze City, has proposed to upgrade to bitumen standards and facilitate urban household's access to livelihood, social, recreational and cultural assets in the Musanze City. The construction of the proposed roads and drains will make them more operational by responding to existing poor transport services. It is anticipated that the project will have very limited impacts on the land, water, animal, plant, humans as it will be passing on the existing right-of-way. However, in case some activities will interfere with the properties of local residents, and compensation measures will be considered.

2.2 Project Development Objective

The project aims to improve access to sustainable infrastructure and services and strengthen urban management and resilience in low income areas of the Musanze City. The construction of the roads and drainages will reduce constraints in transport, commerce and health sectors within the urban and semi-urban areas of the Musanze City (in Muhoza and Cyuve Sectors) and will facilitate socio-economic development opportunities. The construction of the roads and drainages will reduce constraints in transport within the urban and semi-urban areas of the Musanze City. The roads will increase easy accessibility to schools (e.g. Excel, Regina Pacis schools), churches (e.g. EAR, ADEPR, SDA churches), local administrative offices (e.g. Ruhengeri and Susa Cell offices) and other facilities that would in turn boost the living standards of the community along the project lines and the country's economy at large. The drainage construction aims at collecting storm rainwater from the road surface, paved areas nearby the road, and channeling rainwater from volcano mountains). The drainage will avoid unplanned flooding, disruption of roads traffic, destruction of crops and properties and incidence of water borne diseases in communities around it.

2.3 Project scope

The proposed project roads and Rwebeya drains continuation will be developed within the areas of informal settlement of Susa informal settlement and Kizungu in Musanze City. The Iposita- Excel School Eveche-Yaounde stretches from the Nyakinama Vunga Junction to NR4 (Kigali-Musanze-Musanze). This road has many connection and junctions, which are MUZ 3-4, MUZ 3-5, MUZ 3-6., MUZ 3-7, MUZ 3-8, MUZ 3-9. This road and its junctions are located in Kizungu- planned settlement. The second road (MUZ 3-2) is located in Susa unplanned settlement) Table 2. The subproject MUZ 3-3 consists of the construction of Rwebeya storm water drain which include Lower Rwebeya drain (0.87 km) in Muhoza Sector and Upper Rwebeya drain (2.08 km) in Cyuve sector. The project investment cost is The project investment cost is 8,312,000,000 RwF (8,461,251.60 USD) as per May 10, 2021² exchange rate.

² https://www.bnr.rw/currency/exchange-rate/?tx_bnrcurrencymanager_master%5Baction%5D=list&tx_bnrcurrencymanager_master%5Bcontroller%5D=Currency&cHash=4fb7571d4be4cafcb4dc2859ca4996ea

Table 2- 1: Roads and drains covered by RUDP II Phase 3 in the Musanze City

Road and drain name	Sector	Cell	Length (km)	Width (m)
Iposita – Excel School – Eveche - Yawunde Asphalt Road (MUZ3-1)	Muhoza	Ruhengeri	1.60	11.2
Nyamagumba –Regina Pacis Sec. School – Susa – Karisimbi Road (MUZ3-2)	Muhoza	Ruhengeri, Susa	2.38	10
MUZ3-4 (Road)	Muhoza	Ruhengeri	0.29	11.2
MUZ3-5 (Road)	Muhoza	Ruhengeri	0.26	10
MUZ3-6 (Road)	Muhoza	Ruhengeri	0.98	10
MUZ3-7 (Road)	Muhoza	Ruhengeri	0.37	10
MUZ3-8 (Road)	Muhoza	Ruhengeri	0.40	10
MUZ3-9 (Road)	Muhoza	Ruhengeri	0.67	10
Total (Roads)			6.95	
Lower Rwebeya Drain	Muhoza	Ruhengeri	0.87	16
Upper Rwebeya Drain	Cyuve Musanze	Rwebeya Cyabagarura	2.08	16
Total (Drains)			2.95	

Source: Consultant, 2020

The project water drainage is a continuation of the existing Rwebeya drainage channel cutting through the City, especially in the commercial neighborhood of Yawunde. Within the city boundaries, a section of the drainage (middle part) is already upgraded to an open trapezoidal channel (8 m wide) comprising of reinforced concrete cement and stone masonry. Refer to figure 4-4 showing existing constructed section of the drain.

The proposed extension is located on the upstream and downstream of upgraded drainage stretch and is divided into two sections upper Rwebeya section 2.08 km long (as shown in Figure 2-1) and lower Rwebeya section 0.87 km long (as shown in Figure 2-2).

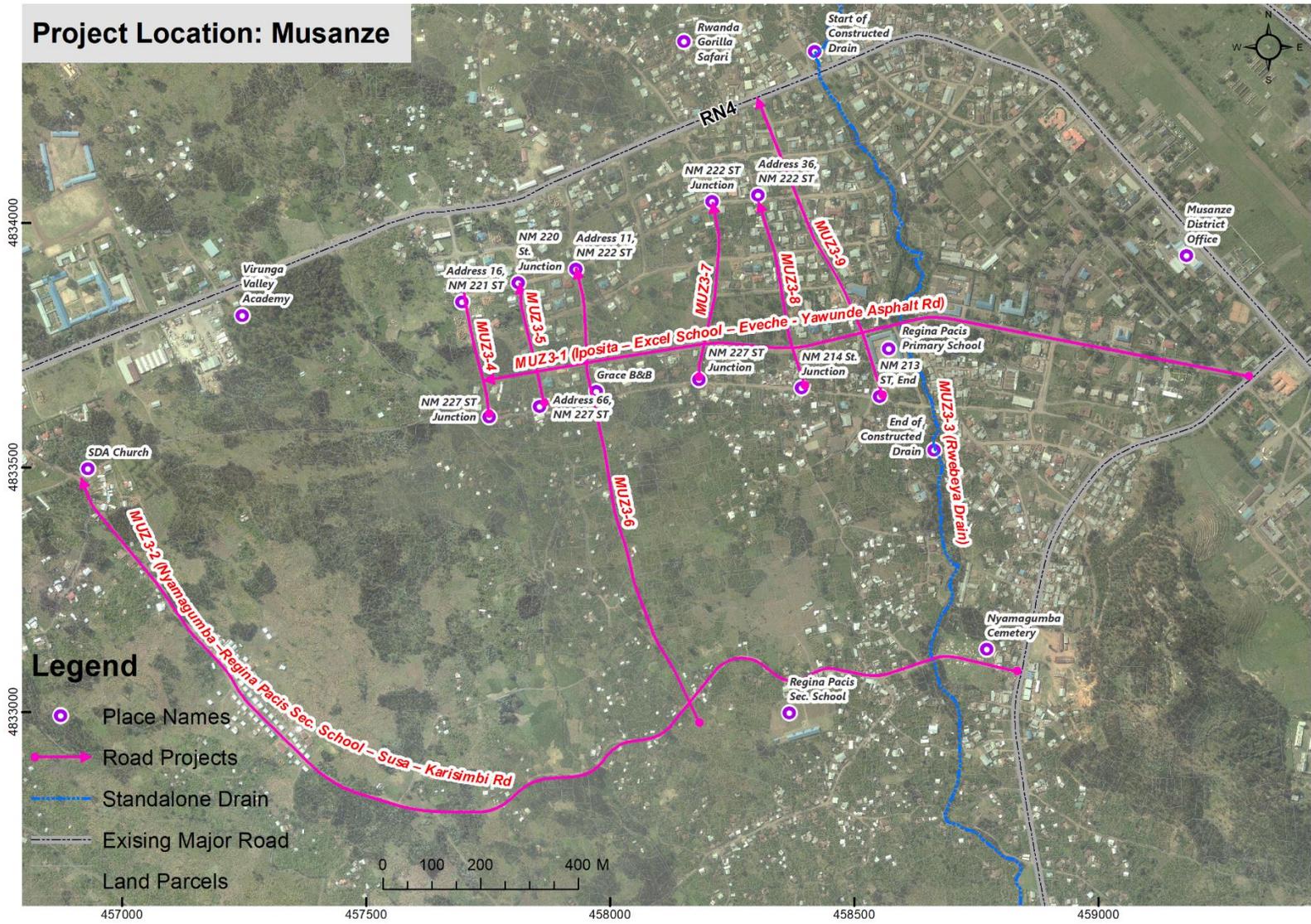


Figure 2- 1: Location of the RUDP II Phase 3 in the Musanze City
 Source: Consultant, 2020

2.4 Roads and drain Geometric Design and components

As discussed in the above section, the project will upgrade two roads and rehabilitate one standalone drain in one planned settlement and one informal settlement in Musanze City. The main road components include the roadway, curbs, greening space, street lighting, sidewalks, drainage facilities, and space for utility services, depending on the available right-of-way. The main drain includes concrete bed, masonry banks and crossing bridges.

2.4.1 Road cross section options

The following are typical road cross sections options that have been considered based on the available right-of-way and associated expropriation cost:

- Option 1 (Figure 2-2): Two-way Roadway Street with cycle lane, greening and walkway on either side, Central reserve of 2 metres, complete with drain, street lighting and provisions for utility survives; right-of-way width 17 m to 24 m.

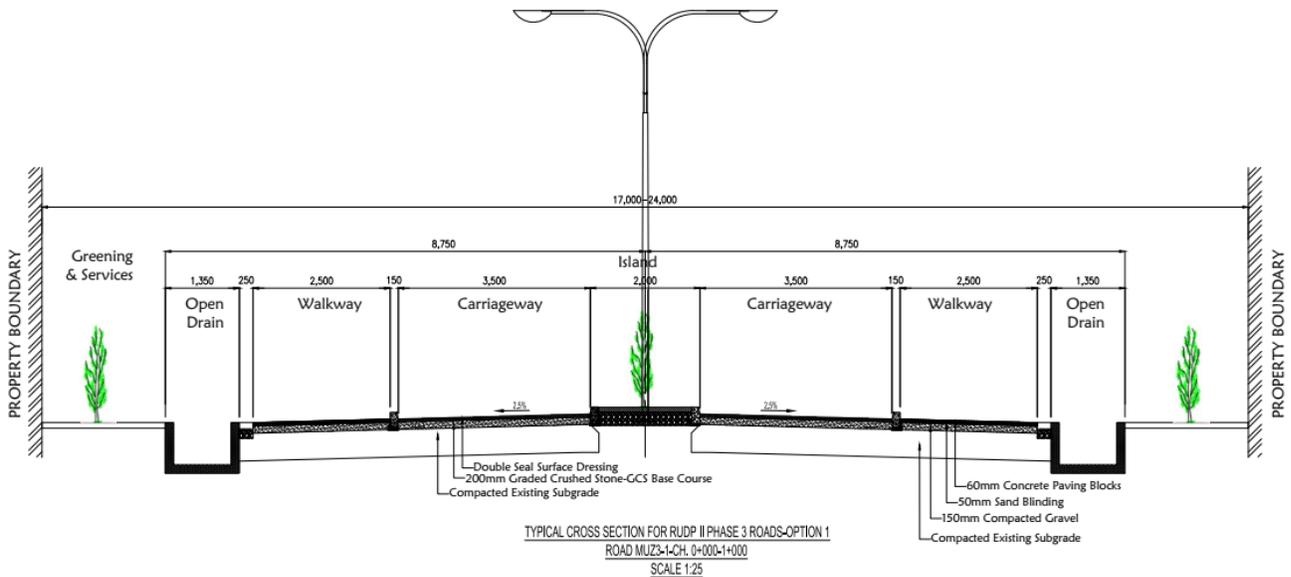


Figure 2- 2: Typical road cross-section Option 1 (width 17m)
Source: LODA (2020)

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

- Option 2 (Figure 2-3): Two-way Roadway Street with a walkway on both sides) one walkway on top of the covered drain, drain on one side and provision of utilities survives (a provision of 1m). Right of the way width is 11. 206 m.

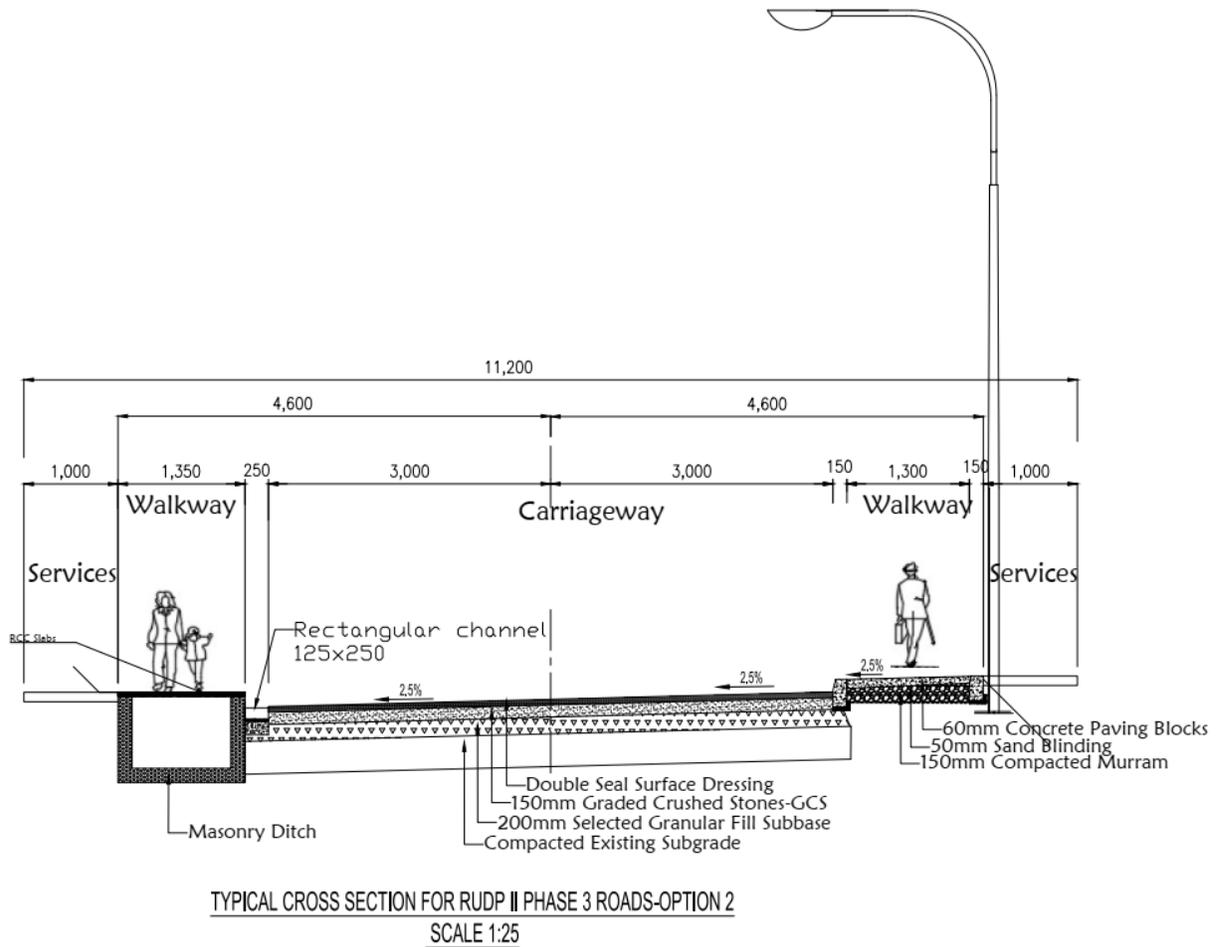


Figure 2- 3: Typical Street Cross Section Option 2 (width 10.00m)
Source: LODA (2020)

- Option 3 (Figure 2-4): Two-way Roadway Street with a walkway on one side (on top of covered drain), drain one side and greening on one side, street lighting and provisions for utility survive; right-of-way width 9.757 m.

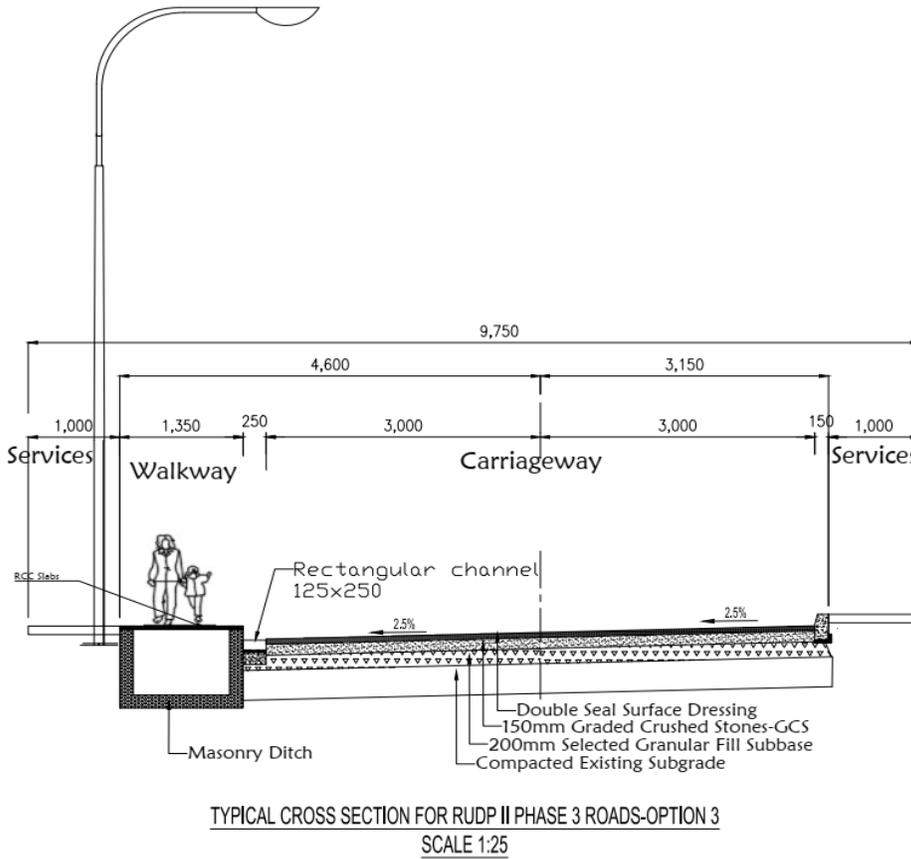


Figure 2- 4: Typical Street Cross Section Option 2 (width 9.757m)

Source: LODA (2020)

The evaluation and recommendations of the four cross-section options are summarized in the project alternative chapter.

2.4.2 Drainage structures

- The gaps identified in the project drainage systems include the lack of systematically planned drainage network;
- Poor bedding condition since they are earthen and makes maintenance difficult.
- Most of the roads in the project area do not have defined drains hence poor drainage system

within the city

- Poor maintenance of the existing roadside drains and standalone drains
- Poor outfalls leading to stagnation and the existing outfalls low lying are. Therefore, an integrated approach is adopted for sustainable drainage solution.

A detailed evaluation has been made for the existing drainage system in terms of nature of drains, size, length, and adequacy/capacity, un-served areas and possible outfall points mostly along with natural drainage courses/rivers. Each drainage system is divided into primary (main) drains, secondary and tertiary drains based on contributory catchment area and importance. All the primary drains collect the storm water from secondary and tertiary drains and dispose of the final outlet like River or water body or valley location. As an integrated approach, some of the drains are proposed alongside the roads (Road side Drains) and others may follow the natural slope (Cross Drain). The following proposals are suggested for the drainage system in Musanze City:

Restoration: The existing drains of adequate capacity and good condition are restored in the proposed drainage network with restoration works like de-silting, complete CC lining for drain sections. Road MUZ3-1 has a section which is tarmacked with roadside drains which will require restoration in Phase 3

Reconstruction: The existing drains with either inadequate capacity or poor condition are proposed for reconstruction. It involves dismantling of existing section and construction of new drain of adequate capacity, i.e., designed for calculated discharge

New Proposal: Wherever there is no existing drainage system, new drains are proposed for an effective storm water drainage system giving solutions to existing problems. Drain sections are designed to carry the calculated discharge at each node, adhering to the design criteria. Roads MUZ3-1, has a section for new construction while road MUZ3-2 will require entire new construction. Standalone drain MUZ3-3 is also proposed for new construction. Figure 5-5 shows the cross-section of drain structure

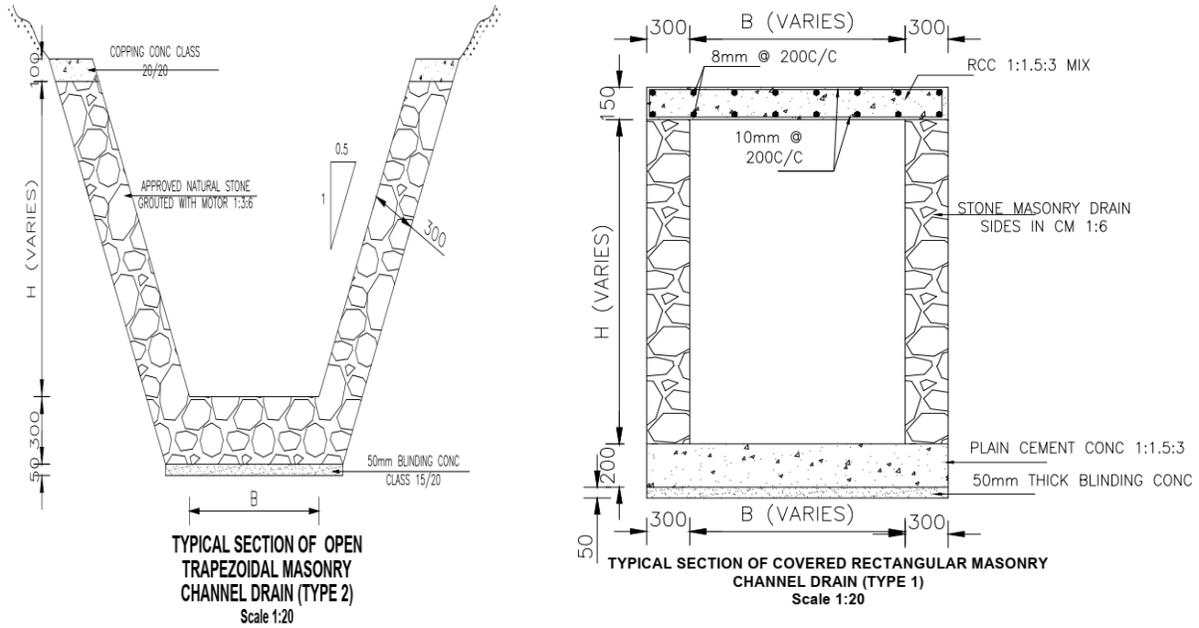


Figure 2- 5: Cross-section of drainage structures

Source: LODA (2020)

2.4.4 Recommendations of the road cross-section options

2.4.4.1 Road width

Considering safety and comfort of drivers, the Association of State Highway and Transportation Officials (AASHTO) recommends lane width of between 2.7 to 3.6m (APWA, 2011). Based on consultations with the Client, RTDA and the World Bank, the desirable standard roadway width in Rwanda is 7.0m (lane widths 3.5m), however; the standard roadway width was reduced to 6.0m (lane widths 3.0m) where available right-of way was inadequate and the cost and environmental and social impacts of expropriations for additional right-of-way were high. Although some road alignment (e.g. Nyamagumba–Regina Pacis Sec. School–Susa–Karisimbi road, MUZ3-2) passes through an area with informal settlement where standard roadway widths are not feasible, the proposed road width options (6.0m, with lane width of 3.0m) fit with urbanized area. The road width shall enable movement of vehicles and pedestrians using road sidewalks.

Roads and their reserves within dense informal settlements are used for:

- Accessibility, and especially for service vehicles such as ambulances and fire extinguishers;
- Opening up the settlements for greater investments;

- Early morning and evening open air market informal businesses;
- Social meeting places, especially where there is no open spaces;
- Collection points for garbage/refuse;
- Petty light industrial activities;
- Temporary commercial cooking and eating spaces;
- Playgrounds or open spaces for children;
- Courtship, especially at night; amongst many others.

In future, therefore, such roads need to be wider and could be implemented in phases and on an incremental approach, funds allowing.

2.4.5.2 Cross slope

Based on AASHTO guidelines and considering the high rainfall intensities in the project area, a typical unidirectional cross slope of 2.5% was provided across the entire standard width of the roadway to facilitate drainage from the pavement surface to the side drains. A typical cross slope of 1.5% was adopted for one-way local urban access roads in the informal settlements. Higher rates of cross slopes were avoided as intermittent impacts of cross winds prevalent in the hilly terrain of the project area on vehicles moving along the roads may affect the steering of the vehicles.

2.4.5.3 Curbs

Curbs are provided for purpose of optimizing utilization of available right-of-way width, delineation of the roadway, walkways and cycle lanes, aesthetics, control of drainage, and reduction of maintenance operations. Three types of curbs will be applied as follows:

- Barrier curbs/vertical curbs shall be provided at limits of roadways and cycle lanes to provide barrier preventing encroachment of vehicles or cycles into pedestrian walkways.
- Mountable curbs/sloping curbs, with sloping faces and reduced heights that allow vehicles to encroach on them without discomfort or damage to tires and wheels, shall be placed at depressed portions on driveway locations.
- Combined curb and gutter consisting of barrier curb with an apron or gutter section attached provided to facilitate drainage.

The curbs shall be made of precast concrete units manufactured locally. The curbs adjacent to the travelled way shall be offset by 0.3m with road marking. Reflectorized paints shall be applied to

curbs along roadway to enhance their visibility and improve road safety. Periodic maintenance by cleaning or repainting will be required to keep the reflectorized curbs effective.

2.4.5.4 Greening Space

Green spaces on the road reserve help to beautify the streets, contribute to a clean, greener local environment and help to address issues relating to climate change. As is the present practice with most streets in Rwandan cities, a combination of turf and trees shall be established on the green spaces, with due regard to required sight distances.

2.4.5.5 Non-Motorized Transports (NMT) Facilities

The none-motorized transport (NMT) facilities include sidewalks and crosswalks for pedestrian access and cycle lanes, provided along the roadway, either on both sides or only on one side of the roadway depending on available width of right-of-way. The NMT facilities are separated from the roadway with curbs and raised greening spaces of width of 0.6m, to allow for maintenance activities.

2.4.5.6 Pedestrian Sidewalks

The sidewalks cover restricted border widths of the right-of-way, typically 1.3m, and were provided along adjoining commercial developments, multiple-residential complexes, schools and other pedestrian generators, where there are potential vehicle- pedestrian conflicts. The Sidewalks are to be paved with all-weather surfaces comprising of concrete paving blocks to ensure their intended use. Without all-weather surfaces, pedestrians may choose to use the roadway and increase vehicle-pedestrian conflicts. Sidewalk curb ramps of width 1.5 m are to be provided at strategic locations to accommodate persons with disabilities.

2.4.5.7 Pedestrian Crossings

Pedestrian crossings were provided at strategic regular locations across the streets. Formal crossings include:

- Zebra crossings;
- Light controlled crossings.

Majority of pedestrians crossing the road do so near intersections and three out of four use formal crossings point where they are available (O’Flaherty, 2005). Factors considered in provision of pedestrian crosswalks included safety, conflicts and policy objectives. The conflict approach is based on the PV2 where P =pedestrian flow (ped/hr) centered at the crossing location while

V=number of vehicles on the road in both directions. A formal crossing was justified if the $PV^2 > 108$ (O’Flaherty, 2005).

For pedestrian crossing at junctions controlled by traffic-lights, the design should provide enough vehicle-holding time (red light time) to enable the pedestrian to cross the road before a vehicle enters the vicinity of the crossing point. In this context, an average walking speed at free flow was assumed at 1.6m/sec for normal pedestrians and at 0.5m/sec for pedestrians with disabilities.

2.4.5.8 Drainage System

Drainage in built up urban or semi-urban areas is important because of rapid rates and large volumes of runoff and costly potential damage to adjacent property by flooding. Surface flow from adjacent tributary areas will be intercepted by the roads, collected within the roadway by curbs, gutters, culverts and channels, and conveyed through exit/outfall drains to the natural drainage system.

Careful attention needs for adequate drainage and protection of the roadway from floods in all phases of location and design reduces costs in both construction and maintenance.

2.4.5.9 Cut/Embankment Slopes – Erosion Control

The design of road will include considerations for preservation of natural ground cover and desirable growth of shrubs and trees within the road corridor, seeding mulching, sodding, or other acceptable measures of covering slopes and other erodible areas will be incorporate in the roads design.

2.4.5.10 Utility Space

Street improvements, whether upgraded within the existing right-of-way or entirely on new right-of-way, generally entail adjustment of utility facilities. The utilities involved included: (1) WASAC’s water supply lines; (2) overhead power cables; (3) underground communications lines including fibre optic cables for various communication companies; and (4) underground service ducts for building connections.

In designing utility provisions, full consideration was given to measures needed to preserve and protect the integrity and visual quality of the streets, its maintenance efficiency, and the safety of traffic. The desirable locations selected for the underground utilities, and appurtenances to the underground installations, such as vents, drains, markers, manholes, and shutoffs, were near the right-of-way line, behind the sidewalk, cycle lane or side drain, so as not to interfere with the safety

or maintenance of the streets. However, existing development and limited right-of-way widths in some streets precluded location of some or all utility facilities as desired outside the roadway of the streets. The greening spaces separating the roadway and the NMT facilities were reserved for overhead power lines/ communication lines.

2.4.5.11 Bus Stops

Bus stops are a critical component of the transit system. On a single round trip a bus rider will typically use at least four different bus stops for boarding and alighting, and being able to get to a bus stop easily and wait for the bus in a comfortable environment are significant aspects of every transit customer's experience. The main considerations made in design of the bus stops included:

- Space availability.
- Convenient locations including concentrations of residences or workplaces and major destinations such as social services (schools, health facilities, etc.), shopping destinations.
- Safety and comfort of people boarding, alighting, and waiting for the bus. Far-side stops (after the intersection) were preferred since this would encourage pedestrians to cross behind the bus and not in front of it. The bus stop design included provision of necessary amenities including shelters with benches for waiting riders to sit away from other pedestrian flow and street traffic, adequate lighting, motorcycle parking facilities and trash cans.
- Visible and easily identifiable locations for both bus riders to easily find them and drivers to clearly see whether there are waiting passengers.
- Good pedestrian access to the surrounding area, especially to the other side of the street, including well-defined and contiguous pathways to and from the stop, as well as crosswalks.
- Accessibility and facilities for persons with disability.
- Integration with other road design elements.

Location of Bus stops

The decision on locations of bus stops involved consultations with Musanze City stakeholders, the transit users (the public) and bus service provider groups for their local knowledge, input and feedback on recommendations made by the Consultant, which were incorporated into the designs. The outreach included transit users and service providers whose experience would be directly

affected and also the surrounding communities which will be impacted. Typical concerns from public included walking distance to stops and the impact on direct abutters. While universal consensus on exact locations was rare, the Consultant attempted to balance the conflicting interests, resulting to general acceptance of the final designs by all the stakeholders and the community.

Determining the proper location of bus stops involved choosing between near-side, far-side and mid-block stops, defined as follows and as illustrated in Figure 2-6.

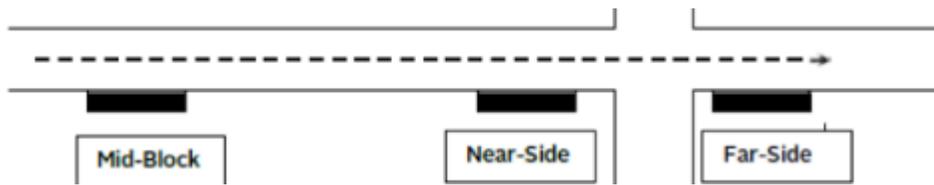


Figure 2- 6: Options for locations of bus stops

Source: LODA, 2019

Near-side bus stops are located before an intersection, allowing passengers to load and unload while the vehicle is stopped at a red light or stop sign. Far-side bus stops are located after an intersection, allowing the bus to travel through the intersection before stopping to load and unload passengers. Mid-block bus stops are located between intersections, 300 feet (90m) or more beyond or before an intersection. The decision of bus stop location involved the following sequence:

- **Step 1:** Stops at major generators: the first consideration for possible locations for stops were those adjacent major trip generators including high density residential units, public institutions (schools, hospitals, etc.), office buildings, commercial centres, etc.
- **Step 2:** Stops at transfer points: the next consideration for possible locations for stops was at intersections to facilitate transfers for riders connecting to different routes. Hassle-free transfers are an important element of a successful transit system. The maximum walking distance between two bus stops serving connecting routes should be no more than 300 feet (90m)
- **Step 3:** stops at signalized intersections: the next set of stops was stops at signalized intersections. The far-side bus stops would be convenient for buses to use the gaps in the stream of traffic created by the signal to pick up and discharge passengers and to reenter traffic.
- **Step 4:** intermediate stops: Once possible stops were identified at transfer points, major

generators and signalized intersections, additional stops were added to complete the set of stops for the route or street. The additional stops for areas of low to moderate passenger demand in the project areas were established by applying standard bus stop spacing criteria. A standard in the transit industry suggests that most riders would not want to walk farther than one quarter-mile (400m) to a bus stop.

Generally, bus stops were located after (far-side of) intersections to facilitate bus and traffic operations. Where far-side stops were impractical due to factors such as land use (e.g. conflict with commercial developments), bus routing, and other factors, the use of near-side bus stop was considered. Streets with long distances between intersecting streets required mid-block stops.

2.4.5 Road Pavement Design

A pavement design of 20 years for new construction works will be adopted. Based on the existing pavement/subgrade investigation and traffic survey class, appropriate pavement structure will be adopted in the next deliverable, detailed design stage. However, based on the previous studies in Phase 2, the following structure has been adopted at this stage subject to validation at the detailed design stage. Cost estimates at this stage are based on the current adopted pavement structure. Table 2-2 presents the road pavement design and respective width in meters.

Table 2- 2: Proposed pavement structure and width

TCS- Types	Surface material	Pavement layers	Surface Dressing	Width (m)
TSC-1-Option 1	Surface dressing	Surface Dressing		6
		Base	150	6
		Sub-base	200	6
		Sub-grade	300	16.20
TSC-2-Option 2	Surface dressing	Surface Dressing		6
		Base	150	6
		Sub-base	200	6
		Sub-grade	300	12.30
TSC-3- Option 3	Surface dressing	Surface Dressing		6
		Base	150	6
		Sub-base	200	6
		Sub-grade	300	10.10

Source: LODA (2020)

2.5 Description of project activities

The project work is scheduled to complete in four phases comprising design, construction, operation, and decommissioning phases. In these project phases, the main activities will include detailed roads and drain designs, construction, operation /maintenance of the roads and drains and decommissioning. During the detailed designs, a number of studies were carried out including the geo-technical surveys, RAP/ARAP and the EIA to inform/ improve the design process. Construction of the proposed sub-project roads and drains will involve various activities including site clearing, transport of construction materials, earth works, pavement, curbs, shoulders and lateral drainage works, construction of culverts, development of quarries, borrow pits, stockpiles and disposal sites. Once project activities come to an end, there is need to systematically decommission of the civil works by implementing a comprehensive rehabilitation program.

2.5.1 Pre- construction phase

2.5.1.1 Land and property acquisition

Land and property acquisition will be also acquired to accommodate the project works (e.g. roads widening and creation of diversion road and campsites).

2.5.1.2 Transport of material to sites

Construction materials sourced outside of the study area will be transported to the sites by roads. The existing roads, secondary and farm roads will be utilized as a means of delivering these materials.

2.5.1.3 Establishment of construction camp sites/ yards

The roads project will require yards for storage of machinery and equipment, processing and storage of materials. This will involve clearing of the vegetation, fencing of camps and the construction of houses, workshops, store-rooms and vehicle parking areas. Camps should be provided with water supply, sanitary facilities and electricity. Additional construction sites such as separate construction sites may be established for the larger concrete structures required, i.e. culverts. These sites might have a stockpiling area for sand, stone, reinforcing steel and cement as well as a batching plant to mix concrete. Prior to the establishment of the construction campsites, the contractor will prepare a plan for the management and rehabilitation of the campsites. The plan shall be approved by the

consultant, Musanze District and LODA.

The following parameters will be considered prior to establishment of camp sites:

- The camp sites of the workers will be small and mobile (Plate 2-1) since the contractor will move from area to another. The materials to be used for camp areas could be trailers cargos, modular type or other materials that can ensure, health and safety. No informal-shacky camp areas will be accepted by the supervision. (see example below observed in Rwanda construction site)



Plate 2- 1: Typical Mobile Campsites to be used in the RUDP II Phase 3 in Musanze City

- The contractor’s storage and camp area are will not include accommodations for sleeping or living, since the majority of workers will be coming from local communities. These storage and camp areas – are small and main purpose is to offer, storage areas for materials, latrines and cleaning areas for workers, among others.
- The contractor will provide a plan detailing the layout of site facilities such as temporal pit latrines, portable toilets, and areas for stockpiling of materials, storage of hazardous materials and provision of containers;
- Only day shifts work will be allowed;
- Stockpiles for concrete materials will comprise side-restrained triangular bin-type structures. Bund walls (oil-tank casing) will be constructed. High quality materials with low dust

generating characteristics will be used;

- Fuel and gas will be stored in a secure area in a steel tank supplied and maintained by the fuel suppliers. Fuel storage will generally occur in workshop areas of site camps, which is generally fenced and paved. A mobile tanker will be used to refuel vehicles on- sites;
- Workshops will be equipped with grease traps in the drainage collection system. Used oil will be collected in drums from these traps and disposed of in approved sites;
- Camps domestic wastes will be collected in drums and removed to the nearest waste site for disposal;
- Suitable washing facilities and sanitary arrangements at site offices, workshops and construction sites will be provided. Sanitary facilities for the site camps will comprise of temporal pit latrines or portable latrines;
- Water for human consumption will be available at the campsite and site offices and at other convenient locations;

2.5.2 Construction phase

The construction works will involve various activities including site clearing, deployment of heavy machinery, transport of construction materials, earth works like cutting and embankments, pavement, shoulders and lateral drainage works, construction of culverts and drains. Other major activities include: development of quarries and borrow pits, operation of earth works like stockpiles and spoil sites and disposal areas.

2.5.2.1 Borrow pit establishment

Existing borrow pits along the route will be used if any. New borrow pits (e.g. stone, gravel exploitation) may have to be established where existing borrow pit material is not suitable or enough. The establishment of new borrow pits will require consultation and approval by the Musanze District officials. The establishment of new borrow pits will require the preparation of a plan (by the contractor) and approval (by the consultant, Musanze District and LODA) for the management and rehabilitation of the borrow pits.

2.5.2.2 Sourcing and transportation of building materials

The project will require various building materials for the construction of the sub-projects. Those materials include a large quantity of stones, gravel, sand, water, cement, quarry stone aggregates and

lateritic soil, bricks, wood, steel-enforcements and plastics. Other materials and equipment that may be needed include paints, solvents, electronic gadgets, wire and ropes, diesel, petrol, oils and food items, vehicles, biological materials, gases, energy, soldering equipment and other minor inputs. Building materials should be sourced as near as possible project area to reduce negative impacts of transportation of the materials to the project site through reduced distance of travel by the materials transport vehicles.

2.5.2.3 Storage of construction materials

Construction materials will be stored on site. Bulky materials such stones, sand and steel should be carefully stored at contractor 's yard and protected from elements of weather to avoid wastage due to weather conditions like wind and rain. Petroleum products will also be stored at site.

2.5.2.3 Excavation, Foundation works and Earthworks

The road and footpaths project will involve excavation of the existing road foundation so as to compact way for new development and excavation will also be done at material sites. Roads construction will require earthworks involving earth cuttings using bulldozers and back actors to remove the softer material, and drilling and blasting of rocks.

2.5.2.4 Masonry, concrete work and related activities

The project activities will involve a lot of masonry work and related activities including: stone and crushing, mixing by use of both manual and mechanical means. These activities are known to be labor intensive and a source of air pollutants.

2.5.2.5 Landscaping

To improve the aesthetic value or visual quality of the site once construction ceases, the contractor will be required to carry out landscaping. This will include establishment of roadside tree planting, backfilling and vegetating of disused quarry sites.

2.5.2.6 Wastes and Storm water management

Wastes to be generated by the project include excavated earth materials, construction debris, a diversity of solid wastes and human excreta. Excavated earth materials and construction debris will be reused or recycled by the project as much as possible. The remaining will be used to fill local earthen roads potholes or disposed in a very well designated site. Human excreta to be generated by

workers at campsites or other working places will be handled using temporal or portable pit latrines. Special attention should be paid to not dig them in areas with shallow groundwater or nearby rivers.

2.5.3 Operational phase

During the operational phase the main project activities involve proper use and maintaining road and drainage infrastructures, with routine maintenance staff and budget. Waste bins and well operated and maintained latrines shall be placed at strategic points like centres to keep sanitary the road sides all along their length.

2.5.4 Decommissioning phase

2.5.4.1 Demolition works

After the usefulness life of the roads and drainages, they will be reconstructed or decommissioned. The project components including the roads, culverts, pavements, drainage systems and parking areas will be demolished.

2.5.4.2 Dismantling of equipment and fixtures

All road materials and equipment including electrical installations, furniture partitions and pipe-work among others will be dismantled and removed from the site on decommissioning of the camp site, the roads and other project components. Priority will be given to the reuse of these materials in other projects. This will be achieved through their resale to other contractors or donation of this equipment to schools, churches and charitable institutions, rehabilitation of feeder roads etc.

2.5.4.3 Site restoration

Once all the wastes resulting from demolition and dismantling works are removed from the construction sites. The sites (project construction sites including demolition road side and dumpsite) will be restored through replenishment of the topsoil and re-vegetation using indigenous plant species or developed according to the development trend of the time.

2.5.4.4 Construction materials and Energy used

The main sources of energy that will be required for decommissioning of the project will include electricity and fossil fuels (especially diesel). Electricity will be used for welding, metal cutting/grinding and provision of light. Diesel will run heavy trucks, machinery such as bulldozers and concrete mixers. The proponent should intend to promote efficient use of materials and energy

through proper planning to reduce economic and environmental costs of excavating new materials.

2.5.4.5 Solid waste generated

Large amounts of solid waste will be generated during decommissioning of the project. These will include construction material debris, metal cuttings, rejected materials, surplus spoil, excavated materials, paper bags, empty cartons, empty paint and solvent containers among others. The developer is advised to take steps to minimize the generation of such waste and to ensure proper disposal procedures or recycling of generated wastes.

3. POLICY LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 Introduction

The Republic of Rwanda has developed policy and strategies; legal instruments and institutional framework for environmental protection and conservation. The environmental policies are prepared by the Ministry of Environment (MoE) and regulated and enforced by the Rwanda Environmental Development Authority (REMA), while the Environmental Impact Assessment (EIA) is reviewed and cleared by Rwanda Development Board (RDB).

The Law on Environment No. 48/2018 in its Article 30 guides on the projects that must undergo an environmental impact assessment before they obtain authorization for their implementation. The Law also specifies the main points that an Environmental Impact Assessment must include. All institutions, policies and laws that have bearing with this project are discussed in this chapter.

3.2 Institutional Framework

In the juridical system of the Republic of Rwanda, the Environmental Impact Assessment procedure is regulated by the Ministerial Order No 001/ 2019 of 15/04/2019 establishing the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment. This list includes physical infrastructure projects such as roads, water pipelines, etc. Table 3-1 highlights all relevant institutions related to this project. It shows each institution, its objectives and its roles and responsibilities.

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Table 3- 1: The roles and responsibilities of relevant Institutions

Institution	Objectives	Roles and responsibility
Ministry of Infrastructure (MININFRA)	The Mission of MININFRA is to ensure the sustainable development of infrastructure and contribute to economic growth with a view to enhancing the quality of life of the population.	MININFRA is responsible for: <ul style="list-style-type: none"> ✓ Ensuring that the construction civil works in RUDP II comply with the master plan related to road infrastructure and urbanism in Musanze District; ✓ Supervising the roads and drainages development as per the Musanze District Development Plan; ✓ Coordinating Ministry for RUDP and representing the Government of Rwanda.
Ministry of Finance and Economic Planning (MINECOFIN)	MINECOFIN has the mission of raising sustainable growth, economic opportunities, and living standards of all Rwandans and develop Rwanda into a country free of poverty.	MINECOFIN is responsible for: <ul style="list-style-type: none"> ✓ Mobilizing necessary funds to fund Government projects including RUDP II Phase 3 works; ✓ Disbursing the funds according to priorities and importance of projects.
Rwanda Transport Development Agency (RTDA)	The main objective of RTDA is to implement Government policy on roads, railways, cable cars as well as road and waterways transport infrastructures;	Under this project RTDA is responsible for: <ul style="list-style-type: none"> ✓ Ensuring and checking that roads and drainage construction under RUDP II Phase 3 works comply with its established standards and norms and road building code; ✓ Managing and controlling the roads network and drainages construction with a view of achieving road safety and maintenance in the Musanze City at construction and operation and maintenance phases of the project.
Rwanda Environment Management Authority (REMA)	REMA has the objective to promote and ensure the protection of the environment and sustainable management of natural resources through decentralized structures of governance and seek national position to emerging global issues with a view to enhancing the well-being of the Rwandan people.	REMA is responsible for: <ul style="list-style-type: none"> ✓ Auditing all phases of RUDP I and RUDP II in the Musanze District; ✓ Auditing the project compliance with the laws on environment during its preparation and implementation phases.
Rwanda Development Board (RDB)	The main objective of RDB is to transform Rwanda into a dynamic global hub for business, investment, and innovation. It aims at fast tracking economic development in Rwanda by enabling private sector growth and infrastructure development promotion to enhance Rwanda to be a better touristic hub.	RDB is responsible for: <ul style="list-style-type: none"> ✓ Reviewing and approving the Terms of References for the ESIA for RUDP II Phase 3 Works in the Musanze City; ✓ Reviewing and approving the submitted ESIA; ✓ Issuing the ESIA certificate for the RUDP II Phase 3 works in the Musanze City for roads and drainages.
Local administrative Entities Development	The Local Administrative Entities Development Agency (LODA) mission is to contribute to the capacity building of the population	LODA is responsible for: <ul style="list-style-type: none"> ✓ For the overall supervision for implementation of RUDP II under the ESF instruments agreed for the project: ESMF, SEP, ESCP, LMP, RPF;

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Institution	Objectives	Roles and responsibility
Agency (LODA)	and decentralized entities by outsourcing funding to finance the socio-economic development of decentralized entities and reduction of extreme poverty in Rwanda.	<ul style="list-style-type: none"> ✓ Providing support to the Secondary cities in their responsibilities with the ESMF ✓ Reporting, training, doing supervision visits ✓ Coordinating and monitoring of performance of implementation of the respective sub-projects, risk management, monitoring & evaluation ✓ Disclosing information, developing and putting in place performance agreements, and developing and implementing the communication strategy for the Second Urban Development Project.
Rwanda Water Resources Board (RWB)	Its role is to ensuring the availability of enough and well managed water resources for sustainable development	<p>RWB is responsible for:</p> <ul style="list-style-type: none"> ✓ Ensuring sustainable use and protection of water resources in the project area
Rwanda National Police (RNP)	The Traffic Police Department is dedicated to ensure that road accidents are prevented or maximally minimized.	<ul style="list-style-type: none"> ✓ The Traffic Police Department is responsible for ensuring road safety and protecting the road way and its users and educating the citizens about the traffic laws. ✓ Contractors will work closely with Traffic Police during construction on issues related to traffic management. ✓ LODA, the district and the supervision team are responsible to ensure road safety to prevent future accidents as the ones that have occurred in RUDP I
Musanze District	The Musanze District has the objective of implementing infrastructure projects especially roads and drainage facilities to facilitate transport for businesses and services.	<p>The Musanze District is responsible for:</p> <ul style="list-style-type: none"> ✓ Selecting and contracting contractors for implementation of the project; ✓ Responsible to ensure implementation of all ESF instruments approved by the project ESMF, SEP, ESCP, LMP, RPF ✓ Ensuring the implementation of the project in Musanze City complies with laws, policies, related to environment, social, health and safety requirements and programmes relating to protection, conservation and promotion of the environment; ✓ Reporting any case of noncompliance related to environmental laws and policies.
Grievance Redress Committee (GRC)	The GRC will ensure that complaints and grievances are addressed in good faith and through a transparent and impartial process, but one which is culturally acceptable.	<p>The GRC will ensure that</p> <ul style="list-style-type: none"> ✓ Record, categorize and prioritize the grievances; ✓ Settle the grievances via consultation with all stakeholders (and inform those stakeholders of the solutions) ✓ Forward any unresolved cases to the relevant authority.

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Institution	Objectives	Roles and responsibility
Communities	Communities have to be involved in project identification, planning and operation, as a matter of policy.	Communities are responsible for: <ul style="list-style-type: none"> ✓ Lease the land in the project right of way; ✓ Providing information during census and surveys ✓ Participating in the grievance redress committees ✓ Reporting violence; ✓ Participating in the construction during implementation as labor and protection of the infrastructure after completion maintaining the road and drainages.

3.3 Policy Framework

The National Policies, Plan and Strategies relevant to this project are summarized in Table 3-2

Table 3- 2: National Policies, Plan and Strategies

Policy, Plan, Strategy	Objective	Relevance
Good Governance/Cross Cutting		
Rwanda Vision 2020, revised 2012	To build a nation in which pressure on natural resources, particularly on land, water, biomass and biodiversity, has significantly been reduced and the process of environmental pollution and degradation has been reversed;	During the project implementation, the contractor and local communities will be sensitized to efficiently manage natural resources and environment;
National Strategy for Transformation (NST1, 2017-2024)	The NST1 picks up from where the Economic Development and Poverty Reduction Strategy (EDPRS 2) left off, and continues in an effort to accelerate the transformation and economic growth with the private sector at the helm. With this new strategy, Rwanda’s public policy will focus on developing and transforming Rwandans into a capable and skilled people ready to compete in a global environment.	This project is in line with the NST1 as it will transform the human development by giving jobs and improving roads, drains and lagoons.

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Policy, Plan, Strategy	Objective	Relevance
National Poverty Reduction Strategy, 2013-2018	The National Poverty Reduction Strategy identifies the transformation of priority areas including 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.	This project is in line with the stated policy as it will transform the human development by improving living conditions of the poor and economic infrastructure such as roads and drainages.
Musanze District Development Master Plans	The Musanze District plans have the objective of supporting urban management for the delivery of basic infrastructure and services and informal settlement upgrading.	RUDP II Phase 3 project fits in the Musanze District Development plans. The roads and drainage under this project will support the achievement of the Musanze District development plans.
Environment, Natural Resources and Ecosystems		
National Environment and Climate Change Policy, 2019.	The main objective of the National Environment and Climate Change Policy is to make Rwanda a nation that has a clean and healthy environment, resilient to climate variability and change that supports a high quality of life for its society.	The project will comply with this policy by ensuring health and safety standard on environment and climate change; only approved quarries and borrow pits by the Musanze District will be used and ensure restoration plan are implemented at the end of the project implementation.
National Biodiversity Strategy and Action Plan, 2016	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 conserved.	The project activities will avoid practices that destroy the biodiversity and protected areas and contribute with different measures to support biodiversity conservation and restoration

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Policy, Plan, Strategy	Objective	Relevance
Rwanda Biodiversity Policy, 2011	The goal of this Policy is to conserve Rwanda’s biological diversity, to sustain the integrity, health and productivity of its ecosystems and ecological processes, whilst providing lasting development benefits to the nation through the ecologically sustainable, socially equitable, and economically efficient use of biological resources.	The project will avoid destruction of natural resources through avoidance of vegetation clearance and prohibited practices such as improper waste dumping that may pollute the nearby Mukungwa river.
National Land Policy, 2004	The overall objective of the national land policy is to establish a land tenure system that guarantees tenure security for all Rwandans and give guidance to the necessary land reforms with a view to good management and rational use of national land resources.	The project will respect mechanisms which guarantee land tenure security. Where not possible, fair compensation will be provided.
National Policy for water resources management, 2011	The water policy aims at fair and sustainable access to water, improvement of the management of water resources, etc. through reforestation , water catchments areas and water collection	The project activities will comply with this policy by installing storm water drains hence, improving the management of water resources through water catchment.
Transport and Urbanization		

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Policy, Plan, Strategy	Objective	Relevance
Public transport policy and strategy, 2012	The policy includes all public interventions within the framework of the urbanization process of Rwanda in order to constitute the urban structures at national and provincial level, to improve urban management, control development, and the spatial expansion of cities, particularly urban centers using effective planning tools	The project will contribute to this policy by upgrading of unplanned settlements with the provision of adequate social infrastructure facilities such as roads and drainages in the Musanze City. The project will contribute to the improvement of transport safety for all modes ensure reduction of both number and severity of accidents.
National Urbanization Policy, 2006	One of its objective is to improve the living conditions of the population in existing precarious neighborhoods, and restructuration and equipment of those neighborhoods with basic infrastructure, and secure land tenure status.	The project will improve the living conditions of the population by providing basic infrastructures such as roads and drainages.
Urbanization and Rural Settlement Sector Strategy 2013-2018	The Urbanization and Rural Settlement Sector encompasses social, economic and environmental activities. It has relevance to both, urban and rural areas. According to policies of Rwanda, access to a decent housing and favorable living conditions is a fundamental right for all citizens.	The project is in line with the action plan as the management of ongoing urbanization requires the establishment of infrastructures for development planning, zoning and urban renewal, with the provision of adequate infrastructure facilities.
Smart City Rwanda Master Plan	This Smart City Master plan provides a framework to help Rwandan towns and cities manage the transition of the 21st century and help ensure the future prosperity of all Rwandans and provides mechanisms for a higher quality of life to their citizens, businesses and visitors.	The project, through roads and drainage construction, will increase and facilitate the connectivity between different urban settlement areas of the secondary cities and city of Kigali. In addition, the livelihoods of the population will be enhanced, there will be an improvement of commercial activities, transportation of goods and people due to the
Health, Safety and Sanitation		

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Policy, Plan, Strategy	Objective	Relevance
National sanitation policy, 2016	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.	As part of the project, the construction of drainages in the Musanze City will bring an answer to storm water management problems where the storm water and run off will be collected and safely disposed to its recipient.
National Health Policy, 2016	One of the objectives of Rwanda Health 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.	By providing good roads, RUDP II phase 3 will contribute to ease transport of patients to hospitals and health centers hence contribute to the improvement of the quality of life and improved health services. The project will comply with this policy by ensuring health safety and the good working conditions and implement awareness programme on HIV Aids, STD, Malaria, Covid-19 and Ebola to workers and the public.
National Occupational Safety and Health Strategy, 2019	It aims at providing a framework for coordination of OSH activities among public, private, employees organizations and civil society institutions	This policy will govern implementation of the project by establishing safety and health standards at workplace and ensure compliance with occupational safety and health standards.
Environmental Health Policy, 2008	The overall objective of the Environmental Health Policy is provision of adequate environmental health services to all Rwandans with their active participation.	This project will comply with this policy by providing good environmental, social, health and safety working conditions to workers and neighboring residents.

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Policy, Plan, Strategy	Objective	Relevance
National Strategy for Climate Change and Low Carbon Development, 2011	This Strategy is the first attempt at plotting a climate resilient and low carbon development pathway for Rwanda. It is the start of a continuous process which is described in the Enabling Pillars and it will be implemented through the Programmes of Action.	This project will contribute to the achievement of the goals by achieving socio-economic development (roads and drainages in this project) that is resilient to economic, social and environmental shocks related to population growth and climate change.

Source: Consultant, 2020

3.4 Legal Framework

A summary of the national legal framework applicable to RUDP II phase 3 is presented in Table 3-3.

Table 3- 3: Relevant National legal framework applicable to RUDP II phase 3

Law/Regulation/Order	Objective	Relevance
Good Governance/Cross cutting		
The Constitution of the Republic of Rwanda, 2003 as revised in 2015	The Constitution makes clear the right to property, that it will not be encroached upon except in public interest and in accordance with the provisions of the law. The constitution specifies that everyone has the right to live in a clean and healthy environment and everyone has the duty to protect, safeguard and promote the environment.	RUDP II phase 3 in the Musanze City will comply with the Constitution by implementation of applicable laws (Law in expropriation, labor, Environment) and will ensure social economic development and comply with environmental laws.
Environment, Natural Resources and Ecosystem		
Law on Environment, 2018	<ul style="list-style-type: none"> • This Law determines modalities for protecting, conserving and promoting the environment. <i>The Article 5 of the Law institute the Polluter pays principle: The polluter pays principle aims to deter activities impairing environment and punish any person who violates regulations.</i> Article 42 prohibits: <ul style="list-style-type: none"> • to dump any solid, liquid waste or hazardous gaseous substances in a stream, river, swamp, pond, lake and in their surroundings; • to damage the quality of the surface or underground water; • to dump, spill or deposit materials of any nature that may cause or increase water pollution; • to build in water sources, streams, rivers and lakes and in the buffer zone in a distance of ten metres (10 m) away from streams and fifty metres (50 m) away from lakes; • to pile soil and any other materials in wetlands; to compact or change the nature of the wetland; • to build in the swamp and in the buffer zone in a distance of twenty metres (20 m) away from the swamp boundaries; • to drain, divert or block the rivers without prior authorization of the competent authority; • to dump, make flow any hazardous waste, waste water, except after treatment in accordance with relevant guidelines (Annex 14 and 15); 	Given the nature of this project and basing on this law, the RUDP II Phase 3 activities are classified under project that must undergo an Environmental Impact Assessment before obtaining authorization for its implementation. The contractor will adhere with all requirements of the Law, avoiding the pollution to the environment

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<ul style="list-style-type: none"> Ministerial order relating to the requirements and procedure for environmental impact Assessment (EIA), 2018 	<p>The order defines the Environmental Impact study as a systematic way of identifying environmental, social and economic impacts of a project before a decision of its acceptance is made. The order specifies the application and review procedure and schedule.</p>	<p>In this report, the environmental, social and economic impacts of all activities in the Musanze City is undertaken before taking decision to comply with this ministerial order.</p>
<p>Wetlands Law: Prime Minister’s order No 006/03 of 30/01/2017</p>	<p>Wetlands (and lakes) are protected by levels of exploitation published in a list of swamp lands, their characteristics and boundaries and determining modalities of their use, development and management. The order prescribes three management levels for specific lakes and wetlands: “Full Protection”; “Use under Specific Conditions” and; “Use without Specific Conditions”</p>	<p>The project will carry out an ESIA which will among other, determine the legal management level prescriptions of wetlands and/or lakes that may be affected by sub-project works and recommend mitigation</p>
<p>National Water Law: Law n°62/2008 of 10/09/2008 putting in place the use, conservation, protection and management of water resources regulations</p>	<p>This Law defines the applicable rules to the use, conservation, protection and management of water resources. The law further defines water reserves, public water domain of the State in the districts, natural public water domain and provides modalities of compensation for damage to a water resource and penalty on water polluting</p>	<p>The project contractors will carry out the construction of the civil works while observing the applicable rules to the use, conservation, protection and management of water resources. In case the water utility services are to be relocated or damaged, the contractor will be responsible for expenses for relocation by the utility providers and compensation.</p>
<p>Ministerial Order determining the list of prohibited plains to constructions, 2005</p>	<p>This Order determines the list of plains on which construction is prohibited and stipulated that whenever appropriate studies establish the need for other plains not on this list to be protected from construction, the Minister in charge of Environment may order that construction be prohibited on those plains.</p>	<p>RUDP II phase 3 will comply with this ministerial order by not approving any construction on the areas provided on the list of prohibited plains to construction. The ESIA did not find any plain in proposed areas in all the Musanze City.</p>

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<p>Law governing the preservation of air quality and prevention of air pollution in Rwanda, 2016</p>	<p>This Law determines modalities for preservation of air quality and prevention of air pollution in Rwanda.</p>	<p>As per this law, the project will implement measures aimed at the preservation of air quality as well as all elements or activities likely to affect air quality or pollute the atmosphere in the project areas by watering roads in dry season and ensure the use of equipment with low gas emissions.</p>
<p>Regulations Governing Hazardous Waste Management, 2018.</p>	<p>These regulations aim to protect public health and the environment by regulating hazardous waste management and shall apply to any person engaged in the generation, storage, collection, transportation, treatment or disposal of hazardous waste. Regulation prohibits persons from generating hazardous waste without a valid Environmental Impact Assessment Certificate, and requires the segregation of hazardous waste.</p>	<p>In case hazardous wastes are generated by the project activities, a license for collection, storage and disposal will be acquired to Regulatory Authority for suitable packing, safe handling, storage, transport and labelling is done. The project implementation will ensure open and unlabeled</p>
<p>Law N°49/2018 of the 13/08/2018 determining the use and management of Water resources in Rwanda</p>	<p>The law determines guidelines principles aiming at preventing pollution of water (through dumping, spilling or depositing hazardous chemicals on water) and rational use of water resources.</p>	<p>As per this law, the project activities will implement measures aimed at carefully handling and store hazardous liquids to avoid incidence of spills or dumping of chemicals on soil, river banks and water</p>
<p>Regulations governing Liquid Waste Collection and Transportation, November 10 2016 No: 005/R/SAN/EWS/R</p>	<p>These regulations establish a framework for liquid waste collection and transportation in Rwanda;</p>	<p>The project implementing contractor will ensure proper management of produced liquid wastes by signing contract with a refuse collection and transportation and disposal company;</p>

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<p>Regulations governing solid wastes recycling in Rwanda, 2015</p>	<p>This regulation aims at protecting the public health and the environment by encouraging the diversion and recovery of recyclable materials.</p>	<p>The management of solid wastes will be considered during the project implementation by implementing the re-use and recycle waste management principles.</p>
<p>Law governing biodiversity in Rwanda, 2013</p>	<p>This Law determines modalities for management and conservation of biological diversity within Rwanda.</p>	<p>The management and conservation of biological diversity in the project areas will be considered during the project implementation where necessary by implementing the ESMP if this report.</p>
<p>Rwandan law N° 58/2018 of 13/08/2018 on mining and quarrying operations.</p>	<p>The Law applies to the activities of exploration, mining, trading and ^{processing} of minerals and quarry. The Law specifies that the quarry operations are conducted only by a person who has been granted a license in accordance with this Law</p>	<p>Quarries and borrow pits will be required to construct the roads and drainage. The project will require contractors to comply with this law and forced during project implementation by requesting the required permits and ensuring quarries are approved by the Musanze District and borrow pits and quarries are remediated and restoration plans are implemented at the end of the project.</p>
<p>Law Governing Roads in Rwanda, 2011.</p>	<p>The purpose of this Law is to regulate the road network in Rwanda and determines its reserves, classification and management.</p>	<p>The project will comply with regulations related to roads construction and follow the road building code.</p>

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<p>National Land Law, 2013</p>	<p>This Law determines modalities of allocating, acquisition, transfer, use and management of land in Rwanda. It also establishes the principles applicable to rights recognized over all lands situated on Rwanda’s national territory and all rights united or incorporated with land, whether naturally or artificially.</p>	<p>Since the project will affect lands and therefore resettlement and compensation, this law is relevant to the project. Rwanda lands are allocated or leased to individual evidenced by a certificate of land registration. The project will ensure rights on lands are</p>
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Law/ Regulation/ Order	Objective	Relevance
Labor and Social Equity		
Law relating to expropriation in the public interests, 2015	This Law determines procedures relating to expropriation in the public interest.	Since the project is in the public interest, this law will be applied during expropriation exercise of the people affected by RUDP II phase 3.
Law Regulating Labor in Rwanda, 2018	The Law regulates the employment in the public and private sector and specifies many issues including those related to occupational health and safety, Occupational accident or disease, right to salary, social security, protection against workplace discrimination, protection from forced labor, etc.	RUDP II phase 3 will abide in good conducive working conditions during the implementation of the project. The district will ensure contractors comply with Labor law to ensure good working conditions and wellness of workers. All forms of discrimination will be avoided during recruitment of workers (male and female workers).
Law N° 48/2015 Of 23/11/2015 Governing the Organization, Functioning and Management of Health Insurance Schemes in Rwanda	The Law determines the organization, functioning and management of health insurance schemes in Rwanda. Article 4 of this Law specifies that the Employer’s contribution to the payment of health insurance contributions for employees Any employer, whether public or private, shall be required to contribute to the payment of his/her employees’ health insurance	In RUDP II Phase 3, the contractor shall be required to contribute to the payment of his/her employees’ work and health insurance.
Safety, Health and Sanitation		
Ministerial Order determining conditions for occupational health and safety, 2012	This Order determine the general and specific rules and regulations relating to health and safety at workplace in order to secure the safety, health and welfare of persons at work and protect them against risks to safety and health arising from work	As required by this law and the LMP of the project, health and safety will be given a priority by ensuring PPE is given to workers daily, regular toolbox meetings on health and safety during construction, insurance and compensation ensured in case of accidents or death. Health and safety committees will be established by contractors and governed by this ministerial order during project implementation.

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Law/Regulation/ Order	Objective	Relevance
Urban development and Construction		
Rwanda Building Code, 2019	The purpose of this Code is to establish the minimum requirements to safeguard the public health, safety and general welfare. This is done through regulating, controlling, and monitoring the design, construction, quality of materials, use and occupancy, location, maintenance, sanitation, lighting and ventilation, energy conservation, and safety including measures to protect life and property from fire and other hazards attributed to the built environment, for all buildings and related non-building structures in Rwanda.	The project is classified as a building project hence will be in compliance with the Rwanda building Code
Law governing urban planning and building in Rwanda, 2012	This Law governs the urban planning and building in Rwanda.	RUDP II phase 3 in the Musanze Secondary City will comply with this law during implementation by ensuring the roads are constructed to the standards and norms stated in this law.
Rwanda building control regulation, 2012	The Building Control Regulations is a nationally recognized document, which will serve as a standard reference for the regulation of building design and construction.	The project is classified as a building project hence will be in compliance with the Rwanda building control regulation;
Sector guidelines for EIA for Roads development projects in Rwanda, 2009	These guidelines help in ensuring that the lessons learned from these experiences are integrated into future best practice in relation to EIA for road projects. National road projects, by their nature, tend to be large, high profile projects extending over a substantial geographical area, and involving huge funding	This ESIA has considered these sector guidelines as compliance during implementation of RUDP II phase 3 in Musanze City.

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<p>Ministerial order N° 04/Cab.M/015 of 18/05/2015 determining urban planning and building regulations</p>	<p>The ministerial order provides urban planning and building principles as well as the building Code with minimum requirements. It also determines the traffic and transport planning.</p>	<p>The project implementation will ensure the quality of road construction materials and, emphasize on the use of locally produced road construction materials that do not compromise the natural ecosystem.</p>
<p>Smart City Rwanda Master Plan</p>	<p>This Smart City Master plan provides a framework to help Rwandan towns and cities manage the transition of the 21st century and help ensure the future prosperity of all Rwandans and provides mechanisms for a higher quality of life to their citizens, businesses and visitors.</p>	<p>The project, through roads and drainage construction, will increase and facilitate the connectivity between different urban settlement areas of the Musanze city. In addition, the livelihoods of the population will be enhanced, there will be an improvement of commercial activities, transportation of goods and people due to the provision of basic and access infrastructure.</p>
<p>Rwanda Green Building Minimum Standards (2017) and Ministerial order N° 04/Cab.M/015 of 18/05/2015 determining urban planning and building regulations</p>	<p>Green building minimum standards recommend the reduction of the GHG emission from the building sector through the reinforcement of the Green Building Minimum Compliance System. The ministerial order provides urban planning and building principles as well as the building Code with minimum requirements</p>	<p>The project activities and construction of civil works will promote energy saving and water efficiency. The project will adopt the climate-resilient design standards and ensure the quality of construction materials and emphasize on the use of locally produced building materials that do not compromise the natural ecosystem.</p>
<p>LAW N° 04/2013 relating to access to information</p>	<p>Provides the public with right to information. This law enables the public to access information possessed by public organs and some private bodies. It also sets out the methods for promoting the publication and sharing of information.</p>	<p>The project will avail information and involve the public and project stakeholders in assessing activities, documents or records related to the project activities. The project documents will be disclosed to public in in any electronic form or print outs copies. These ESF documents will be disclosed on websites of MININFRA, LODA, REMA and City of Kigali</p>
<p>Cultural Heritage</p>		
<p>Law n° 28/2016 on the preservation of cultural heritage and traditional knowledge</p>	<p>Defines tangible cultural heritage, provides classification criteria , organs in charge of classification and stresses on the preservation of cultural heritage and traditional knowledge</p>	<p>The project will protect and preserve the historical area, building, visual representation, and monuments showing artistic talent.</p>

Source: Consultant, 2020

3.5 The Environmental and Social Impact Assessment Process in Rwanda

The Environmental and Social Impact Assessment (ESIA) is a planning tool that permits the integration of environmental concerns into the project planning process at the earliest possible planning and design stages and helps provide management of the project with practical advice on the mitigation of any potentially adverse environmental impacts of the project (Figure 3-1). In Rwanda, the ESIA is regulated by Law on environment N°48/2018 of 13/08/2018 and Ministerial Order N° 001/2019 of 15/04/2019 establishing the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment. This ESIA was conducted according the process shown in Figure 3-1.

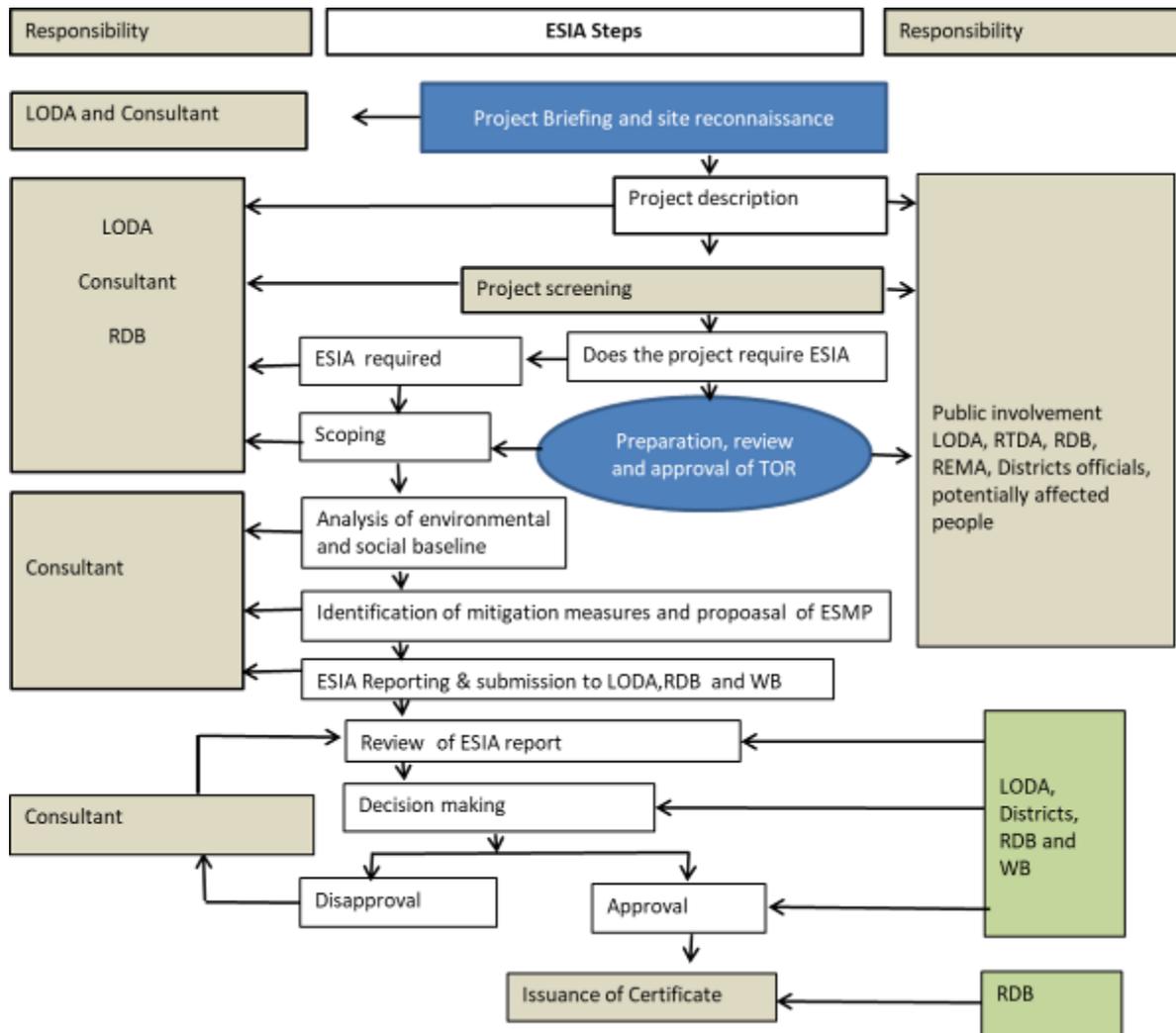


Figure 3- 1: ESIA process for RUDP II Phase 3

Source: Adapted from ESIA Process in Rwanda

The Procedures for Environmental Impact Assessment have been prepared to contribute to improvement of EIA practice in Rwanda and, they aim to serve agencies and individuals taking part in the EIA process. The target groups include developers, EIA experts, staff of REMA, environmental committees at all local government levels (province, Musanze City, sector and cell), lead agencies, experts from research institutions and universities, NGOs and the general public. The guidelines are designed to ensure that participants in the EIA process understand their roles and that laws and regulations are interpreted correctly and consistently (Figure 1-1).

3.6 International Legislative Framework and World Bank Environmental and Social Standards

3.6.1 International Agreements

Rwanda has signed and ratified various international conventions relevant to general environmental protection and, the following conventions and protocols are relevant to the present study:

- i. The international Convention on Biological Diversity (CBD) 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;
- ii. 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;
- iii. 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;
- iv. 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;
- v. Paris Agreement/Paris Climate Agreement or COP 21 of December 2015 on reduction of the emission of gases that contribute to global warming. This agreement was signed by Rwanda on 22/04/2016 and ratified on 06/10/2016;

RUDP II Phase 3 will comply with the above international agreements by ensuring vegetation clearance is limited as much as possible and by avoiding destruction of habitats for endangered species if any. This project will also ensure low emissions from the project cars, trucks and machineries.

3.6.2 World Bank Environmental and Social Framework

The project RUDP II is financed by the World Bank and the Government of Rwanda agreed to follow the World Bank Environmental and Social Management Framework and 8 of the Environmental and Social Standards (WB ESS) relevant for the implementation of the RUDP II project. The objective of the 10 World Bank's ESS is to prevent any harm and mitigate or compensate any impact caused by the project to the people and their environment during the construction and operation of the financed activities³. There are 10 ESS which defines the procedures and expected management by the Bank and the Borrower in the identification, preparation, construction, operation and implementation of financed programs and projects. The ESS defines the mechanism for addressing environmental and social issues since the project design, implementation and operation, and they require actions for consultation with affected communities and public disclosure of the ESIA, ESMP and monitoring reporting.

3.6.2.1 WB Standards relevant for RUDP II project.

The World Bank Environmental Standards triggered for RUDP include: ESS1: Assessment and Management of Environmental and Social Risks and Impacts; ESS2: Labor and working conditions; ESS3: Resource Efficiency and Pollution Prevention and Management; ESS4: Community Health and Safety; ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement; ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources; ESS8: Cultural Heritage and ESS10: Stakeholder Engagement and Information Disclosure (Table 3-4).

Table 3- 4: WB Environmental and Social Standards relevant to this project

Environmental and Social policy	Relevance to the project
Assessment and Management of Environmental and Social Risks and Impacts (ESS1)	The ESIA generates and prepare an Environmental and Social Management Plan (ESMP) to prevent, mitigate and compensate negative impacts to people and the environmental in both the construction and operational phases of all civil works. The ESIA also follows the national regulations in environment, health, safety, labor, land and social participation to ensure that the project activities are environmentally and socially sound and sustainable.
Labor and Working Conditions (ESS2)	The ESMP formulates appropriate recommendations related to labor management, worker's employment criteria (by avoiding child labor), worker's camp

³<https://www.worldbank.org/en/projects-operations/environmental-and-social-policies>

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Environmental and Social policy	Relevance to the project
	management, gender based violence (GBV), workplace sexual harassment, working hours and health and safety measures, to be documented in labor management procedures. All workers shall sign a Code of conduct as part of their contract prior to start work. The ESMP also includes a grievance redress mechanism for workers to raise workplace concerns. The contractor and other parties shall: (1) inform workers about grievance mechanism at the time of recruitment and make it easily acceptable to them; (2) enhance development benefits of workers (such as sensitization in terms of community health insurance “mutuelle de santé” and SACCOs schemes).
Resource Efficiency and Pollution Prevention and Management (ESS3)	Since water and energy for construction purpose are scarce in the Musanze City, the project comes up with efficient approaches for natural resources (i.e. water, energy, construction materials) consumption to preserve the scarce resources: e.g. minimize water use and harvest and use of rain water; a waste management plan has been prepared as a measure and action to be implemented; use of raw materials, water and energy will be minimized. The project has also identified potential adverse impacts (both long term & short term) caused by different pollutants on Health and Environment during the entire life cycle of the project and prepared avoidance/ minimization measures.
Community Health and Safety (ESS4)	The project activities are expected to cause health and safety risks and impacts to local communities (e.g. traffic accidents due to transportation vehicles, transmission of communicable diseases, and pollution of drinking water sources/air due to chemicals/dust). The project design ensures that construction activities do not pose any unintended negative impact to community; that safety and health of affected community is enhanced. Also as result of the interruption of basic services like – electricity, road access, safe walking in the village, access to homes, access to schools, etc.
Land Acquisition, Restrictions on Land Use and Involuntary Resettlement (ESS5)	Roads construction, drains, ponds and standalones infrastructures will affect people living in the areas and as well their houses, fences, and roadside businesses. The project will undertake a Resettlement Action Plan to alleviate the adverse impacts on displaced persons/damaged properties by providing timely compensation and at-least restoring their livelihood and improving their living standard to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.
Biodiversity Conservation and Sustainable Management of Living Natural Resources (ESS6)	The ESIA addresses activity-specific screening procedures for biodiversity risks and impacts likely to occur (e.g. soil erosion, sedimentation that may damage terrestrial and aquatic life) from construction activities (e.g. earth moving, excavation, transportation of materials, labors, machinery, borrow pits, waste disposal, etc.). The project considers relevant threats to biodiversity and ecosystem services, especially focusing on species/habitat loss, habitat degradation, overexploitation, nutrient loading and pollution. It also takes into account the

Environmental and Social policy	Relevance to the project
	differing values attached to biodiversity and ecosystem services by local communities. Application of mitigation/ remedial measures shall involve REMA and RDB to avoid impacts on biodiversity and ecosystem services on natural habitats, on legally protected plants/animals plus avoid introduction of invasive alien species.
Cultural Heritage (ESS8)	The project will perform excavations for the civil works that are likely to affect graves (or any tangible objects that embody traditional lifestyles) which are of social and cultural significance. A Chance find procedure has been included in this ESIA. The project will stop any work in case graves or other cultural resource is found until the local community and responsible agency provide clearance to the rescue plan or any other plan agreed to avoid impacting these resources.
Stakeholder Engagement and Information Disclosure (ESS10)	The Stakeholder Engagement Plan (SEP) cleared and approved by the World Bank will be fully implemented with all the different types of stakeholders, and the agreed timings and modes for communication and consultation.

3.6.2.2 Project ESF instruments cleared by the World Bank for the project

As part of the requirements of the World Bank’s Environmental and Social Framework⁴, the RUDP II Environmental and Social Review Summary Appraisal Stage (ESRS Appraisal Stage)⁵ and Environmental and Social Management Framework (ESMF)⁶ has been prepared as umbrella instrument for the project Environmental and Social Standards (ESS2, ESS3, ESS4, ESS6, ESS8, and ESS10). Other four ESF instruments have also been prepared and approved by the bank

- Project Appraisal Document
- Resettlement Policy Framework (RPF)⁷ to guide the development of site specific RAP which will be prepared during project implementation;
- Labor Management Procedures (LMP)⁸ which defines the procedures for labor, health and safety;

⁴ <https://projects.worldbank.org/en/projects-operations/document-detail/P165017>

⁵ <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/845901598651479210/appraisal-environmental-and-social-review-summary-esrs-second-rwanda-urban-development-project-p165017>

⁶ <http://documents1.worldbank.org/curated/en/571311598032720851/pdf/Environmental-and-Social-Management-Framework-ESMF-Second-Rwanda-Urban-Development-Project-P165017.pdf>

⁷ <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/490111598032724252/resettlement-process-framework-second-rwanda-urban-development-project-p165017>

⁸ <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/353091598031382560/labor-management-procedures-second-rwanda-urban-development-project-p165017>

- Stakeholder Engagement Plan (SEP)⁹ to guide the communication and consultation protocols and the grievances mechanisms;
- Environmental and Social Commitment Plan (ESCP)¹⁰ which summarizes all obligations of the project for environmental and social management during project implementation.

3.6.3 Project Classification

During the project appraisal (PAD, 2019), the World Bank has classified the RUDP-II with a “*Substantial Risk*” rating based on the ESS1 and expected potential environmental and social impacts and risks (GoR-RUDP II, ESMF, 2020).

3.6.4 World Bank Group (WBG) Environmental, Health and Safety (EHS) Guidelines

The World Bank Group has prepared the Environmental, Health and Safety Guidelines^{10 11} to ensure the borrowers apply accepted standards for the Bank¹² in the construction and operation of the financed infrastructure. In cases where government do not have regulations (air quality, water discharge standards), the borrowers will use the standards describe in this guideline.

Under these guidelines, LODA and the Musanze District contractors are obliged to implement all reasonable precautions to protect the health and safety of workers and local inhabitants. They provide guidance and examples of reasonable precautions to implement in managing principal risks to occupational health and safety. These measures must be followed for the construction, operation and decommissioning activities. Contractors should have the technical capability to manage the occupational health and safety issues of their employees, extending the application of the hazard management activities through formal procurement agreements.

For this project, the contractors will follow these preventive and protective measures:

- ✓ Eliminating the hazard by removing the activity from the work process. Examples include substitution with less hazardous chemicals, using different manufacturing processes.
- ✓ Controlling the hazard at its source through use of engineering controls. Examples include local exhaust ventilation, isolation rooms, machine guarding, acoustic insulating.

⁹ <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/117101598651415132/stakeholder-engagement-plan-sep-second-rwanda-urban-development-project-p165017>

¹⁰ <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/101861601658735820/environmental-and-social-commitment-plan-escp-second-rwanda-urban-development-project-p165017>

- ✓ Minimizing the hazard through design of safe work systems and administrative or institutional control measures. Examples include job rotation, training safe work procedures, lock-out and tag-out, workplace monitoring, limiting exposure or work duration.
- ✓ Providing appropriate personal protective equipment (PPE) in conjunction with training, use, and maintenance of the PPE. The application of prevention and control measures to occupational hazards should be based on comprehensive job safety or job hazard analyses. The results of these analyses should be prioritized as part of an action plan based on the likelihood and severity of the consequence of exposure to the identified hazards.

4. APPROACH AND METHODOLOGY

4.1 Introduction

Different techniques were used to collect data required for this ESIA study and these include a comprehensive literature review, field visits, investigation and direct observations, field surveys and interview with key stakeholders. Before undertaking a detailed ESIA study, the team undertook kick-off meeting and a reconnaissance tour that led to the ESIA Scoping, a precursor and an important part of the initial phases of the ESIA process.

After detailed fieldworks were undertaken to gather the required data and information from both field and document review. Having gathered the required information, the consultants consolidated the findings into this comprehensive ESIA report.

Data were collected from primary and secondary sources. Primary data collection involved site assessment surveys with appropriate survey tools such as camera, observation, questionnaires (Annex 5, 6 and 7) to identify and evaluate perceived impacts of the project on (1) roads and surrounding infrastructures; (2) land-use conflicts, (3) vegetation cover of the area; (4) existing sensitive environmental receptors including surface and ground waters; (5) on people living within and around the project area; animal breeding sites, feeding grounds. The evaluation of different road stretches and drains was carried out with a specific focus on (1) physical environment (topography and soil, climate and rainfall, water quality and noise level); (2) biological environment (flora and fauna); (3) socio-economic and cultural environment (population, land use, sources of income, employment, goods and services, cultural/ historical sites).

Secondary data collection involved the review of relevant policies, strategies and regulations related to buildings, infrastructures, national socio-economic surveys and environmental impact assessment. The RUDP II phase 3 Engineering feasibility studies and the Musanze District Development and Masterplans were also reviewed. Table 4-1 describes tasks and approaches used to conduct this study.

The identification of key stakeholders (individual, a group of people, or an organization who can affect or be affected positively or negatively the proposed project) was undertaken using literature review of the institutional setup and consultative interactions with the public. The

analysis of stakeholders involved placing them in categories (Central Government, Local Government, NGOs, PAPs and local communities) and assessing the impacts of each group of stakeholders on the project (Strengths, Weaknesses, Opportunities and Threats-SWOT Analysis).

According to WB ESS1 “Assessment and Management of Environmental and Social Risks and Impacts” and the ES 10 “Stakeholder Engagement and Information Disclosure”, and the Ministerial order relating to the requirements and procedure for environmental impact Assessment (EIA), 2018, it is required the project to hold public hearings on the project to seek the views of the people in the communities which may be affected by the project.

Public involvement is necessary to collect views and concerns of:

- a) Local communities;
- b) Project affect local people;
- c) Local authorities including the Musanze District officials;
- d) Central government institutions (LODA, RTDA, REMA, WASAC, REG).

Methodologies for involving the public were designed and implemented in a flexible manner adapting and responding to the local communities and conditions. They were chosen with the concept of cost-effectiveness so as not to cripple the environmental assessment budget. Public involvement activities were carried out openly and transparently. Public involvement consisted of three stages: information dissemination; consultation; and stakeholder participation as per the directives from project ESMF and SEP. A summary of the consultations performed and their outcomes in this ESIA is provided in Chapter 8. The list of people who participated in the consultation meeting is shown in Annex 10.

Special attention was paid to the Bank’s ESSs and other ESF instruments prepared for RUDP II (PAD, ESMF, ESCP, SEP, LMP, RFP and ESRS). The review of these documents helped to formulate the specific measures for the management of the project environmental and social risks.

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Table 4- 1: Overview of tasks and approaches

Task & Activities	Approach
Task 1: Project site reconnaissance	Fieldwork, observation and mapping
Task 2: ESIA Application to RDB	Desk work of analyzing and compiling the information from the field and literature review, preparation of the ESIA project brief and TORs
Task 3: Preparation and presentation of an inception report	Desk work to discuss the methodological approaches to the assignment (ESIA for of RUDP II Phase 3 in the Musanze City
Task 4: ESIA Scoping	Desk work, field surveys, interviews to identify key issues for the ESIA, preparation and approval of ToRs
Task 5: Review of policies, regulatory framework applicable to ESIA and the Musanze District;	Desk work to review national and international policy, laws, treaties and agreements relevant to this project.
Task 6: Analysis of the project components and activities	Field surveys, mapping, interviews and questionnaires to LODA, the Musanze District and local people
Task 7: Collection of the biophysical and social-economic baseline information	Physical, chemical, biological and social-economic investigations (field surveys, observations, mapping, interview, questionnaires, literature review) to identify the background environment in terms of soil type, erosion, drainage, slope, water resources, wetlands, climate and meteorology, pollution, traffic, patterns, basic services, biological environment, socio-economic and cultural environment
Task 8: Impact identification, impact analysis and impact significance and occupational Safety & Health concerns	Field work and desk work, identifying, analysis and mapping the project impacts and their significance to the communities and environment.
Task 9: Analysis of mitigation measures	Field work and desk work to identify and analysis of the project mitigation measures
Task 10: Analysis of alternatives (alignments, material, construction technology, waste management techniques)	Desk work, field surveys to analyze the project alternatives in terms of the policy, plans, programme, projects, construction technologies or management and work schedule

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Task & Activities	Approach
Task 11: Environmental and Social Management and Monitoring Plan (ESMP) and Environmental and Social Monitoring Plan including plans for traffic, work health & safety, storm water & wastes, labor and greening.	Desk work compiling together according to the project activities, the project impacts, mitigation measures, management and monitoring indicators, responsibility, frequency and cost. The ESMP will also detail the management for the storm water, waste, topsoil, dumping areas, quarry, campsites and borrow sites.
Task 12: Preparation and Disclosure of the Draft Report	Desk work compiling all together all ESIA chapters and disclosure to the client (Musanze District, LODA and other key project stakeholders).
Task 14: Preparation and presentation of the final report	Desk work, revising the draft report according to the input from the client and key project stakeholders
Task 15: Submission of final report and issuance of a certificate of approval by the Rwanda Development Board	Submission of the Final ESIA Report to RDB for final review and approval and issuance of the Clearance Certificate.

Source: Consultant, 2020

4.2 Literature Review

Literature relating to Feasibility Study and Preliminary Design Report of Second Rwanda Urban Development Project (RUDP II) in the Musanze District was reviewed. Other documents reviewed include:

- World Bank Environmental and Social Standards: Bank's Environmental Assessment and Management and Social Risks and Impacts - ESS1; Labor and Working Conditions - ESS2; Resource Efficiency and Pollution Prevention and Management - ESS3; Community Health and Safety - ESS4; Land Acquisition, Restrictions on Land Use and Involuntary Resettlement - ESS5; Biodiversity Conservation and Sustainable Management of Living Natural Resources - ESS6; Cultural Heritage - ESS8; Stakeholder Engagement and Information Disclosure - ESS10.
- The instruments prepared for the project including the Environmental and Social Review Summary – public in the internet ¹¹and, the ESIA's for the previous phases;

¹¹ <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/845901598651479210/appraisal-environmental-and-social-review-summary-esrs-second-rwanda-urban-development-project-p165017>

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- The RUDP webpage in the World Bank website including ESF instruments for RUDP II (PAD, ESMF, ESCP, SEP, LMP, RFP and ESRS).;
 - The supervision reports of the of RUDP I;
 - The bidding documents of the of RUDP I;
 - Environmental supervision reports from the Musanze District, LODA and Contractors;
 - Rwanda vision 2020, 2015 and 2050 and 7-Years Government Programme: National Strategy for Transformation (NST1) 2017–2024;
 - The Environmental New Law (No. 48/2018 of 13/08/2018) determining the modalities for protecting, conserving and promoting the environment;
 - Ministerial Order No 001/2019 of 15/04/2019 Establishing the List of Projects that Must Undergo Environmental Impact Assessment, Instructions, Requirements and Procedures to Conduct Environmental Impact Assessment, 2019;
 - Ministerial order relating to the requirements and procedure for environmental impact Assessment (EIA), 2018;
 - Ministerial Order determining modalities of establishing and functioning of occupational health and safety committees, 2012;
 - Law Governing Roads in Rwanda, 2011;
 - National Land Law, 2013;
 - Law n° 13/2014 of 20/05/2014 on Mining and Quarry Operations ;
 - Law relating to expropriation in the public interests, 2015;
 - Law Regulating Labor in Rwanda, 2009;
 - Law governing the preservation of air quality and prevention of air pollution in Rwanda, 2016;
 - Law governing biodiversity in Rwanda, 2013;
 - Law governing urban planning and building in Rwanda, 2012;
 - Ministerial Order determining conditions for occupational health and safety, 2012;
 - Rwanda building control regulation, 2012;
 - Sector guidelines for EIA for Roads development projects in Rwanda, 2009
-

Land use, topographic and geological maps of the various project areas, and other documents that were deemed as being of fundamental importance to the assignment were also reviewed. A list of all references used is provided under the Reference section of this report.

4.3 Determination of Environmental and Social Baseline Conditions

Environmental and social baseline surveys were conducted within the project area to establish prevailing biophysical and socio-economic conditions that served as basis for impacts assessment and future monitoring. Baseline conditions were established based on literature review and field biophysical and social surveys as well as consultations with relevant stakeholders.

- a) Field visits and detailed studies were conducted along the proposed sub-projects (roads and drains), key ecosystems, water bodies and their adjacent territories. The site visits started in September 2020, continued in October - November 2020. During the site visits, the different biodiversity features, habitat, vegetation, climatic parameters and landscape units were identified and recorded. Walk-through-surveys were conducted across all the proposed RUDP II phase 3 and all observed plant and animal species were recorded. Active searches for protected species (fauna and flora) were also conducted within habitats likely to harbor or be important for such species. The presence of sensitive ecosystems such as Mukungwa and Susa rivers were given due attention.
- b) Review of existing information and data on environmental parameters like rainfall and temperature;
- c) Review and reference to the existing laws, regulations, policies and working documents relating to biodiversity features to verify how the project conforms to them; and
- d) Consultations with the relevant stakeholders (LODA, REMA, RDB, Musanze City, local communities) on the key issues that need special attention and Expert judgment.

4.4 Water Quality Assessment

To have the baseline information on the water quality in the project area, water samples were taken in Mukungwa river (both upstream and downstream of the confluence between Mukungwa

and Susa Torrential River) in November 2020. The water quality was analyzed in terms of Turbidity, pH, Electrical Conductivity (EC), Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Chloride, Copper, Zinc, Cadmium, Lead, Grease and Oil, and Fecal coliforms.

Figure 4-1 shows the sampling sites. The selection of the Mukungwa River is explained by the torrential and temporal natures of Susa and Rwebeya Rivers. These rivers are filled with water when it rains in the Volcanoes. At the time of sampling, there was no water in these rivers. Figure 4-1 shows the water sampling points on the Mukungwa River.

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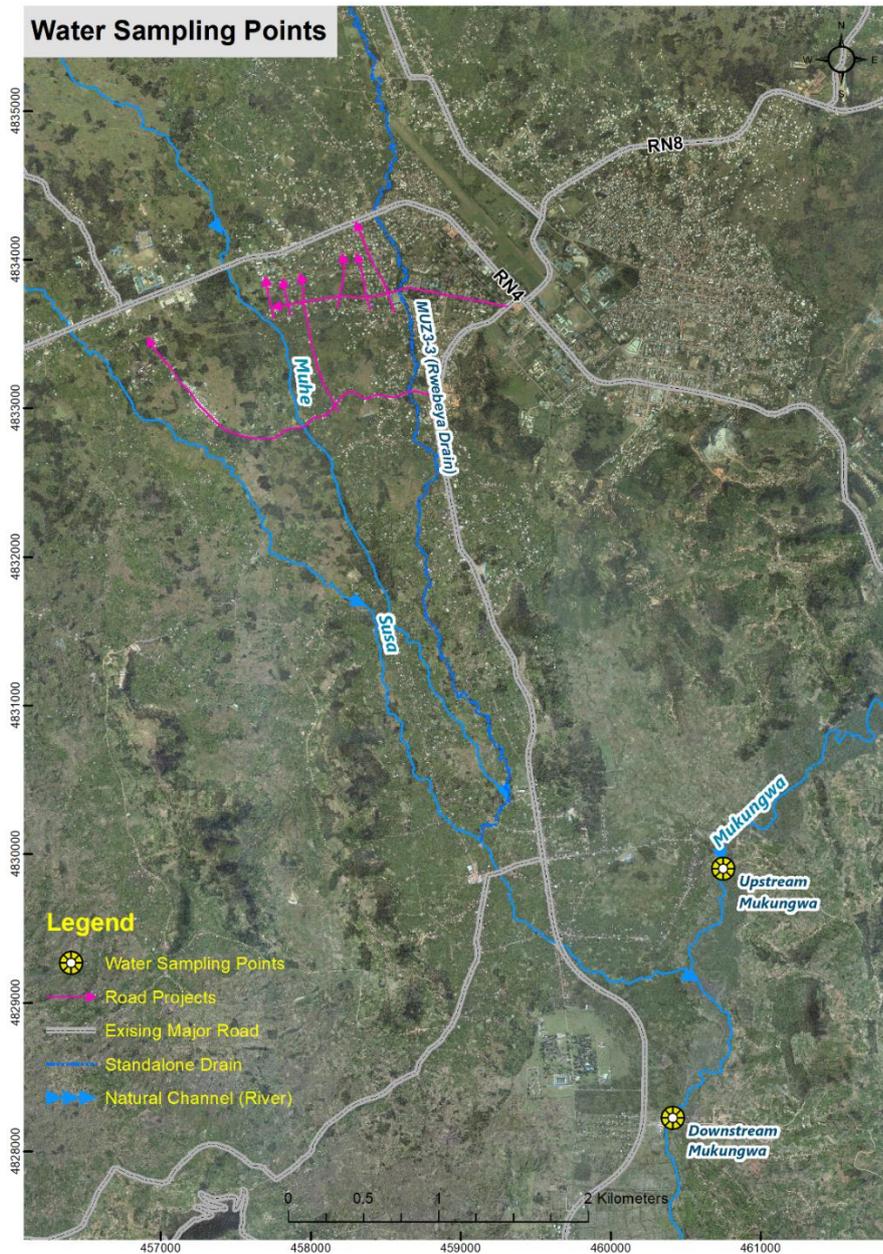


Figure 4- 1: Sampling sites for water quality analysis in Musanze City
Source: Consultant, 2020

Sample collection followed the Standard Methods for the Examination of Water and Wastewater (APHA, 2005). EC ($\mu\text{S cm}^{-1}$) and pH were measured onsite using a multimeter (18.50.SA Eijkelkamp, Giesbeek, The Netherlands). The turbidity was determined using a Portable colorimeter DR/890 (HACH, Colorado, USA). Samples for other water quality analyses were preserved using cooler box with ice packs whose temperature was maintained

at 4°C and transported to the Laboratory of Water and Sanitation Corporation (WASAC) and analyzed the following day as follows:

- Grease & oil (GO) was determined by extraction into a non-polar, hydrocarbon-free solvent followed by measurement of the infrared absorption spectrum of the extract. The absorption between 3000 and 2900 cm⁻¹ by C-H groups in the OG is correlated to the concentration of OG;
- Biological Oxygen Demand (BOD₅) was determined by completely filling an airtight bottle of 300 mL and incubates it in darkness at 20°C for 5 days. BOD₅ was calculated as the difference between the initial dissolved oxygen and the dissolved oxygen after incubation by using Oximeter.
- The Chemical Oxidation demand was determined using the strong oxidizing agents (Cr₂O₇²⁻ or (Cr IV) to oxidize the organic matter. The solutions of Ag₂SO₄, H₂SO₄ were used as catalyst and CaCrO₇ was used as the oxidizing agents. The reading of absorbance is done at 600 nm using colorimeter.
- Heavy metals (Cd, Cr, Cu, Pb, and Zn) were determined by digesting the unfiltered samples with Nitric Acid during sampling. Digested samples were filtered using Glass Fibre Filters (pore size 0.45 µm, 47 mm) to avoid the clogging of the AAS aspirator pipe. The concentrations of these metals were determined using Atomic Absorption Spectrophotometer (AAS Perkin Elmer model Analyst 200) with air/acetylene flame method (Agilent, 2012; Perkin Elmer Corporation, 1996).
- Water samples for total coliform (TC) analysis were filtered on through sterile membrane filters (0.45 µm, 47 mm) with a vacuum pump. Filters for HPC were placed on solidified Yeast Extract Agar and all colonies were counted within 24 and 48 hours of incubation at 37°C. Filters for TC were incubated on Chlomocult Coliform Agar at 37°C for 24 hours. Pink to red colonies and blue colonies were counted for TC (APHA, 2005)

The results for the measured water quality and applicable standards are reported in the chapter of baseline information (Chapter 5).

4.5 Noise level assessment

The noise level was measured at Excel Primary School (Ruhengeri Cell), Reginal Pacis Secondary School, Ruhengeri Catholic Church Eveche, Susa Primary School (Susa Cell using a decibel meter (dB) application installed in a smartphone (Oppo F11). Decibel levels and applicable standards are reported in Chapter 5 of Baseline information.

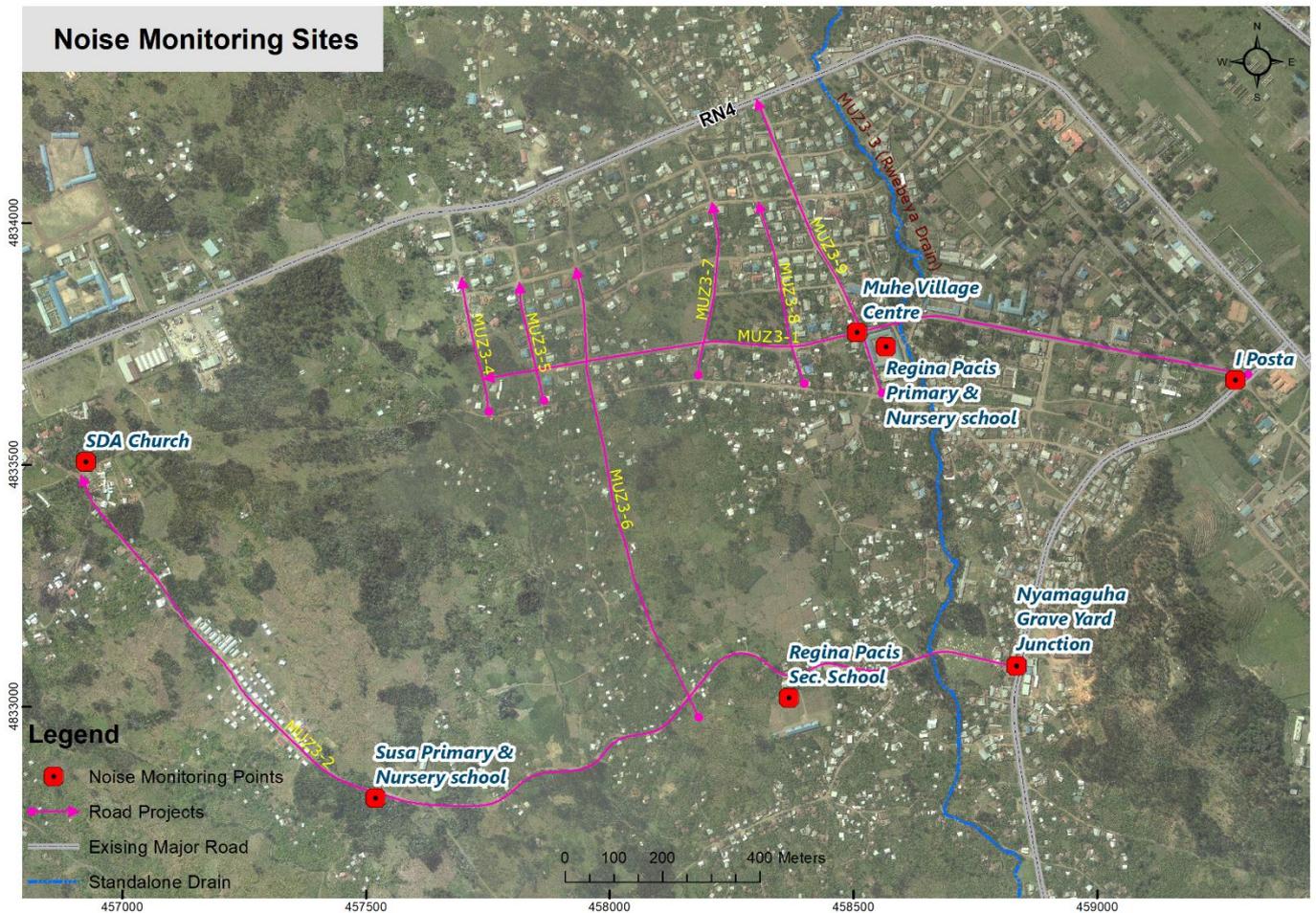


Figure 4- 2: Places for Noise level measurement in the context of RUDP II in Musanze City
Source: Consultant, 2020

4.6 Air Quality Assessment

Air quality was assessed based on the existing information (REMA 2018 and <https://www.accuweather.com>). Based on the project activities the most important air quality parameters to be affected are:

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- Particulate matter (including particulate matter with an aerodynamic diameter of less than 10 microns (PM 10) and 2.5 microns (PM 2.5), from smoke and dust emissions;
- Nitrogen oxides (including oxides of nitrogen (NO_x) and nitrogen dioxide (NO₂) from vehicles, trucks and machinery emissions;
- Sulphur dioxide (SO₂) from vehicles, trucks and machinery emissions;
- Carbon dioxide (CO₂) and carbon monoxide (CO) from vehicles, trucks and machinery emissions;
- Ozone (O₃) from the combination of different emissions resulting from photochemical reactions between oxides of nitrogen, volatile organic contents, and other atmospheric constituents.

Air emissions limits are shown in Table 4-2.

Table 4- 2: Air Emission limits specified World Health Organization

Parameters	Averaging period	Emission Limits (µg/m ³)
Sulphur oxides (SO _x)	10 minutes	500
	24 hour	125
Nitrogen Dioxides	1 hour	200
	Annual	40
PM 10	24 hours	50
	Annual	20
PM 2.5	24 hour	25
	Annual	10
Ozone	8-hour daily maximum	100
Carbon monoxide	15 minutes	100,000
Cadmium	Annual	0.005
Lead	Annual	0.5
Manganese	Annual	0.15
Mercury	Annual	1

Source: Air Quality Guidelines for Europe, 2nd Edition, WHO Regional Publications, European Series, No. 91, 2000. WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide, Global update 2005, WHO 2006

4.7 Biological assessment (Flora, Birds, Mammals, Reptiles, and other fauna)

A terrestrial ecological and avifaunal study was undertaken. As part of this study, a desktop study was carried out of publicly available scientific publications to investigate the ecology and biodiversity of the affected project area (ACNR, 2011). Walk-through-surveys were

conducted across the proposed project site, and all plant and animal species observed were recorded. A special attention was paid to trees and water bodies with sensitive ecosystems that can be directly impacted by the proposed project. A Non-Random Sampling Procedure–Convenience sample was therefore used for flora and fauna data collection all around the project area. Efforts were also made to find the existence of protected species known to be threatened, endemic, endangered and rare, based on national conservation importance and International Union for Conservation of Nature (IUCN) conservation status. Searches for listed and protected plant species at various sites were conducted and the location of all listed species was recorded. The presence of sensitive ecosystems such as Mukungwa river were noted. This aimed at determining the nature of likely impacts of the project and recommendations on mitigation.

4.8 Historical and Cultural heritage assessments

A desktop study (ACHO 2009; GoR, MINISPOC 2015), field surveys (observations and public consultations) were carried out of publicly available scientific publications to determine the archaeological, paleontological, heritage history and location including tombs, burial sites and genocide memorials of the affected project area. The focus was to illustrate and determine the nature of likely impacts and mitigation recommendations of the proposed development.

4.9 Landscape and Visual impacts assessment

A landscape and visual impact assessment study was undertaken. Site visits were undertaken where visual features and the landscape setting of the proposed RUDP II phase 3 sites were recorded. An assessment was also made on the degree of usage of these locations (e.g. by people from nearby homes, centres and institutions) that would be (in their views) sensitive to change (s), due to the proposed project. These receptors were then identified, as well as Key Observation Points (KOPs) (those sensitive receptors who had views of the Project) particularly those relating to intersections of main roads, arterial and scenic routes, as well as urban areas, settlements and farmsteads.

The landscape character was then surveyed in terms of scenic quality (landscape significance) and receptor sensitivity to landscape change (of the site) in order to define the visual objective for the project sites. Photomontages using panoramic photographs were used to determine the

degree of visibility of the Project and change in views of the surrounding landscape. The impact assessment phase involved the determination of the nature of likely impacts of the development and recommendations on mitigation.

4.10 Socio-economic assessment

The socio-economic survey started with the compilation of a baseline description. The baseline description was derived from a range of secondary data (including but not limited to census data, existing reports, development plans and other strategic planning documents) and primary data collection. The primary data used for the baseline was based on information provided by the directly-affected landowners, other project affected persons (PAPs) and issues raised through the public consultation process.

The impact assessment phase incorporated the identification and assessment of socio-economic impacts (direct, indirect and cumulative) that may result from the construction to operation phases of the project. Mitigation measures that address the local context and needs were recommended as the final phase of the study.

4.11 Environmental Standards

Environmental standards are maximum or acceptable concentrations of particular parameters recommended to support or maintain healthy the ecosystem functions. The most important environmental parameters considered in RUDP II phase 3 include water quality (pH, total suspended solids, total dissolved solids, nitrate, phosphate, total coliforms and *E. coli*), noise level and air quality (sulphur oxides (SO_x), nitrogen dioxides, particulate emissions (PM₁₀ PM_{2.5}), ozone, carbon monoxide, cadmium, lead, manganese and mercury.

The water quality and noise level results and applicable maximum allowable levels are reported in the chapter of baseline information (Chapter 5). Despite that the Bank has the Environmental, Health and Safety Guidelines¹², the Banks also accepts the National standards and those of international agencies like the World Health Organization.

¹² https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines

4.12. Identification and analysis of Potential Environmental & Social Impacts

4.12.1 Impacts Identification

For the identification of the project impacts, Table 4-3 was first used as a guideline. Further, the outcomes from field baseline data collection and consultation with the project stakeholders helped to identify more impacts.

Table 4- 3: Identification of the Project impacts using a checklist table

Receptor \ Activities	Atmosphere	Surface water	Groundwater	Soil	Geology	Landscape	Archaeology	Flora and Fauna	Land use	Local population	Local employment	Utilities	Infrastructures	Transport	Economics
Planning and design phase															
Resettlement Private land acquisition															
Construction phase															
Workforce mobilization															
Ground clearing, earth moving and grading and cutting															
Modification of existing services															
Excavation of drainage systems (side exit and standalone drains)															
Construction of sites (campsite, and work site) facilities, utilities, etc.															
Operation and maintenance phase															
Life condition improvement															
Reduction of erosion rate															
Improved road facility															

Source: Adapted from Lohani and Halim, 1983

4.12.2 Impacts Evaluation/ Characterization

The potential environmental and social impacts (adverse and positive) of the RUDP II phase 3 activities during the Design, Construction and Operational Phases were identified by means of a significance Matrix (Table 4-4), where the interactions between relevant project activities and the natural/physical environmental components and the social components were considered to determine whether or not the interaction may create potential impacts. The potential impacts on the baseline conditions were then evaluated according to the following criteria:

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Table 4- 4: Impact Evaluation Criteria

Criteria	Indicative Assessment Thresholds used for each Rating Criteria:	
	Threshold	Typical Descriptions
Characterization of Impact	Positive	Impact is an improvement on the current situation or is desirable
	Negative	Impact is a worsening over the current situation or is not desirable
Type of Impact	Direct	Project results in a direct impact upon aspect/ receptor/ resource (i.e. generally within the Project footprint with a relevant buffer).
	Indirect	Indirect effect upon aspect/receptor/resource.
	Cumulative	Cumulative effect upon receptor.
Reversibility	Reversible	The effect is reversible.
	Irreversible	The effect is potentially permanent and not reversible.
Geographic Extent	Localized	Impact is limited to specific individuals or communities or environmental receptors at or close to the RUDP II phase 3
	Regional	Impact extends across the whole Rwanda
	National or Transboundary	Impact extends to neighboring countries like in our case DRC, Burundi, Tanzania, Uganda, etc.
Time when the impact occurs	Immediate	Effect occurs immediately following the RUDP II phase 3 project activities.
	Delayed	Effect delayed and occurs sometime after project activity/action.
Duration	Very short term	Impact is expected to last in the short term (0-1 year) (e.g. less than two years).
	Short	Impact is expected to last in the short term (1-5 years)
	Medium term	Impact is expected to last in the medium term (5 – 10 years) (e.g. between two and ten years).
	Long term	Impact extends throughout the project operation phase and beyond (e.g. beyond 10 years)
	Permanent	Impacts that cannot be remedied
Probability	Unlikely	The impact can be considered to be unlikely to occur (<20% chance of occurring)
	Probable	The impact can be considered to have likelihood of occurring (40% - 70% chance of occurring)
	Certain	The impact can be considered to have a high likelihood of occurring (>90% chance of occurring)
Magnitude	Negligible	Does not have a measurable impact.

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Criteria	Indicative Assessment Thresholds used for each Rating Criteria:	
	Threshold	Typical Descriptions
	Low	Has a distinguishable low level impact on environment or communities For <i>Negative</i> Impacts: Some measurable change in resource or its quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements. For <i>Positive</i> impacts: Minor benefits to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on resource or reduced risk of negative impact occurring.
	Moderate	Impacts are both distinguishable and measurable and affect the majority of the local population/social aspects or environment. For <i>Negative</i> Impacts: Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements. For <i>Positive</i> Impacts: Benefit to, or addition of, key characteristics, features or elements; improvement of receptor/resource quality.
	High	Has a measurable and sustained positive or negative impact on social or environmental aspects. For <i>Negative</i> Impacts: Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements. For <i>Positive</i> Impacts: Large scale or high improvement of resource quality; extensive restoration or enhancement; major improvement in receptor/resource quality.

Source: RTDA, 2017

Furthermore, for certain topics quantitative thresholds/limit values (e.g. air quality, water quality, noise levels etc.) have been considered in determining the Magnitude of Impact.

4.12.3 Assessment of Impact Significance

The significance of the project impacts was quantified Using the Impact Prediction Matrix (Table 4-5), whereby the impact risk is proportional to its extent, duration, magnitude and probability (Risk = (Extent + Duration + Magnitude) x Probability).

Table 4- 5: Assessment of the project impacts using the Impact Prediction Matrix

Category of Impact	Significance Level	Assigned Score
MINOR	Very Low	1
	Moderately Low	2
	Low	3
MEDIUM	Low Medium	4
	Medium	5
	High Medium	6
MAJOR	High	7
	Moderately High	8
	Very High	9
	Extremely High	10

Source: Ramakrishna, 2015

4.12.4 Assessment of Cumulative Impacts

Cumulative impacts are changes to the environment caused by an action (project or project activity) in combination with other past, present, and future human actions. In practice, assessment of cumulative impacts requires consideration of other assessment concepts, which are different from the conventional approaches used in EIA. Cumulative impacts occur as interactions--between actions, between actions and the environment, and between components of the environment. These pathways between a source and an effect are often the focus of an assessment of indirect or cumulative impacts. The magnitude of the combined effects along a pathway can be equal to the sum of the individual effects (additive effect) or can be an increased effect (synergistic effect).

In many cases, individual sub-projects produce environmental effects that are not significant. However, when combined with the effects of other project components or other projects and activities, these small effects may become a concern, as they may cause a cumulative effect. They are usually neither measured nor accounted for before they cause significant damage through accumulation. In this study efforts were made to predict the cumulative impacts based on our experience on similar projects in similar environment (road projects in urban areas).

Valued Ecosystem Components (VECs)

VECs are the main objects of the cumulative impact assessment process. VECs are defined as any part of the environment that is considered important by the proponent, public, scientists,

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and government involved in the assessment process.

In RUDP II phase 3, the main VECs to be affected include:

- Closest residential areas (noise and air pollution);
- Downstream Ecosystem (Water quality in waterbodies);

Strict adherence to environmental and social management and monitoring plan with special focus on noise, air and water quality as proposed in ESMP will help minimize these impacts.

5. ENVIRONMENTAL AND SOCIAL ECONOMIC BASELINE

5.1 Physical environment

5.1.1 Location of the project area

The project will be implemented in Musanze City, the capital city of Musanze District, and the Northern Province. Musanze District is geographically located at a latitude of 1.4919° S, and a longitude of 29.5572° E. The Musanze District comprises 15 administrative sectors and, the project components are located in Muhoza, Cyuve, and Musanze Sectors of the District. The project site is crossed by Muhe and Rwebeya torrential rivers which empty in Mukungwa Rivers. Figure 5-1 shows the sub-project under RUDP II Phase 3 in Musanze City.

5.1.2 Topography

The topographic analysis of the project area is characterized by gentle and flat slopes. The Musanze city area is a flat plain located at the piedmont of Volcanoes (Virunga) Mountains. The topographic gradient is oriented from North to South; i.e. the direction of water takes the North-South direction. The average elevation in the project area is 1835 m above sea level. There is a little erosion except the one caused by the temporal torrential rivers (Rwebeya, Muhe, Susa) which extend their bed through bank failure on soft volcanic soils. At the point with lower topography, these rivers cause inundations which destroy infrastructures (road and bridges) and properties in the wet season (May- April and October November). This erosion and flooding trends require adequate drainage and land protection measures during the implementation of the proposed roads

5.1.3 Geology and Soils

The geological formation in Musanze City date from late Tertiary and Quaternary with the eruption of Virunga (Volcanoes) Mountains that spread successive layers of lava over the Precambrian rock. The common rock found in Musanze City are the lahar from Sabyinyo (forming the soft soils, and K-Basanite. The continual weathering of this soft parent material has produced extremely fertile soil. The high porosity of this soil has precluded the presence of surface water resources. These young soils are rich in humus and are deep in many areas. They

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are rich in organic matter and have high pH, low bulk density and high cation exchange capacity (RRAM, 1987).

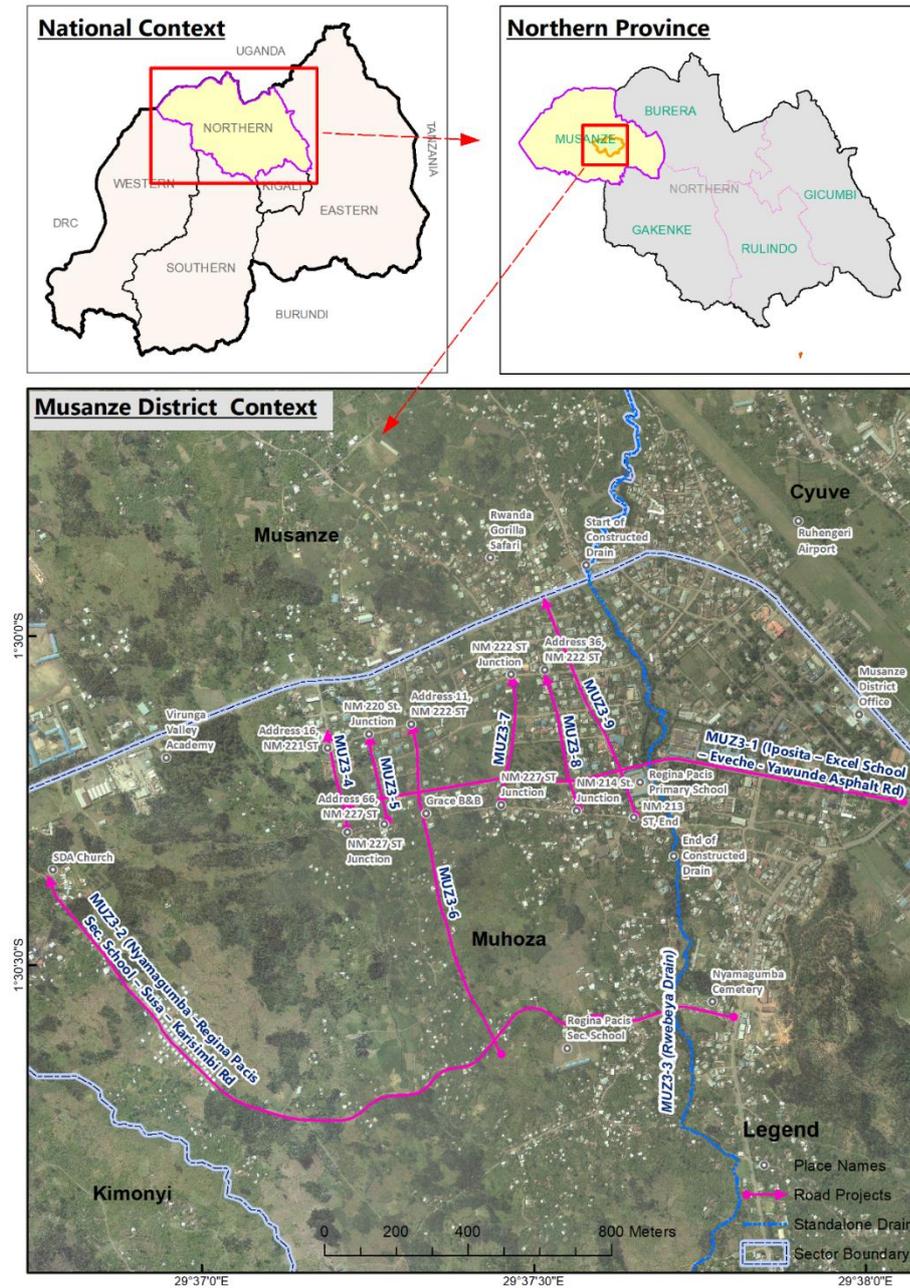


Figure 5- 1: Location of the Musanze District (including the RUDP II Phase 3 sub-projects in the city)

Source: Consultants team (2020)

5.1.4 Earthquake and seismicity hazard history

Rwandan is earthquake and seismicity prone areas (GoR-MIDIMAR, 2015) and, earthquake intensity is commonly measured by Modified Mercalli Intensity (MMI). MMI scale used by USGS (2008) shows that earthquake intensity varies from MMI I (not felt-none) to MMI XI (extreme-very heavy). The earthquake hazard distribution maps show that Rwanda can be affected by earthquake intensity of MMI V (with moderate shaking) and MMI VI (with strong shaking) considering the 10% probability of exceedance in 50 years (GoR-MIDIMAR, 2015). Twenty-four per cent (24%) of the total area of the country are likely to feel the MMI V. This includes Musanze City. Based on the distribution of epicentres and tectonic setting of our region, the project area, Musanze City is located close to epicentre zone one (1) at about 20 km South-Est. However, there is no recorded earthquake event that resulted in the loss of people and destroyed houses in the project area of Musanze City. There were also no traces/indications of building cracks, faulting or caves identified or reported in the surrounding area (within 500m radius) of the project area due to seismicity events. For safety purpose, the proposed roads and drainages shall, however, be designed to seismic load with the required capacity to resist earthquake and associated damages.

5.1.5 Climate and Rainfall

The project area has a moderate climate. It is warm and temperate. This climate is characterized by rainfall throughout the year (1400 mm per annum). The rainfall is distributed bimodally, with the primary wet season occurring through March through May with maximum monthly precipitation of about 200 mm in April. The secondary rain season extends from September through December with maximum monthly precipitation of 160 mm in November (Figure 5-2).

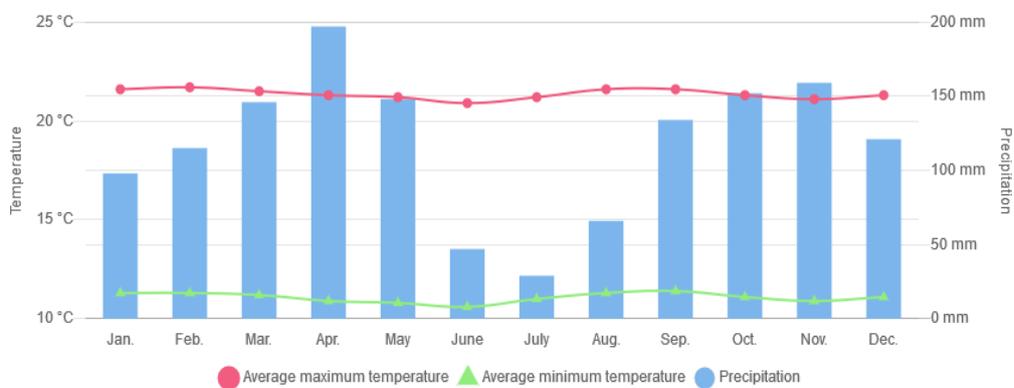


Figure 5- 2: Average monthly rainfall and temperature at Musanze Climatological station

Source: Rwanda Meteorological Agency (2020)

The Principal dry season lasts two to four months between mid-May and mid-September, while the short dry season of January to February is more appropriately considered a time of reduced rainfall. The project area experiences seasonal temperature variations with highest temperatures during the dry season and the coldest period occurs during the rainy season. The average monthly maximum temperature ranges between 20-24°C while the average minimum temperature ranges between 11-13°C (see Figure 5-2). The average sunshine is about 1675 hours per year with high sunshine in the dry season and smaller amounts of rainfall in the rainy season (SGI, 2009).

5.1.6 Air quality

The status of air pollution in Rwanda shows indications of air quality deterioration from 1990 to 2012. Recent air pollution data generated by the UNEP-GEMS Water Program shows that the Rwandese population-weighted exposure to particulate matter since the year 2000 (Boys et al., 2014). Main causes of air pollution in Musanze City are:

- Rapid urbanization with an increase in motorized used cars in the city;
- Use of fossil fuel, in thermal power plants, generating almost 50% of the electricity production in the country;
- The high rate of the use of charcoal and fire woods for domestic cooking. Due to the relative high price of electricity provided by the Rwanda Energy Group (REG) and relatively low-income levels about 60% of the population in Musanze use firewood as a source of energy for cooking;
- Use of old fashioned cook stoves is common in the city

The AccuWeather website (<https://www.accuweather.com>) that monitors air quality shows that particulate matter is most serious air quality concern in Musanze City (PM 2.5 was 27 $\mu\text{g}/\text{m}^3$, and PM10 was 38 $\mu\text{g}/\text{m}^3$). Results from the inventory of air pollution in Rwanda (REMA, 2018) shows that the average concentration of particulate is matter in wet season varies between 45 and 54 $\mu\text{g}/\text{m}^3$ at Mukungwa Station, 10 km South East of Musanze City. All these measures of pollution by particulate matter shows that the air quality varied to fair to poor according to World Health Organization air quality limits (PM 2.5= 25). However Hourly PM 10 shows that

pollution by particulate matter is fair (PM 10 38 $\mu\text{g}/\text{m}^3$ against the limits of WHO of 50 $\mu\text{g}/\text{m}^3$). The pollution level by Sulfur Oxide (SO_x) are very below (4 $\mu\text{g}/\text{m}^3$ against the WHO limits 125 $\mu\text{g}/\text{m}^3$).

The observed air quality level puts the Musanze City's population at some risk for inhalation of air pollutants, which may cause respiratory diseases. This means that the population of Musanze City may sometimes be exposed to elevated concentrations of particulate matter during their stay outdoor, particularly in the city business center and near junctions of paved roads.

5.1.7 Hydrography and Water Quality

The hydrography in the Musanze City is located in Mukungwa-Catchment (the tributary of Nyabarongo River, one of the headwaters of Kagera River, an influent to Lake Victoria). There few springs and rivers in Musanze City, one them being the Kigombe and Mpenge River. However, there is no spring and permanent rivers in the project area. The project area is crossed by two main temporal rivers (Rwebeya and Muhe) (Figure 5-3). They meet in Muko Valley to form the Susa temporal River which empties in Mukungwa River (Figure 5-4). These flows of these rivers appear in rainy season (April- May and October-November) when there are heavy rains in Volcanoes Mountains (especially in Sabyinyo). These rivers are the sources of large amount of volcanic sediments deposition, which constitute the mineral rich soils. During their flow; these rivers transport dead plants, cobble, gravel, sand, and silt sediments. Cobble and gravel stones are collected and hammered by the poor population to make commercial construction gravel, which is sold on the local market.

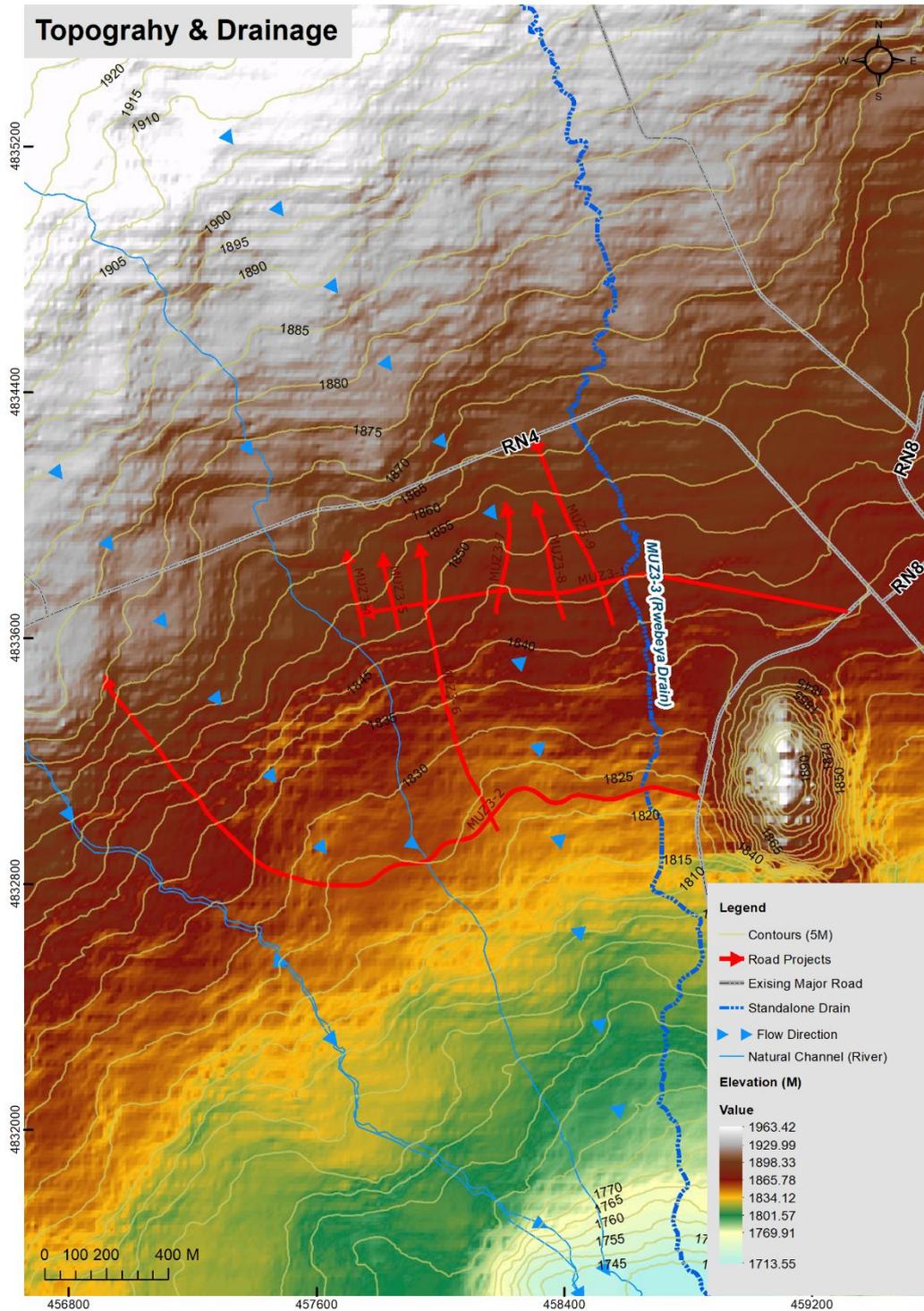


Figure 5- 3: Topography and drainage in the project area
Source: Consultant (2020)

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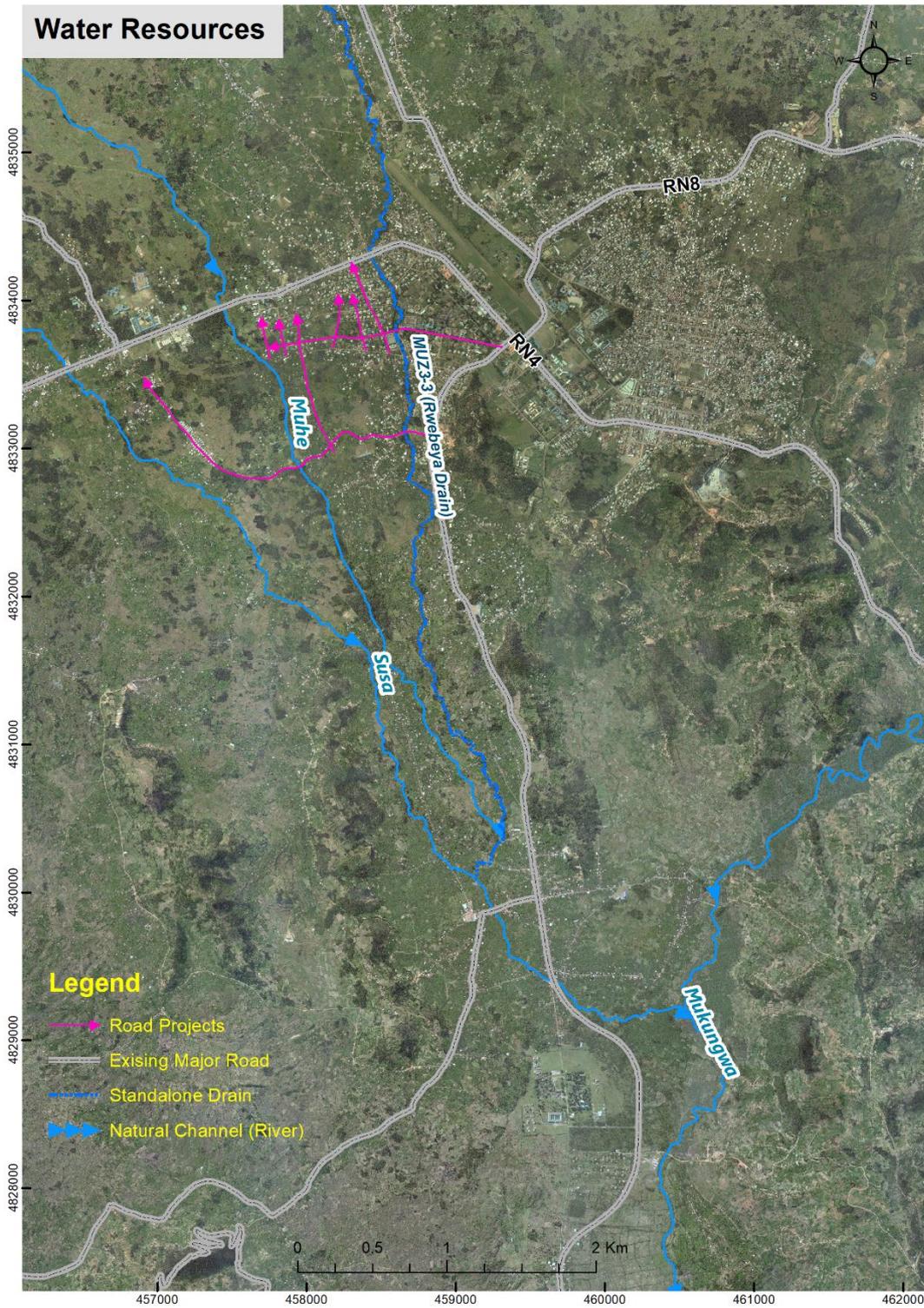


Figure 5- 4: Natural drainage in the project area ending to Mukungwa River
Source: Consultant, 2020

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As all of the sub-projects in Musanze City drain into the Mukungwa River, this is the only surface water body that may be affected by the project activities. As a result, water samples were taken in Mukungwa River upstream and downstream the project catchment point of discharge (see Figure 4-1). The water quality results are shown in Table 5-1.

Table 5- 1: Water quality for water samples collected in Mukungwa, upstream and downstream the project catchment point of discharge. Highlighted in red are parameters whose values exceed the maximum allowable guidelines. Grease, Oil & Lead and Cadmium were very low, and not detected (ND).

Parameters /site	Unit	Mukungwa upstream	Mukungwa downstream	Water Standards (EAS 12, 2014)
pH	-	8.6	8.51	6-9
Total coli-forms	MPN/100 ml	1.4 X 10⁵	8 X 10⁵	4 x 10 ²
Turbidity	mg/l	28	27	30
Electrical Conductivity	uS/cm	277	282	<1,500
Salinity	(‰)	0.15	0.05	0.5
Total Dissolved Solids	mg/l	137	144.2	500
Chloride	mg/l	7.27	7.83	45
Biological Oxygen Demand	mg O ₂ /l	21.75	23.6	30
Chemical Oxygen Demand	mg O ₂ /l	39.58	41	50
Oil and grease	mg/l	ND	ND	2.5
Lead	mg/l	ND	ND	0.01
Copper	mg/l	0.011	0.024	1
Zinc	mg/l	0.0362	0.0491	5
Cadmium	mg/l	ND	ND	0.6

Source: Consultant, 2020

The main issue of water quality at the sampling sites was related to high levels (beyond the maximum allowable concentration) of total coliforms. Other variables were below their maximum allowable concentration. Higher levels of total coliforms are indication of poor sanitation, with inappropriate drainage/sewage system and use of pit latrines in Mukungwa catchment (including the Musanze City).

As part of the project implementation, the project developer should train the local people about hygiene and sanitation, and plan for the development of the more improved water supply and sanitation infrastructure in the project area. The monitoring of water quality should also be conducted during and after the project implementation (construction, operation and decommissioning) to ensure no significant water quality deterioration caused to the project activities.

5.1.8 Noise Level

The noise levels at different sites (see Figure 4-2) of the project construction area show different levels of exposures and risk to the noise pollution the range 47-68 dB (Figure 5-5). Lower levels (47 dB on average) were recorded at Groupe Scholaire Susa and Regina Pacis Secondary School. Higher noise levels (68 dB on average) were observed at the Excel School Eveche. That means noise level is acceptable and below the intolerable levels of 90 dB. Future noise level should ensure the noise level does not exceed 85 dB. During the project implementation, the contractor and the sub-contractors will ensure the noise level is kept within the acceptable noise level.





Figure 5- 5: Noise level measured at different places of Musanze City : Excel School Eveche (a), Eveche Regina Pacis Primary School (b), Regina Pacis Secondary School (c), Umuzabibu Mwiza Organization (d), Groupe scolaire Susa (e)

Source: Consultant (2020)

5.1.9 Land use and Settlement

The Land use in Musanze City contains urban built-up areas, including residential buildings, mixed-use, agri-residential, commercial, and institutional (office) land use. It also contains forest, agricultural and green spaces. The project area is dominated by residential (Ikizungu), agriculture, mixed-use, and a small proportion of forest. There are no water bodies in the project area, except 2 temporal rivers. Apart from a section of MUZ 3-1 road which is tarmacked, other roads are earth road and there is not a bus stop or other traffic infrastructures. Concerning building standards, the Kizungu (around MUZ 3-1 and its branches) and Burera (partly MUZ 3-2) contains a formal residential area. Key public and socio-economic infrastructures include the regional post office, Excel Primary School, Home Inn Hotel, Ruhengeri Diocese bishopric and associated project office, Regina Pacis Primary School, and Gorilla Veterinary Office. Key infrastructures around the MUZ3-2 project include the Nyamagumba Primary School, Nyamagumba Cemetery (phased out), Regina Pacis Secondary School, Susa Primary School,

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Susa Informal Market, and Umuzabibu Mwiza Social Centre. The remainder of Nyamagumba and Susa is occupied by informal settlements, partly and currently in the process of urbanization (Figure 5-6). Some eucalyptus plantations are observed in this region. The existing road network is in very bad conditions with rough and stony terrain roads and some sections do not have a bridge for motorized transport.

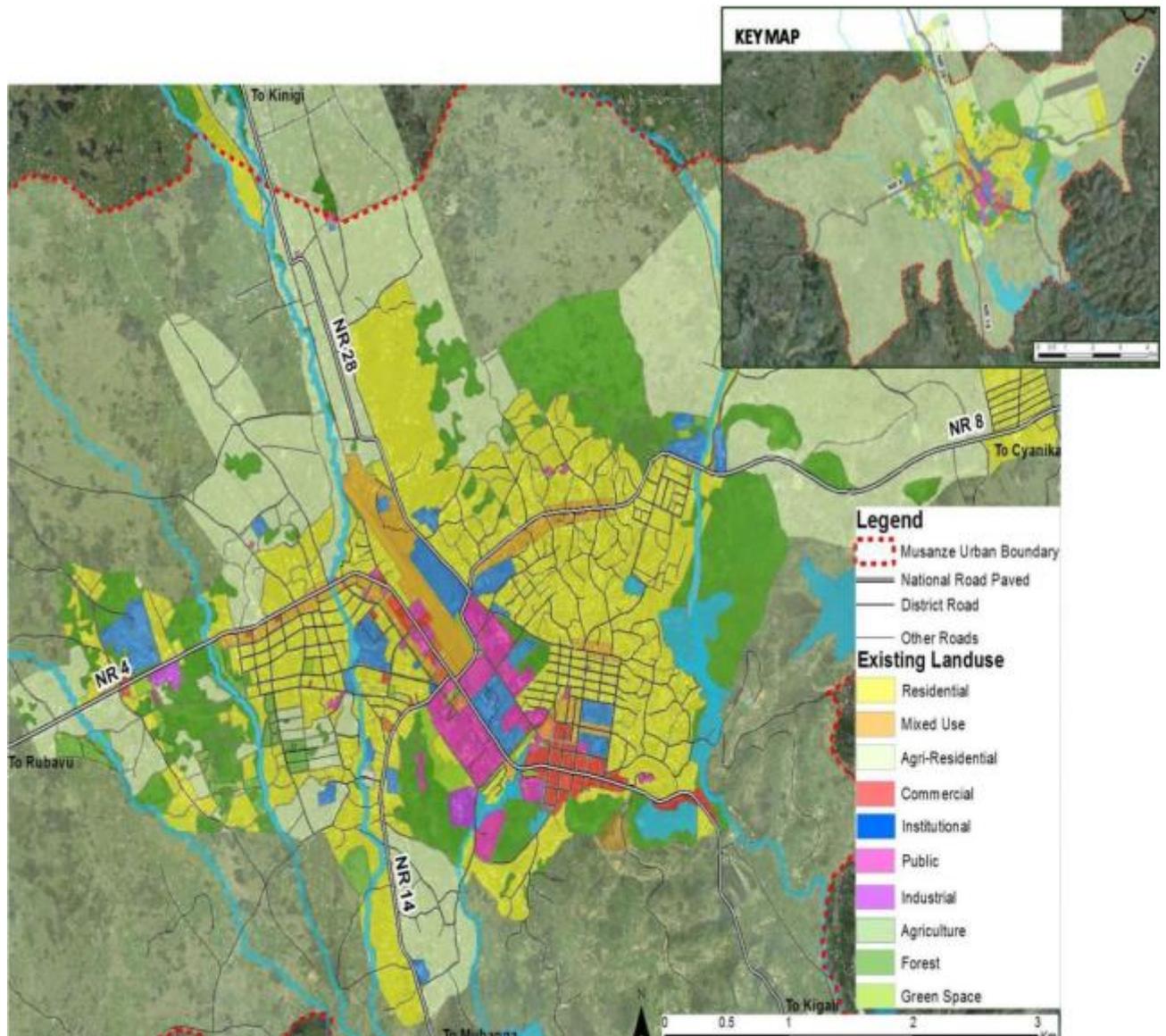


Figure 5- 6: Land Use in Musanze City
Source: LODA (2020)

5.1.10 Key project component issues

The key project component issues in Musanze City are presented in Table 5-2. Rwebeya torrential river has created deep ravine on its pathway and this threatens lives of people and animals (Plate 5-1). The project may lead to the land use conflict with its surrounding. For example, the proposed road MUZ 3-2 and Rwebeya drain pass nearby Nyamagumba Cemetery (see also Figure 5-3). At certain sections, constructions have encroached on the road reserves. The lack of a bridge, specifically on Muhe River complicates the practicability of the road (MUZ 3-2) between Nyamagumba and Karisimbi town areas. The lack of proper drainage on this road has created ditches and drains with motorized way. There are many pools of water during the rainy seasons. MUZ 3-2 lacks not only sidewalk but also streetlights. Non-4x4 cars cannot use this road due to the rough terrain constituted by volcanic rocks.

The project component MUZ 3-1 and its branches present better conditions than MUZ 3-2. The section Iposita–Eveche (678 m) was paved in 1989. The pavement is very old and has not been maintained. It is present, cracks, potholes, and its shoulders have been degraded. The road has drains on both sides whose beds are made of concrete. However, these drains hardly evacuate water. The road junctions and related roads have been paved by asphalt during RUDP I. This section has also streetlights and some space for utilities. The next section of the road is made of earth grade in poor conditions. The potholes and pools are not regularly repaired. Residents use construction waste to fill the potholes and pools. Due to lack of drainages (and if present, they are in poor condition), stagnant water may allow mosquitoes breeding causing malaria spread and other hygiene problems. The Project component MUZ 3-3 presents deplorable conditions caused by water from the volcanic mountains, especially Sabyinyo. This torrent loaded with soil sediments of different size (cobbles, sand, and silts) cause serious sedimentation and erosion. In certain sections, the poor quality water stagnates for several weeks, becoming the habitat for mosquito breeding (Table 5-2).

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Table 5- 2: Key Project Environmental and Social Issues in Musanze City

RUDP II Phase 3 investments	Key Environmental and Social Issues
MUZ 3-2	<ul style="list-style-type: none"> • The road passes nearby Nyamagumba Cemetery • Earthen and rough surface with edge breaking, ruts and slightly deep crossing water flow that cut the road pavement/wearing course; • No proper drainage and potholes, natural drains cross inside the road • Some section is filled with a pool of water during the rainy season • Constructions have encroached on the road reserves • No side drains and sidewalks • There is no bridge at Muhe Torrent, this hinders the practicability of motorized transport (Plate 5-4b) • WASAC (Water and Sanitation Corporation) has installed the water supply pipe inside the road • Key infrastructures around the road include Regina Pacis Secondary School, Susa Primary and Secondary School • No street light; No traffic signage • The road has a lot of meandering to avoid the constructions, with insufficient carriageway in some sections due to encroachment by cultivation and settlements
MUZ 3-1 and its junctions and connected sub-components (MUS 3-4, 3-5, 3-6, 3-7, 3-8,3-9)	<ul style="list-style-type: none"> • Only a section of 987 m has been paved by tarmac in 1989 • The side drains present fair condition and cannot convey water at a certain place on this section • The other sections do not have side drains • There are some encroachment in the road reserve • Poor waste correction in the area push residents to use construction waste (demolished brock, cement, concrete) to fill the potholes and water pools • Some utilities (electrical poles, water pipelines) cross or are installed alongside the road or the right of way (Plate 5-2, 5-3); • Key infrastructures that require attention during the rehabilitation are located along the road (Excel Primary School, Regina Pacis Primary School, Shalom Nursery School, Agati Kids Library, Homme Inn Hotel, and Eveche Garage • Some infrastructures such electricity pole are located inside the road reserve
MUS 3-3	<ul style="list-style-type: none"> • The drain ROW passes nearby Nyamagumba Cemetery and may disturb it • The torrents that use the channel transport sediments of the diverse size which clog the flow of water and cause it to overflow • The flush torrent causes bank failure and scouring and destroy infrastructures (road, bridge), properties and crops • Some sections of the Rwebeya drain are crossed with wooden bridges that threaten the safety of users • Cobbles and gravels from the channels are collected and hammered by local communities to produce construction material (Plate 5-4) • There is poor collection of solid waste, waste is deposited in the drain • Some infrastructures (wisdom) school have encroached the drain bed • Water from the drains cause flooding in Muko Valley

Source: Consultant, 2020

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The proposed natural drain section to be upgraded under RUDP II phase 3, has a relatively wider cross sectional area (up to 16 m at some sections), with undefined slope and deep undulating ravines and gorges especially in sections where the drain is winding/ changing course downstream (Figure 5-7, 5-8 and 5-9). From the foregoing, based on in-depth analysis of design factors (Topography of the catchment area, its slope and terrain, available hydraulic head in the system, ground water depth and its seasonal fluctuation affecting construction, infiltration, uplift, extreme rainfall events occurred in the past years and ruling high flood levels at outfall point), proposed extension of Rwabeya drain will maintain the same design; open trapezoidal masonry channel but the carriageway will be widened to 16 m (8 m from the centerline to either shoulder of the drain) following existing natural drain morphology.



Figure 5- 7: Upper section of Rwebeya standalone drain
Source: Consultant, 2020



Figure 5- 8: Already constructed Rwebeya Standalone drain, also showing project roads under RUDP II Phase 3

Source: Consultant, 2020

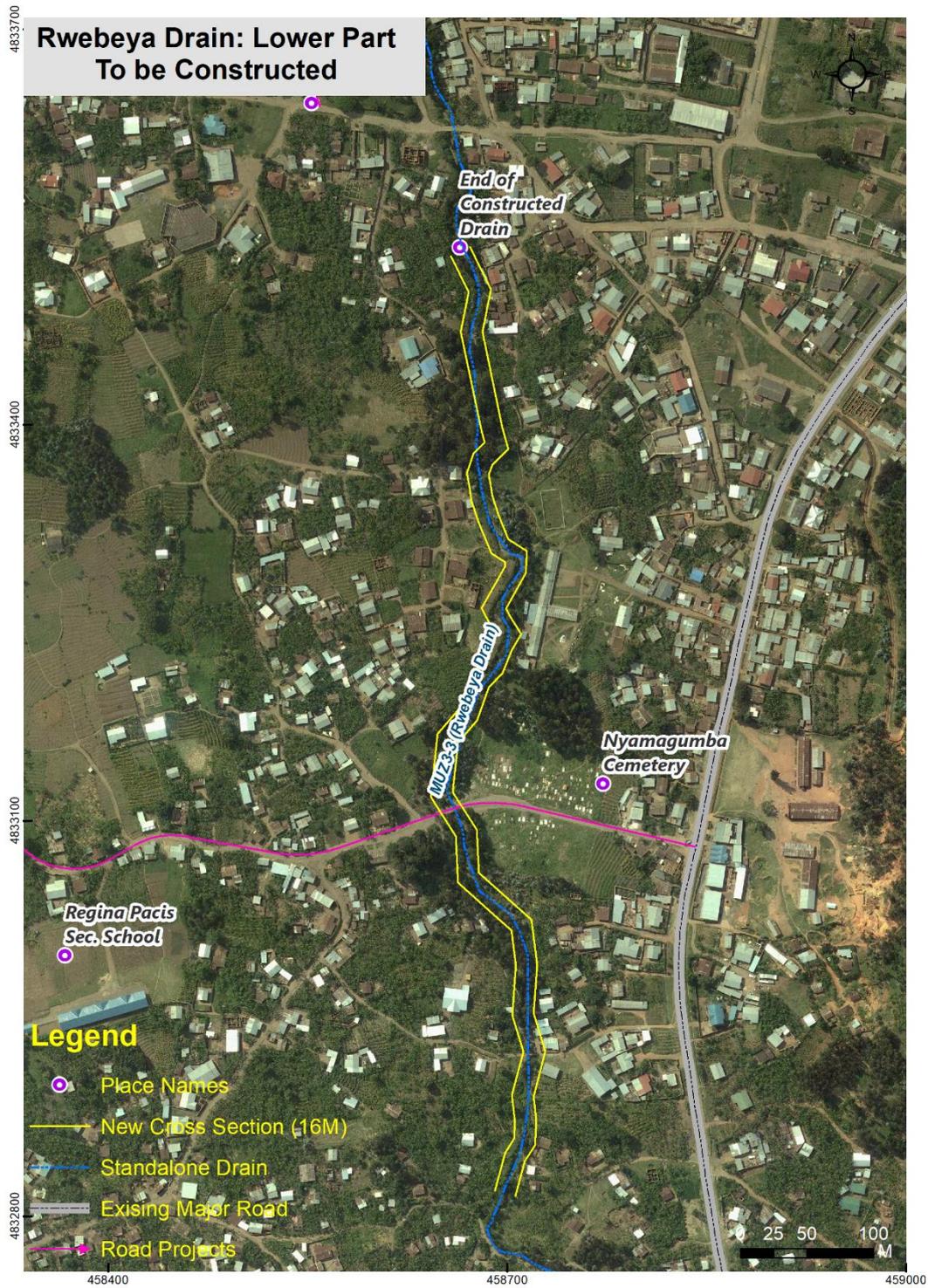


Figure 5- 9: Lower section of Rwebeya standalone drain also showing cemetery
Source: Consultant, 2020



Plate 5- 1: Rwebeya torrential river that has created a deep ravine that threatens the security of local residents

Source: Consultant, 2020

5.1.11 Existing road and drainage conditions

The current state of the existing road is not satisfactory. This results from irregular and poor road maintenance practices. The proposed roads are characterized by potholes, ruts and slightly deep crossing flows that has cut the road pavement (Plate 5-2). Drainage systems are considered as not existing at all or, where side drains and culverts exist, they are overgrown and poorly maintained and bridge are missing at some sections (the road's width has narrowed enough to efficiently accommodate vehicle traffic (Plate 5-3, Plate 5-4). This is due to improper settlement

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with fences and house walls falling with the road alignment. There is a need to enlarge the road's width, install additional pipe culverts at sections where drainage was noticeably poor, as well as stripping and embankment.



Plate 5- 2: Rough and rugged surface, potholes and pools on MUZ 3-2 road

Source: Consultant, 2020



Plate 5- 3: Disposal of demolition waste inside the carriageway and degraded pavement on MUZ 3-1 road

Source: Consultant, 2020



Plate 5- 4: Gravel making (a), missing bridge and WASAC water supply pipe on MUZ 3-1 (b)

Source: Consultant, 2020

5.2 Biological Environment

5.2.1 Flora

Along the RUDP II Phase 3, the prevailing pattern of farming activities has influenced wild vegetation and animal diversity. Vegetation is dominated by agro-ecosystem with Irish potatoes, bananas, maize and beans as main crops in Musanze District. Patches of Eucalyptus and herbaceous plant species characterize other vegetation types. None of the recorded species is globally endangered or threatened.

In total, 45 different plant species were identified (Table 5-3). The species belong to 30 families and 44 genera. The most dominant families were Fabaceae (16.6%) and Poaceae (13.3%) and Euphorbiaceae (10%), while Myrtaceae and Arecaceae (6.6% each). Other families were less represented and comprised 3.3% each.

A total of twenty-one (21) non-native species were recorded. *Eucalyptus sps*, *cypressus sps*, *pinus patura sps*), *Alnus sps* and *Cypres* were most common along the road alignments. The exotic trees have a high demand and their abundance reflects the general absence of tree cover in the project area.

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Table 5- 3: List of plant species recorded along the proposed roads alignment

No	Species names	Family	Vernacular names (in Kinyarwanda)	Plant life	Use/ Other information
1	<i>Cypressus sp.</i>	Cupressaceae	Cypres	Tree	Construction, Exotic species
2	<i>Spathodea campanulata</i>	Bignoniaceae	-	Tree	Construction
3	<i>Euphorbia candelabrum</i>	Euphorbiaceae	Umuduha	Tree	-
4	<i>Ficus thonningii</i>	Moraceae	Umuvumu	Tree	Furniture, NPS
5	<i>Alnus sp.,</i>	Betulaceae	Arnusi	Tree	Agroforestry, Exotic species
6	<i>Pinus patula</i>	Pinaceae	Pinusi	Tree	Construction, Exotic species
7	<i>Cassia occidentalis</i>	Caesalpiniaceae	Umwicanzoka	Tree	Agroforestry
8	<i>Markhamia abtusifolia</i>	Fabaceae	Umusave	Tree	Construction
9	<i>Grevillea robusta</i>	Proteaceae	Gereveliya	Tree	Construction, Exotic species
10	<i>Erythrina abyssinica</i>	Fabaceae	Umuko	Tree	Furniture, NPS
11	<i>Manguifera indica</i>	Anacardiaceae	Umwembe	Tree	Fruit, Exotic species
12	<i>Psidium guajava</i>	Myrtaceae	Ipera	Tree	Fruit, Exotic species
13	<i>Eucalyptus maidenii</i>	Myrtaceae	Intusi	Tree	Construction, Exotic species
14	<i>Persea americana</i>	Lauraceae	Avocat	Tree	Fruit, Exotic species
15	<i>Aeschysomena schimperii</i>	Fabaceae	Umunyegenyege	Tree	Medicinal
16	<i>Archontophoenix sps</i>	Arecaceae	Palm/ Umukindo	Tree	Ornamental, Exotic species
17	<i>Annona cherimola</i>	Annonaceae	Umutima w'Ipfizi	Tree	Fruits, Medicine, Bee Forage
18	<i>Iboza riparia</i>	Lamiaceae	Umuravumba	Shrub	Medicinal
19	<i>Hibiscus sp.</i>	Malvaceae	Hibiscus	Shrub	Ornamental, Exotic species
20	<i>Euonymus japonica</i>	Celastraceae	Indabo	Shrub	Ornamental, Exotic species
21	<i>Dracaena steudnerii</i>	Dracaenaceae	Umuhate	Shrub	-
22	<i>Acanthus pubescens</i>	Acanthaceae	Igitovu	Shrub	-
23	<i>Manihot esculenta</i>	Euphorbiaceae	Umwumbati	Shrub	Food, Exotic species
24	<i>Citrus aurantium</i>	Rutaceae	Ironji	Shrub	Fruit, Exotic species
25	<i>Lanthana camara</i>	Verbenaceae	Mabiyiyakuku	Shrub	Exotic species
26	<i>Carica papaya</i>	Caricaceae	Ipapayi	Herb	Fruit
27	<i>Culcasia falcifolia</i>	Araceae	Amateke	Herb	Food
28	<i>Musa sapientum</i>	Musaceae	Intoki	Herb	Food,
29	<i>Agave sisalana</i>	Asparagaceae	Umugwegwe	Herb	-
30	<i>Solanum esculantum</i>	Solanaceae	Tomate	Herb	Food, Exotic species
31	<i>Solanum tuberosum</i>	Solanaceae	Ikirayi	Herb	Food, Exotic species
32	<i>Erythrococca fisheri</i>	Euphorbiaceae	Umucundura	Herb	-
33	<i>Zea mays</i>	Poaceae	Ikigori	Herb	Food, Exotic species
34	<i>Amaranthus cruentus</i>	Amaranthaceae	Dodo	Herb	Vegetable
35	<i>Crassocephalum montuosum</i>	Asteraceae	Igifuraninda	Herb	Medicinal
36	<i>Bambusa vulgaris</i>	Poaceae	Umugano	Herb	Exotic species
37	<i>Ocimum lamiifolium</i>	Lamiaceae	Umwunya	Herb	Medicinal
38	<i>Bidens pilosa</i>	Asteraceae	Inyabarasanya	Herb	Medicinal
39	<i>Miscanthus sinensis</i>	Fabaceae	Urubingo	Herb	Forage
40	<i>Phaseolus vulgaris</i>	Fabaceae	Ibishyimbo	Herb	Food, Exotic species

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No	Species names	Family	Vernacular names (in Kinyarwanda)	Plant life	Use/ Other information
41	<i>Cucurbita pepo</i>	Cucurbitaceae	Igihaza	Herb	Food, Exotic species
42	<i>Cystopteris montana</i>	Aspleniaceae	Fern/ Igishihe	Herb	-
43	<i>Eragrostis racemose</i>	Poaceae	Umutsina	Grass	Forage
44	<i>Cynodon dactylon</i>	Poaceae	Umucaca	Grass	Forage
45	<i>Paspalum sps</i>	Poaceae	Pasparum	Grass	Ornamental, Exotic species

NPS: Nationally Protected Species

Source: Consultant, 2020

4.2.2 Fauna

Bird species: In total, 5 different bird species were identified (Table 5-4). The species belong to 5 families and 5 genera. Each family was represented by about 20%.

Mammals: A total of 5 different mammal species were identified (Table 5-4). The species belong to 3 families and 5 genera. The most dominant family is that of Bovidae (60%), while Rodentia and Canidae represent 20% each.

Herpetofauna (Amphibians and Reptiles): Only two (2) reptile species were identified (Table 5-6). The species belong to 2 families and 2 genera and, each family comprises 50%. For Amphibians, only one (1) species was identified (Table 5-4).

Invertebrate Species: Seven (7) different invertebrate species were identified (Table 5-4). The species belong to 7 families and 7 genera. Each family comprises 14.2%.

Table 5- 4: List of Bird/ Mammal/ Reptile/ Amphibian/ Invertebrate species

N ^o	Scientific names	Family	Common name/ Vernacular name (in Kinyarwanda)	IUCN Threat Category
Bird species				
1	<i>Streptopelia semitorquata</i>	Columbidae	Red-eyed dove/ Inuma	-
2	<i>Estrilda astrild</i>	Estrildidae	Wax bill/ Ifundi	-
3	<i>Ploceus sp</i>	Ploceidae	Black-necked weaver/ Isandi	-
4	<i>Alethe poliophrys</i>	Turdidae	Red-throated alethe	-
5	<i>Gallus gallus domesticus</i>	Phasianidae	Hen/Inkoko	-
Mammal species				
1	<i>Mus bufo</i>	Rodentia	Western Rift Pygmy Mouse/ Imbeba	-
2	<i>Bos taurus</i>	Bovidae	Cow/ Inka	-
3	<i>Capra aegagrus</i>	Bovidae	Goat/ Ihene	-
4	<i>Ovis aries</i>	Bovidae	Sheep/ Intama	-
5	<i>Canis familiaris</i>	Canidae	Dog/ Imbwa	-
Reptile species				
1	<i>Gekko gekko</i>	Gekkonidae	Gecko/ Igihangara	-
2	<i>Trachylepis striata</i>	Sciaenidae	Striped skink/ Umuserebanya	-
Amphibian species				
1	<i>Bufo terrestris</i>	Bufonidae	Southern toad/ Igikeri	-
Invertebrate species				
1	<i>Lombricus terrestris</i>	Lumbricidae	Umunyorogoto	-
2	<i>Achatina fulica</i>	Achatinidae	Snail/ Ikinyamushongo	-
3	<i>Apis mellifera scutellata</i>	Apidae	Bee/ Uruyuki	-
4	<i>Culex and Anopheles sps</i>	Culicinae	Mosquito, Umubu	-
5	<i>Formica sps</i>	Formicidae	Ant/ Ikimonyo	-
6	<i>Musca domestica</i>	Muscidae	Fly/ Isazi	-
7	<i>Papilio sps</i>	Papillonidae	Ikinyugunyugu	-

Source: Consultant, 2020

5.3 Socioeconomic environment

5.3.1 Population and demography

The project area has witnessed rapid urbanization since the 2000s, due to the country's history of repatriation of refugees from neighboring countries and rural-urban migration, natural population and security issues that prevailed in a rural area in 1990s and booming economic and tourism activities. The population of Musanze City have increased by 4.8% since 2010. The estimated population of Musanze City was 115,000 in 2015. The population density varies from 600 to 1470 within 10 km from the city centre. The highest densely populated area is Muhoza with a density of 2453 inhabitants/km², followed by Cyuve (1179 inhabitants/km²) and

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Musanze (963 inhabitants/km²); all being part of this project (while all roads all found in Muhoza, Rwebeya drain passes across Cyuve, Musanze and Muhoza).

According to the socio-economic survey, a total of 179 households and businesses were identified during the census exercise. The same exercise established that two private educational facilities are affected. A breakdown of identified Project Affected Households (PAHs) and businesses in terms of numbers (per village) is summarized in Table 5-5 and Figure 5-10.

Table 5- 5: Affected Households and Business Premises per Village.

Village	Number of Project affected Households.	Number of project affected Businesses	Total
Bukane	9	0	9
Burera	37	12	49
Bushozi	11	10	21
Byimana	2	4	6
Kabaya	6	0	6
Kageyo	3	0	3
Muhe	22	0	22
Nyiraruhengeri	8	0	8
Susa	40	15	55
Total	138	41	179

Source: Consultant, 2020

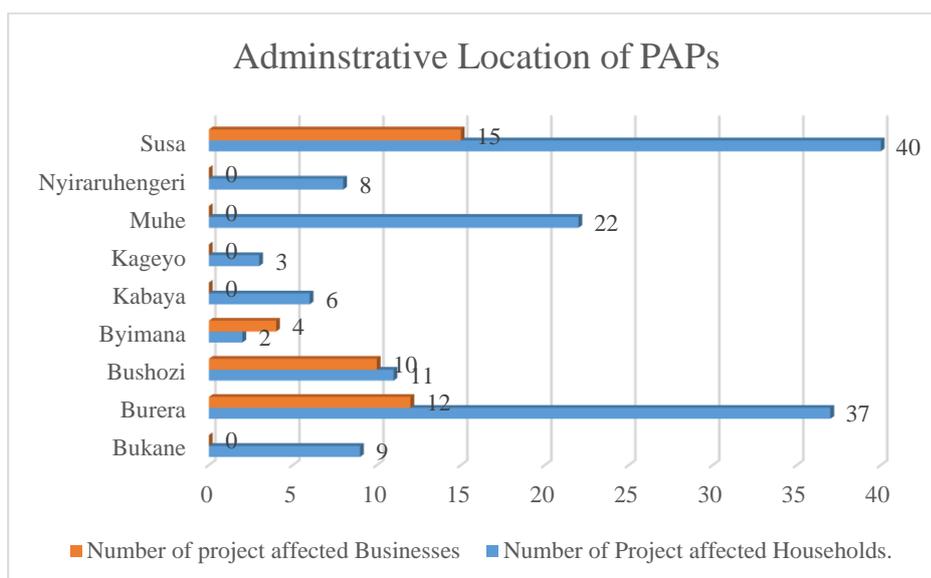


Figure 5- 10: Administrative location of PAPs

Source: Field survey, 2020

5.3.2 Household size and composition

The project traverses three Sectors (Cyuve, Muhoza and Musanze), three Cells (Cyabagarura, Ruhengeri and Rwebeya) and Nine Villages within the Musanze Secondary City. A total of 138 households were interviewed with 68 of the respondents being household heads (70% and 30% male and female respectively). The rest of the respondents were family members who were interviewed due to absentia of the heads during the survey exercise. More than fifty percent of the household heads were between 30-50 years and above 50 years. In Rwanda, the earliest someone can retire under the law is at 60 years, while late retirement age is 65 years. This is an indication that slightly more than half of the breadwinners of affected households were in the ‘sunset years’ of active labor force. However, 43% (43% Male and 12% Female) of the population was within the peak age (30-50 years) for engagement in gainful employment. Figure 5-11 shows the gender and spread of PAPs in the affected Villages.

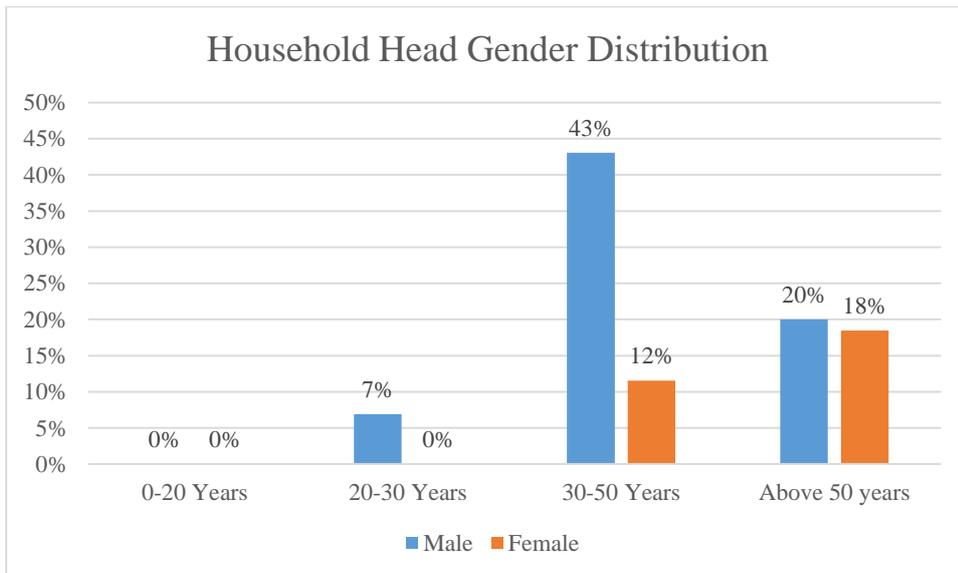


Figure 5- 11: Household Head and Gender Distribution
Source: Field survey, 2020

From the socio-economic survey, it was established that the majority of households were male headed (68%; mostly fathers) (Figure 5-12).

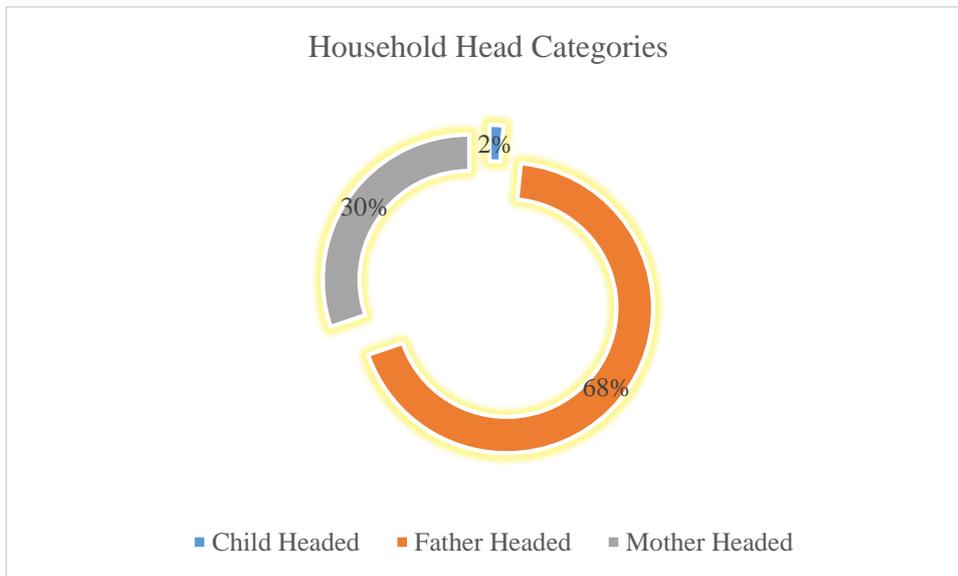


Figure 5- 12: Household head distribution by gender categories
Source: Field survey, 2020

5.3.3 Project affected household

5.3.3.1 Characteristics of Affected Households

Results suggest that the average age of the project affected household members is 23 years. This is indicative of households with youthful household members. In terms of relationships, census data shows that majority of the household members are biological children (65%), while others were spouses (14%) and other relatives (2%) living together indicating relatively higher levels of dependence within the PAP households. In terms of education, 60 % of household members obtained Secondary education. This implies that majority of household members can be considered to be literate. In terms of access to source of income, 37 % of PAP households had members participate in businesses and small-scale farming. Average household size is 5. Most of the PAP household members were always present at home (90%). The high presence at home could be attributed to the Covid-19 pandemic which has seen a number of persons working from home.

In terms of religion, the majority of the PAPs households' heads belong to two dominant religions; Roman Catholic 54% and Protestants accounting for 34%. The minority Christian based faith that PAPs believe in is the Adventists (12%).

5.3.3.2 Vulnerable Project Affected Persons

The vulnerability assessment critically assessed the various vulnerable PAPS and established differentiated measures of assistance to address different vulnerable situations. Thus, the vulnerability assessment identified and proposed different kinds of assistance for the different vulnerability groups and categorized them into four phases including;

- Assistance needed during disclosure phase;
- Assistance needed during compensation payment phase;
- Assistance needed during physical resettlement phase;
- Assistance needed in post physical resettlement phase.

Table 5-7 shows the Vulnerable PAP identified in the project site and proposes the vulnerability mitigation measures. In addition to measures proposed for vulnerable project affected people, the contractor will ensure provision of the disability accessibility (e.g. footpaths and access with railings and handrails).

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Table 5- 6: Vulnerable PAPs in the project area of RUDP II Phase 3 in the Musanze City

PAP Profile	Road	Affected Property	Resettlement Impacts	Entitlement	Vulnerability Category	Special/Supplementary Assistance	Actor	Monitoring and Evaluation Indicators
<p>Name: Nyirakabikira Deborah</p> <p>Gender: Female</p> <p>Position: Mother Headed household</p> <p>HH Head HH Size: 10 Sector: Muhoza Cell: Ruhengeri Village: Byimana</p> <p>ID NO: 1194770012999 110 Tel: 0788827557</p>	MUZ3-1	Land Only (partially affected/no relocation necessary)	Partial Expropriation (1,782,495.83 RWF)- (partially affected/no relocation necessary)	Cash compensation for the piece of land and crops affected. 5% disturbance allowance	Mother Headed household plus pre-existing Conditions (Diabetes and Hypertension) Physically Challenged Elderly 73 Years Low Income She stays with 9 Children out of which two are hers. The rest (7) are orphans and relatives)	Adult Household member(s) who is capable of taking up unskilled or semi-skilled job opportunities during RUDP II phase 3 construction period be given first priority during recruitment Children scholarships to study in schools Insurance cover Enrol and help in payment of premiums in government accredited/sponsored public medical cover scheme. If already enrolled help paying/waive payment of cover premiums Assistance in Legal Services (Processing Letters of Administration and help in Title Replacement) Equal access to grievance redress committees.	Musanze District	Son (daughter) afforded opportunity for employment Waived reconstruct statutory fees PAP was able to access grievance redress mechanism

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PAP Profile	Road	Affected Property	Resettlement Impacts	Entitlement	Vulnerability Category	Special/Supplementary Assistance	Actor	Monitoring and Evaluation Indicators
<p>Name: Nyiramavugwa Immacule</p> <p>Gender: Female</p> <p>Position:</p> <p>HH Head HH Size: 1</p> <p>Sector: Muhoza Cell: Ruhengeri Village: Burera</p> <p>ID No: 1195870036577 051</p> <p>Tel.: 0782041994</p>	MUZ3-2	Land and Crops (partially affected/no relocation necessary)	Partial Expropriation (305424098.1 RWF)- (partially affected/no relocation necessary)	Cash compensation for the piece of land and crops affected. 5% disturbance allowance	Elderly Loss of function in one limb (leg) because of an accident she had in 2009. Hypertension Diabetes	<p>Adult Household member(s) who is capable of taking up unskilled or semi-skilled job opportunities during RUDP II phase 3 construction period be given first priority during recruitment</p> <p>Enrol and help in payment of premiums in government accredited/sponsored public medical cover scheme. If already enrolled help paying/waive payment of cover premiums</p> <p>Regular check and review of welfare by district social safeguard officer.</p>	Musanze District	<p>Son (daughter) afforded opportunity for employment</p> <p>Waived reconstruct statutory fees</p> <p>PAP was able to access grievance redress mechanism</p>

Source: Consultant, 2020

5.3.4 Land Tenure and Project Impacts on Land Use

Property owners comprised the majority of the PAPs (89%), about 9 in every affected land owner had formal land ownership documents (land certificates). Tenants formed (9%) of the respondents as shown in the table below.

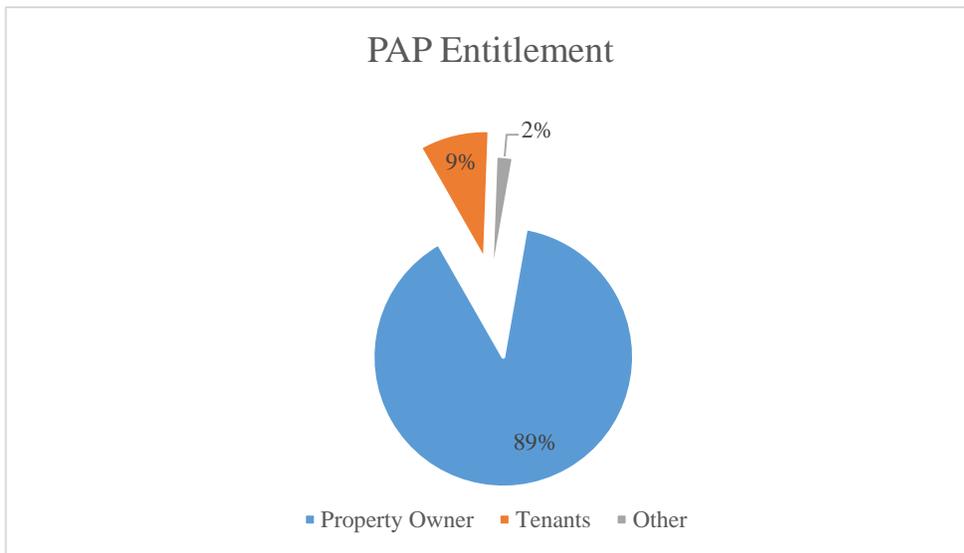


Figure 5- 13: Project affected people entitlements

Source: Source: Field survey, 2020

5.3.5 Household Income of Project Affected Households

Social economic survey carried for RUDP II Phase 3 for Musanze Secondary City revealed that a majority (44%) of PAHs earned below 50,000RW per month. Very few households earned a monthly income 350,000RW and above. Household income is a very good indicator of PAHs economic profile, especially ability to cope with resettlement impacts due to involuntary resettlement (Figure 5-14).

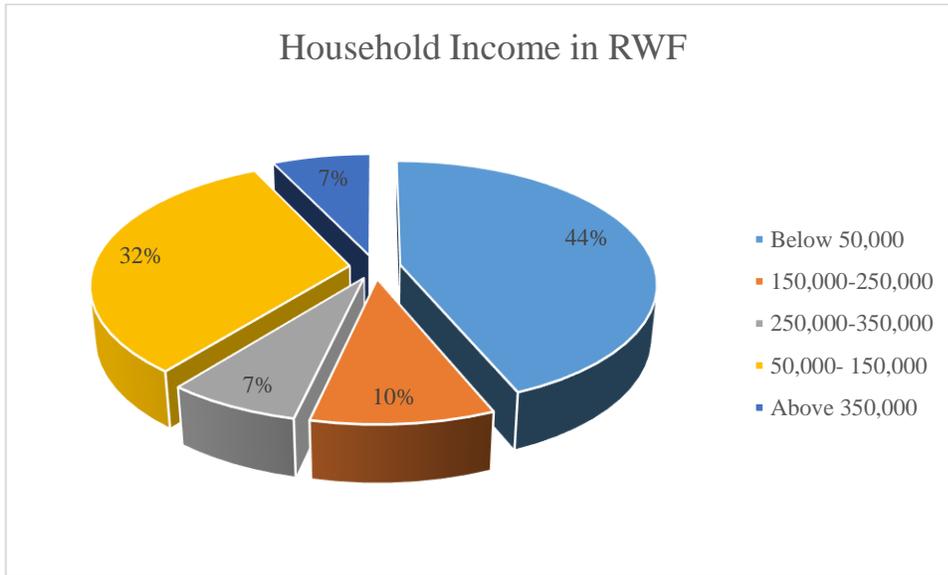


Figure 5- 14: Household Income

Source: Field survey, 2020

Most of the household income is spent on household expenditure items; food, school fees, telephone airtime, toiletry, health, scholastic material, hard energy (fuel and Electricity) and water.

5.3.6. Sources of Income for Project Affected Households

Findings of Socioeconomic studies for Musanze Secondary City PAHs established that PAPs had multiple sources of income. Salary and wages from employment and casual jobs, proceeds from urban farming and small-scale business ventures were the main sources of income in a majority of the households. In general, Musanze City is an Agro-City with majority of its residents involved in urban Agriculture as their main means of livelihoods.

5.3.7 Employment Income

Household income from Salary and wages from formal and casual jobs was the highest source of income for majority of households consulted. Under this category, 18% of the PAPs were self-employed while 20% had formal jobs earning a monthly salary or wages according to agreed contractual terms. Majority of the PAPs consulted (62%) were however unemployed (Figure 5-15).

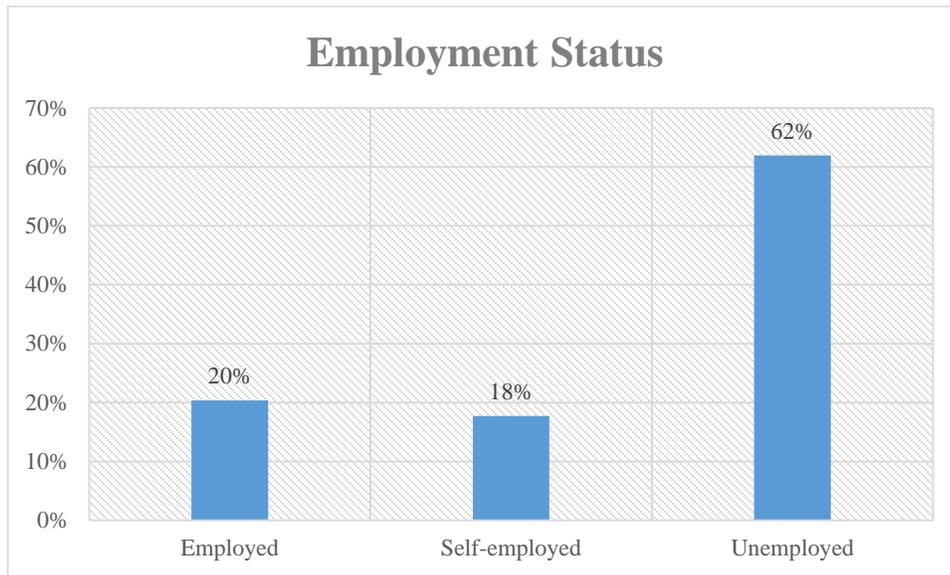


Figure 5- 15: Employment Status

Source: Field Survey, 2020

5.3.8 Infrastructure and transport network

The infrastructure in the Musanze District is dominated by roads, social infrastructure (churches, schools, health centres, stadium and playing grounds, etc) and private buildings. Considering the road infrastructure, the road in Musanze City are used intensively by cars, motorcycles, busses, trucks, bicycles and pedestrians circulating within the town or entering and leaving the Musanze City. There is no regular considerable traffic jam. However, the NR 4 junction with NR 8 and NR 14 regularly occur during working days mainly between 17:00 and 18:00.

Access to basic infrastructures include access to electricity, telecommunication, health consideration, transports and water and sanitation. Concerning telecommunication, 48.6% of the households in Musanze District owns a mobile phone. The mean walking distance to a primary school in the Musanze district is 17.3 minutes

On the other hand, the geographic location of Musanze City makes it the crossroad between Kisoro, Goma, Musanze, Kigali and Muhanga. The bulk of trade and commercial activity is heavily concentrated in Muhoza Sector, which is also a strategic location for local and international travels in terms of the road network.

The project is also bound to occasion relocation of utilities along the project corridors. During

demarcation of the RoW, deliberate efforts were taken to avoid relocation of medium voltage electricity distribution mains. Similarly, the road centerline was also shifted so as not to affect major urban water distribution pipelines. Nevertheless, there were some sections where there was no room to shift the centerline to avoid relocation of the vital utility lines. In such circumstances, relocation of these utility service lines is inevitable. Consequently, this project has set aside a budget for relocation of affected utility service infrastructure.

On the positive side, it was established that about 40% of affected properties had all-weather access road in close proximity. This indicates that road service infrastructure provision is lagging compared to utilities servicing. From the foregoing, upgrading of project roads as envisaged under this project is paramount to improving living conditions of the residents of the project area in Musanze City.

5.3.9 Housing and related Facilities

Housing conditions are good in Musanze City, especially in Project Affected Zones, taking into consideration roof, wall and pavement materials. Roofs materials are dominated by corrugated iron sheets 68%. Water materials are dominated by bricks (55%) and floor pavement material are dominated by cement 71% (Figure 5-16). House with brick are the most dominant among the PAPs house wall materials (55%) whereas wood as wall material is the least used among wall materials. The most dominant floor pavement material is cements (71%). Tiles are less presented 10%. The unpaved houses (earth pavement) represents 6% (Figure 5-16).

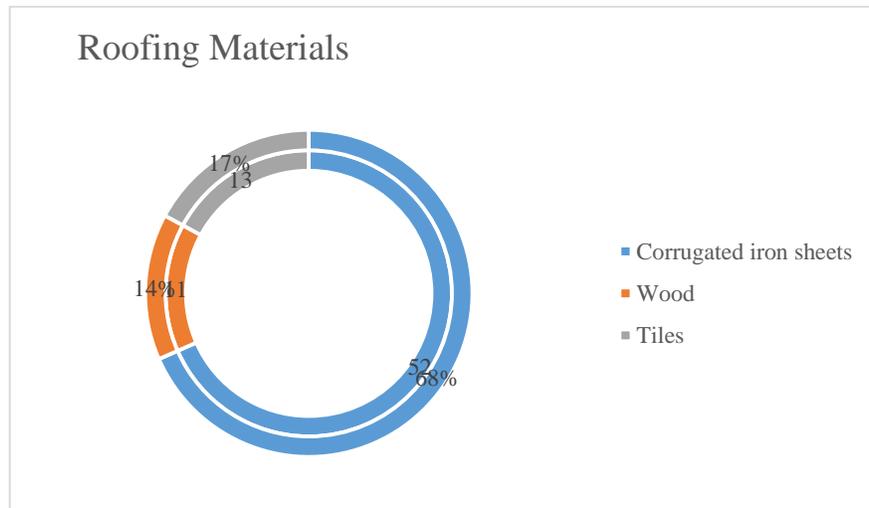


Figure 5- 16: Type of roof materials
Source: Field survey, 2020

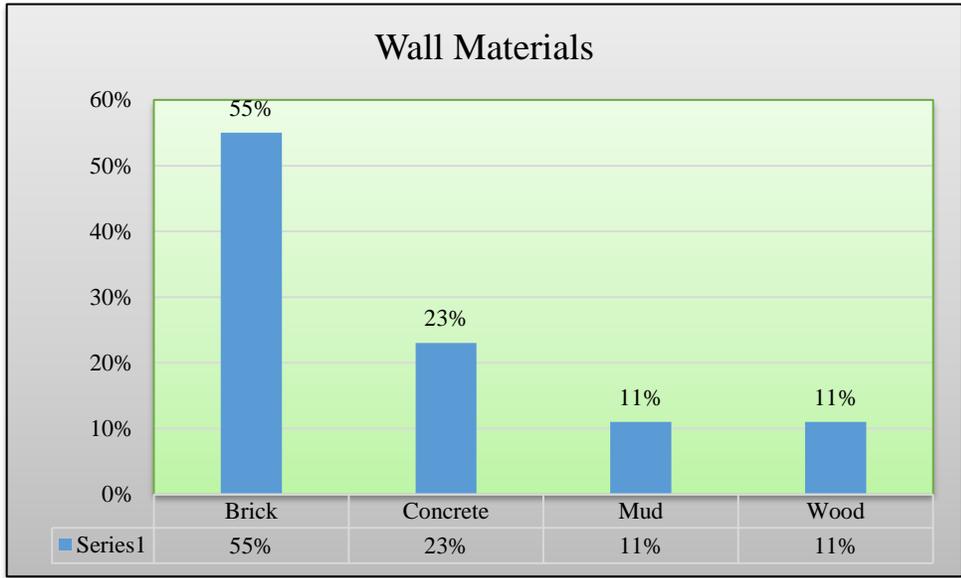


Figure 5- 17: Type of materials used for wall
Source: Field survey, 2020

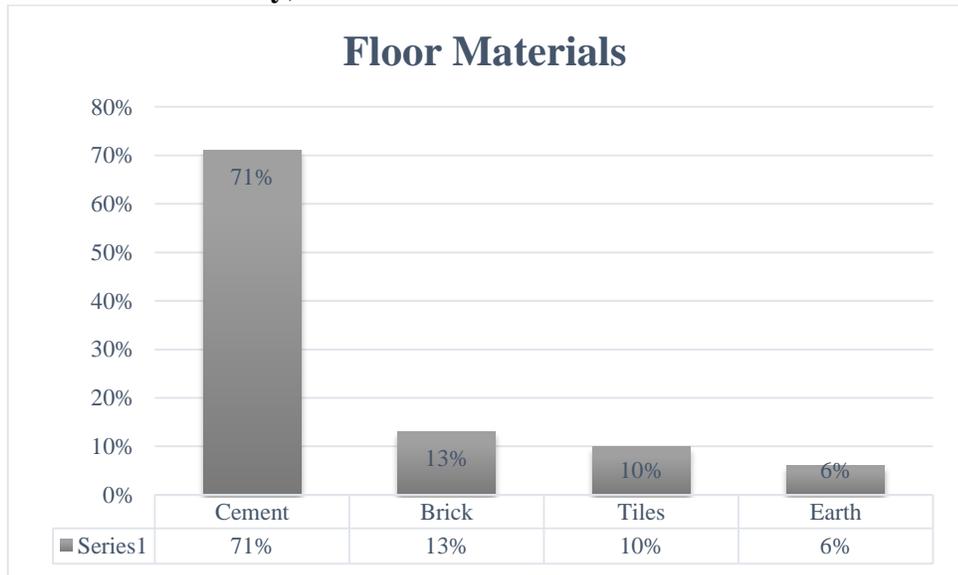


Figure 5- 18: Type of materials used for floor pavement
Source: Field survey, 2020

5.3.10 Education level

In Musanze City especially in the project area, the level of education is fair. Results from the questionnaire survey show that the male gender had the highest education levels as compared to the female among the PAPs. Majority of the people in the project area (35%) had attained at least basic primary education while 24% and 24% had attained secondary and tertiary level respectively.

Sixteen (16%) of the respondents had not attained any level of education. With regard to gender, male are more educated than female in both primary, secondary and tertiary education (Figure 5-19 and 5-20)

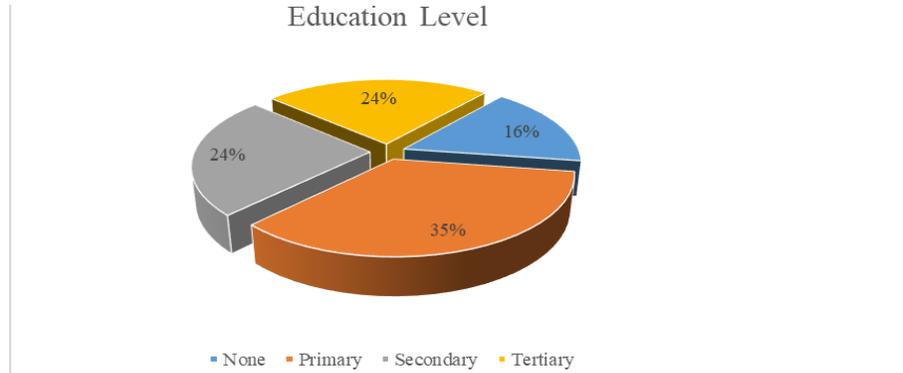


Figure 5- 19: Education level for the PAPS
Source: Field survey, 2020

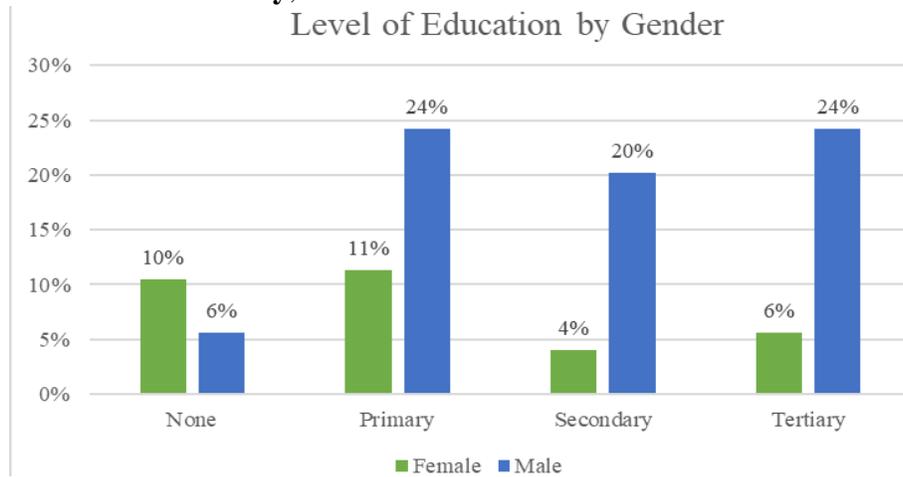


Figure 5- 20: Level of education by Gender
Source: Field survey, 2020

5.3.11. Public Services, Water and Sanitation

Access to services for the PAPS is advanced especially for electricity and piped water. 99% of the Project Affected people have access to electricity while 74% have access to piped water. Only the vehicular is limited 44% (Figure 5-21)

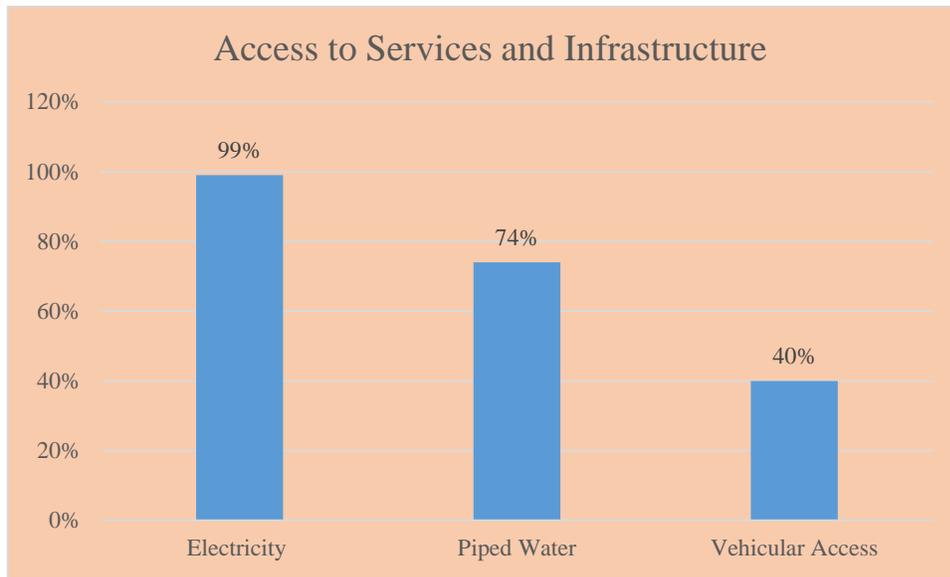


Figure 5- 21: Access to Services and Infrastructure
Source: Field survey, 2020

In terms of water access, the main source of water for domestic use by a majority (86%) was piped water. However, a good number of the households (14%) still lacked access to piped water from within their plot thus depended on water vendors (figure 5-22). The project should ensure that during relocation of water service mains, the pipelines are quickly restored, as the dependency on piped water is very high

In Musanze city there are was one ‘*ubudehe*’ infrastructure affected in particular community water kiosks. The cost of water from public is 20 Rwandan Francs per 20 liters’ jerry can. The kiosk water is source of piped water to community members who don’t have piped water connection to their homes. Residents in the projects area (14%) relies on Ubudehe water kiosk and private water vendors, it is of utmost importance that such an amenity providing water in the community is not demolished without an alternative infrastructure being built to ensure uninterrupted community water supply. From the foregoing, Musanze district administration will build a new community water facility in close proximity to affected social amenity before demolition of condemned amenity (within the RoW) is pulled down.

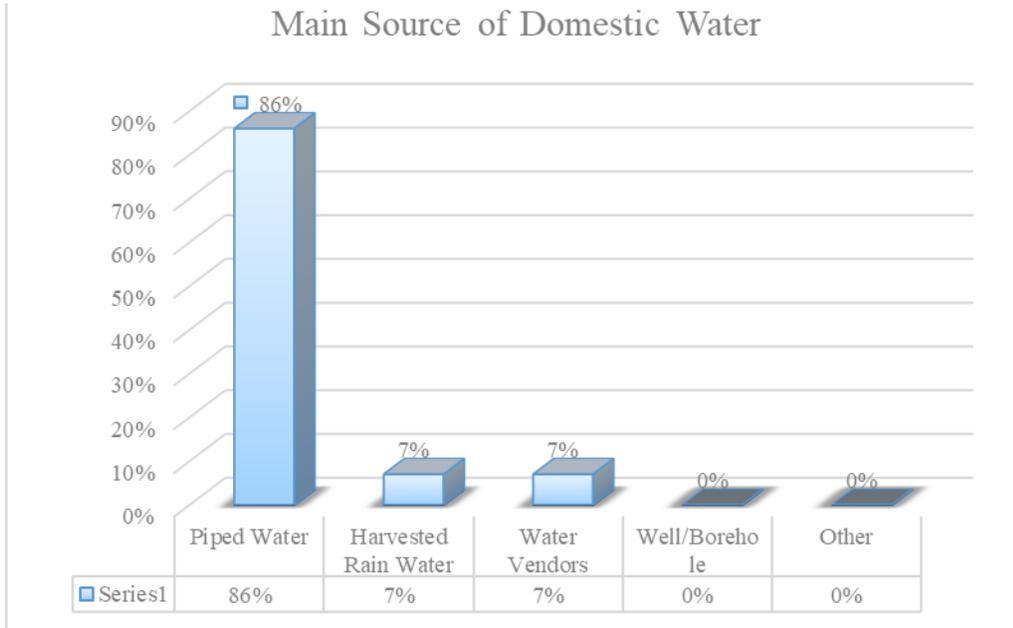


Figure 5- 22: Main source of Water for Domestic Use
Source: Field survey, 2020

With regard to sanitation, the majority of households in the project area utilize external pit latrines as sanitation facilities (66%). The proportion of households with interior toilets with flushing water and septic tanks is low (34%) (Figure 5-23).

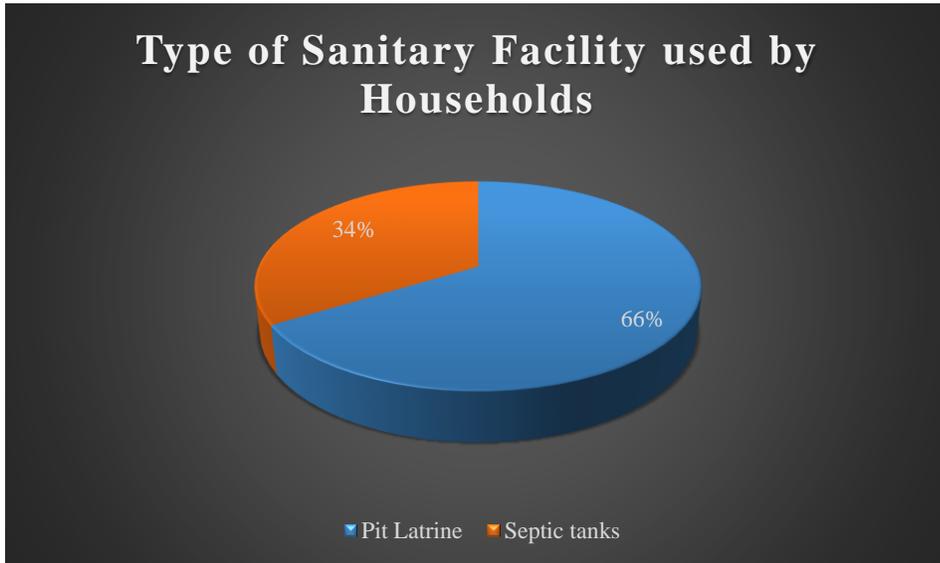


Figure 5- 23: Types of sanitary facilities
Source: Field survey, 2020

It is worth noting water utilities relocation must involve coordination between the contractor, the Musanze District, the Utilities Agency and representative from the Grievance Redress Committee on different phases of relocation planning and implementation. During the planning, the contractor must prepare a relocation plan, detailing the locations, types of infrastructures, and potentially affected communities. The plan will be accompanied by maps developed through a Geographic Information Systems. The inventory (plan) shall inventariate and specify reimbursable and non-reimbursable facilities. Reimbursable facilities include those privately owned by individual households such as individual households or institution's connection pipes and taps. The contractor will send the report to Districts and the utilities agency (WASAC). The report will be discussed through meetings between the contractor, the district engineers and representative of Grievance Redress Committee. After the reception of the report WASAC or the District will inform the affected communities through letters or other communication (radio), small posters or public meetings. After this process, reparation of water utilities should be conducted on time to avoid the services disruption.

5.3.12 Health

Concerning health access, there are three public health centres which provide basic health services in Musanze City. They include Kimonyi, Ruhengeri, Karwasa health centres. The number of private health clinics has been increasing, currently, 5 private clinics are located in Musanze city. They include Mpore Liberte, Prominibus, Mont Nyamagumba and La Medicale clinic. Ruhengeri Referral hospital is the only public hospital providing advanced medical services. The walking distance to health centres in Musanze City is 20 minutes, this distance increase as one move from the city centre to the rural area. The distance varies from 20 to 45 minutes. The ownership of bank accounts is 38.6% of households in Musanze District. The district takes the 11th position concerning the usage of financial services and possession of a bank account.

The district has had trouble in providing efficient health services for the fast-growing population because it needs heavy investment to upgrade, modernize and construct new health facilities. In terms of HIV/AIDS, Musanze District possesses moderate prevalence which is generally estimated between 5-10%. The infant mortality is 83/1000. The under-five age of child mortality is 131/1000. The rate of delivery at the health facilities is 65% and the vaccination is 93%.

The questionnaire survey in the Musanze City revealed that the most prevalent diseases are hypertension (35%) and diabetes (24%). HIV-AIDs is another disease that occupies a non-negligible share (16%). Project affected peoples also suffers from other ailments considered chronic (Figure 5-24). 10% of the population suffer from other illnesses as figure depicts

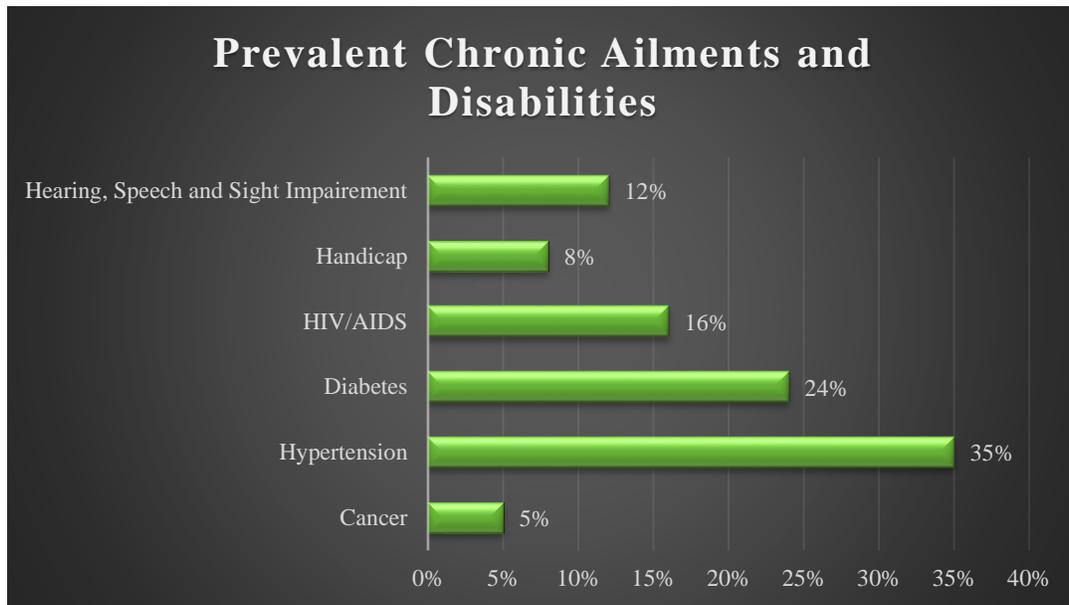


Figure 5- 24: Prevalence of Chronic Diseases and Disabilities
Source: Field survey, 2020

5.3.13 Gender Based Violence

Although the social-economic survey did not record any case of Gender Based Violence (GBV) in the project area, it is likely that the GBV may happen during different stages of the project implementation (RAP implementation or civil works). The project implementation will strictly adhere to the GBV Action Plan prepared by the Government of Rwanda as per the Government Commitment Plan¹³. The plan details measures and actions to assess and manage the risks of gender-based violence (GBV) and sexual exploitation and abuse (SEA). GBV preventive measures will refer to the Rwandan Law 2 of N°59/2008 of 10/09/2008 on prevention and punishment of GBV in all project formations and particularly GRMs procedures. The contractors and sub-contractor’s workers will sign a GBV and SEA code of conduct as part of their contracts. All contractors and supervision

¹³ <http://documents1.worldbank.org/curated/en/337781598651390841/pdf/Environmental-and-Social-Commitment-Plan-ESCP-Second-Rwanda-Urban-Development-Project-P165017.pdf>

consultant will have GBV Specialists as part of the key staff of the team. More measures against GBV are discussed in section 7.2.2.5.5.

5.4 Cultural Heritage and Tourism

Musanze City is known for its favorable climate and has become a touristic transit site for mount gorilla visits. The city has many cultural sites but, apart from Nyamagumba Cemetery, other sites have been found outside the project area. These sites are:

- **Musanze Cave:** It is located at about 3 km Northward the endpoint of the MUZ3-2 sub-project and 2-93 from the MUZ3-8 subproject Westward This volcanic cave is a tourist destination designated by the Rwanda Development Board.
- **Musanze Genocide Memorial site:** located at about 3 km North-Westward within the Ikizungu few meters Norward from the MUZ 3-1.
- **Buhanga Eco-Park:** Located at distance of 6 km Southward from Musanze City. It has been also designated by the Rwanda Development Board (RDB) as a tourist destination. Buhanga Eco-park is believed to be the site of the coronation of kings since the 11 century. The eco-park has a small spring containing dark and ice-cold water. This was where the King's bathwater was collected. The site consists of also cave boarded by big boulders and it is where the King was wheeled in the Royal carriage, known to as "Ingobyi", right from his palace in Nyanza no making any stopover on the way until when he reaches the dark cave. The King could stop in the dark cave to take his shower with the spring water mixed with the local herbs collected from the small ditch, referred to as a fortune-bestowing bath, referred to as "Kwihagira" in Kinyarwanda. After bathing, the King was wiped thoroughly and smeared with regal oil and after this, the King was then carried to the conference podium.
- **Volcanos National Park:** Located 15 km Northward of Musanze City. It is a touristic destination for gorillas trekking. A network tarmac road and earth-graded road connect Musanze city with Kiniga (site of the start of gorilla trekking). Due to this potentiality, the City of Musanze, Kinigi, and Nyakinama contains a network of more than 20 hotels and executive lodges ranging from 2 to 5 stars.

Although, apart from Nyamagumba cemetery, no other archaeological or culturally important site was found within the project RoW, attention shall be paid to implement a find chance find procedure whenever a cultural item is found. Given our country history, there is a certain probability of discovering human remains of the 1994 genocide against the Tutsi. More details about procedure to follow are found in chance find procedure (Section 7-10 and Annex 16). Special attention shall also be paid when constructing Rwebeya drain and Muz 3-2 road, to avoid land take and any disturbance to the cemeteries during the construction activities.

5.5 Sensitive Ecosystems

The most visible sensitive ecosystem in Musanze City project area is Mukungwa River that receive the influent water from Susa, Rwebeya and Muhe torrential rivers. Mukungwa River plays an important economic and ecological role in the project area. On the economic side, the River is used for irrigation and hydro-electricity purpose. Currently two Mini Hydropower plants (Mukungwa II and Rwaza- Muko) are located downstream Musanze City. The total generation capacity of these plants is 4.5 MW. In terms of biodiversity, the river provides habitat to Amphibians and Invertebrates and fish. However, the river is threatened by silt deposition from Rwebeya and Muhe torrential storm rainwater, which poses danger to human safety due to flood.

Concerning the conservation aspect, the nationally protected trees such as *Ficus thonningii* (Umuvumu) and *Erythrina abyssinica* (Umuko) were identified along the proposed roads and drains project (Figure 5-25). The trees are native to Rwanda and have been playing a big role in Rwandan culture and rituals. The cutting of the tree should be avoided as much as possible. However, in some critical conditions of technical easements and without any evidence of any cultural value or rituals associated with the tree, it can be cut and replanted around. Otherwise, the contractor and project developer should work hand in hand to comply with article 4 of the Ministerial Order N° 007/2008 of 15/08/2008 establishing the list of protected animals and plant species in Rwanda. Concerning cultural/ historical aspect, the survey had not identified any sensitive cultural/ historical sites along and in environs the project site.

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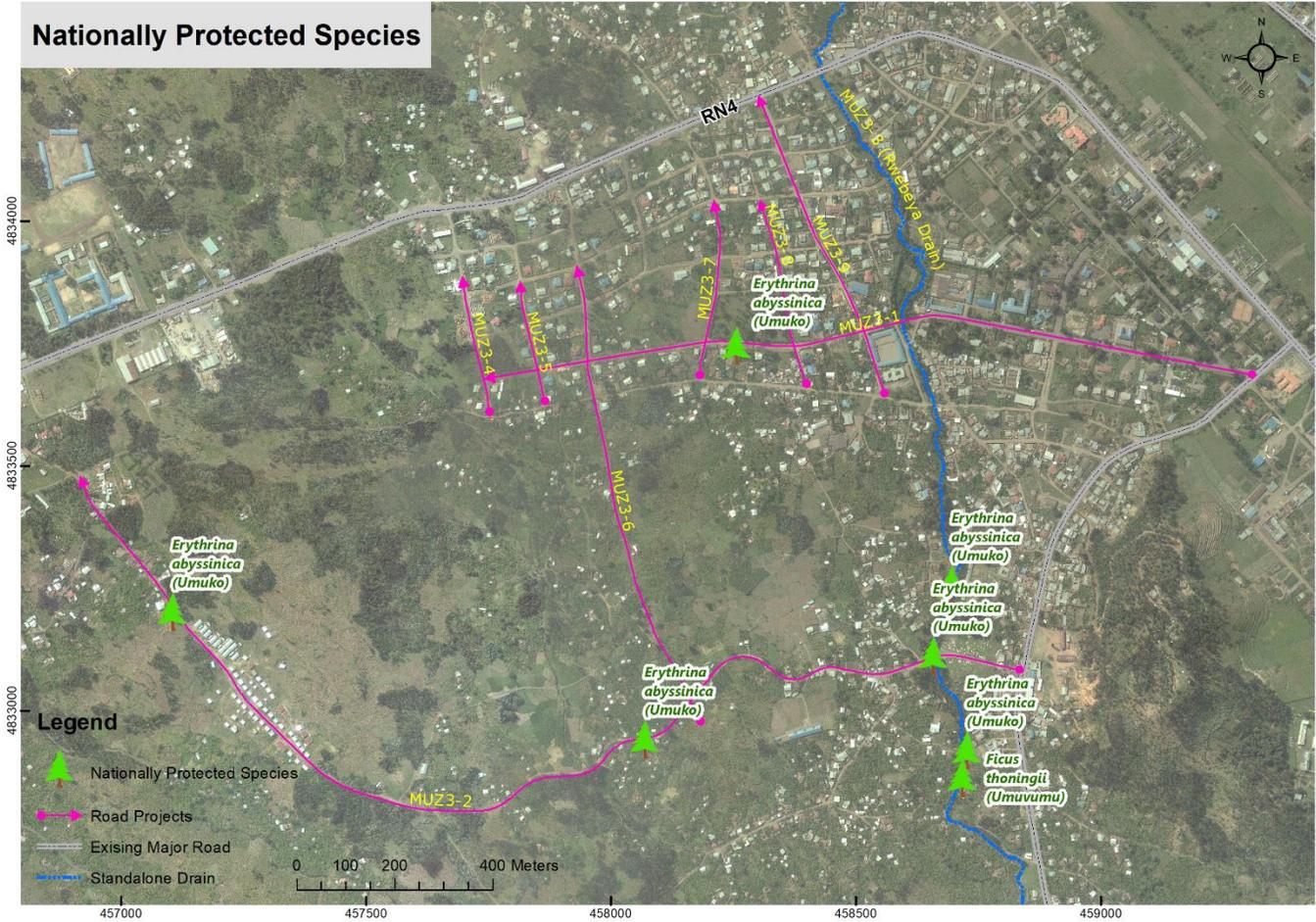


Figure 5- 25: Location of Nationally Protected Species along RUDP II Phase 3 sub-projects in Musanze
 Source: Consultant, 2020

6. PROJECT ALTERNATIVES

The feasibility study and the ESIA considered the analysis of alternatives to ensure that the best among all possible options is selected. The analysis entailed identifying alternative forms of development and considering the environmental and social implications of these alternatives to demonstrate that the proposed scheme is environmentally preferable. The process involved consultation with community and various stakeholders where different suggestions and solutions were proposed for upgrading the roads and drains.

6.1 Zero Scenario

The option of doing nothing was considered, i.e.: no construction of the roads and drains against the upgrade of existing roads and construction of drains. A number of positive impacts would be missed if this option is taken. Positive impacts include job opportunities, increased incomes as well as provision of easy access to road networks, easy transportation of persons and goods. The do nothing option would seem an irresponsible move towards sustainable development and was therefore rejected. The do nothing option is the least preferred from the socio-economic, touristic, and partly environmental perspective due to the following factors:

- The socio-economic status of the beneficiaries and the residents in the project area of the Musanze City would remain unchanged;
- The local skills would remain under-utilized as no employment opportunities will be created for some Rwandese who would have otherwise worked at the project areas;
- Reduced local interaction and business development due to lack of roads infrastructure;
- Soil erosion and environmental deterioration due to lack of proper drainages.

From the analysis above, it becomes apparent that the “do nothing option” is the worst option to the local people, the government of Rwanda and region as a whole.

6.2 Alternative Roads and Drainage location

There were various alternatives for roads and drainages in the Musanze City. The City applied a number of criteria to come up with the roads and drainages based on the objective of improving the living conditions of the people. The roads and drainages were selected to serve a wide coverage of the study area and, were ranked highly by the community as a priority economic activity. The

project is expected to provide a link between various public facilities that are within and outside the study area. It is anticipated that the project will have positive economic development impacts and, will also consider the socio-cultural aspects of the community and its cost implication.

6.3 Road width design

The proposed roads width in the Musanze City took into consideration whether or not the planned roads fall within the existing road boundaries, including the road reserves and will thus not require considerable expropriation cost or will not involve the destruction of natural habitats, including existing vegetation and trees. The proposed roads also considered the carriage way, green space, cycle lane, pedestrian walk-ways and street lights. In this respect, various road widths options (6.00m width roadway) were considered:

- Option 1 (Figure 5-2): Two-way Roadway Street with cycle lane, greening and walkway on either side, Central reserve of 2 metres, complete with drain, street lighting and provisions for utility survives; right-of-way width 17 m to 24 m.
- Option 2 (Figure 5-3): Two-way Roadway Street with a walkway on both sides) one walkaway on top of the covered drain, drain on one side and provision of utilities survives (a provision of 1m). Right of the way width is 11. 206 m.
- Option 3 (Figure 5-4): Two-way Roadway Street with a walkway on one side (on top of covered drain), drain one side and greening on one side, street lighting and provisions for utility survive; right-of-way width 9.757 m.

Option 1 and 2 were selected as the options that have the lowest social displacement impacts, low expropriation cost and low impacts on the environment. Option 1 is applied to the Iposita-Excel School-Eveche-Yawunde Asphalt Road (MUZ3-1) from CH.0+000 to CH.1+0000 (Iposita to Rwebeya Bridge), while option 2 applies to the entire section of the Nyamagumba –Regina Pacis Secondary School-Susa-Karisimbi Road (MUZ3-2) and the MUZ 3-1 from CH.1+000 to CH.1+608. Other options (right-of-way of 12.00m and above) were considered to generate higher cost of expropriation (for the MUZ3-2 road) and therefore were not selected.

6.4 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, the covered design option was preferred and this was based on the need to have the drainage systems double as pedestrian walkways without reducing the road width to create separate drainage and walkways.

6.5 Construction technology and materials

There were different alternative materials such as lateritic, sand, gravel, stone or asphalt that shall be used while upgrading the project roads and drainages. While earthen roads are cheaper, they are less durable. The use of stone is increasingly being opposed due to damages incurred to vehicles. The option of using asphaltic materials that provides a spacious surface, adequately stable due to its adequate strength structure and durability was selected. It is worth noting that construction using durable materials like asphalt is the priority of the Government of Rwanda.

The roads will be constructed using national and internationally accredited materials (e.g. stones, gravels, sand, cement, steel and bitumen) to comply with technical/security, public health/safety and environmental aesthetic requirements. Equipment and technologies that save resources and energy will be given first priority without compromising on cost or availability factors.

This project will also use water. Rainwater should be harvested and be used in construction activities and supply to construction camps for flushing toilets and other non-domestic activities. Heavy use of timber shall be discouraged to minimize destruction of natural resources. The exotic tree species should be preferred to indigenous species in the rehabilitation where need will arise as they can be replanted with ease.

Crushers and other construction equipment and machineries shall be incorporated with pollution control devices like dust arrestors/precipitators, emission control, noise abatement devices and desulfurization devices. The equipment and vehicles with the highest levels of combustion efficiency and with capability to use cleaner fuels like bio-diesel shall be used for enhanced safety features and regularly inspected.

6.6 Waste management options

6.6.1 Human excreta

There were a wide range of sanitation systems to be considered for handling and treating wastes to be generated by the project workers during the construction phase. Sanitation systems to handle human excreta include pit latrines, VIP Latrines, ECOSAN Latrines and flushing toilets. Based on local context (temporal activities), temporal pit latrines or portable latrines are considered the best sanitary systems to be installed at campsites and other temporarily working sites. During the operational phase, pit or portable latrines should be located at strategic points like centres or bus stops to serve the road users. However, special attention should be paid to not locate them nearby water bodies (Mukungwa river) or in areas within the storm water course. Otherwise portable toilets will be considered.

6.6.2 Solid Waste Management Alternatives

A lot of solid wastes will be generated by the proposed project. During construction, wastes to be generated include excavated material and construction debris. We recommend reducing waste production as much as possible and by reusing/recycling generated wastes. The remaining will be disposed in approved and recognized dumpsites. The dumpsites should be located in low value land with low lying landscape, away from water bodies.

During the operational phase, a wide range of wastes are expected to be produced by road users all along the road length. Those wastes include biodegradable, less biodegradable, plastics, metals, glasses, ceramics, chemicals (oil, grease, drugs, etc) and e-wastes. The Musanze City should avail solid waste bins at different road centres and the producer should be educated on placing garbage in waste bins with clear labels (biodegradable, less biodegradable, plastics, metals, glasses, ceramics, chemicals (drugs) and e-wastes (Figure 6-1). Each class of wastes shall be appropriately managed using The Integrated Solid Waste Management (ISWM) approach. This approach takes an overall approach to creating sustainable systems that are economically affordable, socially acceptable and environmentally effective. To be effective, the Musanze City should conduct campaigns on ISWM.



Figure 6- 1: Proposed solid waste bins with different colour

Source: https://www.123rf.com/photo_6701345_big-containers-for-recycling-waste-sorting-plastic-glass-metal-paper.html, 2020.

The approach is summarized in Figure 6-2. The first priority will be given to waste reduction from the source. Recycling, reuse and composting of the waste will be the second alternative in priority. This will call for a source separation program to be put in place. The waste will be sold to waste buyers within the project area or be collected by a private waste management company. The third priority in the hierarchy of options is combustion with energy recovering and low emissions. Finally, sanitary land filling will be the last option for the proponent in areas provided with the facilities.

Prevention techniques shall be applied by the contractors as the 4Rs: reduction, reuse, recycling and recovery. Special attention will be paid to e-wastes (telephone, computer, etc), pharmaceutical and chemical products. These will be collected separately and kept aside for advanced processing to be ordered by REMA or other competent institutions.



Figure 6- 2: Principles of waste management

Source: <https://www.recyclespot.org/Get-Started/Why-Recycle.aspx>, 2020.

6.6.3 Dumpsites, Quarries and Borrow pits

Existing dumpsites was considered to be used as disposal sites for cut and excavated earth material from RUDP II in Musanze. The contractors shall conduct site investigations all around the sub-projects to ensure these sites have the required capacity to handle all earth material. Otherwise, the contractor will look for new dumpsites. Selected dumpsites will not be located near Mukungwa river or any storm water runway. Preferably they will be located in areas of depression and of low land use value, where they cannot be washed into downstream ecosystems. Wherever possible, spoiled materials can be placed in low-lying parts of the topography or be used for filling exaction holes or road potholes and should be appropriately compacted.

Existing borrow pits along the route will be used if any. New borrow pits (e.g. stone, gravel exploitation) may have to be established where existing borrow pit material is not suitable or enough. Prior to commencement of use of the borrow pits, dumping sites and quarries an environmental and social management plan shall be prepared and approved by the Musanze District and LODA and, a rehabilitation plan shall also be prepared and implemented after

completion of construction works. As good environmental practices, it is proposed that existing borrow pits, quarries and dumping sites are given priority.

6.7 Selected Options

The concept of alternatives aims at ensuring that the best among all possible options is selected. For this purpose, a multi-criteria analysis was used to select the preferred alternatives in terms of:

- Road width;
- Construction technology (asphalt, cheap seal, murrum);
- Drain exit extension or not to the storm water recipient;
- Options for sanitation & waste management and rehabilitation of dumpsite & campsites; with regard to their impacts on people (displacement impact);
- Cost (affordability);
- Transport efficiency;
- Health and Safety to road users and local people and Environmental impacts on land;
- Water;
- Air Quality (Table 6-1).

The multi-criteria analysis considered a four weight level (0: No impacts, +1: low impact, +2: medium impact, +3: high impact) for both positive and negative effects. The outcome from the analysis are shown in Table 6-1. Alternatives highlighted in green (they have lower social disturbance and environmental impacts) while those in red have been rejected. Therefore, this study recommends the narrowest road cross section. The study also highly recommended to (1) cover drains, (2) extend them to the storm water recipient; (3) rehabilitation & greening of the road buffer zone, borrow sites, dumpsites, quarries; and (4) to implement best practices in waste management involving sorting, disposal of wastes use of mobile toilets. It is worth noting that although the analysis rejected option 1, this option can be implemented in area where the RoW is available (e.g. MUZ3-1, section between CH 0+000 and CH.1+000).

Table 6- 1: Comparison of the RUDP II Phase 3 alternatives using a four level rating criteria

(0: No impacts, +1: low positive impact, +2: medium positive impact, +3: high positive impact, -1: low negative impact, -2: medium negative impact, -3: high negative impact)

RUDP II Phase 3 options	PAPs Displacement impacts	Construction cost impacts (affordability)	Connection to road network	Health & Safety to users and local people	Environmental footprint	Sustainability	Cumulative rating	Decision
Zero Scenario	0	0	0	0	0	-1	-1	Rejected
Road Option 1 (17 m RoW)	-1	-1	+2	+3	-1	+3	+3	Adopted
Road Option 2 (11 m RoW)	-2	-2	+3	+2	-2	+2	+1	Adopted
Road Option 3 (10 m RoW)	-1	-1	+1	+1	-1	+1	+1	Rejected
Murrum option	0	-1	+1	0	0	0	0	Rejected
Cheap seal option	0	-2	+2	+2	-1	+2	+3	Adopted
Asphalt option	0	-3	+3	+2	-1	+3	+4	Adopted
Drain exits not extended to the recipient	0	+1	0	-3	-3	-3	-8	Rejected
Drain exits extended to the recipient	-1	-1	0	+3	+3	+3	+7	Adopted
Rehabilitation & greening of the road buffer zone, borrow sites, dumpsites, quarries	0	-1	0	+1	+3	+3	+6	Adopted
No rehabilitation & greening of the road buffer zone, borrow sites, dumpsites, quarries	-1	+1	0	-1	-3	-3	-7	Rejected
Best practices in Waste management involving sorting, disposal of wastes use of mobile toilets	0	-1	0	+3	+3	+3	+8	Adopted
Inefficient practices in waste management without waste sorting & disposal nor use of mobile toilets	0	+1	0	-3	-3	-3	-8	Rejected

Source: Consultant, 2020

7. ENVIRONMENTAL AND SOCIAL IMPACTS IDENTIFICATION AND MANAGEMENT

7.1 Introduction

This chapter presents the potential positive and negative impacts and risks that will be associated with the implementation of the RUDP II Phase 3 Project roads in Musanze Secondary City. The analysis of impacts will be related to activities carried out during:

- Construction phase;
- Operational phase;
- Maintenance phase;
- Decommissioning of the facilities such as construction camps, equipment and materials used for construction, operation and maintenance of the roads.

The impact during each project life cycle phase can be categorized into: impact on biophysical environment, socio-economic environment and health and safety impacts.

7.2 Project impacts

The project activities will have potential positive and negative impacts and risks on the biophysical environment (air, water, aquatic and terrestrial ecology, soil) and on socio-economic and cultural environment (land use, finance, employment, hazard and health, security, etc.).

7.2.1 Positive impacts during construction

7.2.1.1 Road safety impacts

7.2.1.1.1 Improved roads safety in the project area

The upgrading of the roads will increase their width to allow two passage carriage ways and pedestrian walkway. Housing standards will be increased and informal houses, which are safe haven for bandits reduced. Side road drains will be equipped with concrete block access bridges to homes and businesses. The provision of the public lights along the roads will increase human safety in the unplanned settlement. Home owners will be also sensitized to avoid dumping litter and other waste in the drains and this will reduce pollution and spread of diseases.

Enhancement measures

The Musanze District and LODA shall:

- *Implement traffic management at construction sites to enhance traffic flow and safety and public road safety awareness activities along roadside communities;*
- *Place traffic signs at all necessary sites in the construction area to reduce traffic congestion and safety problem associated with haulage of materials;*
- *Set up a grievance mechanism.*

7.2.1.1.2 Impact on safety and security in the project area

The upgrading of roads will increase their width to allow two passage carriage ways (for the roads) and walkways. Side drains with concrete block will constitute access bridges to homes and businesses. The provision of the public lights along the roads will increase human safety and decreases the theft in the unplanned settlements. In addition, the upgrading of the roads will increase housing standards and business standards. Home owners will be also sensitized to avoid dumping litter and other waste in the drains and this will reduce pollution and spread of diseases.

Enhancement measures

The contractor shall:

- *Respect the design criteria to put in place measures that would enhance road safety like: provision of sealed shoulders, improved road signs and markings and speed humps;*
- *Put in place proper traffic signs at all necessary sites in the construction area to reduce traffic congestion and safety problem associated with haulage of materials and the construction works.*

7.2.1.1.1.3 Access to homes and services

Settlements in project areas have infrastructures and services. However, due to the poor status of the roads, it takes time to residents to have access to hospital, clinics and markets, and banks. There will be improvement in the living conditions of people specifically women by improving access to home, health facilities, schools, churches, workshops and other services.

7.2.1.1.1.4 Impact on pedestrian traffic

The most important consequence of the construction of the roads is improvement of travel conditions, especially in terms of safety and comfort for pedestrians is the construction of NMTs and walkways. The construction will also facilitate travel during rainy seasons blocked by the formation of mud and ruts largely due to the passage of heavy vehicle. In addition, the construction of streetlight will ensure the safety of pedestrian and their belonging since the visibility will scare away thugs or gangsters. The establishment of road signs and other traffic safety signs will protect pedestrian from accidents.

7.2.1.1.1.5 Reduced maintenance and fuel Consumption costs of vehicles

It is estimated that during the roads operation, there will be total gasoline consumption reduction by cars and motorcycles. Similarly, the number of car damages will be reduced, thereby reducing operational and maintenance costs of vehicles.

7.2.1.2 Improved drainage and its environmental benefits

The improved road sides and exit drainage system and, reconstruction of culverts will reduce erosion rate, disaster and non-sanitary condition and erosion related disasters such as flooding in downstream areas, and properties destruction, and safety. The asphaltting of the roads will reduce dust emission from existing road especially during the dry season where passing vehicles raise the dust that spread in residential areas and spoils roofs, clothes and food and thus causing respiratory disease. Construction, lining, covering of drains and construction of stilling basin will reduce health risks related to malaria, waterborne disease and odor from stagnant water. In addition, better storm water management will contribute to biodiversity protection.

Enhancement measures

The contractor shall:

- *Ensure drainage systems have scour checks;*
- *Ensure drainage systems are covered with concrete blocks;*
- *Ensure drains are extended to the receiving waters*
- *Construct sediments, silt and litter trapping infrastructure at the exit of the drains to avoid sediments spreading the receiving water (e.g. Mukungwa river);*

- *Establish permanent roads and drain cleaning especially along inlets;*
- *Establish an efficient system of waste collection and management;*

The Musanze District shall

- *Regularly monitor solid and waste water management to avoid illegal discharge in the new constructed drain;*

7.2.1.3 Socio economic improvement

The project will improve the social and economic status of people living in Musanze City by opening up the settlements to the other areas for investments and facilitating the people access to employment sites such as schools and universities, health centres and a wide range of social services including churches, markets, lodges, education and local administrative premises of the city. Employment and income opportunities, improved delivery of goods and services will also be increased. The road projects will facilitate poverty alleviation. Thus, the direct impact on land loss will be counterbalanced by the benefits of the upgraded roads and associated drainages.

7.2.1.3.1 Improved income generation and livelihoods

The positive impact during the construction phase is the creation of direct and indirect jobs as works will be performed by local or regional companies (supplies and supply of materials, etc.). The improved roads infrastructure in and the investment expenditure injected into the local economy via for example salaries and wages and raw material purchase, will both have a multiplying effect from which additional jobs and incomes will be generated. The project will contribution to increase in value of land and properties and this will be additional income to the communities that will be invested in the other businesses.

Enhancement measures

The Contractor shall:

- *Give preference to local people for casual laborers. Officials from cells and villages of the road corridor may be involved in recruitment processes basing on Ubudehe categorization.*

LODA shall:

- *Make contractual obligation for the road contractor to hire a specific percentage of*

women;

- *Make a contractual obligation for the road contractor not to hire children for any work to be performed within the campsite or on the site.*

7.2.1.3.2 Improved well-being and increased business opportunities

The improvement and development of means of communication, urban development and live ability are essential for development. The upgrading of the roads in the Musanze City will actively contribute to:

- Opening up settlements areas to new investments in housing and businesses and other infrastructures such as schools, markets, workshops, churches, workshops, public halls;
- Initiate the development of trade across the settlements;
- Opening up and upgrading of informal areas with an untapped potential of the Musanze City to benefits of businesses and housing;
- Improve the economic conditions and the wellbeing of populations and health and hygiene and sanitation of population in the area;
- Improving traffic conditions, the safety and security of users of the roads and reduce travel time and transport and repairing costs;
- Increase the value of construction land and properties (rent and sale values).

7.2.1.3.3 Promote and Attract New Investments

The project is likely to promote and attract businesses and investments along the upgraded roads due to the improvement and reliability transport services which are comparatively cost effective. Shopping and business opportunities are likely to increase all along the upgraded roads.

7.2.1.3.4 Increased Land Value

In the long-term, land values along the upgraded roads will gradually increase as a result of successful operation of the project.

7.2.1.3.5 Increase of tourism

The implementation of RUDP II phase 3 will increase the attraction to touristic destinations across

the Musanze District (see touristic places in Section 5-4).

7.2.2 Negative impacts during construction period

Potential environmental impacts associated with the project area and construction works include: loss of land and assets, soil erosion and compaction, sedimentation of rivers, contamination of soil and water sources, disruption of surface and sub-surface drainage patterns, changes to soil moisture and fertility, edge effect on plants adjacent to cleared areas, deposition of airborne road dust and airborne emissions from vehicles and construction equipment, accidental fires, loss and/or conversion of wildlife habitat, proliferation of invasive plants, disturbance to heritage resources, salvage and disposal of timber, noise and aesthetics.

The proposed sub-project will be primarily confined to public land (the existing Right-of-Way (ROW) but on some area it will require the widening of the existing ROW. This will lead to land take or damage of land and other properties thereon (residential houses, churches, schools, transmission line, water supply, trees and crops). This will also cause disruption of existing environment and social set up and direct economic loss for asset losers and their families in the process.

The main adverse impacts as identified during such discussion include:

- *Loss of agricultural, residential and business properties such as land and houses;*
- *Loss of trees, garden and crops and other natural resources;*
- *Disruption of public utilities and common property resources i.e. water supplies, drinking water tap points, water tanks, power lines and churches respectively;*
- *Disruption of infrastructure facilities such as schools, electricity and communication installations;*
- *Traffic and access to home and public utilities (schools, health centre, churches, etc.).*
- *Impacts associated with materials sourcing areas such as quarries;*
- *Increase in pollution from sites preparation, campsite sitting, dumpsites, material sources, water drainage, increased erosion and sediments, hazardous materials;*
- *Air quality deterioration;*
- *Noise and vibration pollution;*
- *Impacts on the cultural and religious values;*

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- *Occupational health and safety risks (HIV, GBV, prostitution, drug abuse, Covid-19, etc.);*

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

Table 7- 1: Impacts of the RUDP II phase 3 project activities

Impact on	Earth works including quarrying	Laying of pavement	Vehicle & machine operation & maintenance and fueling	Concrete & crusher and asphalt plants	Sanitation & waste (yards)	Project operation	Improper disposal of liquid and solid waste
Air	Dust	Dust	PM, COx, NOx, SOx, Dust Odor, smoke	Dust, PM, smoke	Odor / smoke	PMs, COx, NOx, Sox	
Noise	Noise and vibration	Noise and vibration	Noise pollution	Noise pollution		Noise pollution	
Water	Erosion, siltation,	Contamination from asphalt plant (hydrocarbons & heavy metals)	Contamination by hydrocarbons and heavy metals	Contamination by concrete, aggregates and hydrocarbons & heavy metals	Contamination (BOD, COD, Fecal pathogens)	Contamination by hydrocarbons & heavy metals	Turbid water, Siltation of water
Soil	Erosion, landslide		Contamination by hydrocarbons and heavy metals	Contamination by hydrocarbons and heavy metals	Contamination (Fecal pathogens)		Possible soil contamination
Vegetation and local fauna	Loss of fauna and flora		Degradation of Flora and fauna	Lower productivity use as fuel wood	Tree cutting	Toxicity of vegetation	
Local community	Disturbance (properties, traffic, etc)		Disturbance	Disturbance	Diseases, conflict	Poaching and health & social incidents	Collision with traffic
Worker's health and safety	Increase of stagnant water and disease	Asphalt odor and dust	Collisions with vehicles, Accidental injury/death	Impact on health due to inhalation of dust	Impact on health due to inhalation of dust	Increase in communicable diseases	Collisions with pedestrians

Source: Consultant, 2020

7.2.2.1 Impacts on land and properties

Impacts on agricultural land, crops and properties are one of the most serious impacts of the planned roads reconstruction project. Widening and extension of access trucks will traverse semi-urban areas of the project area. Any crops alongside the roads will be cleared, while houses within the road right of way will be demolished during roads widening and construction works. Houses along the part roads that will undergo re-construction may also develop cracks from vibrations caused by the construction works.

7.2.2.1.1 Project affected People and Properties

- A total of four (4) properties will be expropriated in full (the owners have to relocate and look for land elsewhere) while 245 being partially affected (residual land still viable to support existing land use post expropriation phase). The four fully expropriated properties are located along MUZ3-2 and MUZ3-3 Streets. The four properties earmarked for full expropriation are in Burera village under agricultural use (owned by a male household head) and in Susa village under residential purpose (owned by a woman).
- In general, of the eighty seven (248) properties affected in Musanze City; only (5) are commercial, (165) agricultural and a majority (78) are residential. More details about categories, distribution and location of affected properties are shown in Table 7-2 and Figure 7-1.

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

Table 7- 2: Summary of PAPs Identified along the Project Sections

Project Road	Residential	Commercial	Agricultural	Number of Project affected households.	Number of project affected Businesses	No. Of Affected Land Parcels	No. of affected Property Owners with Crops	No. of affected Property Owners with Structures/Houses	Partially Affected Properties (Partial Expropriation)	Fully Affected Properties (Full Expropriation)
Iposita–Excel School–Eveche-Yawunde Asphalt Rd (MUZ3-1)	2	0	0	8	0	2	2	2	2	0
Nyamagumba –Regina Pacis Sec. School – Susa – Karisimbi Rd (MUZ3-2)	50	5	16	56	36	71	42	45	69	2
Rwebeya Drain (MUZ3-3)	15	0	146	51	1	162	157	4	160	2
MUZ3-4	0	0	0	23	0	0	0	0	0	0
MUZ3-5	0	0	0	0	0	0	0	0	0	0
MUZ3-6	8	0	3	0	0	11	7	4	11	0
MUZ3-7	0	0	0	0	0	0	0	0	0	0
MUZ3-8	2	0	0	0	0	2	0	0	2	0
MUZ3-9	1	0	0	0	4	1	0	2	1	0
Total	78	5	165	138	41	249	208	57	245	4

Source: Fieldwork, 2020

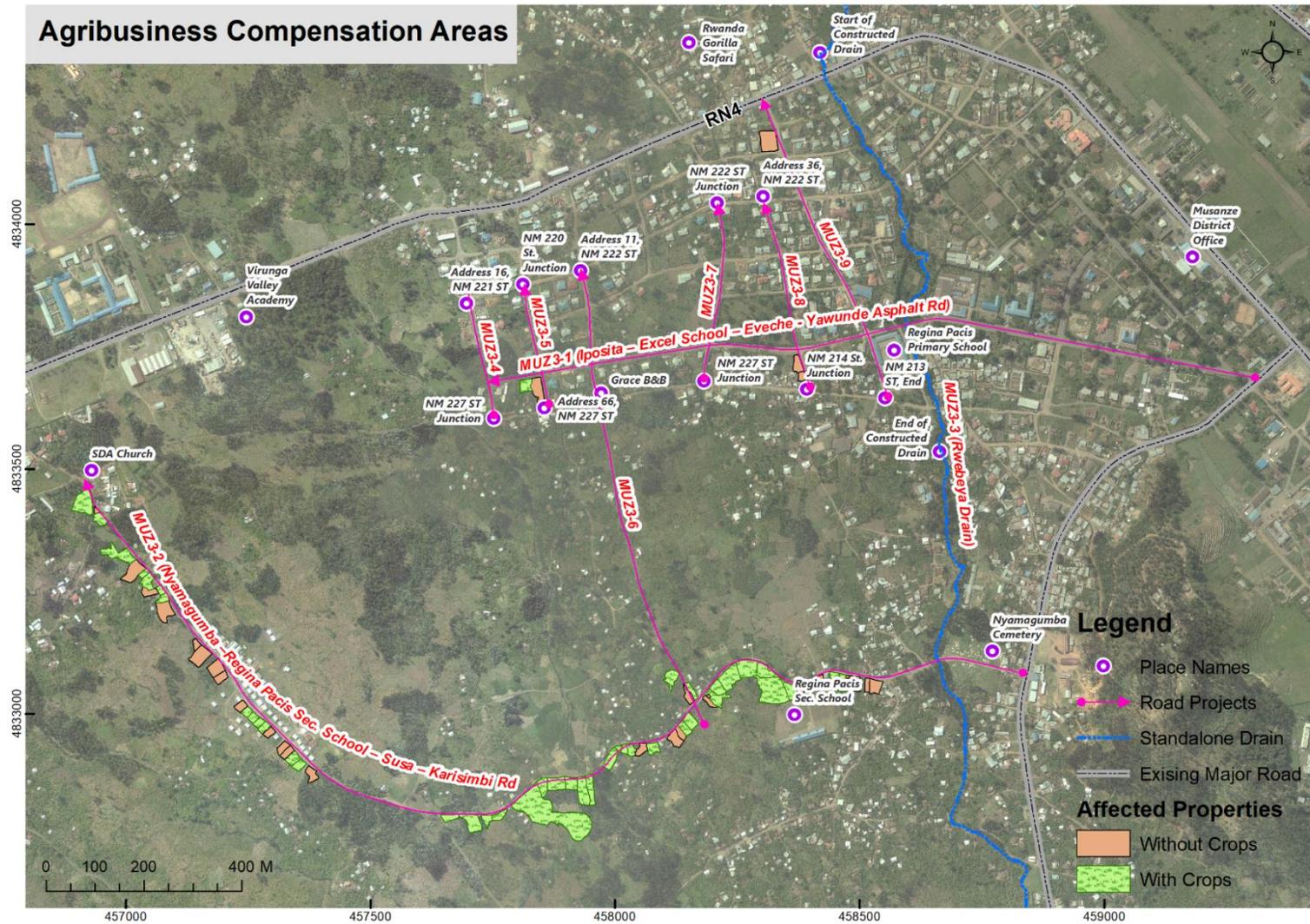


Figure 7- 1: Land parcels with/ without crops along the Muhoza settlements road (example of crops: beans, maize, irish potatoes)
Source: Consultant, 2020

Mitigation measures

Musanze District and LODA shall implement the resettlement measures detailed in RAP which include:

- *Undertaking field surveys to identify and record the status of buildings and properties that can be affected by the ground induced vibration from the project activities;*
- *Assess damages to properties and determine the extent of the damage whether it is repairable or a new property if required all together;*
- *Undertake a temporary measure of giving temporary shelter to the affected family as valuation is on-going, if the property is adversely affected that it's not usable.*
- *Implementing the population resettlement plan in consultation with the effected persons, the services of the districts and the Ministry of Local Government;*
- *Early identification of entitlement for compensation planning of Resettlement and Rehabilitation Action Plan to compensate the losses;*
- *Project affected persons (PAPs) are compensated according to the official compensation rates. The acquisition of the land and private properties will be carried out in accordance with Rwanda Expropriation law for public interests, World Bank ESS 5;*
- *Displaced persons are compensated before their actual moving and start of construction activities;*
- *Compensation for expropriated population is done in accordance with the Land Law No.43/2013 of 16/06/2015 and the expropriation law (32/2015 of 11/06/2015 and WB ESS 5 (Land Acquisition, Restrictions on Land Use and Involuntary Resettlement).*

7.2.2.2 Environmental impacts

7.2.2.2.1 Clearance of vegetation

It is expected that vegetation will be cleared during roads widening at most of all the project roads sections. Roads widening will lead to disruption of small animal's ecosystems, death of animals among others.

Mitigation measures

The contractor shall:

- *Ensure that clearance of vegetation during road widening remains within footprint of the project development;*
- *Avoid unnecessary destruction of the surrounding vegetation, and ensure reforestation of cleared or degraded sites by indigenous species;*
- *Before cutting any trees, count them and show them to the District forestry/environmental officer and the project Environmental and Social Risk Management Specialist for assessment and approval;*
- *For every cut tree, replace it by planting 3 trees (native species);*
- *Preserve (or stockpile) excavated topsoil for future site restoration procedures;*
- *Plant trees in the road reserve and ensure cut trees are replanted elsewhere to improve the green of the site and its environment;*
- *Locate borrow pits in less vegetated areas, far from water bodies, and rehabilitate borrow pits after road work activities;*
- *Appropriately dump the earth material taking into consideration the site future use (e.g. playground or green space).*

7.2.2.2.2 Disruption of protected plants and animal habitats

The proposed roads project activities will pass nearby natural habitats for some plants or animals of national and international importance (Table 7-3). It is expected that disturbance of their habitat or displacement of the species may occur during construction period, given that the construction activities will be moving from one end of the road to the other.

Table 7- 3: Location of the protected plants and Animals species

Species	Status	Location	GPS location: X / W/ Z (in m)
Plant species			
<i>Erythrina abyssinica</i> (Umuko)	NPS	At street NM4 ^{Ave}	0792082/ 9833624/ 1845m
		In Bushozi Village, Ruhengeri Cell, Muhoza Sector;	0792551/ 9832796/ 1824m 0792483/ 9832990/ 1826m
		In Burera Village, Ruhengeri Cell, Muhoza Sector, falls in RoW	0791894/ 9832820/ 1828m
		In Susa Village, Ruhengeri Cell, Muhoza Sector	0790929/ 9833082/ 1855m
		Along the Rwebeya drain, Used as drain bank protection,	0792521/ 9833134/ 1827m
<i>Ficus thoningii</i> (Umuvumu)	NPS	Karama Village, Ruli Cell in Shyogwe Sector Along the existing Rwebeya drain	0792542/ 9832740/ 1808m

NPS: Nationally Protected Species

LC: Least Concern by IUCN

Source: Consultant, 2020

However, it has been observed that the trees occupy already degraded lands by crops and livestock farming activities. The trees are not located within their pristine habitats; instead, they set limits from one farm plots to another and thus, do not have cultural values and rituals for the local people.

Mitigation Measures:

The contractor shall:

- *Where these species cannot be avoided, they will be relocated to other suitable locations that will not be disturbed, under the supervision of qualified specialists from REMA or other competent authority;*
- *Revegetation will incorporate native/ indigenous trees and shrubs of local provenance and aim to maintain, enhance and/ or restore habitat connectivity;*
- *Where possible, areas to be cleared will be worked from one side to another, or from the centre out, to prevent animals becoming trapped;*
- *Avoid wherever possible the habitats used by animal species with conservation interest. Areas used for breeding, nesting, feeding, migration and congregation shall be demarcated and clearly signposted. Access to these areas is prohibited.*

7.2.2.2.3 Impact on degraded natural habitats to the protected animals

The proposed roads construction activities may affect natural habitats to plants and animals. Destruction to these habitats may lead to migration of animal species, lack of food and nest. Restoration of the habitats can be accomplished by passive or active means or combination of both. Passive restoration enhances natural restoration processes, while active restoration involves planting seeds/saplings and taking care of them to avoid predators and disturbances.

Passive restoration measures

- create conditions for natural regeneration such as limit grazing practices by banning, fencing, placing safety nets or other protective means around the stems of the tree species;
- remove invasive species or competitive vegetation by cutting or breaking undesired species;
- create conditions for periodic watering;
- taking actions to prevent wild animals grazing in the afforested areas.

Active restoration measures (best option)

- remove any sprouts and invasive plants that can compete the growth of the afforested plants;
- preserve selected indigenous plant seedlings and saplings to the habitat;
- take action to prevent wild animals grazing by fencing, placing safety nets around each seedling, sapling, etc.
- maintain a favorable water balance (in dry periods of June–August, January-Mach);
- undertake aftercare felling (letting the light in) until the stands develop a good canopy.

7.2.2.2.4 Impacts generated by improper extraction of materials from quarries and borrow pits and dumping activities

Sand, gravel, crushed stone and sand stones are needed for the road base and concrete structures. Potential quarries and borrow pit sites exist nearby the Musanze City. However, final sites will be determined based on a closer comparison of environmental and social impacts. These impacts generated at these sites include visual intrusion because of removal of part of some hills, noise (and its associated impacts on wildlife and people), sedimentation (and associated impacts on water quality) and impacts associated with the transport of material to worksite.

Mitigation measures

Contractor shall:

- *Prepare and get the approval of the management and rehabilitation plan for the borrow pits and dumpsites;*
- *Avoid disposing wastes in wetlands and waterways.*
- *Careful plan sequential exploitation of quarries and borrow pits allowing the exhausted section of the quarry to be reinstated, while starting the exploitation of a new section.*
- *Stockpile the top soil to be used re-vegetation. Re-vegetation shall be done with the ppreviously existing vegetation. Rehabilitate the borrow pits and dumpsites to the satisfaction of the supervising firm, district and LODA environmentalists, and in conformity of the agreed environmental mitigation plan.*

7.2.2.2.5 Extraction and use of materials

Roads and drainages construction materials such as stones, gravel, sand and water will be required for the construction activities and will be obtained from quarries, rivers and land. Since some quantities of these materials will be required for the construction of road, the availability and sustainability of such resources at the extraction sites will be negatively affected, as they are not renewable in the short term. In addition, the sites from which the materials will be extracted may be affected in several ways including landscape changes, risk of displacement of people, animals and vegetation, poor visual quality and opening of depressions on the surface leading to destruction of agricultural crops, injuries to human and animal.

Mitigation measures

The contractor shall ensure that new extraction sites:

- *Are not located in the vicinity of settlement areas, cultural sites, water resources or any other valued ecosystem component, or on high or steep ground or in areas of high scenic value, and shall not be located less than 1km from such areas;*
- *Are not located adjacent to stream channels wherever possible to avoid siltation of river channels;*
- *Are not located in forest reserves. However, where there are no other alternatives, permission shall be obtained from the appropriate authorities and an environmental impact study shall be conducted;*
- *Shall be easily rehabilitated. Areas with minimal vegetation cover such as flat and bare*

ground, or areas covered with grass only or covered with shrubs less than 1.5m in height, are preferred.

- *Shall have clearly demarcated and marked boundaries to minimize vegetation clearing.*
- *Vegetation clearing is restricted to the area required for safe operation.*

7.2.2.2.6 Increasing soil erosion and sedimentation

Soil erosion is likely to occur during slope cuts and excavation works. Erosion is often caused by failing to keep water off road surfaces. Clearing of vegetation cover during roads expansion, construction of culverts and site drains, detours for collecting construction materials from quarries/borrow areas will expose soils during rainy seasons and may result in incremental soil erosion and sedimentation of river courses. Therefore, structures need to be developed to reduce soil erosion that may lead to sediments loading and silting of water resources.

Mitigation measures

The contractor shall:

- *Appropriately drain water from excavations and transfer it to the sediment retention pond for sedimentation before discharging to the environment;*
- *Break the runoff velocity using ditches, series of rock check dams or other arrangements*
- *Maintain the natural hydrological flow direction unless diverted for protecting buildings, farms or other properties;*
- *Cover stock piled materials with fabric;*
- *Select and implement sediment control devices such as: i) site fencing; ii) straw bales; iii) sediment basins or traps; iv) storm inlet traps; vi) rock check dams and vii) interception berms/swales;*
- *Re-vegetate with trees and grass indigenous to the sites all sites with bare soil along RUDP II phase 3 sub-projects to avoid further erosion.*

7.2.2.2.7 Impact on surface water

Construction activities during the rainy season will increase the amount of sediments running in to water resources as trenches/drains will be excavated and culvert constructed to increase the

conveyance of water. Dumping of soil waste has been observed in existing drains. Excavation of drains, cutting, clearing of the top earth and widening of the road will expose the soil to erosion which will range from rills, to gully depending on the season in which these works will be undertaken. This will threaten not only the agricultural production, but also siltation will pollute the Mukungwa River.

Mitigation measures

The contractor shall:

- *Install drainage systems with scour checks;*
- *Cover drainage systems with concrete blocks;*
- *Extend drainages to the receiving water resources;*
- *Redesign the road side drainage and extend them downstream to the recipient.*

7.2.2.2.9 Gas emissions

The main primary pollutants that will be produced by these construction activities including carbon dioxide (CO₂), carbon monoxide (CO), nitrogen oxide (NO_x), sulphur oxide (SO_x), chlorofluorocarbons (CFC), ammonia (NH₃), odors, radioactive pollutants and fine particulates along the way as a result of diesel combustion. Secondary pollutants include: (1) particulate matter formed from gaseous primary pollutants and compounds in photochemical smog such as nitrogen dioxide, (2) ground level ozone formed from NO_x and volatile organic compounds. Such emissions can lead to several environmental impacts including global warming and health impacts.

Mitigation Measures

The contractor shall:

- *Use the cleanest fuels (e.g. on-road grade diesel) within technically feasible possibilities;*
- *Use of low-sulphur diesel for fuel-powered machinery to minimize oxides of sulphur emissions;*
- *Properly maintain vehicles and machineries to comply with relevant emission standards and the Prime Minister's Instructions N°004/03 of 27/12/2013;*
- *Avoid unnecessary idling of construction vehicles at the construction sites to reduce the emission of exhaust fumes. This should be enforced through a penalty system, where*

offenders are warned, then fined. Additionally, all construction idling equipment or machinery should be turned off;

- *Avoid peak traffic hours or routes with heavy traffic.*

7.2.2.2.11 Decline in scenic quality

Upgrading of the existing roads may adversely affect view sheds. Cumulative effects of poorly managed quarries and borrow pits supplying building materials for road projects may also cause loss in scenic values. Clear and proper diversions should be put in place to enable people reach their intended destinations.

Mitigation measures

The contractor shall:

- *Ensure proper and progressive restoration of the borrow area site after gravel extraction and dumpsite after closure through remediation of borrow pits, landscaping, and grass planting where appropriate.*
- *Ensure that proper drainage system to handle storm water run-offs is put in place so that soil/land erosion and deposition of materials originating from the Borrow area or dumpsite in areas surrounding area site is controlled.*
- *Ensure that he concerns of any such community regarding the operation of the Borrow area or dumpsite, are addressed frequently and in consultation with the Musanze District Environment Officers, LODA, REMA and other relevant lead agencies.*
- *Work with the grievance committee involving the executive secretary of the village, elders, and district officers is set up to deal with complaints of the community.*

7.2.2.3 Health, Safety and Sanitation impacts

7.2.2.3.1 Risks of accidents and injuries to workers

Because of the intensive engineering and construction activities including grinding and cutting, masonry and excavation works, transportation, car and truck accidents among others, construction workers will be exposed to risks of accidents and injuries. Such injuries can result from accidental falls from high elevations, injuries from hand tools and construction equipment cuts from sharp edges of metal sheets, failure and collapse of machines. Open ditches, unfinished works and

improper storage of materials can lead to accidents to both the public and workers.

Mitigation measures

The contractor shall:

- *Provide to all workers all relevant personal protective equipment (PPEs) including safety gear and ear masks, nose masks, ear muffs, helmets, overalls, industrial boots, etc.*
- *Ensure that all equipment are in good working conditions to prevent occupational hazards;*
- *All accidents should be reported to LODA within 12 hours which shall then be reported to the WB within 24 hours after occurrence;*
- *Enforce wearing the PPEs at all times while at work;*
- *Establish and implement a health and safety plan;*
- *Provide regular trainings to the workers and community.*

7.2.2.3.2 Spread of Communicable diseases

Increase in income for the local workers may attract sex workers and other forms of sexual behaviors, and this will lead to increased public health risks (including an increase in prevalence of sexually transmitted diseases such as HIV/AIDS) as the project will be implemented in urban area where informal sex workers are found. In addition, local climate and hygiene conditions may create mosquitoes breeding sites, as well as contamination of infectious respiratory secretions (e.g. Covid-19) that is becoming pandemic in Rwanda.

The contractor shall:

- *Establish HIV-AIDS campaign awareness mechanism since improved human mobility and income on the transport sector especially go in tandem with increased HIV transmission. Initially, a strong awareness campaign shall be undertaken (media, rural radio, campaigns, theatres forum, sketch, etc.);*
- *Be encouraged to use local labor force Robust measures to address the risk of gender-based violence will be implemented through: a) training of workforce about refraining from unacceptable conduct, b) informing workers about national laws, c) introducing a Worker Code of Conduct as part of the employment contract, d) introducing sanctions for non-compliance (e.g., termination) e) cooperation with law enforcement agencies and will*

provide workers opportunity to spend their time off away from the host community;

- *Provide workers with mouth masks (at least two-2 per day) to lower risks of transmission of Covid-19 virus when speaking, coughing, sneezing;*
- *Avail an infrared digital thermometer to read forehead temperatures of workers (37⁰C/98.6 F, core body ^o) before and after works;*
- *Enforce physical distancing practice at site as Covid-19 spreads mainly among people in close contact for a prolonged period;*
- *Avail clean and sufficient water, container of hand soap/sanitizer for hand washing;*
- *Avail a registration book at main entrance (specifying names, tel. number, village, cell, sector, district of every one) for future tracking in case a Covid-19 victim is found at site.*

7.2.2.3.3 Accidental Oil and fuel Spills and Leaks

The Project will involve use of equipment diesel oils. In the event that these oils accidentally leak into the environment, they could result to significant contamination of soil, surface and underground water resources.

Mitigation measures

The contractor shall:

- *Checking and regular servicing of his construction equipment.*
- *Re-fueling at safe locations,*
- *Use of spill kits and applications of emergency spill procedures.*
- *Provision of a 20 cm layer of sand and ballast at the machinery storage area and diesel tank section, this layer act as sink to potential oil spills and will be replaced when saturated.*
- *No vehicles should be serviced/maintained on site – they should use licensed garages.*

7.2.2.3.4 Sanitation problem at working sites

Construction workers will require sanitary facilities for their primary needs at worksites. Working

conditions with no proper sanitation may result in sanitation hazard with open defecation or conflicts the local residents on the use of toilets or transmission of poor hygiene diseases from pollution of the environment.

Mitigation measures

The contractor shall:

- *Install the sanitation facilities (portable pit latrines at the workers sites and clearly distinguish between female and male with labels;*
- *Avail solid waste bins and sort garbage according different categories (e-wastes, chemicals, plastics, metals, glasses papers/wood and biodegradable wastes)*
- *Liaise with the licensed garbage disposal companies existing the city and agree to pay waste collection fee;*
- *Provide sufficient and separate toilets for men and women with toilet papers and water points.*

7.2.2.4 Waste generation impacts

Large quantities of solid waste will be generated by various project activities at the site. Inappropriate solid waste disposal could lead to contamination of soil, ground water, and streams and the spread of pests and communicable diseases. Such solid waste materials can be injurious to the environment through blockage of drainage systems, choking of water bodies and negative impacts on human and animal health. Human excreta are also expected to be produced by workers all along the roads during the construction activities. Appropriate sewage and solid management measures will be put in place.

Mitigation Measures

The contractor shall:

- *Develop a solid waste management plan;*
- *Collect, recycle or dispose to approved sites all waste lubricants and oils;*
- *Have central locations for refueling of vehicles and fuel powered machinery;*
- *Place plastic sheeting under hazardous material and their storage areas to collect and*

retain leaks and spills;

- *Collect the contaminated runoff from oil storage areas for disposal in approved sites;*
- *Collect and into drums and transported to approved disposal sites;*
- *Well pack and transport the bitumen to avoid spillages;*
- *Avoid scattering empty bitumen drums along the construction or campsite. A central place for storage of empty bitumen drums awaiting disposal to appropriate sites should be got;*
- *Regularly service and maintain vehicles and construction machinery that are likely to spill fuel and oils;*
- *Acquire permits/ approvals for fuel storage and transportation;*
- *Provide mobile toilets for workers.*

7.2.2.5 Social Impacts

7.2.2.5.1 Impacts in construction yards

The contractor will have a mobile construction and workshop yards for construction material.

a) Insecurity in and around the storage yards

These yards could attract up thieves who will be motivated to steal different items available in the camps.

Mitigation measures

The contractor shall ensure:

The construction yards/camps should be fenced for the safety and security purpose of the construction material.

7.2.2.5.2 Social Evils: Slums, Alcoholism and Prostitution

There would be an increasing of public health risks such as increasing prevalence of HIV&AIDS and other Sexually Transmitted Diseases (STDs) due to workforce from immigrants' workers. There could also be increased drug and alcohol abuse mainly during construction period that can place stress on social, cultural and family structures. The sources of stress may include (1) problems associated with the compensation process and potential community discord such as (2) risk of impoverishment relating to difficulties in adapting to new livelihood systems; (3) potential

exploitation by others in the relocation/compensation process; (4) possible conflicts within or between communities, or with government agencies.

Mitigation Measures

The contractor shall:

- *Carry the Sensitization programmes targeting the project workers through radios, films, meetings and other means of media about the likely the social evils arising from the presence of the project should be undertaken by the contractor to prevent such evils as alcoholism, prostitution;*
- *Increase the awareness related to health problems arising from social promiscuity. Contractors should collaborate with health officials to sensitize workers about social, and health safety. Gambling and consumption of illicit alcohol within camps used by construction crews should be strictly prohibited;*
- *Prohibit gambling and consumption of illicit alcohol within camps used by construction crews.*

7.2.2.5.3 Impact related to dust and particulate emissions

The impacts of emissions of gas and dust will be felt at the immediate vicinity of the working area. They may be caused by the operative gear in restricted areas and for a limited time. In areas of extractions of materials such as stones for crushing and masonry, and stone crushing site, the air quality may be deteriorated by the emission of dust by the particular asphalt production plants. Emanation of bad smells due to the preparation of the tar (bitumen) may be experienced. The intensity of these impacts can be described as medium.

Mitigation measures

The contractor shall:

- *Suppress dust emissions to dust prone areas (such as quarries and borrow pits) by regular sprinkling water or by covering stockpiles;*
- *As much as practical cover the material stock piles to reduce dust;*
- *Use protective clothing like helmets and dust masks on construction sites;*
- *Limit the speed of haulage trucks to reduce dust levels. To ensure this, speed humps shall be*

introduced along construction routes, and the drivers of construction vehicles shall be obliged to adhere to speed limits through a penalty system;

- *Regular maintenance of plants and equipment.*

7.2.2.5.4 Noise and vibration pollution

During construction and decommissioning, traffic movements, compaction and earth moving, loading and unloading of materials, will generate noise increase that will affect residential and public places (see Figure 4-2 and Figure 5-5) for the location of sensitive infrastructures to the noise. The impacts associated with such activities include:

- a) Potential disturbance to residential, social and commercial and institutional premises along the proposed construction roads;*
- b) Noise and vibrations caused by heavy machinery could potentially cause damage to buildings along the construction areas and materials sites;*
- c) Non-observance with the occupational health and safety to the construction workers;*

Mitigations measures

The contractor shall:

- *Inform the neighboring communities of any unusual construction activities with extraordinary noise levels such as to include time, expected duration and any safety precautions;*
- *Undertake structural integrity assessment of existing buildings and other structures along the road as control for damages from vibrations;*
- *Utilize low noise machinery for the construction to the extent possible (Noise levels be below 90 dB to the nearest receptors by days);*
- *Undertake assessment of building structures within the work areas with respect to their capacity to withstand compaction vibrations;*
- *Provide all construction workers with relevant safety gear including ear masks;*
- *Avoid use of explosive in quarries;*
- *Install the stone crushing plants according to manufacturer's specifications (if possible at least 2km away from any sensitive receptors such as residential areas, religious places,*

health centres, schools);

- *Instruct drivers to limiting the speed of haulage vehicles to a level that will produce the least amount of noise, can help to minimize the increase in noise levels.*

7.2.2.5.5 Gender aspects

Women will be more impacted by the project disruption of water and power supply than men as women are usually victims for inadequate home water supply and power services. It will be important to avoid disconnection to drinking water and power supply to maximize tangible benefits for the local population including women. Other impacts related to gender are related to the fact that women may not benefit equally from employment as contractor tend most of the time to recruit men considering experience and physical capabilities. Moreover, some project activities (disruption of utility services like water, loss of land and properties and job/income to men) may put women at high risk for Gender Based Violence (GBV).

Mitigation measures

The contractor shall:

- *Ensure women get employment in the project at the same level and with the same payment as men (consider a gender quota of at least one-third (1/3) female¹⁴ as per national policy);*
- *Ensure equal payment to men and women. If compensation payment is paid to a bank account, both men and women need to have access to it;*
- *Give priority in staff recruitment to households headed by women and that are particularly vulnerable; Women workers will be given same PPE as men- helmet, gloves, vest, masks, water provisions, toilets for women, toilet paper, first aid, etc;*
- *Plan relocation of utilities well to avoid disruption that may affect the local communities;*
- *Strict adherence to Rwandan Law 2 of N°59/2008 of 10/09/2008 on prevention and punishment of GBV in all project formations and particularly GRMs procedures;*
- *All workers to sign a Code of Conduct;*
- *Prepare a GBV Action Plan which will form part of the contractor's ESMP;*

¹⁴ ESMF, 2020 (Article 9 of the Rwandan Constitution of 2003 introduces a mandatory women's quota of 30% in all decision-making organs)

- *In case of a grievance emanating from GBV, a special GBV task force will be established and will be in charge of receiving, assessing and handling all cases of sexual harassment and GBV. The taskforce will also handle GBV throughout the project implementation stage. The task force includes project staff namely: Human resource officer and social safeguards specialist from the contractor, Social Safeguards Specialist from the concerned PIU (LODA, Musanze district administration), Gender Monitoring Officer and Environmental and Social Management Specialist from the District , Social Safeguards Specialist from the supervising firm, Women representative from the GRC at cell level and GBV service provider in the area of GBV prevention and handled referral pathways for the GBV survivors.*

7.2.2.5.6 Impacts on mobility and road safety

The land preparation and excavations will lead to a temporary disruption of traffic, normal access to property, housing plots, schools and churches, etc. The scope of these impacts can be characterized as significant as the project activities related to the execution of the works will affect the normal transit in rural areas, and the population living in the immediate environment of the project sites.

The impacts on road safety will be high. Hazard areas due to excavations in front of houses, and blind spot will be created with the machinery, materials placed in the road. Lack of clarity of safe pedestrian zones, See some photos below (Plate 7-1).





Plate 7- 1: Illustration of safety risks from hazard areas due to excavations in front of houses and blind spot created with the machinery and materials placed in the road

Mitigation measures

The contractor shall:

- *Ensure roads and drainages safety is improved through good engineering design i.e. improving sight distance and visibility, especially approaches to bends, junctions, bridges, etc, and at roadside settlements;*
- *Install clear road signs including road furniture;*
- *Install shoulders throughout the length of the road to discourage parking on the road;*
- *Provide appropriate road signs and road markings in locations where standards are compromised to warn drivers of safety hazards.*

7.2.2.5.7 Interference with business and daily activities during excavation and construction

Demolition of structures on the road reserves will lead to interference with business activities and basic earning. Most of these businesses acquire loans from relatives and micro finance, banks operating in the country to stock merchandise. Traders, pharmacists, informal markets, mobile money stands, and motorcycles parking sites will be affected.

Mitigation measures

Contractor shall:

- *Provide the access road/facilities to all buildings especially those accommodating business*

activities and people's homes;

- *Provide alternative temporary spaces for informal businesses (mobile credits selling stands, motorcycles parking sites);*
- *Engage with formal businesses owners in dialogue on potential periods of disruption;*
- *Conduct the construction works in phases so as to allow some businesses to continue;*
- *Provide temporal access bridges to the businesses during construction works and permanent durable access to both business features and community's homes;*
- *Provide appropriate information to potentially affected local communities prior to the beginning of any works in order to allay fears, complaints or potential risks due to lack of information or awareness about the project activities;*
- *Ensure provision of the disability accessibility including footpaths and access with railings and handrails.*

7.2.2.6 Disastrous impacts

7.2.2.6.1 Fire outbreak

Risks to human safety are related to fire and handling of construction material including fuel asphalts and other substances. The scope of these impacts is limited; they are for the workers and depend on compliance with safety requirements normally expected.

Mitigation Measures

The contractor shall:

- *Put in place and implement a fire prevention and fighting plan;*
- *Provide adequate number of fire extinguishers at the workshops, fuel and bitumen storage areas, workers' camps, asphalt plants and all campsites, duly serviced and located at easily accessible points.*
- *Have part of the work sites designated as a fire evacuation/assembly area.*
- *Have some staff adequately trained in fire fighting operations.*
- *Provision of safety signage such as "No smoking" at workshops, fuel and bitumen storage areas, workers' camps, asphalt plants and all work sites where fire hazards are likely to occur.*

- *Ensure the availability of a health centre/ hospital and transport emergency vehicles (ambulance).*

7.2.2.6.2 Impact on utilities

The construction of the existing roads will involve its considerable widening. The widening of these roads and drainages will necessarily necessitate relocation of power lines, water supply pipes and communication cables. Relocation of power lines would cause temporary disruption of supply to consumers, public inconvenience and financial loss to utility operators.

Mitigation measures

The contractor shall:

- *Obtain from the utilities agencies definition and details of all public utilities sites within 50 m of the works, prior to undertaking any work;*
- *Accurately locate all services to reduce risks of damage to power line, water pipelines and telecommunication lines;*
- *Fix the damage to the satisfaction of the utility agency at the his cost and; reparation work shall be treated as an emergency and undertaken without undue delay;*
- *Design and construct adequate and appropriate under or over passage crossing structures at the existing roads and major paths crossings to allow easy/free and safe movements of people with their goods/ and some of which also for motorized traffic.*

7.2.3 Negative impacts of the roads operation

7.2.3.1 Increased accidents and death to human, domestic and wild animals

If appropriate speed regulating measures and signage are not used along the road and if road ethics and adherence are not enforced, the upgraded road will result in increased accidents to humans and domestic animals roaming the area especially around very dense settlement of Muhoza and public places such as Nyamagumba Centre (see Figure 5-2). The traffic jams may occur and this could also lead to inconveniences to traders and commuters along the road or those using the road.

Mitigation Measures:

The district and Traffic police shall:

- *Install road signage posts, zebra crossing, provide speed humps near villages, markets, schools to warn the public about danger and other critical location;*
- *Ensure pedestrians have adequate footpaths along roads, through villages or near community facilities;*
- *Implement road safety education and training to local people and drivers on the code of conduct at construction sites;*

7.2.3.2 Interference with the traffic flow

The well upgraded road may lead to increased traffic wanting to use the road and this may even lead to traffic jams especially at junctions. Humps could be erected to safeguard the school children of adjacent schools or for those using the hospital. The traffic jams could also lead to inconveniences to traders and commuters along the road or those using the road.

Mitigation Measures

The district and Traffic police shall:

- *Install road signs for maintenance activities;*
- *Ensure pedestrians have adequate footpaths along roads, through villages or near community facilities;*
- *Implement road safety education and training to local people and drivers on the code of conduct at maintenance sites;*
- *Provide road signage posts, zebra crossing at critical locations.*
- *Indicate diversion routes during construction;*

7.2.4 Negative environmental impacts of decommissioning activities

7.2.4.1 Solid waste

Although demolition waste is generally considered as less harmful to the environment since they are composed of inert materials, there is growing evidence that large quantities of such waste may lead to release of certain hazardous chemicals into the environment. Demolition of the project will involve dismantling camps, equipment and fixtures at contractor's yard and related infrastructure will result in large quantities of solid waste. The waste will contain the materials used in construction including concrete, metal, cement, oil, bitumen, sealants and fasteners.

Mitigation measures

The contractor in decommissioning shall:

- *Reuse, recycle the removed materials for other purpose otherwise disposed to a licensed waste disposal site;*
- *Donate reusable demolition waste to charitable organizations, individuals and institutions*

7.2.4.2 Generation of wastewater

Demolition of supply lines will also lead to increased waste water and interference with other community members. This wastewater may join existing rivers networks and that will lead, especially in rainy season, to increase in pollution.

Mitigation measures

Impacts related to waste generation will be mitigated as described previously in the section of waste generation (7.2.2.4.1) and sanitation problem (7.2.2.3.3).

7.2.4.3 Dust emission

Potential dust emission will be generated during demolition works. This will affect demolition staff as well as the neighboring residents.

Mitigation measures

Mitigation measures as described above in the section 7.2.2.2.7 shall be implemented by the contractor.

7.2.4.4 Increased in noise and vibration

The demolition works will lead to potential deterioration of the acoustic environment within the project site and the surrounding areas.

Mitigation measures

Impacts on the acoustic environment will be mitigated as described previously in the section (7.2.2.2.9).

7.2.5 Cumulative impacts

Cumulative impacts are possible considering the project site (mainly urban) with many projects taking place there and in its surroundings. These project include but not limited to other development projects such as construction of roads, buildings, schools, shopping malls and hotels in the Musanze City. This will cause key impacts such as:

- *Increased construction and renovation due to the attractiveness of the areas (informal settlements) to businessmen, residents and tourists travelling to the sites;*
- *Increased pressure on agricultural land and natural resources such as trees and wildlife due to urban expansion;*
- *Increased frequency and severity of vehicle accidents;*
- *Some improvement in poverty reduction especially in informal settlements that will be upgraded progressively to formal ones;*
- *Considerable expansion of businesses, hotels and settlements characterized by lack of planning (urban sprawl);*
- *Larger land acquisition and resettlement, community disturbance, dust and noise during construction and larger noise impact during operation.*
- *Increased traffic, loss of vegetation, civil air-borne dust, waste generation, community disturbance.*

Mitigation measures

With effective implementation of good construction management measures, the cumulative impacts can be adequately mitigated to acceptable levels. These cumulative impacts could be effectively managed by:

- *Adopting proper mitigation measures with minimum impacts (sharing construction materials, dumpsites to minimize dust, noise, carbon emissions, waste generation);*
- *Education of construction workers to minimize social disturbance and cultural conflict;*
- *provision of temporary access to local traffic; timely compensation for the lost items;*
- *Proper maintenance of the existing community access roads, timely relocation of water pipes, communication lines and other utilities and timely restoration/strengthening of project sites upon completion of construction.*

7.3 Environmental and Social Management Plan

An Environmental and Social Management Plan (ESMP) has been developed for RUDP II phase 3 to assist the developer (LODA) and the project management team (the Musanze City, contractor and supervisor) in mitigation and managing environmental and social impacts and risks associated with life cycle of the project (Table 7-4, 7-5, 7-6). Other relevant project partners are Rwanda Development Board (RDB) in charge of the issuance of ESIA Certificate and Rwanda Environmental Management Authority (REMA) in charge of monitoring of the implementation of the project ESMP.

This ESMP defines the measures to reduce, prevent and mitigate potential safety, health, social and environmental risks associated with the project and detail all the necessary mitigation measures, their financial costs, as well as the persons responsible for their implementation and monitoring. This ESMP also improves environmental performance while ensuring compliance with applicable National regulations and the World Bank environmental and Social standards during the construction, operational and eventual decommissioning phases of the project.

The ESMP is mandatory for all contractors and subcontractors during construction and it also includes measures to be developed by the District and ensure that mitigation and enhancement measures continue throughout the operating life of the project. The ESMP include a Monitoring plan that is also mandatory and includes certain parameters to be measures during both the construction and operational phases of the works to ensure that impacts are fully monitored and that necessary mitigation measures are applied.

The ESMP implementation will be evaluated in future environmental audits. Thus this ESMP ensures that the project implementation is carried out in accordance with design by taking appropriate mitigation measures to minimize impacts on the environment and people during construction and operation phases. It emphasizes how the development may impact on relevant environmental factors and how these impacts may be mitigated and managed according to National regulations and the approved ESF instruments (ESMF, ESCP, SEP, LMP, etc) as approved by the World Bank.

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Table 7- 4: Environmental and Social Management Plan during Designing/Planning Phase

Project activities	Negative impacts/ Environmental and Social Standards	Prevention and Mitigation measures	Responsibility		Cost estimate in Rfw
			Implementation	Supervision	
Land acquisition for road widening, diversion, extraction of construction material, disposal of spoil materials, campsite installation;	Loss of land and destruction of properties (houses) Affected people are underpaid; ESS5, ESS1	Avoid where possible agricultural land/properties, social/religious institutes and fish habitat during finalization of siting/ alignment infrastructure; Avoid the housing and commercial structure during the finalization of the road alignments and location of water drainages system/culverts; Prior to start road construction activities, a fair compensation at full replacement cost of properties and lands shall be conducted based on the WB policy and National Expropriation Law and districts expropriation procedures; Ensure participation of owners and local administration in all compensation process;	Contractor;	Environmental and Social specialists; Supervision firm;	857,929,683.6 0

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Project activities	Negative impacts/ Environmental and Social Standards	Prevention and Mitigation measures	Responsibility		Cost estimate in Rfw
			Implementation	Supervision	
	Loss of vegetation/ trees/ animal habitats along the road alignment due to road widening, creation of diversions, borrowing activities, camp sitting; ESS1; ESS6;	<p>Ensure that clearance of vegetation remains within footprint of the project development;</p> <p>Avoid unnecessary destruction of the surrounding vegetation;</p> <p>Before cutting any trees, count them and show them to the District forestry/environmental officer and the project Environmental and Social Risk Management Specialist for assessment and approval;</p> <p>For every cut tree, replace it by planting 3 trees (native species);</p> <p>Avoid encroachment into rivers, flood plains and banks;</p> <p>Preserve (or stockpile) excavated topsoil for future site restoration procedures;</p> <p>Locate borrow pits, dumping sites and quarries in less vegetated areas, far from water bodies and, rehabilitate them after road work activities;</p> <p>Appropriately dump earth material, considering the site future use (e.g. playground or green space);</p> <p>Re-vegetate each side of the road, borrow dumping sites with ornamental grasses, fruit or indigenous tree species, according the Re-vegetation Plan in section 7.9 (plant three trees for one tree cut)</p>	Contractor; Landscaping specialist;	REMA; LODA; District; Supervision firm;	4,000,000

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Project activities	Negative impacts/ Environmental and Social Standards	Prevention and Mitigation measures	Responsibility		Cost estimate in Rfw
			Implementation	Supervision	
Extraction of construction materials;	Competition/ Over use of resources in the project area (e.g. gravel, sand and hard core); ESS3	Extract required construction materials through accurate budgeting and estimation of actual construction requirements to ensure that materials are not extracted or purchased in excessive quantities; Ensure that wastage, damage or loss (through runoff, wind, etc) of materials at construction sites is kept minimal, as these would lead to additional demand for and extraction/ purchase of the materials; Consider reuse of excavated materials and use of recycled materials to reduce the amount of raw materials extracted as well as reducing impacts at the extraction sites; All exhausted quarries and borrow pits should be isolated and protected to usable state.	Contractor;	Supervision firm;	1,000,000
Excavation, cutting and movement of heavy construction machinery;	Disruption of utilities (live electric and tele-communication cables, water pipe) and exposure of damaged utilities to the public and workers; ESS1	Prepare procedures for rapid notification to the Public Utilities Board and assistance with re-instatement, in the event of any disruption; Prior to start construction, the utility services (electrical cables, tele-communication line, water supply pipeline) should be shifted with the consultation of the relevant organizations; Inform the local community before starting excavation, cutting, removal work; Carefully remove the utilities that are connected to any structures;	Contractor;	Environmental and Social specialists; Supervision firm;	Part of the BoQ related to relocation of public utilities

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Project activities	Negative impacts/ Environmental and Social Standards	Prevention and Mitigation measures	Responsibility		Cost estimate in Rfw
			Implementation	Supervision	
All construction works	Dust and Noise pollution at construction sites; Vibration effects to structures along road alignment; Surface water contamination and impacts on aquatic fauna; ESS3	Notify the adjacent community before starting the construction work; Spraying of water in the dry land or from where there is a possibility to generate dust; Proper Health and Safety measures for the workers such as using of appropriate PPE (helmet, Earplug, musk, safety shoes, hand gloves etc.) should be taken to avoid any accidents at work place; Construct noise barrier around the dismantling sites; Stop the engine when it is not required; Ensure that earth wastes, sediment and stockpiles are safe enough disposed not to contaminate water bodies and aquatic diversity;	Contractor;	Environmental and Social specialists; Supervision firm;	2,000,000
Setting up construction camps	Land encroachment; Solid and liquid waste from the construction camp; ESS3;	Construction camps shall not be constructed within a distance of 50 m from the water bodies; Avoid productive land and away from the settlement during the selection of land for the setup of construction camp; No solid and liquid waste discharge into the water bodies; Instruct workers to maintain clean environment in the camps.	Contractor;	Environmental; Supervision firm;	Cost covered in the site installation budget
Total: 864,929,683.6 RwF					

Source: Consultant, 2021

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Table 7- 5: Environmental and Social Management Plan during Construction Phase

Project activities	Negative impacts/ Environmental and Social Standards	Prevention and mitigation measures	Responsibility		Cost estimate (Rwf)
			Implementation	Supervision	
Road widening, construction, Excavation, cutting; Compaction; extraction of borrow and quarry material and Transport of Logistics	Destruction of houses, commercial business structures that may lead to loss of livelihoods and income; ESS5	<p>Undertaking field surveys to identify and record the status of buildings and properties that can be affected by the ground induced vibration from the project activities;</p> <p>Avoid affecting the number of housing and commercial structure during the alignment and location of road works and drains;</p> <p>Undertaking reparation of damages (e.g. cracks in buildings) from the ground induced vibration at the satisfaction of the owners early on to avoid irreversible damages. In case of irreversible damages, the owners will be compensated following ESS5 requirements.</p> <p>Consider providing job opportunities for the affected people.</p>	Contractor; Social specialist in case compensation is needed;	MININFRA; REMA; LODA; District; Supervision firm;	Covered in Expropriation fee;
	Traffic and /or construction related accident and inconveniences due to reduced traffic area used by construction vehicles, road uses including students, women, children; ESS4	<p>Preparation of a Traffic Management Plan (TMP) for each subproject – contractor will be prepared this plan before the starting of construction and follow it strictly;</p> <p>Implement road safety measures such as speed breakers/ humps, warning signs/lights, road safety signs, flag-persons (divert traffic to follow alternative routes) near villages, schools, university; churches, markets, health centre to warn the public about dangers and ensure uninterrupted traffic;</p> <p>Establish and implement a health and safety plan</p> <p>Provide regular trainings to the workers and community</p> <p>Report immediately (before 24 hrs) the incidence/accident to the client</p> <p>Implement road safety education and training to local people and drivers on the code of conduct at construction sites;</p> <p>Workers will not use their mobile phones during driving and when operating equipment;</p> <p>Avoid/ restrict as possible the obstruction of normal traffic and road use; In case it proves unavoidable, alternative route to be availed for road user</p> <p>Emergency vehicles must be available for use by ambulance, police or fire vehicles; Implement all measures detailed Sections 7.7 (Community Health, Safety and Security Management Plan);</p> <p>All workers to sign a Code of Conduct.</p>	Contractor	REMA; LODA; District; Supervision firm;	12,000,000

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Project activities	Negative impacts/ Environmental and Social Standards	Prevention and mitigation measures	Responsibility		Cost estimate (Rwf)
			Implementation	Supervision	
Road widening, construction, Excavation, cutting; Compaction; extraction of borrow and quarry material and Transport of Logistics	Interference with business and daily activities as well as disruption of access to people's homes during excavation and construction	<p>Provide the access road to all buildings especially those accommodating business activities;</p> <p>Provide alternative temporary spaces for informal businesses (mobile credits selling stands, motorcycles parking sites);</p> <p>Engage with formal businesses owners in dialogue on potential periods of disruption;</p> <p>Conduct the construction works in phases so as to allow some businesses to continue;</p> <p>Provide temporal access bridges to the businesses during construction works and permanent durable access after the construction activities;</p> <p>Provide appropriate information to potentially affected local communities prior to the beginning of any works in order to allay fears, complaints or potential risks due to lack of information or awareness about the project activities.</p> <p>Ensure provision of the disability accessibility including footpaths and access with railings and handrails.</p>	Contractor	REMA; LODA; District; Supervision firm;	Covered elsewhere
	Workers accidents leading to injuries, illness or death; ESS4	<p>Ensure all staff in construction activities have protective equipment (e.g. helmets, dust masks, gloves, safety glasses, boots);</p> <p>Avail first aid kit on-site, train some people techniques of handling injured people;</p> <p>Transport means to be always present and ready to transport injured to nearest clinic; Health insurance for the personnel;</p> <p>Ensure machinery, equipment, personal protective equipment, appliances and hand tools do comply with prescribed safety and health standards;</p> <p>Implement all measures detailed Sections 7.7 (Community Health, Safety and Security Management Plan)</p>	Contractor	REMA; LODA; District; Supervision firm;	10,000,000
	Degradation of air quality (dust and particulate emissions) by construction	<p>Prepare a dust management plan (DMP) with the fooling measures: watering frequency, monitoring of visual impacts, inspection, records keeping, responsibility, training, complaints response and corrective action</p> <p>Fit vehicles with appropriate exhaust systems and emission control</p>	Contractor	REMA; LODA; District; Supervision firm;	15,000,000

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Project activities	Negative impacts/ Environmental and Social Standards	Prevention and mitigation measures	Responsibility		Cost estimate (Rwf)
			Implementation	Supervision	
	vehicle traffic, due to earth excavation and dust emission from stockpiles during dry period ESS3	<p>devices;</p> <p>Use stone crushers and mixing machines with wet scrubbers to arrest evolved dust;</p> <p>Maintain vehicles and construction equipment in good working condition including regular servicing;</p> <p>Impose speed limits at 30 km/hour on vehicle movement at the worksite to reduce dust emissions; Control the movement of construction traffic in the access road;</p> <p>Water spray to the dry earth/ material stockpiles, access roads and bare soils as and when required to minimize the potential for environmental nuisance due to dust;</p> <p>Increase the watering frequency during periods of high risk (e.g. high winds);</p> <p>Cover stockpiles of fines on windy days and, enclose gravel screening section to reduce dust propagation;</p> <p>Provide masks to workers in very dusty environment;</p>			
	Air quality deterioration due to exhaust emission and combustion of fuel (Sulphur, Carbon, Nitrogen,....) ESS3	<p>Use low sulfur fuel in diesel engines (graders, excavators and trucks and this will reduce Sulfur Dioxide emissions</p> <p>Enforce use of new and gas emission complying vehicles, trucks and machinery;</p> <p>Install emission control devices in non- complying machines, vehicles, and trucks;</p> <p>Sensitize drivers to avoid unnecessary racing of vehicle engines at loading/offloading points and parking areas;</p> <p>Develop an engine maintenance plan (program) to control pollution from diesel powered engines)</p> <p>Plant trees at the road sides according the re- vegetation plan detailed in section 7.9</p>	Contractor	REMA; LODA; District; Supervision firm;	5,000,000
Road widening, construction, Excavation, cutting;	Noise and vibration pollution of machinery/ heavy trucks to	<p>Use machines with minimum noise and vibration;</p> <p>Sensitize vehicle drivers, machinery operators to switch off engines not being used; Work only during day time (7:00-17:00);</p> <p>Avoid gunning of vehicle engines when passing through sensitive</p>	Contractor	REMA; LODA; District; Supervision	1,500,000

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Project activities	Negative impacts/ Environmental and Social Standards	Prevention and mitigation measures	Responsibility		Cost estimate (Rwf)
			Implementation	Supervision	
Compaction; extraction of borrow and quarry material and Transport of Logistics	local people; ESS3	<p>areas (e.g. schools, churches, health centres);</p> <p>Keep in good condition machinery to reduce noise generation;</p> <p>Advise local people, hospitals, hotels, school, churches on the planned activities that cause unavoidable noise</p> <p>Engage in consultations with the district authorities and the hospital management on the noise and vibration management (noise)</p> <p>The consultant shall reschedule noise and vibration generating activities around the schools in the weekend during school holidays;</p>		firm;	
	Impacts from blasting operations using explosives ESS3, ESS4	<p>Avoid carrying out any blasting during excavation and other project work. Should unavoidable the blasting (e.g. quarrying) the contractor will request and get approval from the competent authority. As per national regulations the blasting site should not be within a radius of 600 m of residential area and shall always take place during day’s hours.</p> <p>The methods and the means for the storage and the handling of the explosive should strictly adhere to national law national law, regulations and mining standards provided by the Rwanda Mines, Petroleum and Gas Board (RMPGB).</p> <p>Recruit a person with a valid explosives manager's certificate as explosives manager.</p> <p>Ensure that activities that involve explosives, accessories or precursor substances are:</p> <p>(a) managed by a certified explosives manager;</p> <p>(b) carried out only by competent and certified persons; and</p> <p>(c) carried out only if the licenses and permits required are in place.</p> <p>Ensure use or fitting high efficiency mufflers to noisy construction equipment and provide PPE protection to workers (masks, ear protection) exposed to the noise level above 85 dB to ensure compliance of the noise management measures,</p>	Contractor	REMA; LODA; District; Supervision firm;	Part of civil and quarrying work

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Project activities	Negative impacts/ Environmental and Social Standards	Prevention and mitigation measures	Responsibility		Cost estimate (Rwf)
			Implementation	Supervision	
		Monitor the vibration and noise level and impacts to buildings and local people within a radius of 1km.			
Excavation, cutting and disposal of earth spoils,	Surface and Ground water pollution due to discharge/disposal of earth materials, sedimentation in water bodies; Water and soil pollution by accidental spills of hazardous liquid from machinery and human excreta due to lack of mobile toilets; ESS3	Determine dumping location with government officials, local landowners Stockpiles, parking yards to be located far away from rivers, marshlands, at least a minimum of 100m from these ecological zones; Stockpile topsoil at designated area, surrounding them with perimeter drains, and place geotextile silt traps on the stockpiles to avoid erosion and sedimentation; Cover stockpiles during rainy season to prevent erosion and sediment runoff; Handling and storage of the potential contaminants has to be organized under strict condition to avoid water pollution during construction works; Strict management and regulation construction activities, to minimize sedimentation, prevent and control fuel/chemical spills; Avoid concrete works close to water courses; Machinery and equipment working near water courses should be properly serviced to avoid oil spilling; Petrochemicals and other hazardous liquids should be stored in contained areas, surrounded by concrete containment; Monitor water quality against its background (Figure 4-1, Table 5-1); Any spills on open roads should be cleaned-up within 24 hours; Collected waste water/runoff to be contained, disposed; Ground water quality monitoring to be carried out by the contractor following the national water quality standards (Standard RS 109:2017 stipulating tolerance limits for discharged industrial wastewater and RS 110:2017 stipulating tolerances limits for discharged domestic wastewater) (Annex 14 and 15);	Contractor	MININFRA REMA; LODA; District; Supervision firm;	30,000,000
Excavation, cutting and disposal of earth spoils,	Land/ Soil pollution due to solid, liquid and hazardous wastes; Due to organic waste such as	Avoid the productive/agricultural land, cultural sites, natural habitat etc.; Land/soil quality should be ensured by the contractor to fill the abutment area and approach road; Re-vegetation exposed area as early as possible to reduce the soil erosion; Create barrier for reducing the sedimentation into the water bodies; The Land or soil quality tests should be carried out by the contractor	Contractor	MININFRA REMA; LODA; District; Supervision firm;	10,000,000

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Project activities	Negative impacts/ Environmental and Social Standards	Prevention and mitigation measures	Responsibility		Cost estimate (Rwf)
			Implementation	Supervision	
	<p>remaining foods, leafs, papers, straw, fruit cover etc; due to inorganic waste such as polythene, glasses, synthetic paper, plastic etc.; due to hazardous waste such as paint, fuel, chemicals, oil, petroleum products, bitumen</p> <p>ESS3</p>	<p>The contractor will minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes);</p> <p>Any wastes should not be thrown into the river/stream/drainage channels other than dump in to the designated waste dumping area;</p> <p>Handling of hazardous liquid should be done carefully by a designated experienced person;</p> <p>Organic waste should be managed by composting method. A concrete chamber with 3 rooms is needed to be provided. In one room organic waste should be dumped and another room inorganic waste will be dumped. When the room will be filled then covered by earth. Then dump to the third room. After 6 months, organic waste will be converted into fertilizer and will be used by the farmers;</p> <p>Inorganic waste should be given to the authorized vendor for free of cost for recycling;</p> <p>Accidental spillage of hazardous waste should be managed by spreading sawdust on the oil surface and sawdust mixed with oil must be stored in a designated concrete room;</p> <p>Provide appropriate PPE to construction personnel for handle materials;</p> <p>Make sure all containers, drums and tanks that are used for storage are in good condition;</p> <p>Take all precautionary measures when handling and storing fuels and lubricants, avoiding environmental pollution;</p> <p>Wastewater monitoring should be carried out by the contractor, following the national standard on waste management.</p>			
Road widening, diversion, construction;	<p>Destruction or disturbances of newly identified cultural sites;</p> <p>ESS8</p>	<p>Implement change finds protocols (section 7.10) and avoid land take or destruction of areas of historic interest (Cemeteries, Genocide memorials, recreational areas), rather change the road alignment to preserve them;</p>	Contractor	Social Specialist; District; Supervision firm;	3,000,000

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Project activities	Negative impacts/ Environmental and Social Standards	Prevention and mitigation measures	Responsibility		Cost estimate (Rwf)
			Implementation	Supervision	
Excavation, cutting, and disposal of spoils	Loss of aquatic biodiversity due to stockpiling of construction materials near a river/ drainage channel; ESS3 ESS6	Ensure that earth waste, sediments and stockpiles are safely enough disposed to safeguard terrestrial and aquatic diversity; Ensure disposal of soil spoil are not carried within the buffer zone (50, 10 and 5 m away from Lakes, Rivers and Streams respectively); Immediately remove all the construction debris from the construction site as well as near water bodies in a planned way; Protect water bodies from sediment loads by silt screen or bubble curtains or another barrier; Construction activity should be recommended during the dry season; Construction workers shall be instructed to protect water resources; Monitoring of aquatic habitats will be done in the water bodies in the project area; Rehabilitate the road sides, and dumpsites according the re-vegetation plan detailed in section 7.9	Contractor	REMA; LODA; District; Supervision firm;	Cost covered elsewhere
Sites clearance and restoration works;	Soil erosion and siltation from clearance and restoration works; ESS3 ESS6	Install erosion control measures e.g. check dams, storm water drainage channels; Put in place a storm water management plan that minimizes impervious area infiltration by use of recharge areas; Site excavation works to be planned such that a section is completed, constructed or rehabilitated before another section begins. Concentrate construction activities to dry season to the extent possible; Place geotextile on stockpiles to avoid erosion through runoff Re-vegetate the road buffer area, dumpsites, borrow sites and other areas where bare soil is created due to construction works; Sensitize people in the hillside to plant trees and protect land from erosion and landslide;	Contractor	MININFRA REMA; LODA; District; Supervision firm;	25,000,000
Excavation, blasting at quarries, borrow pits and road compaction;	Increased noise and vibration pollution from blasting for excavation, road compaction that can damage houses and properties and	Create noise barrier around the construction sites; Stop unnecessary engine operation in the construction site; Maintain vehicles and construction equipment in good working condition including regular servicing; Control the movement of construction traffic in the access roads; Ban construction equipment causing excess pollution/visible smoke; Water spray to dry earth/ material stockpiles, access roads and bare soils/ when required to minimize environmental nuisance due to dust;	Contractor	MININFRA REMA; LODA; District; Supervision firm;	Covered in BoQ

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Project activities	Negative impacts/ Environmental and Social Standards	Prevention and mitigation measures	Responsibility		Cost estimate (Rwf)
			Implementation	Supervision	
	impact local residents; ESS3 ESS4	Stored materials such as excavated earth, dredged soil, gravel and sand shall be covered and confined to avoid their wind drifted; Restore disturbed areas as soon as possible, preferably by local plants; For any blasting, a protocol has to be prescribed with acceptable methods for mechanical excavations;			
All construction works	Risk of partial roads failure as a result of catastrophic seismic events;	Tiff road structures (e.g. culvert, drainage) should be built to withstand at least a magnitude 6 seismic event; Monitor seismicity of the area, either in collaboration with Kigali Seismicity Centre or Seismic-monitoring network, or through a consultant, whichever option is deemed to be the best; Routine preventative maintenance of road components (e.g. culverts, drainages,...) to ensure their damage to immediately repair them;	Contractor	MININFRA REMA; LODA; District; Supervision firm;	Covered in BoQ
All construction works	Risk of labor influx; Conflict over jobs between local people and external workers; ESS2	Local residents will be given the priority during workforce selection/ recruitment; Sitting workers camp away from existing settlements, and camp should be furnished with all necessary services; Identify construction workers by wearing uniforms and even identity tags;	Contractor	LODA; REMA; District; Supervision firm;	N/A
	Employing under age workforce and school drop out Female under Employed; ESS2	Only people with above 18 years shall be recruited as per the labor law; The contractor shall engage in consultation with local parents and authority to make sure that all children go to school; The district shall hold local authorities responsible and parent accountable for failing to properly educate their children; Female shall be encouraged to work for the project (a quota of at least 30% female shall be respected);	Contractor	LODA; REMA; District; Supervision firm;	N/A

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Project activities	Negative impacts/ Environmental and Social Standards	Prevention and mitigation measures	Responsibility		Cost estimate (Rwf)
			Implementation	Supervision	
	Social welfare ESS4	Construction workers shall be given breaks to go for lunch; Avail onsite canteen to supply food and potable water; Implement all measures detailed Sections 7.6 (Community Health, Safety and Security Management Plan) Provision and hand washing points;	Contractor	LODA; District; Supervision firm;	7,000,000
	Increase of HIV/AIDS, Other STDs; and unwanted pregnancies, and Gender Based Violence; ESS4	following activities: Action 1: Gather information to understand how violence directly impacts the project workers and communities around and the availability of services for victims and survivors of violence and exploitation in the project area Action 2: Develop strategies and plans to address GBV, sexual exploitation and other abuse among the project participants (workers and communities). Consider interventions for the short term (six months to one year) and medium term (project duration) Action 3: Equip the project team (GBV specialist, ESS Specialists) to respond appropriately to support those seeking assistance Action 4: Include violence prevention and response activities in weekly, monthly, quarterly and annual work plans; Develop a sensitization campaign to the staff on HIV&AIDS and STDs; Establish a voluntary testing to determine HIV status; counseling at existing medical facilities; Install a sensitization campaign during Umugoroba w’ Ababyeyi (Village Roundtable Programme) will be done to teach young girls and women on changes to be brought by the project and their implication on their social and sexual life; The contractor and consultant will have GBV Specialists as part of the key staff of the team in addition to the Environmental and Social Safeguard Specialists; The client shall ensure that the contractor on sign a contract with provision related to monitoring of the sexual behaviors of the workers; The contractor shall pursue workers who have impregnated local	Contractor	LODA; REMA; District; Supervision firm;	Pre-estimated

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Project activities	Negative impacts/ Environmental and Social Standards	Prevention and mitigation measures	Responsibility		Cost estimate (Rwf)
			Implementation	Supervision	
		women; Strict adherence to Rwandan Law 2 of N°59/2008 of 10/09/2008 on prevention and punishment of GBV in all project formations and particularly GRMs procedures; <i>In case of a grievance emanating from GBV, a special GBV task force will be established and will be in charge of receiving, assessing and handling all cases of sexual harassment and GBV.</i> The taskforce will also handle GBV throughout the project implementation stage. The task force includes project staff namely: Human resource officer and social safeguards specialist from the contractor, Social Safeguards Specialist from the concerned PIU (LODA, Musanze district administration), Gender Monitoring Officer and Environmental and Social Management Specialist from the District , Social Safeguards Specialist from the supervising firm, Women representative from the GRC at cell level and GBV service provider in the area of GBV prevention and handled referral pathways for the GBV survivors (see also Annex 12 for more information).			
All construction works	Increased contamination of Covid-19 virus; ESS 4	Provide workers with mouth masks (at least two-2 per day) to lower risks of transmission of Covid-19; Avail an infrared digital thermometer to read forehead temperatures of workers (37°C/ 98.6 F, core body t°) before and after works; Enforce physical distancing practice at site as Covid-19 spreads mainly among workers and people in close contact for a prolonged period; Avail clean water, container of hand soap/sanitizer for hand washing; Avail a registration book at main entrance (specifying names, tel. number, village, cell, sector, district of every one) for future tracking in case a Covid-19 victim is found at site;	Contractor	LODA; REMA; District; Supervision firm;	Covered in BoQ
	Occupational health and safety risks; Incidents, Accidents and	Ensure that all plans and equipment to be used are certified by the relevant authority; Provide well stocked first aid box to be easily accessible within the premises; Fire-fighting equipment e.g. fire extinguishers and hydrant systems to be	Contractor;	LODA; REMA; District; Supervision firm;	Covered in BoQ

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Project activities	Negative impacts/ Environmental and Social Standards	Prevention and mitigation measures	Responsibility		Cost estimate (Rwf)
			Implementation	Supervision	
	Dangerous occurrences; ESS2 ESS3 ESS4	<p>provided at strategic locations (e.g. stores)</p> <p>Regular inspection and servicing of the equipment must be undertaken by a reputable service provider;</p> <p>Provide signage indicating works in progress, communicate to public on segments to be worked on, alternative routes;</p> <p>Circuits must not be overloaded;</p> <p>Electrical fittings near all potential sources of ignition should be flame proof;</p> <p>All electrical equipment must be earthed;</p> <p>Keep a record of all hazardous chemicals used at construction sites;</p> <p>No eating or drinking in areas where chemicals are stored or used;</p> <p>Develop suitable system for safe collection, recycling and disposal of chemical wastes. If needed, look for advises from REMA.</p> <p>Provide workers in areas with elevated noise and vibration levels, with suitable ear protection equipment such as ear muffs;</p> <p>Ensure that construction workers are provided with adequate supply of wholesome drinking water;</p> <p>Implement all measures detailed Sections 7.7 (Community Health, Safety and Security Management Plan);</p> <p>All workers to sign a Code of Conduct.</p>			
Campsite operation	Fire outbreak at campsites, at fuel storage sites; ESS4	<p>Ensure availability of emergency vehicles for fire-fighting (with Fire Extinguishers, Fire hydrant, sand) in nearby the project site;</p> <p>Ensure the availability of a health centre/ hospital and transport emergency vehicles (ambulance);</p>	Contractor	LODA; District; Supervision firm;	3,000,000
	Increased Energy consumption; ESS3	<p>Ensure electrical equipment, appliances and lights are switched off when not being used;</p> <p>Install energy saving fluorescent tubes at all lighting points instead of bulbs which consume higher electric energy;</p> <p>Explore use of renewable energy like solar photovoltaic cells;</p>	Contractor	MININFRA; LODA; District; Supervision firm;	2,600,000

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Project activities	Negative impacts/ Environmental and Social Standards	Prevention and mitigation measures	Responsibility		Cost estimate (Rwf)
			Implementation	Supervision	
	Competition over access to water; ESS3	Harness rainwater for construction and domestic use to avoid conflicts over water with communities; Install water conserving taps that turn-off automatically when water is not being used; and sensitize staff to conserve water by avoiding unnecessary toilet flushing; Install a discharge meter at water outlets to determine and monitor total water usage; Promptly detect, repair water pipe, tank leak;	Contractor	LODA; District; Supervision firm;	5,000,000
	Increased generation of solid wastes and generation of sewage; ESS3 ESS1	Implement 3 R principles (Reducing, reusing, recycling wastes); Dispose waste more responsibly by dumping at designated dumping sites; Avail solid waste bins and sort garbage according different categories (e-wastes, chemicals, plastics, metals, glasses papers/wood and biodegradable wastes); Construction materials left over at the end of construction are used in other projects rather than being disposed of; Use of durable, long-lasting materials that will not need to be often replaced; Install pit latrines at campsite and portable toilets at working sites Being temporal, pit latrines shall be connected to the soak away pits; Sewage from portable toilets will appropriately disposed in soak away pits Avoid digging pit latrines in area with shallow groundwater.	Contractor	LODA; REMA; District; Supervision firm;	5,000,000
	Insecurity of workers on sites or camp site; ESS2	Cooperate with administration to appoint security personnel operating 24 hours where needed; Body-search to workers to avoid getting weapons on site, nothing is stolen; Ensure only authorized personnel get to site Security alarms will be installed in vehicles and other appropriate devices or areas;	Contractor	LODA; REMA; District; Supervision firm;	5,000,000
Total :139,100,000					

Source: Consultant, 2021

Table 7- 6: Environmental and Social Management Plan during Operational Phase

Project activities	Negative impacts/ Environmental and Social Standards	Prevention and mitigation measures	Responsibility		Cost estimate (Rwf)
			Implementation	Supervision	

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Vehicle traffic	Air pollution From increasing vehicles traffic, dust emission and burning of fuels; ESS3	Increase tree-planting by adding new native tree species in appropriate locations after consultation with concerned authority; Enforce use of new and gas emission complying vehicles, machinery Install emission control devices in non-complying machines, vehicles and trucks; Sensitize drivers to avoid unnecessary racing of vehicle engines; and to switch off engines if not needed;	Contractor;	MININFRA; District; Environmental and Health officer;	Inclusive in Maintenance BoQ;
	Noise pollution due to faulty engines that may increase noise level; ESS3	Necessary instruction for drivers; Establishment of signboards near sensitive receptors like schools, places of worship etc.;	Contractor;	MININFRA; District; Environmental Health officer;	Inclusive in Maintenance BoQ;
	Road traffic and accidents due to road infrastructure improvement that may encourage drivers to over speed; ESS4	Install speed humps at selected places (e.g. near settlement, schools, university, markets, health centre) to slow down traffic at critical locations; Provide road signage and pavement markings; Avail pedestrian walkways on both sides on the roads; Keep provision of adequate lighting facilities in project area; Sensitize drivers to avoid using mobile phone during driving and while crossing the road;	Contractor;	District; Social specialist;	Inclusive in Maintenance work, BoQ;
	Surface and ground water pollution due to accidental hazardous chemical spill in soil or river banks; due to soil erosion; ESS3	Conduct regular monitoring and inventory of risks for erosion and drainage problems; Conduct routine maintenance like grading, drain clearing, pothole patching and shoulder repairs; Cover the bare surface by tree planting to reduce soil erosion; Ensure river bank protection works from chemical and erosion sediment contamination; Inform to the concern authority to take necessary action to reduce the contamination of groundwater.	Contractor;	MININFRA; District; Environmental and Health officer;	6,000,000
Erosion control;	Change in hydrology and flood pattern due	Conduct regular monitoring and inventory of risks for erosion and drainage problems;	PIU Coordinators	MININFRA; Environmental	5,000,000

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	to increase flood and erosion water logging in drainage system; ESS3	Conduct routine maintenance of water drainage system; Construction sites to be cleaned properly after completion of construction activities so that the natural drainage system may not hampered; A separate and details hydro-morphological study should be conducted before starting construction activities;	assisted by Environmental Specialists	and Social officer;	
Waste management;	Solid waste generation at different village centres along the roads; ESS3 ESS1	Remaining construction materials will be completely removed from the streets, garden, impacted area of project sites and placed in the certified final disposal site agreed with the district environmental officer and the supervisor; Clean-up operation of construction sites will require restoration/ re-vegetation actions by local plant species; Avail solid waste bins and sort garbage at different important centres along the roads to collect garbage according different categories (plastics, metals, glasses papers/ wood and biodegradable wastes); Ensure that solid wastes generated at different garbage collection sites are regularly & appropriately disposed of at authorized dumping sites. Private company may be contracted to collect and dispose solid waste on regular intervals; Sensitize nearby people about best solid management practices (3R principles: Reducing, Reusing or Recycling wastes) and principle of sorting wastes from the source;	Contractor;	MININFRA; District; Environmental and Health officer;	4,000,000
Total : 15,000,000					

Source: Consultant, 2021

7.4 Environmental and Social Management Plans (ESMP)

7.4.1 Introduction

The benefits of environmental and social monitoring plan fall in three general categories: to audit mitigation measures, to refine impact assessment methods, and to improve project outcomes through adaptive environmental management. First, monitoring determines whether responsible agencies implemented the promised mitigation measures and whether these measures were effective. Second, monitoring compares the actual effects of a project to its predicted effects. Third, monitoring improves project outcomes through adaptive environmental management.

7.4.2 Institutional arrangement and roles

For this project MININFRA is designated as the overall coordinating Ministry and represents the Government of Rwanda. The MININFRA will be the project executing Ministry with the key role of coordinating the implementing agencies (LODA and the Musanze District) and other key players including RHA, RTDA, WASAC and REMA among others.

LODA, RHA and RTDA will have an oversight role over the implementing agencies which include the Musanze City. The oversight will include coordination and monitoring of performance of implementation of the respective sub-projects, risk management, monitoring & evaluation and disclosure of information, developing and putting in place performance agreements, and developing and implementing the communication strategy for Urban Development Project.

It is worth noting that the Contractor as the project implementer and Consultant as the project supervisor will play a key role in the implementation of the project ESMP. The success in implementation of the project ESMP of RUDP II Phase 3 in Musanze City will highly depend on their joint efforts. The Contractor and Consultant shall have permanent staff (environmentalist and health and social safeguard officers), with the required skills and experience.

7.4.2.1 Local Administrative Entities Development Agency (LODA)

LODA will have an oversight role over the implementing agencies which include the Musanze City. Apart from the responsibilities discussed above, LODA will be responsible for:

- a. Managing of funds, and will host the Project Management Unit;
- b. Managing and oversee the implementation of the sub-projects by the beneficiary Musanze District;
- c. Contracting of supervision and other consultancies, according to agreed procurement procedures;
- d. Managing sub accounts according to agreed financial arrangements;
- e. Providing quarterly financial reports on physical and financial progress;
- f. Support supervision of the Environmental and Social Standards and ESF instruments Implementation
- g. Informing and engaging the Musanze District;
- h. Providing technical assistance and trainings to the Musanze City and other stakeholders;

7.4.2.2 Rwanda Development Board (RDB)

The role of RDB is to review and approve the ESIA Reports and issue EIA certificate.

7.4.2.3 Rwanda Environment Management Authority (REMA)

REMA shall:

- a. Supervise the environmental impact assessment implementation, environmental audit, and any other environmental study.
- b. Supervise and assess development programs to ensure compliance with the laws on environment during their preparation and implementation;

7.4.2.4 Contractor

The Contractor shall:

- a) Be responsible for developing the ESMP (Contractor's ESMP) to achieve the environmental specifications contained herein and the relevant requirements contained in the Certificate of Approval, issued by RDB;

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- b) Be responsible for the overall implementation of the ESMP in accordance with the provisions of ESMF, ESIA and conditions of Approval, issued by RDB;
- c) Ensure that all third parties who carry out all or part of the Contractor's obligations under the Contract comply with the requirements of this ESMP; and work closely with LODA, Districts and Supervisors/Consultant.
- d) Develop ESMP and Rehabilitation Plans for borrow pits, dumping sites and quarries
- e) Contracting the staff and provide them with protection equipment/ Gender sensitive
- f) Ensure the Health and safety of the communities
- g) Restore the borrow pits and quarry to the near previous condition
- h) Conduct awareness programmes for HIV Aids, STD, Malaria, Covid-19 and Ebola prevention;

7.4.2.4.1 Environmental and Social Supervision and Monitoring by Contractors

The client will require that contractors monitor, keep records and report on the following environmental and social issues for their subproject. The application of this requirement will be proportionate to the activities and to the size of the contract, in manner acceptable to the World Bank:

- **Safety:** hours worked, recordable incidents and corresponding Root Cause Analysis (lost time incidents, medical treatment cases), first aid cases, high potential near misses, and remedial and preventive activities required (for example, revised job safety analysis, new or different equipment, skills training, and so forth);
- **Environmental incidents and near misses:** environmental incidents and high potential near misses and how they have been addressed, what is outstanding, and lessons learned;
- **Major works:** those undertaken and completed, progress against project schedule, and key work fronts (work areas).
- **E&S requirements:** noncompliance incidents with permits and national law (legal noncompliance), project commitments, or other E&S requirements.

- ***E&S inspections and audits:*** by contractor, engineer, or others, including authorities—to include date, inspector or auditor name, sites visited, and records reviewed, major findings, and actions taken.
- ***Workers:*** number of workers, indication of origin (expatriate, local, nonlocal nationals), gender, age with evidence that no child labor is involved, and skill level (unskilled, skilled, supervisory, professional, management).
- ***Training on E&S issues:*** including dates, number of trainees, and topics.
- ***Footprint management:*** details of any work outside boundaries or major off-site impacts caused by ongoing construction—to include date, location, impacts, and actions taken;
- ***External stakeholder engagement:*** highlights, including formal and informal meetings, and information disclosure and dissemination—to include a breakdown of women and men consulted and themes coming from various stakeholder groups, including vulnerable groups (e.g., disabled, elderly, children, etc.).
- ***Details of any security risks:*** details of risks the contractor may be exposed to while performing its work—the threats may come from third parties external to the project.
- ***Worker grievances:*** details including occurrence date, grievance, and date submitted; actions taken and dates; resolution (if any) and date; and follow-up yet to be taken—grievances listed should include those received since the preceding report and those that were unresolved at the time of that report.
- ***External stakeholder grievances:*** grievance and date submitted, action(s) taken and date(s), resolution (if any) and date, and follow-up yet to be taken—grievances listed should include those received since the preceding report and those that were unresolved at the time of that report. Grievance data should be gender-disaggregated.
- ***Major changes to contractor’s environmental and social practices.***
- ***Deficiency and performance management:*** actions taken in response to previous notices of deficiency or observations regarding E&S performance and/or plans for actions to be taken—these should continue to be reported until UNOPS determines the issue is resolved satisfactorily.

7.4.2.5 The Musanze District

The Musanze District will have the role of implementation of their respective sub-projects. They shall be responsible for the implementation of environmental laws, policies, strategies, objectives and programmes applicable to RUDP II phase 3.

- a) Monitor the compliance to the national guidelines for protection, conservation and promotion of the environment.
- b) Contracting of the contractor
- c) Participate in grievance redress process
- d) Organize consultation process.

7.4.2.6 Supervising Firm/ Consultant

The consultant will be responsible for issuing instructions to the contractor and where environmental considerations call for action to be taken. The consultant Environmental Specialist shall submit regular written reports to districts and LODA on a monthly basis (in case of emergency, there should be a direct report). The Supervising Consultant will be responsible for the monitoring, reviewing and verifying of compliance with the ESMP (the plan) and conditions of the Certificate of Approval by the Contractor. His / Her duties in this regard will include, *inter alia*, the following:

- a) Confirming that the Certificate of Approval and all permits required (ESIA Certificate, permits for establishment of borrow pits, dumpsites, quarries, crusher and asphalt plants, etc) in terms of the applicable legislation have been obtained prior to the activity commencing;
- b) Monitoring and verifying that the ESMP (the plan), Conditions of Authorization in the Certificate of Approval and Contract are adhered to at all times and taking action if specifications are not followed;
- c) Monitoring and verifying that environmental impacts are prevented or kept to a minimum.
- d) Reviewing and approving method statements, in order to ensure that the environmental specifications contained within this ESMP (the plan) and Certificate of Approval are adhered to.

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- e) Inspecting the site and surrounding areas on a regular basis with regards to compliance with the ESMP (the plan), Certificate of Approval and Contract.
- f) Monitoring the undertaking by the Contractor of environmental awareness training for all new personnel on site during construction and for maintenance activities during operation.
- g) Ensuring that activities on site comply with all relevant environmental legislation.
- h) Ordering the removal of, person(s) and/or equipment not complying with the specifications of the ESMP and/or Certificate of Approval.
- i) Undertaking a continual internal review of the ESMP (the plan) and submitting any changes to LODA and/or REMA or RDB and the concerned Lead Agencies (in case of major changes) for review and approval.
- j) Checking the register of complaints maintained and ensuring that the correct actions are/were taken in response to these complaints.
- k) Checking that the required actions are/were undertaken to mitigate the impacts resulting from non-compliance.
- l) Reporting all incidences of non-compliance to the management of LODA.
- m) Conducting monthly environmental performance audits in respect of the activities undertaken relating to the project.
- n) Keeping a photographic record of progress on site during construction from an environmental perspective.
- o) Recommending additional environmental protection measures, shall this be necessary.
- p) Providing report back on any environmental issues at site meetings.
- q) Submit the status of the ESMP implementation on monthly, quarterly bases and at the end of the project.

7.4.2.7 Local Community and community verifiers

Local communities will be negatively impacted by the project activities during implementation as some of the services such as utility provision will be temporally interrupted. Community will also benefit also positively from this project through improved accessibility. Community participation

is a basic human right and fundamental principle of democracy (RUDP II, SEP, 2020).

The local community shall:

- a) Help to prevent or mitigate problems/complaints that may arise and hinder project progress in the next phases;
- b) Intervene in acquisition to agree on fair compensation of the loss caused by the project;
- c) Be useful agents in collection of data that will be vital in monitoring and as such they will play a role in the monitoring framework;
- d) Participate in and provide information on the effectiveness of grievance resolution.

Community Verifiers will also support the project implementation by checking and keeping track of any issues caused by the contractors, impacts caused to the communities and reporting GRM or GBV issues.

7.4.2.8 Independent External Environmental Auditor

An independent external environmental auditor shall be appointed by LODA to ensure compliance with the ESMP (the plan). The intervals at which environmental audits shall be undertaken shall be agreed upon by LODA, the Contractor, Supervising Consultant, districts and REMA. The environmental audit programme shall at least include the following:

- a) A comprehensive environmental audit will be undertaken at the completion of the construction phase to verify compliance with the ESMP, Certificate of Approval and all applicable environmental legislation. An audit report shall contain recommendations on environmental management activities which are required to be implemented within the subsequent phase. The external auditor shall report concurrently to Contractor and LODA.
- b) Periodic environmental audits to be undertaken during operations phase in order to verify on-going satisfactory environmental management performance. These audits must be followed up with appropriate remedial and, corrective actions when the audit findings demonstrate any non-conformance or non-compliance with specifications of ESMP (the plan).
- c) Compile and agree on (together with LODA) a template for the appointed Supervising

Consultant’s monthly reports essentially meaning that an Independent Environmental Auditor (IEA) will need to be appointed right at the commencement of the project.

7.4.3 Implementing Management Arrangements

7.4.3.1 Project performance up to date

LODA Team: The main implementing agency of the project has a dedicated team of three people (an environmental specialist, a social specialist and a civil engineer) to provide support to the local government of the Musanze District.

The Musanze District: The District has an Environmental Specialist, Social Specialist and Road engineer whose responsibilities include supervising all civil works being developed in the Musanze City. However, this task has been challenged with the multiple issues:

- Limited staff for the project supervision;
- Contractors and supervising firms with limited attention to social and environmental issues;
- Resettlement issues have delayed works and compensation to affected people;
- Basic services like water, electricity, have been interrupted for periods longer than expected and created more impacts to local inhabitants;
- Access to houses have been a major impact of the project and putting provisional and safe access should be a priority in the new project;
- Dumping of construction debris or soil have been an issue with some contractors;
- Restoration of borrow pits and camp areas not well done;
- Drainage works not taking into account the recipient;
- Contractors without adequate facilities for eating, drinking water, resting and washing, first aid kits to treat minor cuts or burns;

As result of the lessons learned, for this project, the ESIA will detail all requirements to overcome these challenges and improve the overall environmental and social management of the project.

Also the Bidding documents and contracting documents will include the environmental clauses, requirements in the Bill of quantities. LODA and Musanze District will be responsible to include in all ESIA's the Environmental and Social technical clauses for the bidding documents and contracts to ensure that the contractor has a mandatory duty to apply all environmental, health and safety and social prevention, mitigation and compensation measures included in the ESIA. The details about Environmental, Health and Social Clauses for bidding document are given in Chapter 10.

7.4.3.2 Project Safeguard Management Capacity

For the successful implementation of the project ESMP, the project key actors (client, consultant and contractor) should have staff with required capacity for environmental and social safeguard as detailed below:

- **The Ministry of Infrastructure (MININFRA)** will be responsible for the overall project coordination through the Project Coordination Unit (PCU). It has the overall responsibility for infrastructure development in the country. It has the mandate for policy and coordination on urbanization. MININFRA has implemented various Bank funded operations and has experience in safeguards application, but has limited experience with the ESF. MININFRA has two environmental and social specialists in the Division of Urbanization, Human Settlement and Housing Development but they will not have time to participate in the project. It has been agreed to hire an Environmental and Social Coordinator for RUDP II to coordinate the work with all implementing agencies.
- At REMA level: REMA has been implementing WB supported projects and is currently implementing LAFREC. However, it has limited experience working with WB Bank projects and new ESF. REMA reserves the legal mandate for national environmental protection, conservation, promotion and overall management. Its participation in the project will be very beneficial to bring up environmental compliance and performance at a higher interest. REMA staff from the environment compliance and enforcement division should inspect and audit the project compliance to Environmental regulations.
- At LODA level: LODA through a Single Project Implementation Unit (SPIU) will be

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responsible of project implementation. LODA has experience working with the Bank and is currently implementing four Bank funded operations which are following the World Bank safeguards policies. LODA has two permanent staffs (Environmental Specialist and Social safeguard specialist) to inspect the project compliance to the environmental and social/health/safety standards and report to WB Environmental and Social Risk Management Team;

- At Musanze District level: The Districts have a staff with the role of environmental officer. The environmental officer is in charge of several duties and projects. At the moment there is no position of social specialist at the District level. The project will hire two project staff: Environmental and social safeguard expert and project engineer to enforce environmental and social compliance, and report to LODA Environmental and Social Risk Management Team. The District through the Labor Inspector will also enforce the project compliance to the Law Regulating Labor in Rwanda, 2018;
- At the level of the consultant firm: The consultant will hire two staff: Environmental Specialist and Social, Health and Safety ssafeguard Specialist to monitor the implementation of the ESMP and issue the instructions for the actions to be taken for the proper implementation of the ESMP. The consultant will be reporting to Musanze District and or LODA;
- At the Ccontractor’s level: Hire 3 specialists: (1) Environmental Specialist; (2) The Social Risk Management Specialist; (3) The Safety, Health and First Aid Specialist, to implement the project environmental, social, health and safety standards as described in the ESMP. The team will be reporting to the consultant firm.

While the LODA staff have the required capacity (they got various trainings and experience on environmental and social risk management) for the monitoring and supervision of this project, the staff of other project key actors (MININFRA and REMA) and the staff to be hired at the district, consultant and contractor’s level may not have the required experience with the WB ESF, especially the ESSs. Before the commencement of the project work, it is of prime importance to train all key staff to be involved in the project implementation. Details about trainings are shown in section 7-11 and Table 7-14.

7.4.4 Environmental monitoring parameters and permissible standards

Environmental monitoring of environmental parameters (noise levels, water quality, air quality, erosion/wastes, vegetation clearance, work and traffic safety among others) is required for all works financed under RUDP II Phase 3 and for the proposed works in Musanze City.

7.4.4.1 Water quality

The contractor shall monitor the water quality in terms of Turbidity, pH, Electrical Conductivity (EC), Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Chloride, Copper, Zinc, Cadmium, Lead, Grease and Oil, and Fecal coliforms at different sites shown in Figure 4-1 and Table 4-2, to check the effectiveness of the proposed mitigation measures.

7.4.4.2 Noise Levels Monitoring

Noise during construction is expected to be a problem within the project area, hence periodic sampling of the contractor equipment and at work sites should be undertaken to check the effectiveness of the mitigation measures are in place. Noise level will be checked against the baseline levels reported in chapter 5 (Figure 5-5). For consistency purpose, the noise levels will be measured at sites shown in Figure 4-2.

7.4.4.3 Air Quality

The contractor shall monitor dust levels during earthmoving and excavation activities. The contractor shall also monitor gas emissions from the project vehicles to check the compliance with the air quality standards (Table 4-3).

7.4.4.4 Storm water monitoring plan

This storm water monitoring plan is intended to ensure that all the mitigation measures proposed are addressed in the management plan.

The purpose of an environmental monitoring plan is to:

- Define the mitigation monitoring and execution requirements associated with the construction and operation phase of this project;
- Define the indicators and processes used to identify and execute mitigation actions

related to the project;

- Ensure that any other impacts that may arise out of the project during implementation can be identified from indicators set and appropriate mitigation measures are taken;
- Establishing roles and responsibilities and implementing procedures for effective execution of the mitigation process;

This plan describes the mitigation monitoring and execution approach, responsibilities, and procedures associated with the Project. The storm water monitoring plans for the different project phases (construction and operation) are given according to the proposed mitigation measures (Table 7-9, Table 7-10).

7.4.4.5 Soil Erosion Monitoring

The excavation of earth for the construction of roads, work camps and storage facilities will exacerbate soil erosion. It will, therefore, be the responsibility of the Contractor ‘s environmentalist to ensure the implementation and effectiveness of erosion control measures. Focus should be given to work sites where soil is disturbed and its immediate environ during and after vegetation clearing.

7.4.4.6 Monitoring Rehabilitation of campsites

The Contractor ‘s environmental, health and safety inspection team should ensure that areas used as temporary campsites for workers and storage of hazardous materials during construction are progressively rehabilitated as they are no longer required. Once a site is rehabilitated it should be signed off by REMA or the Musanze District environmental officer.

7.4.4.7 Monitoring of Accidents/Health

The Contractor ‘s environmental, health and safety inspection team must make sure that appropriate signs are posted at appropriate locations/positions to minimize/eliminate risk of accidents. In addition, the environmental inspectors should monitor the following:

- a) All the workers are adequately provided with Personal Protective Equipment‘s/gears depending on the nature of assignment;

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- b) Measures to create awareness regarding sexually transmitted diseases, primarily HIV/AIDS, and other diseases such as malaria retaken;
- c) Preventive measures to reduce/eliminate malarial, infections where/wherever appropriate are put in place;
- d) Periodic health surveys are carried out along the transmission route;

LODA will have overall responsibility to oversee that all environmental measures are put in place and that regulations are enforced. The construction supervision consultant should assist LODA in this process in order to make sure that contractors fulfil the environmental requirements. The following parameters could be used as indicators:

- a) Presence of posted visible signs at construction sites;
- b) Presence of sanitary facilities at construction sites;
- c) Level of awareness of communities pertaining to dangers/risks associated with asphalt road project;
- d) Accidents and incidents reports.

7.4.4.8 Waste Management Monitoring

The Construction Contractor shall regularly monitor the management of wastes through the following parameters:

- Quantity of waste generated
- Metric tons of earth waste
- Location and status of the dumpsite
- Frequency of waste collection from the generation sites.

7.4.4.9 Oil Spillage Monitoring

Oil spills, along the project site and within workshop premises, to be one of the key issues for monitoring. Specify parameters to monitor will include oil, greases and surface water (of Mukungwa river).

7.4.4.10 Re-vegetation maintenance and monitoring

After rehabilitation, rehabilitated areas will be inspected in the period of six months for up to 2 years to assess rehabilitation performance against the completion criteria outlined below. Monitoring will determine if follow up seeding will be required. Monitoring will essentially involve visual assessment to ensure the rehabilitation works have been implemented as planned. Table 7-7 shall be used as the monitoring guide to assess the success or otherwise of the re-vegetation/ rehabilitation plan.

Table 7- 7: Re-vegetation Monitoring Guide

Criterion	Target	After six months	After one year	After 2 years
Ornamental grass foliage cover (%) excluding weeds	>90	50	90	>90
Ornamental trees	1 stem per 5 m spacing			
Mean weed foliage cover (%).	<5	<20	<10	<5
Bare soil areas (%).	<5	<50	<10	<5

7.4.4.11 How to monitor

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 grievance 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 and LODA Implementing Unit.

The 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. The reports will be based on records kept as per requirements of the General Specifications of the Road & Bridge Works. These detailed reports with evidence of compliance shall be prepared and appended to summary monthly reports. Table 7-8 presents the environmental Monitoring Plan, including monitoring parameters, location, means, frequency , responsibility and cost.

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Table 7- 8: Environmental Monitoring Plan

Parameter/ Activity	Location	Means of Monitoring	Frequency	Responsible Agency		Cost estimate (RfW)
				Implemented by	Supervised by	
During Project Implementation						
Stone/Sand Collection	At borrow pits/quarries sites/ rivers	Ecological (Biophysical) inspection of the sites before extraction activities of the stone/sand start	Weekly	Contractor	Consultant/ Environmental Specialist	2,500,000
Sediment quality for heavy metals	At any place in river or stream where construction materials will be extracted	Laboratory analysis for metals (lead, cadmium, chromium, copper, manganese, mercury and zinc) and oil/grease	Before sand extraction	Contractor at recognized national laboratory	Consultant/ Environmental Specialist	3,000,000
Soil pollution	Construction sites, Campsites, Material storage sites; Water drainage channel;	Visual inspection at filling area that no effluent/spills to soil/land/agricultural lands	Monthly	Contractor	Consultant/ Environmental Specialist	N/A
Stability of slopes	Cut, Filled, Embankment sites;	Visual inspection of erosion prevention measures, Retaining walls, Compacted area;	Monthly		District Engineer	N/A
Hydrocarbon and Chemical storage	At campsite, yards	Visual inspection at storage facilities	Monthly	Contractor	Consultant/ Environmental Specialist	N/A
Traffic Safety	Construction sites, Access roads, Pedestrian walkways,	Visual inspection of traffic signs/ flags persons placed/used for traffic management;	Monthly	Contractor	Consultant/ Environmental Specialist	N/A
Air Quality (dust, smoke)	Construction and extraction sites/ Material storage sites;	Visual inspection to ensure dust suppression measures (e.g., spraying of waters) are in place, equipment/machinery in use are in good standard/ condition;	Daily/ Monthly	Contractor	Consultant/ Environmental Specialist	N/A

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Parameter/ Activity	Location	Means of Monitoring	Frequency	Responsible Agency		Cost estimate (RfW)
				Implemented by	Supervised by	
	Sensitive receptors (homesteads, schools, health centre, church, local administrative offices,...) along the road corridor;	Continuous monitoring using appropriate instruments and analyzers (for particulate matter, Carbon dioxide, Sulphur, Nitrogen oxides)	Quarterly	Contractor	Consultant/ Environmental Specialist	3,000,000
Noise	Construction and extraction sites;	Noise measurement (Noise levels on dB); Work restriction between 6:00 a.m.-17:00 p.m. close to sensitive sites;	Weekly	Contractor	Consultant/ Environmental Specialist	2,500,000
Surface Water Quality	Mukungwa river (at drainage outlets)	Water sampling, analysis (TDS, Turbidity, pH, dissolved oxygen, biological and chemical oxygen demand)	Quarterly	Contractor at recognized laboratory	Consultant/ Environmental Specialist	10,000,000
Groundwater quality	At tube-well installation (for workers camp), Water-wells (for contractor) for drinking;	Depth of tube-well to be more than 30m; Test water for arsenic iron and manganese before installing of casing. If the quality is found not suitable further deepening will be done. Laboratory analysis of all drinking water parameters specified in national standards	During drilling of wells; After development of wells	Contractor at recognized laboratory	Consultant/ Environmental Specialist	15,000,000
Tree-planting/ revegetation	Cleared/tree cut sites, Water drainage slopes,	Visual inspection for planted trees and taking care of them;	Monthly	Contractor	Consultant/ Environmental Specialist	N/A
Biodiversity	Natural sensitive sites: Mukungwa river	Sites monitoring in terms of biodiversity taxa;	Once the proposed roads construction is approved;	Biodiversity consulting firm	Consultant/ Environmental Specialist	2,000,000

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Parameter/ Activity	Location	Means of Monitoring	Frequency	Responsible Agency		Cost estimate (RfW)
				Implemented by	Supervised by	
Waste management	Construction and extraction sites, camp sites	Visual inspection that solid waste is properly disposed at construction and camp sites	Monthly	Contractor	Consultant/ Environmental Specialist	N/A
Drinking water and sanitation	Construction and extraction sites, campsites, Laboratory,	Visual inspection that workers are provided with clean water and sanitation facilities (e.g., toilet paper, hand sanitizer,...);	Daily	Contractor	Consultant/ Environmental Specialist	N/A
Restoration of work sites	Work/ Cleared sites	Visual inspection of restored sites (e.g. by tree planting, filling of open borrow pits);	After completion of works	Contractor	District Engineer; Consultant/ Environmental Specialist	N/A
Safety of workers Monitoring and reporting accidents	At work sites	Inspection of use of Personal protective equipment (PPEs) and implementation of Occupational Health and Safety to workers;	Monthly	Contractor	Environmental and Social Specialist	2,000,000
Grievances (environmental issues)	Muhoza-Cyuve Project area	Number of grievances registered and addressed	Monthly	Protection implementation Unit (PIU)	Environmental Social Specialist	N/A
Stability of protection works	Slope sites, Resettlement sites	Visual inspection of erosion control	Monthly	RUDP II	Protection implementation Unit (PIU)	N/A
Total						40,000,000

Source: Adapted from ESMF, 2020

7.5 Storm Water Management Plan

7.5.1 Importance of a storm water management plan

The purpose of a storm water management plan is to protect, maintain and enhance the public health, safety, and general welfare of humans and the environment by establishing minimum requirements and procedures to control the adverse impacts associated with increased storm water runoff. Proper management of storm water runoff will minimize damage to public and private property, reduce the effects of development on land, control stream channel erosion, pollution and sediment deposition, reduce local flooding, and, in some instances, maintain the pre-development runoff characteristics.

This project appreciates the importance of managing storm water, understands and shall abide by the ruling that discharge of any storm water, non-treated drain waters and waste from any plot area to the surface bodies or on the surrounding land is forbidden.

A proposed storm water management measures to curb any predicted storm water run-off from this project, either at the construction or operation phases is presented below.

7.5.2 Storm water management measures

The kind of management measures for adaptation at the project site during roads, standalones and ponds construction in the Musanze City can be categorized as:

- Non-structural storm water management measures and,
- Structural storm water management measures.

Non-structural storm water management measures

Non-structural storm water measures are preventative actions that involve managerial planning and source controls. The following are non-structural storm water management practices that shall be applied at both the construction and operation phases of the project to minimize increases in new development runoff:

Construction phase

- Establishment of a temporary storm water collection pond made of impervious material, positioned at probably the lowest points of the road alignment and drainage based on the project area contours. This will hold water which may be used for construction of the road and drainage and also serve other purposes.
- Phased excavation to avoid opening big chunks of land at once,
- Fast tracking of the project works to avoid stockpiles open for long,
- Compacting of excavated area to minimize erosion effect from storm water.

During operation phase

- *Natural area conservation*- Green areas and other vegetation cover shall be provided for the road and drainage side and surrounding the project area to reduce run-off, through planting of grass and trees;
- *Disconnection of rooftop runoff*- rain collection gutters along the roof top of the offices or camp sites shall be directed into water tanks from which water shall be sourced for equipment washing and pavement cleaning.

Structural storm water management measures

Structural storm water measures are physically constructed controls that may remove pollutants from runoff, limit the rate of runoff, prevent contact between runoff and pollutants, and stabilize pollutants.

The following structural storm water management practices shall be designed to satisfy an applicable minimum control at both the construction and operation phase.

- Well networked surface drainage open channels covered by grills shall be built within alongside the roads and along the access roads.
- Water drains shall be built to channel surface water into a planned storm water collection pond at the construction stage.
- Physical buffering through well planned landscaping of the project site is planned for, to reduce the run-off velocity thereby reducing soil erosion, sedimentation or any other adverse effects of storm water. Vegetative buffers (such as grass growing), to allow for storm water management infiltration, shall assist in ground infiltration of the likely storm run-off and thereby improving the ground water re-charge.

Table 7-9 and 7-10 present the plan for the management of the storm water during construction and operational phase.

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Table 7- 9: Storm water management plan during Construction phase

Activity	Requirements	Procedure	Implementation schedule	Responsibility	Cost estimate (in RfW)
Storm water management	Site plans indicating the area to be excavated	Phased excavation of the road corridor to avoid opening big chunks of land at	Road and drainage, campsites clearing time.	Contractor	Cost covered in civil works related to Drainage
	Work implementation schedules	Fast tracking of the project works to avoid keeping excavated areas open for long.	Excavation for drainage and road.	Contractor	
	Ground compacting equipment	Compacting of excavated area to minimize erosion effect.	Foundation backfilling time. Levelling of site after construction.	Contractor	
	Work implementation schedules	Physical buffering through well planned landscaping of the project site.	Foundation backfilling time. Levelling of site/ roads/ drainage after construction.	Contractor	

Table 7- 10: Storm water management plan during operational phase

Activity	Requirements	Procedure	Implementation schedule	Responsibility	Cost estimate (in RfW)
Storm water management	Provision of green areas.	Green areas and other vegetation cover are provided for alongside the roads and drainages to prevent erosion and beautify the developed areas.	At the end of the construction, when preparing the road and drainage for commissioning.	District or its Contractor	5,000,000
	Paving of side and cycle lanes	Pavement of walkways and cycle lanes thus minimizing erosion and dust effect and reduce road usage conflicts.	At the end of the construction, when preparing the road/ drainage for commissioning.	District or its Contractor	5,000,000
	Periodic drainage maintenance including cleaning and repairs of damaged drains	Removal of silt, trashes and deposits in the drains	During the project operation	District or its Contractor	5,000,000 per year

7.5.4 Sediment Traps/Basins

Runoff from construction sites will contain large amounts of suspended particles, silts, grits and trashes. Trapping them in sediment traps is critical in preventing damage to streams, rivers, and lakes. Otherwise those materials can have impacts on the quality of water that humans drink, the habitat of fish and other wildlife, and the overall value of our waterways. For this project, sediment traps/basins and baffles have been proposed to be provided at the end or point of discharge of drains to allow settling of silt, sediments and suspended particles before discharging the storm water into a river, stream, or landscape and reduce the storm water runoff velocity. Where ponds cannot be installed, drains will be widened with baffles inside towards the end of drains (50 m), to slow down and calm the runoff velocity.

- a) **Maintenance:** Since the sediment traps will accumulate sediment trash and debris, regular maintenance of the system shall be needed to regularly dredge sediments and remove trashes, and debris;
- b) **Security and Safety:** typical hazards related to storm water ponds include drowning, entrapment in the confined spaces of inlet, slips and falls on steep embankment slopes or slippery surfaces. The sediment trap shall be fenced to avoid individual access and use. Local communities will be educated to be aware of any possible liability issues related to the hazards posed by storm water ponds.

7.6 Contingency Plan

7.6.1 Spills

7.6.1.1 Petroleum/Gasoline spills

Petroleum/Gasoline may be stored on-site for use by machinery and vehicles during construction

of the roads in the Musanze City. Petrol/gasoline spill is:

- a) Highly flammable
- b) Explosive when in vapor foam
- c) Easily ignited by flame or spark; lighter than water (floats on water)
- d) Toxic to humans by ingestion
- e) Toxic to aquatic organisms

The initial response to petrol/gasoline spill will be:

- a) Stopping the flow at the source if possible.
- b) Eliminating all possible sources of ignition (e.g. extinguish cigarette, shut off motors, generators)
- c) Evacuating danger area
- d) Carefully considering the hazards and merits of trying to contain the spill if it is safe to do so and obvious benefits of containment is apparent (e.g. contain if flowing towards a water course.) otherwise leave gasoline to spread and evaporate
- e) Meeting at the emergency assembly point
- f) Notifying the Supervising consultant.

In the event of fire, the response will be:

- a) Using CO₂ , dry chemical, foam or water spray(fog);
- b) Using jet streams to wash away burning gasoline.
- c) Diverting the gasoline to an open area and let it burn under control.

- d) Using water to cool the tank surfaces.
- e) Being aware of re-ignition if the fire is put out before all the gasoline is consumed.

Petrol/gasoline can be recovered in the following manner:

- a) Unburnt gasoline can be soaked up by sand or pit moss or by commercial sorbets.
- b) If necessary, contaminated soil will be excavated,
- c) Gasoline entering the ground can be recovered digging sumps or trenches and pumping from below water table.
- d) Petrol/ gasoline can be disposed of in the following manner.
- e) Evaporation incineration under controlled manner.

7.6.1.2 Other Fuels and Oil Products

Fuel and Oil products spills will be contained using local earth material and /or sand bags. Spill clean-up equipment specifically designed for other fuel and Oil products are to be located at the construction camp areas and at other detached storages. Dangers associated with fuel oil spills include:

- a) Risks associated with flammability.
- b) Mildly toxic by ingestion, highly toxic if aspirated.
- c) Moderately toxic to aquatic organisms.
- d) Harmful to waterfowl
- e) Floats on water.

Spills or leaks of all light and medium oils, including fuel oil at storage facilities will be

responded to by the following steps:

- a) Identifying the source of the leak or spill
- b) Stopping flow if possible
- c) Eliminating open flame ignition processes.
- d) Containing the spill.
- e) Notifying the Supervisor's Representatives
- f) Initiating Spill Response Plan.

In the event of tank rupture, the containment berm is designed to contain the full capacity of the tank. This will allow the oil to be contained and pumped out into salvage tanks. Contaminated soil from the site will be excavated, and transported to a treatment facility or treated on site by air sparging. Spilled diesel fuel can be covered by commercial sorbents or by sand straw or peat moss. If necessary, contaminated soil will be excavated. Digging sumps or trenches and pumping from below water table can recover diesel fuel saturated soil. Fuel spills on land will be responded to by the following procedures:

- a) Construction of earth berm down slope of the running or seeping fluid.
- b) Plastic taps may be placed at the base of the berm to allow the fuel pool on the plastic tarp for easy capture with absorbent pads,
- c) Pads may be squeezed into empty drums and re-used.
- d) Larger pools may be pumped back into the drums.
- e) Special care will be taken to prevent the fuel from entering the water body or water where it will have greater negative impact.

- f) Contaminated soil and vegetation may have to be removed and disposed off at well designated dump site in each district.

Fire Response methods for Diesel Fuel includes:

- a) CO₂, dry chemical, foam, or water spray.
- b) Water to cool tank surface.
- c) Diversion of the diesel to an open area and let it burn of under control.
- d) Awareness of re-ignition if the fire is put before all diesel fuel is consumed

Fuel spills on water will be contained immediately to restrict the extent of the floating fuel. The methods, which may be used to contain the fuel include:

- a) Booms deployed to contain the spill.
- b) Absorbent pads used to capture small spills on watercourse.
- c) A skimmer to recover oil contained by boom and then pumps the recovered fuel into empty fuel drums.

7.6.1.3 Acid Spills

These occur mainly from vehicle batteries and other materials with acidic chemical properties. Spills of acid will be contained using sand bags and neutralization can be accomplished using either soda ash or lime. Both the sand bags and lime will be stored at equipment maintenance yards/service areas. Following neutralization, the area will be carefully flushed with water. Any water used for flushing a spill shall be contained, recovered and disposed of in an approved manner.

7.6.1.4 Concrete

During any course of concrete pour in the storm water pathways but mainly in the water courses, carbon-dioxide cylinders will be ready for use to neutralize the effect of the concrete.

7.6.1.5 Plan Review and Training

The Spill Contingency and Response Plan will be monitored periodically by the Supervising consultant, Environmental officer (Contractors side), the Contractor's Project Manager and the District Environmentalist. Reviews will include updates to the products on site, suggested amendments to the plan, and reviews of handling and spill mitigation measures and other relevant information. The Spill Contingency and Response Plan will be a key component of Environmental Awareness Training Programs. All personnel on site will receive training in the use of the plan, prevention, expected reporting of spills, reporting structure, response, and follow-up.

7.6.2 Damages to environment and properties

The construction and civil works will involve intensive works and heavy trucks and machineries that may lead to unexpected damages to the different components of environment (water, air, land) including buildings and utilities. The construction works may lead to unexpected pollution to water resources, air quality, destabilization of cuts and embankment leading to erosion and landslide. When happens, the contractor, and the client (LODA and Musanze District) will:

- *Assess damages to water resources, air quality and land; and undertake the remedial actions;*
- *Assess damages to properties or utility services and determine the extent of the damage*

whether it is repairable or a new property if required all together;

- *Undertake a temporary measure of giving temporary shelter to the affected family as valuation is on-going, if the property is adversely affected that it's not usable.*
- *Ensure the Project affected or damaged properties and services are fixed otherwise compensated at full replacement cost.*

7.7. Community Health, Safety and Security Management Plan

This plan provides potential community health, safety and a security risk associated with the implementation of RUDP II Phase 3 and helps to provide guidance that respond and mitigate the identified risks. Under this plan all applicable laws and standards stated in legal and institutional framework shall apply. The table below shows the potential risks of the project activities in the 6 secondary cities, the proposed mitigation measures and the responsibilities. Table 7-11 summarizes the Community Health, Safety and Security Management Plan.

Table 7- 11: Community Health, Safety and Security Management Plan

Potential Risk	Mitigation Measures	Responsible
Increased pressure on health services and infrastructure. New workers from outside areas to the project area will increase demand on existing health services	➤ Health services of the new workers shall be provided especially the medical insurance–Mutuelle de santé and where possible, the contractor may assist with the improvement of healthcare infrastructure.	Contractor Community Liaison and Health Officer

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Potential Risk	Mitigation Measures	Responsible
Spread of Communicable diseases. New workers to the area could bring with it an increase of communicable diseases.	<ul style="list-style-type: none"> ➤ Awareness campaigns on hygiene and sanitation and how these diseases spread. 	Contractor Community Liaison and Health Officer
Dust from transport and vehicles and machineries on roads	<ul style="list-style-type: none"> ➤ Control speed limits; ➤ Haul truck transporting volatile construction materials ➤ Ensure haul trucks are not overloaded and are covered where necessary; ➤ Control of moisture content on haul road via sprinkling; Monitoring to ensure all dust emission are within national and international best practice limits. 	Contractor Environmental Officer
Road accidents	<ul style="list-style-type: none"> ➤ Control speed limits; ➤ Ensure haul trucks are not overloaded and are covered where necessary; ➤ Investigate reasons and implement stricter or new measures if needed. ➤ Erect speed control signs ➤ Community awareness ➤ All measures are written in separate Traffic Management Plan 	Contractor Safety Officer
Diffuse run-off from roads, construction areas and other disturbed areas may contain elevated concentrations of suspended solids or pollutants.	<ul style="list-style-type: none"> ➤ Ditches will channel surface water runoff to the designated areas ➤ Maximum reuse or recycle of process wastewater; ➤ Water monitoring will be conducted. 	Contractor Environmental Officer

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Potential Risk	Mitigation Measures	Responsible
Noise during construction.	<ul style="list-style-type: none"> ➤ Monitoring will be conducted; ➤ Operating hours of the open pit activities only during the daily hours; ➤ Speed restrictions on site traffic; and ➤ Workers provided with PPE. 	Contractor Community Liaison and Health Officer
Potential Economic impact on household livelihoods	<ul style="list-style-type: none"> ➤ Local residents will be hired where possible ➤ Implementation of a Livelihood Restoration Programme in the project area 	Contractor Community Liaison and Health Officer
Loss of properties due to road upgrading	<ul style="list-style-type: none"> ➤ Ensure expropriation and compensation are carried out as per the ARUP and expropriation Law ➤ All compensations and expropriation should be paid prior to commencement of works 	Contractor Community Liaison and Health Officer
Gas emissions from project vehicles, trucks and construction machineries	<ul style="list-style-type: none"> ➤ Constant preventative emission control; ➤ Ensure all project vehicles and trucks have valid vehicle inspection certificates, ➤ Good design of plant and use of modern machineries and plant; ➤ Air quality monitoring. 	Contractor Safety Officer
Dust from construction activities including quarries and borrow pits	<ul style="list-style-type: none"> ➤ Open pit engineering design to ensure less dust escapes and is captured in the void; ➤ Consider the meteorological conditions; ➤ Water sprays on excavators, ➤ Workers provided with appropriate PPE. 	Contractor Environmental Officer

Source: Consultant, 2020

7.8 Traffic Management Plan and Safety Signage

This proposed traffic management plan provides measures to avoid accidents during the implementation of RUDP II Phase 3 activities in the Musanze City.

7.8.1 Issues and problems related to Traffic Management Plan

The following issues can be identified:

Lack of traffic discipline

- i. Trucks or construction machineries stop near intersections and in all lanes just in front of intersection without any consideration of traffic flow or stop in the middle of the road,
- ii. Trucks and construction machineries drive at high speed in the project road and can cause serious accidents,
- iii. Vehicles stop near intersections and in all lanes just in front of intersection without any consideration of traffic flow or stop in the middle of the road to pick up and/or drop passengers,
- iv. Motorized vehicles are parked along roads, even if parking is forbidden.

Poor pedestrian facilities and behavior

- i. Pedestrians walk on the roadway because sidewalks are being upgraded, closed or occupied by unauthorized parking,
- ii. Pedestrians cross the road under construction everywhere and any time even if trucks,

construction machineries or vehicle are passing through.

- iii. In roundabouts, pedestrians are waking anywhere and anytime when they want.

Poor Traffic Operation

- i. The flag-person directs traffic against traffic/safety signals,
- ii. The flag-person uses sign posts which are not visible at distance or during darkness periods to direct traffic.
- iii. Many obstructions such as construction materials, construction equipment, construction wastes are occupied in road spaces.

Poor traffic management facilities

- i. Road markings are non-existent or out of paint and lanes are not marked on the roadway,
- ii. Very few or poorly made road signs are installed on the road construction corridor and junctions;

Poor traffic Signals

- i. No truck, construction machineries and vehicle drivers follow traffic signal;
- ii. Some of the traffic signals are malfunctioning.

Poor compliance for drivers

Most of people do not follow traffic rules properly because most of drivers are not well-trained or are reluctant to abide by the traffic rules. Table 7-12 proposes the countermeasures of the Traffic issues.

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Table 7- 12: Proposed countermeasures the Traffic issues

Problem	Cause	Countermeasure	Responsible
Lack of traffic discipline	Trucks or construction machineries stop near intersections	All trucks and machineries should not stop near intersection	Contractor; Health and safety Officer; Flag-person
	Trucks and construction machineries drive at high speed	Speed limit sign posts should be installed and a flag-person to ensure compliance	Contractor; Health and safety officer; Flag-person
	Vehicles and construction machineries stop in the middle of the road	Vehicle should be prohibited to stop in the middle of road when not at duty	Contractor; Health and safety officer; Flag-person
	Motorized vehicles are parked along roads	A parking should be provided	Contractor; Health and safety officer; Flag-person
Poor pedestrian facilities and behavior	Pedestrians walk on the roadway	Ensure sidewalks are not occupied by unauthorized parking	Contractor; Health and safety officer; Flag-person
	Pedestrians cross the road under construction everywhere and any time even	Pedestrians should be guided when crossing the road under construction	Contractor; Health and safety officer; Flag-person
	Pedestrians are waking in roundabouts, anywhere and anytime when they want	Pedestrian should be stopped from walking in the round or guided when construction activities are being carried out	Contractor; Health and safety officer; Flag-person
Poor Traffic	The flag-person directs traffic	The flag-person should follow	Contractor
Operation	against traffic/safety signals	the safety signals provided	Health and safety officer; Flag-person
	The flag-person uses sign posts which are not visible at distance or during darkness periods to direct traffic	New and visible sign posts should be provided	Contractor; Health and safety officer; Flag-person

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Problem	Cause	Countermeasure	Responsible
	Many obstructions such as construction materials, construction equipment, construction wastes are occupied in road spaces.	All obstruction should be removed on the road space and corridor	Contractor; Health and safety officer; Flag-person
Poor traffic management facilities	Road markings are non-existent or out of paint and lanes are not marked on the roadway	Ensure all required sign posts are installed or marked on the roadway	Contractor; Health and safety officer; Flag-person
	Very few or poorly made road signs are installed on the road construction corridor and junctions.	Ensure worn out sign posts are removed and replaced by new ones	Contractor; Health and safety officer; Flag-person
Poor traffic Signals	No truck, construction machineries and vehicle drivers follow traffic signal	Ensure all drivers comply with traffic signs. Failure to comply sanctions should be provided	Contractor; Health and safety officer; Flag-person
	Some of the traffic signals are malfunctioning.	Ensure malfunctioning sign posts are replaced	Contractor; Health and safety officer; Flag-person
Poor compliance for drivers	Most of people do not follow traffic rules properly most of drivers are not well-trained or are reluctant to abide by the traffic rules.	Toolbox meetings about traffic rules should be provided to all workers and drivers	Contractor Health and safety officer Flag-person

7.8.2 Road safety signs

Road safety signs to be used in this project are classified basing on the purpose and message intended as: regulatory signs, warning signs and advisory signs and temporary signs as detailed in the Table 7-13. These signs shall be installed to avoid accidents, injuries and fatalities.

Table 7- 13: Road safety signs to be used during the implementation (construction phase)

SIGN TYPE	PURPOSE	EXAMPLE	MEANING
REGULATORY	Regulatory road sign are signs that are used to indicate or reinforce traffic laws, regulations or requirements which apply either at all times or at specified times or places upon a road, street or highway under use or construction the disregard of which may constitute a violation, or signs in general that regulate public.		Vehicles should stop before crossing or continuing to a given direction
			Strictly prohibited to enter.
			No parking allowed at this point.
			One-way sign. Not allowed to use the lane.
			Hooting not allowed.
			Slow down.

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SIGN TYPE	PURPOSE	EXAMPLE	MEANING
			Warning about students/ pedestrians crossing a road
			Speed limited at 30 km/h.
			Risk of stones falling on the road.
			Road closed to users.
WARNING	Warning sign is a type of sign which indicates a potential hazard, obstacle or condition requiring special attention. Some are traffic signs that indicate hazards on roads that may not be readily apparent to a driver. The warning signs usually contain a symbol		Working place.
			Narrow road ahead.
			Humps ahead

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SIGN TYPE	PURPOSE	EXAMPLE	MEANING
			Informing that trucks and heavy machineries use the road.
			Area close to many users of the road.
			Zebra crossing
ADVISORY	Advisory sign posts are often seen under a warning sign and typically placed at sharp curves, exits, or exit ramps.		Speed limit near a turn.
			Risk sliding or slippery.

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SIGN TYPE	PURPOSE	EXAMPLE	MEANING
			Slope of 10 % ahead
			Speed limit to 40 km/h due to works.

Source: adapted from <https://in.pinterest.com/pin/814729388820637445/>, 2020.

7.8.3 Diversions

In order to carry out the construction works, it may be necessary to close or divert certain specified roads, either permanently or temporarily during the construction period. The contractor should arrange diversions for providing alternative route for transport and/or pedestrians. After breaking up, closing or otherwise interfering with any street or footpath to which the public has access, the Contractor shall make such arrangements as may be reasonably necessary so as to cause as little interference with the traffic in that street or footpath during construction of the rehabilitation works as shall be reasonably practicable. Wherever the construction works interfere with existing public or private roads or other ways over which there is a public or private right of way for any traffic, the Contractor shall construct diversion ways wherever possible.

7.9 Vegetation Restoration Plan

7.9.1 Rehabilitation objectives

The purpose of the re-vegetation plan is to identify effective re-vegetation practices that help accelerate the natural succession processes that occur following the clearing of native vegetation and soil disturbance. The re-vegetation objectives are to:

- Ensure roadside stability and minimize maintenance;
- Ensure that conservation values and biodiversity are protected; and
- Ensure local amenity and aesthetics are enhanced.

7.9.2. Existing vegetation

The project area is the urban and semi-urban areas and has limited vegetation number/species along the road. The main vegetation along the road has been reported in Table 4-2. In general vegetation in the project area is dominated by herbs (*Digitaria sp.*, *Bidens pilosa*, *Commelina africana*, *Ocimum lamiifolium*, *Cynodon dactylon*, *Settaria sp*), fruit trees (*Citrus aurantium*, *Psidium guajava*, *Passiflora incarnate*, *Psidium guajava*, *Persea americana*, *Carica papaya*, *Manguifera indica*) and wood trees (*Acacia abyssinica*, *Eucalyptus sp.*, *Pinus patula*, *Bambusa vulgaris*, *Grevillea robusta*) and crops (*Musa sapientum*, *Phaseolus vulgaris*, *Glycine max*, *Zea mays*, *Ipomoea batatas*, *Beta vulgaris*, *Brassica oleracea*).

7.9.3 Types and quantity of vegetation to be planted

Ideally, the reinstated roadside vegetation should be similar in structure and content to comparable naturally occurring vegetation in the local area and would reflect the vegetation communities

present in the road reserve and adjacent bushland. However, as discussed in 7.9.2, the project area is typical urban and semi-urban areas and has limited natural vegetation.

Our field investigations and desk works came up with a list of trees and grasses more adaptive to the Musanze City climate and altitude and having good canopy and ornamental values. While trees shall be planted with spacing of 5 m, grasses shall be planted as many as possible with the aim to have grass foliage cover of over than 50%. The Musanze District officials will have the right to select one or more of the native trees in the following list: Umwungo (*Begoniameyeri johannis*), Umuremere (*Kigelia africana*), Umufu (*Podocarpus usambarensis*), Umugo (*Acacia polyacantha*), Umugwampore (*Ficus glumosa*), Umuhere (*Ficus ovata*), Umuhumuro (*Maesopsiseminii*), Umukerenke (*Ozoroareticulata*), Umukoli (*Markhamia obtusifolia*), Umukongwa or Umukwa (*Dombeya bagshawei*), Umumena or Umuremampango (*Pappea capensis*), Umurangara or Umubonobono (*Croton macrostachyus*), Umusasa (*Sapium ellipticum*), Umusebeya (*Albizia adianthifolia* and *Albizia gummifera*), Umushikiri (*Eucleas chimperi*). Umucaca (*Pennisetum clandestinum*), Umunyarugera (*Acacia sieberana* var. *kagerensis*) and Umugeshi (*Hagenia abyssinica*).

However, the experience has shown that native species are sometimes hard to grow, require considerable effort to re-adapt to the disturbed environment in the short period of time. It is under the client responsibility to invest more effort in the maintenance of the restored natural green space along the project area.

The reinstatement of dumpsites, borrow pits, quarry sites and campsites shall be done using adaptive vegetation preferably of fruit trees (*Citrus aurantium*, *Citrus aurantifolia*, *Psidium guajava*, *Passiflora incarnate*, *Psidium guajava*, *Persea americana*, *Carica papaya*, *Manguifera indica*) and wood trees (*Eucalyptus sp.*, *Eucalyptus maidenii*, *Acacia abyssinica*, *Pinus patula*, *Bambusa vulgaris*, *Grevillea robusta* or other adaptive trees, *Alnus glutinosa*, *Alnus vulgaris*).

7.9.4 Weed Control

All along the road side weeds that can out-compete the local native species will be controlled. Adequate control measures will be incorporated to ensure weeds are removed and disposed to an approved dump site.

7.9.5 Revegetation Techniques

The following rehabilitation works shall be undertaken on areas of disturbed earth requiring rehabilitation:

- Topsoil will be uniformly spread to a minimum depth of 100mm over the area; and
- Area to be ripped to a minimum depth of 200mm deep with rip lines approximately 300mm apart. Where slopes are present, rip lines shall be along contours.

The following rehabilitation work shall be undertaken at borrow/gravel pits:

- Overburden and then topsoil shall be uniformly and evenly spread over the disturbed areas of the pit. Depending on the slope of drainage lines within the pit, it may be necessary to form small swales from the topsoil to reduce erosion velocities and encourage the deposition of seeds.

- The existing pit floor shall be ripped to a depth of 300 – 500mm deep with rip lines between 500 - 800mm apart, if the material in the floor of the pit is able to be ripped. The whole area of the pit, including drainage lines, shall be ripped.
- All stockpiled vegetation shall be spread along the contour and pit floor to help promote seed deposition and further reduce erosion velocities.

7.9.6 Timing and Staging of Re-vegetation Works

As soon as the construction activities end, re-vegetation works will start. Topsoil and vegetative material will be spread over disturbed areas and re-vegetation will start. The project area will be monitored over most of the wet season, primarily to investigate any further scour in the area, but in addition to observe the regeneration success of native seed and potential weed spread. All weeds will be either manually removed and disposed of in a quarantined area or sprayed with herbicide.

7.10 Chance find Procedure

7.10.1 Purpose of the chance find procedure

As per the requirements of the WB ESS8 related to cultural sites and the RUDP II ESMF directives, a chance find procedure for this project will be put in place. The chance find procedure is a project-specific procedure that outlines actions required if previously unknown heritage resources, particularly archaeological resources, are encountered during project design, construction or operation. A Chance Find Procedure, as described in IFC Performance Standard 8, is a process that prevents chance finds from being disturbed until an assessment by a competent specialist is made

and actions consistent with the requirements are implemented.

7.10.2 Responsibility

The project Implementation Unit is responsible for siting and designing the project to avoid damage to cultural heritage. When the proposed location of a project is in areas where cultural heritage is expected to be found, either during construction or operations, the client will implement chance find procedures established through the Social and Environmental Assessment. The client will not disturb any chance finds further until an Assessment by a competent specialist is made and actions consistent with the requirements of this Performance Standard are identified.

7.10.3 Scope of the chance find procedure

This procedure will be applicable to all activities conducted by the personnel, including contractors that have the potential to uncover a heritage item/site including bodies of victims of the 1994 Genocide against the Tutsis. The procedure details the actions to be taken when a previously unidentified and potential heritage item/site is found during construction activities. Procedure outlines the roles and responsibilities and the response times required from both project staff, and any relevant heritage authority.

7.10.4 Induction/ Training

All personnel, especially those working on earth movements and excavations, are to be inducted on the identification of potential heritage items/sites and the relevant actions for them with regards to this procedure during the Project induction and regular toolbox talks.

7.10.5 Chance find procedure

If any person/worker under this project discovers a physical cultural resource, such as (but not limited to) archaeological sites, historical sites, remains and objects, or a cemetery and/or individual graves during excavation or construction, the following steps shall be taken:

- 1) Stop all works in the vicinity of the find, until a solution is found for the preservation of these artefacts, or advice from the relevant authorities is obtained especially the Institute of National Museums of Rwanda (INMR);
- 2) Immediately notify the foreman. The foreman will then notify the Site engineer and the Environment Officer of the contractor;
- 3) Record details in Incident Report and take photos of the find;
- 4) 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 takeover;
- 5) Preliminary evaluation of the findings by archaeologists. The archaeologist must make a rapid assessment of the site or find to determine its importance. Based on this assessment the appropriate strategy can be implemented. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage such as aesthetic, historic, scientific or research, social and economic values of the find;
- 6) Sites of minor significance (such as isolated or unclear features, and isolated finds) should be recorded immediately by the archaeologist, thus causing a minimum disruption

to the work schedule of the Contractor. The results of all archaeological work must be reported to the INMR, once completed.

- 7) In case of significant find the INMR, will be informed immediately and in writing within 7 days from the find,
- 8) The onsite archaeologist provides INMR with photos, other information as relevant for identification and assessment of the significance of heritage items.
- 9) The INMR will investigate the fact and provide response in writing.
- 10) Decisions on how to handle the finding shall be taken by the responsible authorities which is INMR . This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage;
- 11) Construction works could resume only after permission is granted from the responsible authorities.
- 12) In case no response received, this will be considered as authorization to proceed with suspended construction works.

One of the main requirements of the procedure is record keeping. All finds must be registered. Photolog, copies of communication with decision making authorities, conclusions and recommendations/guidance, implementation reports are kept.

7.10.6 Additional information: Management options for archaeological site

- *Site avoidance.* If the boundaries of the site have been delineated attempt must be made to

redesign the proposed development to avoid the site. (The fastest and most cost-effective management option);

- *Mitigation.* If it is not feasible to avoid the site through redesign, it will be necessary to sample it using data collection program prior to its loss. This could include surface collection and/or excavation. (The most expensive and time-consuming management option.)
- *Site Protection.* It may be possible to protect the site through the installation of barriers during the time of the development and/or possibly for a longer term. This could include the erection of high visibility fencing around the site or covering the site area with a geotextile and then capping it with fill. The exact prescription would be site-specific.

7.10.7 Management of replicable and non-replicable heritage

Different approaches for the finds apply to replicable and non-replicable heritage.

Replicable heritage

Where tangible cultural heritage that is replicable (Replicable cultural heritage is defined as tangible forms of cultural heritage that can themselves be moved to another location or that can be replaced by a similar structure or natural features to which the cultural values can be transferred by appropriate measures. Archaeological or historical sites may be considered replicable where the particular eras and cultural values they represent are well represented by other sites and/or structures and not critical is encountered, mitigation measures will be applied.

The mitigation hierarchy is as follows:

- i. Avoidance;
- ii. Minimization of adverse impacts and implementation of restoration measures, in-situ;
- iii. Restoration of the functionality of the cultural heritage, in a different location; Permanent removal of historical and archaeological artefacts and structures;
- iv. Compensation of loss - where minimization of adverse impacts and restoration not feasible.

Non-replicable heritage

Most cultural heritage is best protected by in situ preservation, since removal is likely to result in irreparable damage or even destruction of the cultural heritage.

Nonreplicable cultural heritage (Nonreplicable cultural heritage may relate to the social, economic, cultural, environmental, and climatic conditions of past peoples, their evolving ecologies, adaptive strategies, and early forms of environmental management, where the (i) cultural heritage is unique or relatively unique for the period it represents, or (ii) cultural heritage is unique or relatively unique in linking several periods in the same site. Examples of non-replicable cultural heritage may include an ancient city or temple, or a site unique in the period that it represents.) must not be removed unless all of the following conditions are met:

- i. There are no technically or financially feasible alternatives to removal;
- ii. The overall benefits of the project conclusively outweigh the anticipated cultural heritage loss from removal; and Any removal of cultural heritage must be conducted

using the best available technique advised by relevant authority and supervised by archaeologist.

Human Remains Management Options

The handling of human remains believed to be archaeological in nature requires communication according to the same procedure described above.

There are two possible courses of action:

- i. Avoid. The development project is redesigned to completely avoid the found remains. An assessment should be made as to whether the remains may be affected by accumulative impacts associated with the development, and properly addressed by a comprehensive management plan.
- ii. Exhume. Exhumation of the remains in a manner considered appropriate by decision makers. This will involve the predetermination of a site suitable for the reburial of the remains. Certain ceremonies or procedures may need to be followed before development activities can recommence in the area of the discovery.

Emergency Contacts

Institute of National Museums of Rwanda
(INMR) Address : KN 90 St2, Kigali
Téléphone : 0730 741 09
Email: info@museum.gov.rw

Website: www.museum.gov.rw

7.11 Training and capacity building plan

The effective implementation of the ESMP requires that all persons working for the project are aware of the importance of environmental requirements for the project and their roles and responsibilities in the implementation of the ESMP. They should also be aware of actual or potential environmental impacts of their work activities; the benefits of improved performance and the consequence of not complying with environmental requirements. In addition, the local communities must be made aware of their rights and obligation, and informed on the project benefits in terms of employment opportunities and increased livelihoods outcome. The implementation of this plan shall build the skills and capacity assessment conducted by the ESMF.

This plan sets out that the following entities shall need to be trained:

- Contractor's Project manager, Senior staff, Environmentalists and officer in charge of Health and Safety;
- Contractor's casual workers and drivers;
- Resident Engineer, Consultant's Environmentalists and officer in charge of Health and Safety.
- Representative of local community/community verifiers, road users, material suppliers and women

Table 7-14 outlines the training recipients, environmental and social aspects to be covered in the training and capacity building conducting agencies.

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Table 7- 14: Indicative content of the RUDP II phase 3 capacity building training

SN	Training recipients	Mode of Training	Environmental and social aspects	Training conducting agencies	Budget in RWF
1	MININFRA and REMA staff to be involved in the project; Staff in charge of environment, social, health and safety at District, Contractor, Consultant.	Lecture System Workshops Group Discussion Visit to Case Study	<ul style="list-style-type: none"> • World Bank Environmental and Social Standards • Rwanda Environmental and social protection laws and policies (e.g. Environmental Law, labor Law, expropriation Law, etc); • Relevant ratified treaties, conventions and protocols on Environment and social protection; • Project (RUDP II phase 3) Environmental and Social Management Plan implementation; • Environmental pollution associated with roads and urban development and management projects; • Best practices for environmental and social standards; • Grievance redress mechanisms; 	Environment Specialists from RDB, REMA and World Bank	1,000,000
2	Contractor and consultant senior staff	Seminar Workshop Lectures	<ul style="list-style-type: none"> • World Bank Environmental and Social Standards; • Rwanda Environmental and social protection laws and policies (e.g. Environmental Law, labor Law, expropriation Law, etc); • Relevant ratified treaties, conventions and protocols on Environment and social protection • RUDP II phase 3 Environmental and Social Management Plan implementation • Environmental pollution associated with roads and urban development and management projects; • Best practices for Environmental and Social Standards • Grievance redress mechanisms; 	Environmental and Social Specialists from LODA, Consultant and Contractor	1,000,000

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SN	Training recipients	Mode of Training	Environmental and social aspects	Training conducting agencies	Budget in RWF
3	Contractor's Staff and workers	Seminar Workshop Lectures and on site meetings	<ul style="list-style-type: none"> • Environmental pollution associated with road and urban development and management projects; • Project' Environmental and Social Management Plan implementation; • Dealing with complaints – to maintain good relationship with stakeholders; understanding the needs, traditions and behavior of local communities. • Social right and responsibility of the company personnel • Training on grievance handling and reporting • Training of Local Government Officials on screening for land acquisition, impact on assets and livelihoods and on vulnerable groups • Environmental impacts and social and economic benefits of the project including employment opportunities • Training on HIV-AIDS • Training on GBV including sensitization on gender constraints and priorities related to the project activities; • Grievance redress mechanisms; 	Environmental and Social Specialists from LODA, Consultant and Contractor	1,000,000
4	Local community and community verifiers	Site debates, meetings, posters, banners and brochures Radio and TV spots	<ul style="list-style-type: none"> • Environmental impacts and social and economic benefits of the project including employment opportunities • Training on HIV-AIDS • Training on GBV including sensitization on gender constraints and priorities related to the project activities; • Grievance redress mechanisms; 	Environmental and Social Specialists from LODA, Musanze District, Consultant and Contractor	1,000,000

8. CONSULTATIVE AND PUBLIC PARTICIPATION

8.1 Background

As per the requirements of the WB ESF (ESS10 and RUDP II Stakeholder Engagement Plan (SEP)), the stakeholder consultation was undertaken to engage local and affected people, disseminate activities, outputs and results to all relevant stakeholders, to ensure that stakeholders are provided with sufficient opportunity to voice their opinions and concerns that may influence project decision (RUDP II SEP, 2020).

The objectives of the ESIA public consultation process were to:

- ✓ Make the ESIA study participatory and transparent;
- ✓ Share the potential positive and negative environmental and social impacts and their proposed mitigations;
- ✓ Inform the PAPS about their right and how they will be put in actions;
- ✓ Explain and make the compensation process transparent;
- ✓ Determine the attitudes of PAPS towards the proposed project components; and finally
- ✓ Provide a platform for future consultation by:
 - reducing conflicts through early identification of contentious issues;
 - improving transparency and accountability of decision making;
 - facilitating participation to increase public confidence in the ESIA process;
 - Identifying stakeholders with who further dialogue will be constructive in subsequent stages of the project.

8.2 Procedure for Stakeholder's engagement

As per the provisions of the RUDP II SEP, stakeholder's engagement involved the appropriate, culturally consultation methods. Prior to any engagement event, the following steps were followed:

- a) Preparation of standard 'question and answer' sheets tailored for specific stakeholder types (based on 'lessons learnt' analysis and common issues raised in previous engagement);
- b) Planning/design of engagement action (s) with Project Implementation Units and Musanze Districts;
- c) Agree on the roles of parties during stakeholder engagement activities;

- d) Selection of individual/group stakeholders with whom engagement will occur;
- e) Selection of methods for engaging and disclosure of information (including such topics as format, language, and timing);
- f) Selection of location and timing for engagement activities, for PAPs, avoiding busy work times when special activities may be occurring);
- g) Agreeing mechanisms for ensuring stakeholder attendance at engagement activities (s);

8.3. Engagement methods and techniques

The stakeholder’s engagement techniques used in this ESIA were borrowed from the RUDP-II SEP and ESMF and involved the methods presented in Table 8-1 and Table 8-2.

Table 8- 1: Stakeholders consultation methods for the preparation of the RUDP-II ESIA in Musanze City

Engagement Method	Appropriate application of the method
Correspondances (Phone, Emails, text messages)	<ul style="list-style-type: none"> ● Invite stakeholders to meetings ● Consultation with stakeholders and follow-up
One-on-one meetings	<ul style="list-style-type: none"> ● Seeking views and opinions; ● Enable stakeholder to speak freely about sensitive issues; ● Build personal relationships; ● Record meetings
Formal meetings	<ul style="list-style-type: none"> ● Present the Project information to a group of stakeholders; ● Allow groups to comment – opinions and views; ● Build impersonal relation with high level stakeholders; ● Disseminate technical information; ● Record discussions
Public meetings	<ul style="list-style-type: none"> ● Present Project information to a large group of stakeholders (local communities); ● Allow the group to provide their views and opinions; ● Build relationship with the communities, especially those impacted and vulnerable/disadvantaged; ● Distribute non-technical information; ● Facilitate meetings with presentations, PowerPoint, posters etc.; ● Record discussions, comments, questions.

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Engagement Method	Appropriate application of the method
Focus group meetings	<ul style="list-style-type: none"> • Present project information to a group of stakeholders (young, female, road users); • Allow stakeholders to provide their views on targeted baseline information; • Build relationships with communities; • Record responses
Workshops	<ul style="list-style-type: none"> • Present project information to a group of stakeholders; • Allow the group of stakeholders to provide their views and opinions; • Use participatory exercises to facilitate group discussions, brainstorm issues, analyze information, and develop recommendations and strategies; • Recording of responses
Surveys	<ul style="list-style-type: none"> • Gather opinions and views from individual stakeholders • Gather baseline data • Record data • Develop a baseline database for monitoring impacts
Website	<ul style="list-style-type: none"> • Present project information and progress updates; • Disclose findings of ESIA, ESMP, ESMF, RAP and RPF and other relevant project documentation
Direct communication with owners of affected properties, land, crops/asset	<ul style="list-style-type: none"> • Seek PAPs participation during social economic survey and valuation exercise; • Share findings of valuation report, seek PAPs approval and signature; • Communicate cut-of-date

Source: Adapted from RUDP II SEP, 2020

Table 8- 2: Stakeholders levels of consultation

Stakeholder group	Communication technics
LODA and Musanze District	Telephone / email / text messaging One-on-one meetings Formal meetings

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Stakeholder group	Communication technics
Project Affected People	Print media, text messaging and radio/TV announcements One-on-one interviews/meetings Public meetings Focus group meetings Surveys Information boards
Local community including vulnerable or disadvantage groups.	Print media, text messaging and radio/TV announcements One-on-one interviews/meetings Public meetings Focus group meetings Surveys Information boards
Non-Governmental Organization (CSO, religious groups).	Phone / fax / email / text messaging One-on-one interviews Focus group meetings Information boards Phone / fax / email / text messaging Print media and radio announcements
Private Sector (environmental professional organization, institute of engineers)	Workshops Focus group meetings Surveys

Source: Adapted from RUDP II SEP, 2020

For this project, the public consultations were conducted by the ESIA consultants, assisted by trained local people. The training of the locals on public consultations and survey methods was conducted simultaneously between 09 November 2020 in Muhoza sector along the project sites (Plate 8-1). In some case, road users such as moto taxi were joined at their parking site. The trained locals then assisted in the conducting of the public consultations that were divided into three phases:

- The first phase entailed the conducting of public awareness meetings with all PAPS in Muhoza Sector;
- The second phase was the one on one interviews of the PAPS or what is often referred to as a door-to-door survey. PAPS were grouped in women, men, vulnerable, youth and road users;

- The third phase will be the validation workshops where all PAPS assembled to validate the data collected during the door to door interviews.



Plate 8- 1: Training of locals on Public Consultation Process and the Survey Methods in Ruhengeri Cell, Muhoza Sector , Musanze City

8.4 Stakeholder Analysis

8.4.1 Stakeholder Identification

To enhance maximum participation and achieve a better output, the project stakeholders were identified and informed about the proposed project. In this regard, two broad categories of stakeholders were identified, depending on their level of interest or the magnitude of impacts on the project (Table 8-3):

- **Primary stakeholders:** those directly affected, either positively or negatively, by the project, decisions, or actions.
- **Secondary stakeholders:** those that are indirectly affected by the project, or decision, or actions.

Table 8- 3: Stakeholders for RUDP II Phase 3 in Musanze City

Primary Stakeholders	Secondary Stakeholders
MINECOFIN	RTDA
MININFRA	WASAC
MINALOC	REG, REMA
Musanze District	The private sector federation
WB	Civil society organizations (religious groups, NGOs) International NGOs in the field of environmental protection: IUCN, ARCOS, WCS
Local communities	RTDA
Project Affected People (PAPs)	WASAC
	Others Development Partners
	Academia, university of Rwanda, Center of Excellent and Biodiversity
	The private sector federation
	RTDA
	WASAC

Source: Adapted from RUDP II SEP, 2020

8.4.2 Stakeholder Analysis

The project stakeholder's analysis of the RUDP II Phase 3 in terms of strength, weakness, opportunities, threats is shown in Table 8-4.

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Table 8- 4: Stakeholder Analysis for RUDP II phase

Stakeholder	Interests	Opportunities	Threats	Linkages/Involvement with the proposed project
Central Government and Government entities (MININFRA, MINALOC, LODA, RTDA, RHA, RDB, and REMA)	<ul style="list-style-type: none"> ✓ Guidance and coordination of the project ✓ Input to environment management plans ✓ Monitoring of environmental and social issues 	<ul style="list-style-type: none"> ✓ Institutional support and coordination 	<ul style="list-style-type: none"> ✓ Limited resources for monitoring ✓ A bureaucracy that may delay the progress of operations thus costing the project more time and money 	<ul style="list-style-type: none"> ✓ Give guiding policies and government regulations ✓ Monitoring of works ✓ Technical support to District staff s ✓ Issue approvals/permits/certificates to the project
Local Government entities (Musanze District, Muhoza Sector, Musanze and Cyuve Sector)	<ul style="list-style-type: none"> ✓ Responsible for the planning and development of infrastructure ✓ Representing project affected persons ✓ Technical guidance during data collection ✓ Accountability for development in their areas of jurisdiction 	<ul style="list-style-type: none"> ✓ Can provide information about population trends and dynamics ✓ Political support and mobilization ✓ Can be utilized as the contact persons in the project area ✓ Can help in spreading information from sensitization meetings 	<ul style="list-style-type: none"> ✓ Political interference ✓ Lack of resources and skills to participate fully 	<ul style="list-style-type: none"> ✓ Share information on compensation modalities ✓ Witness the land acquisition and compensation process ✓ Facilitate the communication among the stakeholders, can participate in project progress and site meetings ✓ Can take up the role of liaising with the local communities. the district can take on the role of environmental monitoring in collaboration with consultants
Local community mainly the potentially affected persons including women, youth, vulnerable people, elderly and community verifiers	<ul style="list-style-type: none"> ✓ Project benefits to the PAPs and surrounding residents. ✓ Good source of information on the trends and dynamics within the project area ✓ Casual labor to be recruited from PAPs and surrounding residents. 	<ul style="list-style-type: none"> ✓ Assistance in information transfer ✓ Labor supply (Unskilled) 	<ul style="list-style-type: none"> ✓ Misinterpret project intentions and therefore sabotage which eventually results in project delays ✓ If not sensitized, they might disrupt project activities 	<ul style="list-style-type: none"> ✓ A good channel for information transfer and sharing ✓ Need for compensation ✓ Supply chain linkages

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Stakeholder	Interests	Opportunities	Threats	Linkages/Involvement with the proposed project
NGOs (Umuzabibu Mwiza, Faith Based Organizations and women organizations)	<ul style="list-style-type: none"> ✓ Good information sources ✓ Affected properties ✓ Advocacy for grievance redressing 	<ul style="list-style-type: none"> ✓ Assistance in information transfer ✓ Provision of information ✓ Participation in grievance redress mechanisms (GRM) 	<ul style="list-style-type: none"> ✓ If not sensitized, they might disrupt project activities 	<ul style="list-style-type: none"> ✓ Provision of advice in different grievance redress mechanism ✓ Facilitation of communication among different stakeholders ✓ Intervention in Gender Based Violence resolution mechanisms
Rwanda Institute of National Museums	<ul style="list-style-type: none"> ✓ Preservation of historical and cultural heritage 	<ul style="list-style-type: none"> ✓ Assistance in change find procedures 	<ul style="list-style-type: none"> ✓ The project implementation may encounter the discovery of archaeological and cultural objects 	<ul style="list-style-type: none"> ✓ Facilitation in the collection and transportation and conservation of cultural, historical and archaeological objects discovered during the implementation of road and drains sub-project in Musanze City
Rwanda Commission on the Fight against Genocide	<ul style="list-style-type: none"> ✓ Preservation of genocide historical facts 	<ul style="list-style-type: none"> ✓ Assistance in chance find procedures 	<ul style="list-style-type: none"> ✓ The project implementation may come across the remains of genocide victims 	<ul style="list-style-type: none"> ✓ Facilitation in collection and transportation and preservation of genocide victims remains that may be discovered during the project implementation
Private Sector Federation	<ul style="list-style-type: none"> ✓ Support in businesses that are connected with the project (supply of materials) 	<ul style="list-style-type: none"> ✓ Assistance of businessmen who will supply 	<ul style="list-style-type: none"> ✓ The implementation of the project will imply contracts to supply of construction materials to the contracts 	<ul style="list-style-type: none"> ✓ Intervention in the contractual matter between the suppliers and contactor

Source: Field survey, 2020

8.5 Stakeholder Engagement

8.5.1 Approaches

Stakeholders were engaged through public meetings (Plate 8-2) that took place in Muhoza Sector/ Ruhengeri Cell, Susa Village. The purpose of the consultation was:

- To gather information on the experience and lesson learned during the implementation of past RUDP project phases in Musanze City, Muhoza Sector
- To gather information on the expected positive and negative impacts of project RUP II Phase
- To discuss and clearly explain the proposed projects in RUDP II Phase 3 to all the PAPS;
- To inform the PAPS about the forthcoming socio-economic surveys, and to discuss the importance and relevance of such surveys to all project-affected persons.
- To prepare the PAPS and inform them about the date when the socio-economic (one to one) interviews were to be carried out in their homes or premises. Besides, to persuade the PAPS to be available during the questionnaire survey and other discussions related to matter concerning their livelihoods, compensation and other grievances.



Plate 8- 2: Project Affected Persons attending a meeting in Muhoza Sector/ Ruhengeri Cell, Susa Village
Source: Field Survey, 2020

For effective performance, the consultant team (both RAP and ESIA) organised public meetings and focus group discussions with the participation of Sector and Cell Executive Secretaries,

Sector Land Manager, Cell Development Officers (CEDO) and the land valuer and City Engineer Musanze District One Stop Centre. Due to this collaboration, many people attended such meetings. The team recommended the participants to spread the message to others who were not present.

For effective performance, the consultant team (both RAP and ESIA organised public meetings and focus group discussions with the participation of Sector and Cell Executive Secretaries, Sector Land Manager, Cell Development Officers (CEDO) and the land valuers from the Musanze District One Stop Centre. Due to this collaboration, many people attended such meetings. The team recommended the participants to spread the message to others who were not present. Plate 8-2 shows a session of focus discussion with a group of women.

Table 8- 5: Place and dates of the Public Consultations in Musanze City

No	City /District	Sector	Cell	Village	Female	Male	Date
1	Musanze City	Muhoza	Ruhengeri	Susa	4	1	12/11/2020
				Bushozi	7	2	
				Kivu	5	1	
Total					16	4	

Source: Consultant, 2020

Table 8- 6: Schedule of door to door interviews in the Musanze City

Musanze City	Sector	Cell	Village	Female	Male	Date
	Muhoza	Ruhengeri	Susa	3	6	13/11/2020
			Burera	5	7	
			Kivu	6	4	
Total				14	17	

Source: Consultant, 2020

8.5.2 Outcomes of the Stakeholder Engagement Program

From the stakeholders' participation, stakeholders exchanged with the consultant' team on the perception of the previous phases of RUDP in the project neighbourhood to learn lessons. The latter can serve for improved implementation of RUDP II Phase 3. Overall, stakeholders (residents and road users) have a good appreciation for the outcomes of the previous phases of RUDP project. Overall, many concerns were the delay in compensation, property destruction at the outfall of the rehabilitated Rwebeya Drain. Table 8-7 provides details on the lessons learned from the implementation of previous phases of RUDP.

Table 8- 7: Stakeholders perceptions on the implementation of previous RUDP phase in Musanze City

Issues/ concerns	Description
Safety issues	<ul style="list-style-type: none"> • In Nyamagumba, Susa and Bushozi neighbourhoods, the road size is very small. There were no footpaths. Cars and pedestrian compete for the passage. People and car compete for road use • The lack of construction of Rwebeya drain has caused considerable destructions • The outfall from the rehabilitated section of Rwebeya River has caused erosion • The road and its sides are used as a storage site for construction material • The laying of the WASAC pipe did not provide proper compensation
Benefits/ positive impacts from previous RUP projects	<p>The compensation money was sufficient</p> <p>The value of properties bought by relocated families was higher than that of the former properties</p> <p>The value of rent has increased, the area (quarter) has attracted the renters from other areas</p> <p>People increased the value of their houses through renovation</p> <p>New businesses such as pharmacies were installed in the quarter, motels have been implanted in the area</p> <p>New churches have been built in the area</p> <p>Security increased due to streetlight, theft considerably reduced.</p> <p>Drug abuse reduced because security agents (police, district security officers and community security agents can easily patrol in the area thanks to the street lights and road accessibility</p> <p>There was much improved in road comfort and practicability for both commuters and users (moto-taxi cyclists). Before the road construction motorcyclist would avoid venturing in the area due to the presence of sharp volcanic rocks that caused tyre punctures</p>

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<p>Compensation and relocation issues</p>	<p>Compensated people (projected affected peoples PAPs) have not given sufficient time to relocate to a new area</p> <p>The transfer of money to the PAPs account corresponded the date of project activities (demolition)</p> <p>Some PAPs were forced to rent hotel rooms, this constitutes the wastage of compensation money</p> <p>During demolition, some reusable construction materials such as stones and bricks are stolen by crooks who pose as broker or middlemen</p> <p>Compensation money has been a source of conflicts in some families</p> <p>Community expect the loss of productive land due to the expansion of the urban area</p>
<p>Awareness of RUDP II phase 3 project</p>	<ul style="list-style-type: none"> • The population is aware of RUDP II phase 3. During the implementation of Bushozi and Burera Rural area. • People expect an increase in the value of land • They also expect improvement in traffic • They expect that access to food produces from Bugarura (Rwaza Sectors), especially Banana, Sweet Potatoes will be accessed easily due to improved transport • They expect the reduction of costs of construction material as dump trucks will easily access the area, especially, the transport of sand from the nearby River • They expect a new job in the construction sector due to urban expansion • They expect cheap transport cost from the area to Musanze (Karismbi) as they have to use NR 4 Road which takes a lot of time • They expect new accommodation projects will come into the area to the students from INES Ruhengeri

Source: Consultant, 2020

During consultations, the residents raised some issues. Most of these issues concerned the destruction of the properties and related compensation, the nature of compensation (money or properties), school dropout, influx of people and increase in prostitution and HIV-AIDs. Table 8-8 provides the details on these issues and their responses.

Table 8- 8: Issues raised during consultation and their responses

Point of concerns and issues	Response / Answer/ outcome
Affected People	
Issues/concerns	Responses
Properties that will be affected by the machines	In the planning of roads, all of this potential impact are considered and shall be taken into consideration during the valuation process It will be better to involve the Grievance Redress Committee in the case of properties destruction by compactors vibration
For people whom their land and boundaries walls will be destroyed, how are they going to live in houses without anything separating them with the road?	It will be better to stabilise the road cuts to avoid house destruction from cut slumps. The planning must consider the construction of the retaining wall In case essential parts of properties such as toilets (external pit latrines) are marked for demolition without sufficient land for reconstruction/ relocation, it will be necessary to compensate the whole compound
Many people wanted to know if they will be paid in money or if they will get another equivalent land or if there is another possibility.	It will depend on what the government will see as the best option and they will be consulted first to get a good option which will satisfy them. And during the survey, the compensating option will be included. It will be better to provide enough time for PAPs to relocated at least 30 days to facilitate them find decent accommodation and time to buy alternative properties
When are the survey starting and the expropriation?	The survey schedule was communicated to all people and to those affected by the project the process of expropriation shall be communicated
Local Leaders	
During the survey how shall we differentiate you and others who might have other interests?	During the survey, enumerators were introduced and accompanied by district officials and LODA staff.
Valuing affected assets (crops and trees)	They will be valued too, and the owners will get their compensation payment.
What about properties with special cases like graves, etc.	Cultural heritages, cemeteries, graves and other cultural assets shall be identified and avoided as per the national laws and World Bank Cultural heritage operational policies.

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Increase of, prostitution, homosexuality, HIV/AIDS and sexually transmitted diseases from workers who will leave their wives especially those from outside, it is anticipated that prostitution and homosexuality will increase.	More emphasize will be put into sensitization and awareness-raising on the impacts of STDs and how to prevent them. Also, condoms should be availed at the project site to reduce the infection of HIV/AIDS and other sexually transmitted diseases. Mosquito nets should also be given to workers to prevent malaria.
Increase of school dropout (selling small things, like eggs, fruits to get money or because of distraction by the process of the construction. Schoolgirls could also become prostitutes as a result of being attracted by money from workers and end up dropping out of school.	Parents should be responsible. They have to make sure that their children go to school regularly and appropriately. The communication between school teachers and parents is then required to be able to help them. Also, the local authority will be responsible and hold accountable parents who fail to properly monitor and educate their children on the importance of education
Road Users/ Neighbouring Residents	
When is the official project starting?	It has relied on that an official launch of the project shall be communicated by district officials.
Given the influx of people from different cultures, local people might be influenced by these cultures especially youth.	The majority of workers should be local people to avoid the issue of influx of people from other districts.
Women and Women Representative	
How about employment opportunities and recruitment?	The priority shall be given to PAPs and vulnerable people during the recruitment. However, the project recruitment process should only consider adult people. The use of children will be against both government and the World Bank and policies.
Delay in payment for casual labourers. Contractors and sub-contractors do not pay the casual labourers according to agreed instalments (normally 15 days). Some contractors can pay only one instalment.	The contractors shall prepare and explain the terms of the contract to the labourers. If the contractor's defaults on payment, the district, the consultants (supervisory) team and the client should monitor and if possible enforce penalties
The loss of these properties can cause serious psychological injuries, no matter how much money they can benefit.	Livelihood rehabilitation shall be planned by the districts for people affected by the project by the loss of their property is suggested to help them to build a new life by coping with the situation
Some women may not have a say on the family properties. The money from the compensation might be the cause of GBV.	The payment should be done to the family account or both wives and husbands together so that women can know how to claims their rights. Money should be deposited at their Bank account where they all have access to it.

Divorce is likely to happen, especially because women will be attracted by foreign workers who have enough money and leave their respective husbands for a better life. Men would also be attracted by prostitutes and spend all their salaries from the project in prostitutions and leave their wives.	Basic knowledge in reproductive health, laws, Rwandan culture should be provided to residents in the project area and workers so that they can behave accordingly.
Local Resident	
Large cuts on the steep slopes will make more fragile the slope and lead to a landslide	Minimize the cut as much as possible and protecting the fragilized slope by retaining walls
The project will involve land take and loss of properties	Compensation at the satisfaction of the affected people

Source: Field Survey, 2020

8.5.3 Attitudes of PAPS towards RUDP II phase 3

From the public consultations, interviews, stakeholders’ engagement, the beneficiaries and affected persons showed a positive attitude towards the proposed project and they were ready to cooperate in all aspects and project activities. This cooperation is reinforced by the fact that stakeholders expect more benefits from the project, especially the road. Most of them came to the conclusion that this was a development project that will increase the value of their properties and their respective villages will benefit as well. User of the roads such as motorcycles and bicycles taxi drivers expect their business to proliferate because costs incurred in repair are expected to reduce. Residents expect the reduction of respiratory diseases during the dry season because, dust will not spread into their rooms, spoiling their clothes, beds, water and food. In order to harness these benefits, the implementation of the project should avoid grievances related to the insufficient road size and lack of safety measures.

8.5.4 Enhancement measures for the social issues raised during the public consultation

As discussed in the previous section, lessons learned from the implementation of previous RUP II phases 3 in Musanze City have raised good expectations on positive impacts that will result from the implementation of the RUDP II Phase 3. To harness these positive benefits, PAPS, road users and authorities proposed measures to enhance or consolidate these benefits (positive impacts).

Table 8-9 presents the proposed enhancement measures proposed for the identified project impacts during the public consultation.

Table 8- 9: Enhancement measures for the project impacts

Positive Impacts	Enhancement measures
Employment opportunities	Local people should be given priority for employment during the construction phase.
Income generating opportunities	People should be compensated at their satisfaction and get money before the project implementation.
	Compensation should be provided as earlier as possible at least 1 month before the project activities starts. People complained that activities start the same days as the compensation. Families spend the compensation money paying accommodation from hotels and lodges
Business and income generating opportunity	People should be given opportunities to sell services and items that will be needed by workers.
Increased skills and knowledge	Local people will get skills and knowledge, which will help them to get further employments in the future.
Empowerment of women	Women should be encouraged to participate.
Installation of basic infrastructures	The district should facilitate investments into basic infrastructure such as pharmacies, modern markets and health centres, schools and installation of bus stop on newly constructed road;
Increased infrastructure	Local people should be encouraged to invest in infrastructure such as accommodation and restaurants;
Increased traffic safety	Road safety measures should be enhanced through building of humps, zebra crossings and traffics sign. Large enough footpath should be installed to avoid conflict between pedestrian, motorcycles and cars;
Increased hygiene and health	The contractors should be provided sanitation facilities to the project site to avoid conflicts related to poor hygiene; The contract should consider regular watering to reduce dust emission;
Facilitation in construction permitting/ licensing	The district should ease the issuing of construction permits to the residents because residents recommend that projects investment shall be accompanied by properties renovation
Facilitation of renovation	The authorities must facilitate the residents to access credits facilities to invest in the renovation of their properties

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Positive Impacts	Enhancement measures
Controlling the urban sprawl	Local authority (district, sector) should enforce construction regulation to avoid urban sprawl and spatial expansion of unplanned settlement; especially in Muhoza area;

Source: Field survey, 2020

The World Bank information disclosure standard states that whenever the Bank requires an environmental assessment (EA), the proposed borrower prepares an EA report as a separate, free-standing document.

The EA report is made publicly available:

- a. After the borrower has made the draft EA report available at a public place accessible to project-affected groups and local NGOs in accordance with ESS 10 (Stakeholder Engagement and Information Disclosure)
- b. After such EA report has been officially received by the Bank, but before the Bank begins formal appraisal of the project.

RUDP Phase 2 Project shall have to comply with the World Bank Policy on the information disclosure and it is proposed that an Executive summary and the full ESIA report shall be posted on the websites of: the six secondary city districts, LODA, MININFRA and MINALOC.

9. GRIEVANCE REDRESS MECHANISM

9.1 Introduction

As per the requirement of the WB ESF (ESS2, ESS10), a Grievance Redress Mechanism (GRM) was prepared based on the guidelines from the project ESMF, LMP and SEP. This grievance mechanism will ensure that all project related complaints and grievances are addressed in good faith and through a transparent and impartial process, but one which is culturally acceptable. All grievances raised by stakeholders shall be managed through a transparent process, readily acceptable to all segments of affected communities and other stakeholders, at no cost and without retribution.

For RUDP II Phase 3, the types of grievances stakeholders may raise include, but are not limited to:

- Negative impacts on communities, which may include, but not be limited to financial loss, physical harm and nuisance from construction or operational activities;
- Health and safety risks;
- Negative impacts on the environment such as pollution of water ways, soil, and air;
- Relocation of utilities, and unacceptable behavior by staff or employees.

9.2 Objectives of Grievance Redress Mechanism (GRM)

The GRM will work within existing legal and cultural frameworks, providing an additional opportunity to resolve grievances at the local, project level.

The key objectives of the GRM are:

- i. Record, categorize and prioritize the grievances;
- ii. Settle the grievances via consultation with all stakeholders (and inform those stakeholders of the solutions)
- iii. Forward any unresolved cases to the relevant authority.

The appropriate signage will be erected at the sites of all works providing the public with updated project information and summarizing the GRM process, including contact details of the relevant Project Contact Person within the project implementation unit. Anyone shall be able to lodge a complaint and the methods (forms, in person, telephone, forms written in Kinyarwanda) should not inhibit the lodgment of any complaint.

9.3. Grievance Redress process

9.3.1 Project Level Grievance Redress Mechanism: Grievance Redress Committee

As the GRM works within existing legal and cultural frameworks, it is organized in such a way that the Grievance Redress Committee (GRC) will comprise local community representative, PAPs representative, women representative, local authority representative at village and cell levels, contractor and supervising firm representative. The grievance redress process, and members of GRC and their roles and responsibilities are presented in Table 9-1, 9-2, 9-3.

It is expected that many project related grievances will be site-specific. They will be related to impacts generated during construction such as noise, dust, vibration, contamination, workers dispute, grievances on land boundaries, or misunderstandings between affected households and the contractor regarding access arrangements, properties accidentally damaged by construction activities, accidents on sites among others. These impacts will be resolved with the contractor committed to implement the CESMP and proper supervision by the implementing agencies and Musanze District officials.

The grievance procedure at project level will be simple and administered at the extent possible at the local levels to facilitate access, flexibility and ensure transparency, timely feedback and appeal. All the grievances will be channeled via the Grievance Resolution Committees purposely established for the project at Cell, Sector and District level. Stakeholders will be allowed to use any means easily accessible to them to voice their concerns and complaints such as filling a grievance form, sending an email, using phone etc. Complaints will be filled in a Grievance Register that will be distributed to PAPs free of charge. After registration of the complaint, an investigation will be carried out by the committee members to verify its authenticity. Thereafter a resolution approach will be selected based on the findings. The decisions of the action to be taken will be communicated to all involved parties mainly in written form.

All measures will be undertaken to ensure that the grievance is solved amicably between the concerned parties. If the grievance is not solved at Cell level, Sector or District level courts will be the last resort. Efficiency in solving the grievances will be of paramount importance. The selection of members for the sub-project grievance committee will be at the discretion of the PAPs to decide basing on information provided by the PIUs.

In practice, not many complaints are expected. This is based on the assumption that all proposed works are within the road reserve areas and that a Resettlement Action Plan is concurrently prepared along with this ESIA. However, some complaints are likely to be associated with construction impacts. Most are received directly on site by the Contractor's Site Manager/Engineer who will mandatory be responsible to resolve these issues on site. The CSM will inform the Grievance Committee (GRC) of these complaints and their outcomes, and of others not satisfactorily resolved that the GRC should take over. The GRC will log these in the Complaints Register and inform the concerned PIU (REMA, LODA or Musanze Districts).

At each level of the project GRC, complaints will be solved within a period of 24-48 hours or otherwise handed to the next level. Once at judiciary level, due process as mandated by the law will be followed depending on what the courts will require. Through citizen engagement meetings the PAPs will be informed of the different grievance mechanisms in place for them to lodge their complaints and dissatisfactions.

9.3.2 Labor Related Grievance Mechanism

In order to create a working environment that provides safety and security to all workers, contractors will be required to present a worker's grievance redress mechanism that responds to the requirements of ESS2. For direct workers, the mechanism shall involve an appropriate level of management and address concerns promptly, using an understandable and transparent process that provides feedback to those concerned, without any retribution. The contractor will inform the workers of the grievance mechanism at the time of hiring, and make it easily accessible to them.

i. For workers and labor contracting issues (i) Individual labor disputes: Article 102 of law n° 66/2018 of 30/08/2018 regulating labor in Rwanda

Workers will elect representatives who will form a committee that will act as the Workers Grievance Redress Committee. As mandated by article 102 of the law regulating labor in Rwanda, the employees' representatives amicably settle individual labor disputes between employers and employees. If employees' representatives fail to settle the disputes amicably, the concerned party refers the matter to the labor inspector of Musanze District where works are being implemented. If the Labor Inspector of the District fails to settle the dispute due to the nature of the case or conflict of interests, he/she refers the dispute to the Labor Inspector at the national level stating

grounds to refer such a dispute. If amicable settlement fails at the national level, the case is referred to the competent court. In any case, the PIU will be informed from the beginning of any worker's grievances and provide insight and mediation if possible. The matter will be referred to the labor inspector only if the PIU fails to do the mediation.

ii. Collective labor disputes: LAW N° 66/2018 of 30/08/2018 Regulating Labor in Rwanda

The law requires that collective labor disputes be directly notified to the labor inspector of the area by the worker's representatives. Within this framework, any collective labor disputes that will arise under RUDP-II Phase 3, will be addressed to labor inspector in Musanze District for assessment and settlement. In case of escalation, the matter will be referred to the national level. Before escalating the collective labor dispute, the PIU through the Environmental and Social Management Unit will be alerted. Necessary investigations will be conducted and the contractor will be duly approached. The matter will be referred to the labor inspector only if the PIUs and worker's representatives fail at amicable settlement. The PIU will elaborate a template to be used in all PIUs to report on labor issues to the Bank.

iii. For worker's safety issues

All grievances related to worker's safety will be addressed through the following channels:

- 1) The supervisor and environmental officer from the contractor, supervising firm or from the district or PIU will report any accidents within 24 hours; other health and safety issues;
- 2) The PIU coordinators will find solutions to the issues following the agreed ESF documents with the World Bank and National regulations
- 3) The PIU will consult the Occupational Health and Safety committee on the health and safety issue as required by Article 78 of the labor law.

iv. Grievance process for non-labor related issues involving project workers

In the project area there might be other conflicts related to relationships between the workers and the local community. Depending on who is the aggrieved party, the following mechanism will be used:

- **A WORKER- AGAINST ANOTHER WORKER:** These grievances will be handled through the Workers Grievance Committee/representatives.

- **COMMUNITY MEMBER – AGAINST A WORKER:** If there is any grievance from a community member against a worker, they will be handled through the Workers Grievance Committees/representatives.
- **WORKER- AGAINST A COMMUNITY MEMBER:** The project will establish a project grievance committee at various levels of the local administration scheme in Rwanda from the Cell, Sector up to the District government. This grievance mechanism as described in the SEP and ESMF, will have the mandate of solving all complaints and grievances related to project activities and impacting local communities. Any grievance from a worker against a community member will be handled through this committee.

v. Grievance Channel for Gender Based Violence (GBV)

As GBV/SEA/SH requires timely access to quality, multi-sectoral services and involves confidentiality and informed consent of the GBV survivor. To address the issues related to GBV, the guidelines from the GBV Action Plan will be followed. The document details the Accountability and Response Framework, identifies the service providers with minimum package of services (**health, psychosocial, legal/security**, safe house/shelter, and livelihood). The successful bidder will prepare the Contractor's Environmental and Social Management Plan (CESMP) that will integrate provision from the GBV Action Plan, with enough details of handling GBV cases. Chapter 10 gives some provisions to be part of the bidding documents.

9.3.3 Judiciary Level Grievance Redress Mechanism

The project level process will not impede PAPs access to the legal system. Local communities have existing traditional and cultural grievance redress mechanisms (**Abunzi committees**) established and regulated by Law No 37/2016 of 08/09/2016 determining organization, jurisdiction, and competence and functioning of Abunzi committee. These are established at cell and Sector level to solve community based conflicts and grievances their regulatory body being the Ministry of Justice. This mechanism cannot be overlooked by the project. The population can choose to use this channel instead of the project GRC. The escalation at this level leads to the court process. At any time, the complainant may take the matter to the appropriate legal or judicial authority as per Rwanda National Legal procedure.

Table 9- 1: Grievance Redress Process for the implementation of RUDP II Phase 3 in Musanze District

Stage	Process	Duration
1a	Since most of complaints during the execution of works involves directly the contractor, at first the Aggrieved Party (AP) will take his/her grievance to the Construction Site Manager (CSM) of the relevant project who will endeavour to resolve it immediately. <i>The site Manager will inform the environmental officer or the appointed focal project at the district level.</i> Where AP is not satisfied, the complaint will be transferred to the project Grievance Committee (GC) at cell level. For complaints that were satisfactorily resolved by the CSM, he/she will inform the GC and the GC will log the grievance and the actions that were taken. There is also a possibility that the AP directly takes his/her complainants directly to the GRC without going to the CSM first. In this case, the GRC will solve it working with the CSM.	24 hours
1b	The AP may choose to escalate the grievance to the Abunzi Mediation Committee ¹⁵ especially if she/he is not directly linked to the sub-project.	Not fixed
2	On receipt of the complaint, the GC at cell level will endeavour to resolve it immediately. In case the GC at cell level fail to solve the complaint, it will be escalated to the GC at Sector level. If unsuccessful, the GC or the complainant then notifies the Musanze District Authority.	1-2 days at cell level 1-2 days at sector level
3	Musanze District Authority will endeavour to address and resolve the complaint and inform the aggrieved party. The District Authority will refer the complaint to the Project Implementation Unit (LODA, REMA) with other unresolved grievances for their consideration.	1 – 5 days
4	If it remains unresolved or the complainant is dissatisfied with the outcome proposed by the PIU, he/she is free to refer the matter to the court.	1 – 7 days
5	If the issue remains unresolved through the courts, then the ultimate step will be for the ombudsman. The decisions at this level are final.	Not fixed
6	The dimension to be represented in purple will be strictly for GBV related matters. The AP will approach directly the GBV task force to ensure her/his anonymity and safety. However, in case the complaint was addressed first to the Site Manager, the latter is required to immediately refer it to the task force. The GBV task force will work with competent authorities to ensure	Not fixed

Source: Adapted from RUDP II SEP, 2020

¹⁵ The Abunzi Committee is statutory body responsible for conciliating parties in conflict with the aim of consolidating national unity and peaceful coexistence among Rwandans.

Table 9- 2: Proposed Members of GRACE and their roles, RUDP II Phase 3

No	Member of GRC	Roles and responsibilities
1	President(PAP representative)	<ul style="list-style-type: none"> - Chairing meetings; - Give direction on how received grievances will be processed; - Assign organizational responsibility for proposing a response; - Referring cases to next level; - Speaks on behalf of GRC and s/he is the one to report to the cell or the sector
3	Village leader	<ul style="list-style-type: none"> - Represents local government at village level; - Resolves and lead community level grievance redress - Sends out notices for meetings; - Records all grievance received and report them to next local level
4	Cell executive secretary	<ul style="list-style-type: none"> - Proposes responses to grievances and lead in resolving community grievance unsolved from village level; - Records and reports all grievances received from village leaders; - Chairs sensitization meeting at the cell level during public consultations meetings; - Assists and guides in identifying vulnerable and disadvantaged groups within the cell. - Signs the valuations sheets for compensation facilitate a proper Resettlement Plan
	Representatives of PAPs	<ul style="list-style-type: none"> - Represents the interests of aggrieved parties - Give feedback on the efficiency of GRM
5	Women and youth representatives	<ul style="list-style-type: none"> - Represent the interests of women and youth; - Advocate for equity and equal opportunities; - Help in prevention of sexual harassment and promote wellbeing of the women and youth - Take part in resolution of any grievance related to sexual harassment and any gender domestic violence that may arise; - Mobilize women and youth to be active in income generating activities specifically for opportunities in the projects intervention areas.
6	Contractor	<ul style="list-style-type: none"> - Receive and log complaints/grievances, note date and time, contact details, nature of complaint and inform complainant of when to expect response; - Handle complaints revolved around nuisance resulted from construction and endeavor to handle them satisfactory;
No	Member of GRC	Roles and responsibilities

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No	Member of GRC	Roles and responsibilities
		<ul style="list-style-type: none"> - Inform engineer (supervisor) and GRC of received complaints/grievances and outcomes and forward unresolved complaints/grievance to GRC - Attend community meetings, respond and react to PAPs complaints raised concerning the contractor.
7	Supervisor	<ul style="list-style-type: none"> - Represent client/LODA; - Ensure that all grievances raised have been responded to, and that the contractor responds to the complaints raised concerning them, - attend community meetings respond to all concerns related to RUDP-II from community - Report on monthly basis the progress of GRM process

Source: Adapted from RUDP II SEP, 2020

Table 9- 3: Proposed members of the GBV task force for RUDP II Phase 3

Institution	Staff position
PIU National level (LODA, REMA)	Social Safeguards Specialist
PIU (District level)	Gender Monitoring Officer , Environmental and Social Management Specialist
Contractor	Human Resources Officer, Social Safeguards Specialist
Supervisor	Social Safeguards Specialist
NGO in GBV prevention	Designated representative

Source: Adapted from RUDP II SEP, 2020

As mandated by the law on gender equality, women representation will make up at least 30% of the GRC. All PAPs representatives will be directly elected by their peers and the number of members may vary depending on the context and particularities of each sub-project site characteristics.

9.4. Communication Plan

Along with or as part of the CESMP, the contractor will prepare a detail communication plan at the beginning of the project implementation to define and make arrangements to facilitate communities and project PIUs communication as with any other person external party (NGOs, associations, etc) to the project to communicate with the project, to provide or request for information or file a complaint. These arrangements are provided in Table 9-4.

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Table 9- 4: Tools to be used to communicate with the project for communication and sending recommendations, claims, and observations

Project webpage	The ESF documents including the ESIA Report will be disclosed in the implementing agencies of RUDP II Phase 3 containing project description, implementing arrangements, contact key persons (email, phone of Environmental Specialist or Social/Safety Specialist). The project webpage will be maintained updated and review by the ESS of the PIUs during the project implementation period
Radio communication	At least every 2 weeks a radio announcement will be shared with the communities on the progress of the project and the way the community can communicate with the project PIUS.
Community project blackboard	In a community selection point or the district, a blackboard with project information, timeline, and information of the works, contractor, areas of risks, announcements will be placed and box for comments will be placed with a lock so only the environmental or social officer can open and respond to any messages. Any complaint from a third party can be filed using this method.
Facebook, WhatsApp, other media	PIU, Musanze District, communities can form groups to share information, monitored progress and share photos, progress and completion and benefits of the works.
Email, Telephone, other media	All contacts of the environmental and social management unit be it PIU at National level or at District level will be made public to be used by any stakeholder or third party willing to ask for information, provide suggestion or file a complaint or inform issues affecting the works.

Source: Adapted from RUDP II SEP, 2020

10. ENVIRONMENTAL AND SOCIAL CLAUSES FOR SUCCESSFUL BIDDERS FOR RUDP II PHASE 3 IN MUSANZE DISTRICT

Most environmental and social impacts of RUDP II Phase 3 in Musanze will result from activities directly under the control of contractors and will be mitigated directly by the same contractors. As a consequence, ensuring that contractors effectively mitigate programs activities related impacts is the core of the Program’s mitigation strategy. This will be done by ensuring that the environmental and social management of programs activities are mandatory parts of activities works contracts. The client will incorporate standardized environmental and social clauses in tender documentation and contract documents, so that potential bidders are aware of environmental and social performance requirements expected from them, are able to reflect that in their bids, and required to implement the clauses for the duration of the contract.

Prior to start implementing the project, the contractor must prepare and submit a Contractor Environmental and Social Management Plan (CESMP) to the supervision firm and client for approval. The CESMP will provide a detailed explanation of how the contractor will comply with the project the EHS clauses for contractors and demonstrate that sufficient funds are budgeted for that purpose and sufficient capacity is in place to oversee, monitor and report on CESMP performance.

The client will enforce compliance by contractors with clauses covering issues related to Environment, Health and Safety (EHS). As per the RUDP II ESMF recommendations, Table 10-1 presents the environmental and social technical clauses (ESTCs) to be incorporated in the Tender Document and bill of quantities.

Table 10- 1: environmental and social technical clauses (ESTCs) to be incorporated in the Tender Document for RUDP II Phase 3 in Musanze City

Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
ESTC 1: Waste Management			
ESTC 1 :001 Management of domestic solid wastes	<ul style="list-style-type: none"> • Avail solid waste bins, at least one bin for each category (e-wastes, chemicals, plastics, metals, glasses papers/wood and biodegradable wastes) (see Figure 6-1) and sort wastes at their sources accordingly; • Ensure all solid wastes are handled by a licensed company involved in refuse management that will be hired by the contractor; • Minimize the generation of wastes, segregate, reuse or recycle all the wastes, wherever practical; • Avoid burning of solid waste; • Do not allow ponding of water near waste collection/storage areas and construction camps; • Discard all the storage containers that are capable of storing of water, after use or store them in inverted position. 	Ensure the contractor has hired a local licensed company involved in waste collection and disposal; Inspection of the campsites and work sites to ensure there are no trashes	5,000,000
ESTC 1 :002 Management of excavated soil spoil	<ul style="list-style-type: none"> • Consider existing dumpsites which has been used as a dumping site for cut and excavated earth material from the previous phases of RUDP II for its capacity to handle the project soil spoil. Otherwise, look for new dumpsites. Selected dumpsites will not be located near Mukungwa river or any storm water runway. Preferably they will be located in areas of depression and of low land use value, where they cannot be washed into downstream ecosystems. • Wherever possible, spoiled materials can be placed in low-lying parts of the topography or be used for filling exaction holes or road potholes and should be appropriately compacted. • Prior to commencement of use of the dumping sites a plan of the management and rehabilitation of the dumpsite shall be prepared 	Conduct site surveys to identify the alternative sites for dumping Review and approve the management and rehabilitation plan for the dumpsite	15,000,000

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
	by the contractor and approved by the Consultant and Musanze District		
Wastewater Management			
ESTC 2 :001 Sewage Management	<p>Avail the adequate number of toilets and hand wash basins (one toilet for every ten persons with a minimum of a total of 10 toilets including at least 2 units at each active site (construction camp, borrow site, quarry site, dumpsite, etc) and separate latrines for males and females with total isolation by wall or by location.</p> <p>The sewage in the campsite will be handled using pit latrines and all along the work site by mobile toilets. Hand wash basins will also be provided along with toilets.</p> <p>Provision of adequate treatment and disposal for the sewage (septic tanks and soak away pits)</p>	Define the location and number of toilets and hand wash basins and ensure safe disposal of the sewage. The toilets, septic tanks and soak away pits will not be located in the storm water run way or flooding area.	8,000,000
ESTC 2 :002 Management of Fuels and Hazardous Substances	<p>Hazardous waste (including bitumen, oils, additives, grease, diesel, paints, etc) will be stored in appropriately labeled drums or similar sealed container, be placed in approved storage sites surrounded by concrete containment to avoid leaks to the environment</p> <p>Store all hazardous wastes appropriately in bunded areas away from water courses or provide absorbent and containment material (e.g., absorbent matting) where hazardous material are used and stored and personnel trained in the correct use.</p> <p>Make sure all containers, drums, and tanks that are used for storage are in good condition and are labeled with expiry date. Any container, drum, or tank that is dented, cracked, or rusted might eventually leak. Check for leakage regularly to identify potential problems before they occur.</p> <p>Store hazardous materials above flood plain level.</p> <p>Drums will safely be transported to an approved chemical waste depot;</p> <p>Return the emptied container of hazardous material (e.g. bitumen drums, gas cylinders, etc) back to the supplier. However, if they</p>	Define the location for the waste storage sites away water courses and ensure not spills or leaks to the environment	7,000,000

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
	<p>are not empty prior to their return, they must be labeled with the name of the material they contained or contain and information on the supplier;</p> <p>Any spills should be cleaned-up within 24 hours;</p>		
ESTC 3: Water Resources Management			
<p>ESTC 3-001 Avoidance of pollution to water resources</p>	<ul style="list-style-type: none"> • Strictly adhere with the management guidelines proposed in ESTC 1 and ESTC 2; • Ensure waste substances do not enter waterways, storm water systems or underground water tables; • Avail a water quality monitoring test kit for the water quality (Turbidity, pH, Electrical Conductivity (EC), Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Chloride, Copper, Zinc, Cadmium, Lead, Grease and Oil, and Fecal coliforms); • Monitor and report (monthly) the water quality characteristics in the runoff from the project site to the point of the drain discharges to the receiving water in Mukungwa River (see site coordinates and maps in Table 4-2 and Figure 4-1). For compliance purpose compare the measured results with the background water quality characteristics shown in Table 5-1. 	<p>Ensure the contractor complies with the management guidelines proposed for ESTC 3</p>	<p>Cost covered in ESTC 1 and ESTC 2</p>
<p>ESTC 3-002 Controlling storm water, erosion and siltation of water bodies</p>	<p>Stabilize the cleared areas not used for construction activities with vegetation or appropriate surface water treatments as soon as practicable following earthwork to minimize erosion</p> <p>Install temporary drainage works (channels and bunds) to avoid sediment and erosion from construction sites to the environment</p> <p>Divert runoff from undisturbed areas and install sediment catch basins, where appropriate, to capture sediment-laden run-off from site</p> <p>Stockpile materials away from drainage lines</p> <p>Wash out ready-mix concrete agitators and concrete handling equipment at washing facilities off site or into approved bunded areas on site.</p>	<p>Ensure the contractor complies with the management guidelines proposed for ESTC 3</p>	<p>Part of the site installation or construction work</p>

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
	<p>Ensure that tires of construction vehicles are cleaned in the washing bay (constructed at the entrance of the construction site) to remove the mud from the wheels. This shall be done in every exit of each construction vehicle to ensure the local roads are kept clean.</p> <p>Ensure that roads used by construction vehicles are swept regularly to remove sediment;</p> <ul style="list-style-type: none"> • Monitor and report the water quality characteristics in the runoff from the project site to the point of the drain discharges to the receiving water (Mukungwa River) (see site coordinates and maps in Table 4-2 and Figure 4-1). For compliance purpose compare the measured results with the background water quality characteristics shown in Table 5-1. 		
ESTC 4: Drainage Management			
ESTC 4-001 Drainage Management and Safe disposal of the storm water	<ul style="list-style-type: none"> • Implement the management guidelines related to provision of drainage proposed in ESTC 3-001 • Ensure evacuation and safe disposal of the storm water from all project sites (excavation sites, road construction sites, campsites, borrow sites, quarry sites and dumpsites) to the recipient (road side drainage or Susa/Rwebeya/Mukungwa River) • Establish local drainage line with appropriate trash and silt collector and screen for rainwater connecting to the existing established drainage lines; • Rehabilitate road drainage structures immediately if damaged by contractors' road transports. • Protect natural slopes of drainage channels to ensure adequate storm water drains. 	Ensure the contractor complies with the management guidelines proposed for ESTC 4-001	Part of the cost for site installation and drainages
ESTC 4-002 Runoff control and Sediment Traps	<ul style="list-style-type: none"> • Sediment traps/basins will be provided at the end or point of discharge of drains to reduce the storm water runoff velocity, allow settling of silt, sediments and suspended particles including trashes before discharging the storm water into a river, stream, or landscape 	Ensure the contractor complies with the management guidelines proposed for ESTC 4-002	Part of the cost for installation of drainages

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
	<ul style="list-style-type: none"> For security and safety purpose, the trap shall be fenced to avoid individual access and use and local communities will be educated to be aware of any possible liability issues related to the hazards posed by storm water ponds; Where ponds cannot be installed, drains will be widened with baffles inside towards the end of drains (50 m), to slow down and calm the runoff velocity. 		
ESTC 5: Soil Quality Management			
ESTC 5-001 Avoidance of contamination of soil	Implement all waste management guidelines specified in ESTC 1 and ESTC 2 through good housekeeping of chemicals (grease, oil, bituminous, etc) and wastes to avoid chemical spillage and leaks or trashes that can pollute the soil.	Ensure the contractor complies with the management guidelines proposed for ESTC 5-001	Cost covered in ESTC 1 and ESTC 2
ESTC 5-002 Management of Construction material stock piles	<p>Limit the project activities and wastes within the project footprint (RoW, campsites, borrow sites, quarry sites and dumpsites)</p> <p>Protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds</p>	Ensure the contractor complies with the management guidelines proposed for ESTC 5-002	1,000,000
ESTC 6: Erosion and Sediment Control			
ESTC 6-001 Erosion from construction material stockpiles may contaminate the soils	<p>Ensure evacuation and safe disposal of the storm water from all project sites (excavation sites, road construction sites, campsites, borrow sites, quarry sites and dumpsites)</p> <p>Locate stockpiles away from drainage lines and protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds</p> <p>Remove debris from drainage paths and sediment control structures</p>	<p>Conduct surveys and identify the storm water evacuation channels and disposal sites</p> <p>Ensure the contractor complies with the management guidelines proposed for ESC 6-001</p>	Part of the cost for installation of drainages and excavation
ESTC 6-002 Cleared areas and slopes susceptible for erosion	<p>Reinstate and protect cleared areas as soon as possible.</p> <p>Mulch to protect batter slopes before planting</p> <p>Cover unused area of disturbed or exposed surfaces immediately with mulch/grass turfings/tree plantations</p> <p>Cover the loose sediments and water them if required</p> <p>Divert natural runoff around construction areas prior to any site</p>	<p>Carry out survey to identify areas susceptible to erosion</p> <p>Ensure the contractor complies with the management guidelines</p>	Part of the cost for installation of drainages and excavation

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
	<p>disturbance</p> <p>Install erosion protective measures on site prior to construction, for example, sediment traps</p> <p>Control drainage through a site in protected channels or slope drains</p> <p>Install ‘cut off drains’ on large cut/fill batter slopes to control water runoff speed and hence erosion</p> <p>Observe the performance of drainage structures and erosion controls during rain and modify as required.</p>	proposed for ESC-002	
ESTC 7: Top Soil Management			
<p>ESTC 7-001</p> <p>Land clearing and earth works</p>	<p>Limit the project activities within the project footprint and avoid disturbance of soil outside the project site</p> <ul style="list-style-type: none"> • Strip the top soil to a depth of 15 cm and store in stock piles of height not exceeding 2m. • Remove unwanted materials from top soil like grass, roots of trees and similar others. • The stockpiles will be done in slopes of 2:1 to reduce surface runoff and enhance percolation through the mass of stored soil. • Locate topsoil stockpiles in areas outside drainage lines and protect from erosion. • Construct diversion channels and silt fences around the topsoil stockpiles to prevent erosion and loss of topsoil. • Spread the topsoil to maintain the physic chemical and biological activity of the soil. The stored top soil will be utilized for covering all disturbed area and along the proposed plantation sites • Prior to the re-spreading of topsoil, the ground surface will be ripped to assist the bunding of the soil layers, water penetration and revegetation 	<p>Carry out survey to identify places where topsoil can be stored</p> <p>Ensure the contractor complies with the management guidelines proposed for ESTC 7-001</p>	Covered elsewhere
ESTC 8: Topography and Landscaping			
<p>ESTC 8-001</p> <p>Land clearing and earth works</p>	<p>Undertake mitigation measures for erosion control/prevention specified in ESC-001 and 002</p> <p>Undertake landscaping (filling of pits, holes and depressions) and</p>	Carry out survey of the area to identify the disturbed area for	2,000,000

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
	<p>greening through grass-turfing and tree plantation (4,500 trees), where there is a possibility of rain-cut that will change the shape of topography.</p> <p>Ensure the topography of the final surface of all raised lands (construction yards, approach roads, access roads, bridge end facilities, etc.) are conducive to enhance natural draining of rainwater/flood water</p>	<p>landscaping</p> <p>Ensure the contractor complies with the management guidelines proposed for ESTC 8-001</p>	
<p>ESTC 8-002 Greening in the road buffer zone, reinstated dumpsites, quarry and borrow site</p>	<ul style="list-style-type: none"> • Undertake greening through grass-turfing (complete land cover) and tree plantation (at least 3,000 trees whose species have to be approved by the District) at both sides of the project roads • Undertake greening through grass-turfing (complete land cover) and tree plantation (at least 1 tree per 5m spacing) for dumpsites, borrow sites and quarry sites under reinstatement • Ensure three trees are planted wherever a tree is cut. 	<p>Undertake consultation with the District and REMA to identify which species to be planted in the road buffer zone</p> <p>Ensure project compliance with the management guidelines for ESTC 8-002</p>	<p>15,000,000</p>
<p>ESTC 9: Construction Material Extraction</p>			<p>EHS</p>
<p>ESTC 9-001 Sand extraction</p>	<p>Avoid extracting sand from the river bed in long continuous stretches; alternate patches of river bed will be left undisturbed to minimize the potentially negative impacts on the aquatic habitat.</p> <p>Not excavate deeper than 3 m at any single location.</p> <p>Not carry out sand extraction near chars that have sensitive Habitats</p> <p>Not carry out sand extraction during the night particularly near the chars</p> <p>Obtain approval from DSM before starting sand extraction from any location.</p> <p>Carry out sand extraction from sand bars to the extent possible.</p> <p>Maintain record of all sand extraction (quantities, location shown on map, timing, any sighting of key species)</p> <p>Provide silt fences, sediment barriers or other devices around the extraction areas to prevent migration of sediment rich water in to the river channels.</p>	<p>Carry out survey of the area prior to sand extraction and identify any sensitive receptors/habitats (e.g. bird colony) at or near the proposed sand extraction locations.</p> <p>Determine ‘no-go’ areas for sand extraction, based upon the above survey,</p> <p>Monitor the activity to ensure that the contractor complies</p>	<p>Covered in the cost of supply of construction material</p>

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
		with the management practices for ESTC 9-001..	
<p>ESTC 9-002 Construction material from borrow pits and quarries</p>	<p>To consider existing dumpsite which is used as a disposal site for cut and excavated earth material from RUDP II Phase 3 in Musanze. The contractors shall conduct site investigations all around the sub-projects to ensure these sites have the required capacity to handle all earth material.</p> <p>The contractor will look for new dumpsites. Selected dumpsites will not be located near water bodies or any storm water runway. Preferably they will be located in areas of depression and of low land use value, where they cannot be washed into downstream ecosystems. Wherever possible, spoiled materials can be placed in low-lying parts of the topography or be used for filling exaction holes or road potholes and should be appropriately compacted.</p> <p>Existing borrow pits along the route will be used if any. New borrow pits (e.g. stone, gravel exploitation) may have to be established where existing borrow pit material is not suitable or enough. Prior to commencement of use of the borrow pits, dumping sites and quarries an environmental and social management plan shall be prepared and approved by the Musanze District and LODA and, a rehabilitation plan shall also be prepared and implemented after completion of construction works. As good environmental practices, it is proposed that existing borrow pits, quarries and dumping sites are given priority.</p>	<p>Carry out survey of the area prior to establish a borrow or quarry site to identify any sensitive receptors/habitats (e.g. bird colony) at or near the proposed site.</p> <p>Determine ‘no-go’ areas based upon the above survey,</p> <p>Monitor the activity to ensure that the contractor complies with the management practices for ESTC 9-002.</p>	
<p>ESTC 9-003 Blasting using explosive</p>	<p>Avoid carrying out any blasting during excavation or rock cut and other project work. Should unavoidable the blasting (e.g. quarrying) the contractor will request and get approval from the competent authority. As per national regulations the blasting site should not be within a radius of 600 m of residential area and shall always take place during day’s hours.</p> <ul style="list-style-type: none"> The methods and the means for the storage and the handling of 	<p>✓ Assess the possibility of avoiding use of explosive, otherwise ensure the contractor has the permit and adheres with the explosive</p>	<p>Covered in the cost of supply of construction material or other related civil work</p>

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
	<p>the explosive should strictly adhere to national law national law, regulations and mining standards provided by the Rwanda Mines, Petroleum and Gas Board (RMPGB).</p> <ul style="list-style-type: none"> • Recruit a person with a valid explosives manager's certificate as explosives manager. • Ensure that activities that involve explosives, accessories or precursor substances are: <ul style="list-style-type: none"> ○ managed by a certified explosives manager; ○ carried out only by competent and certified persons; and ○ carried out only if the licenses and permits required are in place. • Ensure use or fitting high efficiency mufflers to noisy construction equipment and provide PPE protection to workers (masks, ear protection) exposed to the noise level above 85 dB to ensure compliance of the noise management measures, • Monitor the vibration and noise level and their impacts to buildings and local people within a radius of 1 km 	<p>management practices (ESTC 9-003)</p>	
ESTC 10: Air Quality Management			
ESTC 10-001 Management of machinery and vehicle exhaust emissions	<p>Fit vehicles with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition. Proof or maintenance register shall be required by the equipment suppliers and contractors/ subcontractors</p> <p>Operate the vehicles in a fuel-efficient manner</p> <p>Service all vehicles regularly to minimize emissions</p> <p>Machinery causing excess pollution (e.g. visible smoke) will be banned from construction sites</p> <p>Limit the idling time of vehicles not more than 2 minutes.</p>	<p>Ensure the project machinery and vehicles compliance with the guidelines for the air quality management for machinery and vehicle's emissions (ESTC 10-001)</p>	<p>2,000,000</p>
ESTC 10-002 Management of dust and particulate	<p>Supply water and provide a mobile water tanker and suppress dust and particulate emissions at the stone crusher plants, excavation sites, borrow sites, etc. crushing of rocky and aggregate materials shall be wet-crushed, or performed with particle emission control</p>	<p>Ensure compliance of the project activities with the guidelines for the air quality management for</p>	<p>6,000,000</p>

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
	<p>systems</p> <p>Cover haul vehicles carrying dusty materials moving outside the construction site</p> <p>Impose speed limits on all vehicle movement at the worksite to reduce dust emissions</p> <p>Water construction materials prior to loading and transport</p> <p>Reschedule earthwork activities or vegetation clearing activities, where practical, if necessary to avoid during periods of high wind and if visible dust is blowing off-site</p> <p>Restore disturbed areas as soon as practicable by vegetation/grass-turfing</p> <p>Store the cement in silos and minimize the emissions from silos by equipping them with filters.</p> <p>Establish adequate locations for storage, mixing and loading of construction materials, in a way that dust dispersion is prevented because of such operations;</p> <p>Avail the air quality monitoring kit for particulate matter (PM10, PM 2.5) and monitor/report (daily) the PM 10 and PM 2.5 level at quarry sites, asphalt plants, borrow sites, excavation and construction sites</p>	<p>dust emissions (ESTC 10-002)</p>	
ESTC 11: Noise and Vibration Management			
<p>ESTC 11-001</p> <p>Traffic vehicles Noise and vibration management</p>	<p>Maintain all vehicles in good working in accordance with manufactures maintenance procedures</p> <p>Ensure project drivers comply with the traffic codes concerning maximum speed limit, driving hours, etc.</p> <p>Organize the loading and unloading of trucks, and handling operations for the purpose of minimizing construction noise on the work site;</p> <p>Avail a noise measurement device, monitor and report noise level at the noisy sensitive areas (centres, school, health centres, etc).For consistency purpose, monitor the noise level at the sites shown in Figure 4-2 and compared the recorded values with the</p>	<p>Ensure the project machinery and vehicles compliance with the guidelines for Noise and Vibration Management (ESTC 11-001)</p>	<p>N/A</p>

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
	background noise level presented in Figure 5-5		
<p>ESTC 11-002 Management of Noise from machineries/equipment</p>	<p>Not carry out any blasting during excavation or any other activity. Should excavation be required (e.g. quarrying) the contractor will request and get approval from the competent authority. The blasting site should not be within a radius of 600 m of residential area and shall always be take place during day’s hours.</p> <p>Use the quietest available plant and equipment or modify equipment to reduce noise (for example, noise control kits, lining of truck trays or pipelines). Install acoustic enclosures around generators to reduce noise levels.</p> <p>Concentrate the project noisy activities during day’s hours (7:00 am-6:00) and notify adjacent landholders prior any typical noise events outside of daylight hours.</p> <p>Maintain all equipment in order to keep it in good working order in accordance with manufactures maintenance procedures. Equipment suppliers and contractors shall present proof of maintenance register of their equipment.</p> <p>Fit high efficiency mufflers to appropriate construction equipment and provide PPE protection to workers (masks, ear protection) exposed to the noise level above 85 dB</p> <p>To ensure compliance of the noise management measures, monitor the noise level at the sites indicated on Figure 4-2 and compared the recorded values with the background noise level presented in Figure 5-5.</p>	<p>Ensure the project machinery/equipment compliance with the guidelines for Noise and Vibration Management (ESTC 11-002)</p>	<p>1,000,000</p>
<p>ESTC 11-003 Management of vibration impact on property during excavation, compaction, blasting and road operation</p>	<p>Undertake the field surveys to identify and record the status of buildings and properties that can be affected by the ground induced vibration from the project activities</p> <p>Compensate any damage (e.g. cracks in buildings) from the ground induced vibration at the satisfaction of the owners</p> <p>Undertake investigations of seismicity on the prospective sources of the material including quarries/borrow pits for embankment fills, pitching, rip rap, concrete aggregates and other construction</p>	<p>Ensure all impacts from ground induced vibration from the project activities are compensated at the satisfaction of affected persons</p>	<p>To be part of the project civil works and contingent cost</p>

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
	<p>materials;</p> <p>Lower vulnerability of infrastructure by enhancing prior measures such as the reinforcement of works (road, bridges and culvert)</p> <p>Prepare an emergency response plan including response to earthquakes accidents (break, fall, fissures, landslip) that may occur during the construction works</p>		
ESTC 12: Protection of Flora			
ESTC 12-001 Vegetation clearance and revegetation	<p>Before cutting any trees, count them and show them to the District forestry/environmental officer and the project Environmental and Social Risk Management Specialist for assessment and approval;</p> <p>For every cut tree, replace it by planting 3 trees (native species);</p> <p>Reduce the disturbance to the surrounding vegetation especially those with protection status shown in Figure 5-25 and Table 7-3);</p> <p>Minimize the length of time the ground is exposed or excavation left open by clearing and re-vegetate the area at the earliest practically possible.</p> <p>Wherever possible (where vegetation can grow), plant the vegetation on cuts and embankments</p> <p>Provide adequate knowledge to the workers regarding nature protection and the need of avoid felling trees during construction</p>	Ensure compliance of the project activities with the guidelines for Flora Protection (ESTC 12-001)	2,000,000
ESTC 13: Protection of Fauna			
ESTC 13-001 Protection of animal habitat	<p>Check the project site of the presence of sensitive habitats including of active nests or eggs of migratory birds.</p> <p>In case active nests are identified, shift the work to the other sections and seek advice from or REMA</p> <p>Minimize the release of oil, oil wastes or any other harmful substances to the environment especially in water ways.</p> <p>Provide adequate knowledge to the workers regarding protection of flora and fauna, and relevant government regulations and punishments for illegal poaching</p>	Ensure compliance of the project activities with the guidelines for Fauna Protection (ESTC 13-001)	1,000,000
ESTC 14: Protection of Fisheries			
ESTC 14-001	Implement the management guidelines for Waste Management	Ensure compliance of the	Cost covered in

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
Fishery Protection	(ESTC 1 and ESTC 2) and Waste Resources Management and (ESTC 3) Minimize the release of oil, oil wastes or any other harmful substances to water ways. During abstraction of water in the nearby streams of rivers for suppressing dust or use in other construction activities, install and maintain aquatic lives/fish screens at the water intake	project activities with the guidelines for Protection of fisheries (ESTC 14-001)	solid waste and wastewater management (ESTC 1 and ESTC 2)
ESTC 15: Road Transport and Road Traffic Management			
ESTC 15-001 Construction vehicular traffic	Prepare and submit a traffic management plan to the consultant for approval at least 30 days before commencing work on any project component involved in traffic diversion and management. Include in the traffic management plan to ensure uninterrupted traffic movement during construction: detailed drawings of traffic arrangements showing all detours, temporary road, temporary bridges temporary diversions, necessary barricades, warning signs / lights, and road signs. Avail traffic sign posts (at least 5 for each category shown in Table 7-13), warning tapes (at least 100 tapes) Provide road signs and warning tapes at strategic locations of the roads complying with the schedules of signs contained in the Rwanda Traffic Regulations. Install and maintain a display board at each important road intersection on the roads to be used during construction, which shall clearly show the following information in Kinyarwanda: Location: Village name Duration of construction period Period of proposed detour / alternative route Suggested detour route map <ul style="list-style-type: none"> ○ Name and contact address/telephone number of the concerned personnel ○ Name and contact address / telephone number of the Contractor ○ Inconvenience is sincerely regretted. 	Conduct surveys to identify the traffic accident hotspots and road deviation alternatives Review and approve the Contractor's Traffic Management Plan Ensure compliance of the project activities with the guidelines for the management of construction vehicular traffic (ESTC 15-001)	8,000,000

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
ESTC 15-002 Spillage of fuels and chemicals	Restrict the transport of oversized loads, uncovered, unsealed substances and overloaded trucks Enforce on-site speed limit by strategically position the traffic sign posts and humps at those accidents hot spots Clean up all spills of substances/material	Ensure compliance of the project activities with the guidelines for the management of Accidents and spillage of fuels and chemicals (ESTC 15-002)	2,000,000
ESTC 16: Wetland use activities			
ESTC 16-001 Earthworks and green infrastructure construction activities in wetlands	<ul style="list-style-type: none"> • Avoid as much as possible disruption of water bodies or other wetland (e.g. dumping or illegal discharge of pollutants); • Respect the buffer zone regulation (avoid construction activities within 10 m of water bodies or wetland). 	Ensure compliance of the project activities with the wetland and buffer zone protection guidelines	N/A
ESTC 17: Construction Camp Management			
ESTC 17-001 Siting and Location of construction camps	Submit to the consultant for approval a detailed layout plan for the installment of construction yards showing the relative locations of all temporary buildings, including the management plan for the storm water, sewage and other wastes Construction camps will be small, will not include dormitories, only areas for eating, hygiene and sanitation, storage of belongings, etc. Construction camps will be installed as far as possible from the communities in order to avoid social conflicts; Local authorities responsible in the district for Environment health, social affairs and security shall be duly informed on the set up of camp facilities so as to maintain effective surveillance over public health, social and security matters.	Conduct surveys to identify the most suitable locations for dumpsites Review and approve the detailed layout plan for the installment of construction camp showing the relative locations of all temporary buildings, including the management plan for the storm water, sewage and other wastes	Cost covered in the site installation
ESTC 17-002 Water Supply and	Provision of Safe and reliable water supply Hygienic sanitary facilities and sewerage system.	Ensure compliance of the project activities with	Cost covered in the site

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
Sanitation Facilities	Provision of the adequate number (one toilet for every ten persons) and separate latrines and bathing places for males and females with total isolation by wall or by location. Provision of adequate treatment and disposal for the sewage	the guidelines for the management of Water Supply and Sanitation Facilities (ESTC 17-002)	installation & operation
ESTC 17-003 Storm water management	Ensure harvesting of rain water from the campsite building roof using water tanks (at least one tank of 5 m ³); Ensure safe drainage and disposal of all runoff generated from the campsite (soak away pits or drainage to the side of the roads	Ensure compliance of the project activities with the guidelines for the management of the storm water (ESTC 17-002)	Cost covered in the site installation & operation
ESTC 17-004 Management solid of wastes	Implement the management guidelines for Waste Management (ESTC 1 and ESTC 2)	Ensure compliance of the project activities with the guidelines for the management of wastes (ESTC 17-004)	Cost covered in the site installation & operation
ESTC 17-005 Management of Energy for cooking	Made available alternative fuels like natural gas or kerosene on ration to the workforce to prevent them using biomass for cooking.	Ensure compliance of the project activities with the guidelines for the energy management (ESTC 17-005)	Cost covered in the site installation & operation
ESTC 17-006 Health and Hygiene	Provide first aid kit and maintain a stock of medicines in the facility and appoint fulltime designated first aider or nurse. Keep in contact with the ambulance to be used during emergency. Initial health screening of the laborers coming from outside areas Train all construction workers in basic sanitation and health care issues and safety matters, and on the specific hazards of their work Provide HIV awareness programming, including COVID 19, STI (sexually transmitted infections) and HIV information, education and communication for all workers on regular basis Complement educational interventions with easy access to condoms	Ensure compliance of the project activities with the guidelines for the management of the storm water (ESTC 17-006)	Cost covered in the site installation & operation

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
	<p>at campsites as well as voluntary counseling and testing</p> <p>Install drainage facilities throughout the construction camps and other project areas to ensure that disease vectors such as stagnant water bodies and puddles do not form.</p> <p>Regular mosquito repellent sprays during the wet seasons.</p> <p>Carryout short training sessions on best hygiene practices to be mandatorily participated by all workers.</p> <p>Place display boards at strategic locations within the project area containing messages on best hygienic practices</p>		
ESTC 17-007 Safety	<p>Post the campsite safety rules at the strategic places. Communicate the roles and responsibilities of laborers in case of emergency in the monthly meetings with contractors</p> <p>Provide appropriate security personnel (private security guards) and enclosures to prevent unauthorized entry in to the camp area.</p> <p>Maintain register to keep a track on a head count of persons present in the camp at any given time.</p> <p>Encourage use of flameproof material for the construction of labor housing / site office. Also, ensure that these houses/rooms are of sound construction and capable of withstanding storms with strong winds and installed with lightening protection.</p> <p>Provide appropriate type of firefighting equipment suitable for the construction camps</p> <p>Display emergency contact numbers clearly and prominently at strategic places in camps.</p>	<p>Ensure compliance of the project activities with the guidelines for safety (ESTC 17-007)</p>	<p>Covered in the safety best practices</p>
ESTC 17-008 Site Restoration	<p>Dismantle and remove from the site all facilities established within the construction camp including the perimeter fence and lockable gates if build.</p> <p>Maintain the noise levels within the national standards during demolition activities or international standards (noise residential level cannot be more than 80 dB)</p> <p>Contractor should connect with NGOs or the community to see potential use of good material that can be use by others.</p>	<p>Ensure compliance of the project activities with the guidelines for site restoration (ESTC 17-008)</p>	<p>Cost covered in the site decommissioning</p>

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
	<p>Dispose remaining debris at the designated waste disposal site.</p> <p>Handover the areas to land owner or district if agreement between both parties (contractor and land-owner) has been made and it will be signed and verified in a written report by the ESS that the area is clean of construction waste, hazardous waste (painting, diesel, oils, others).</p> <p>Restore the site to its condition prior to commencement of the works or to an agreed condition with the landowner.</p>		
ESTC 18: Cultural and Religious Issues			
<p>ESTC 18-001 Construction activities near religious and cultural sites</p>	<p>Limit all construction activities within the foot prints of the construction sites and avoid disturbance to cultural and religious sites, wherever possible</p> <p>Stop work immediately and notify the site manager if, during construction, an archaeological, grave or burial site is discovered. It is an offence to recommence work in the vicinity of the site until approval to continue is given by the DSM/PIU. Provide separate prayer facilities to the construction workers.</p> <p>Show appropriate behavior with all construction workers especially women and elderly people</p> <p>Allow the workers to participate in praying during construction time</p> <p>Resolve cultural issues in consultation with local leaders and supervision consultants</p> <p>Establish a mechanism that allows local people to raise grievances arising from the construction process.</p> <p>Ensure the local authorities responsible for health, religious and security are duly informed before commencement of civil works so as to maintain effective surveillance over public health, social and security matters</p>	<p>Ensure compliance of the project activities with the guidelines for Cultural and Religious Issues (ESTC 18-001)</p>	<p>3,000,000</p>
ESTC 19: Environmental, Social, Health and Safety			
<p>ESTC 19-001 Health and Safety Best practices</p>	<p>Hire 3 specialists: (1) Environmental Specialist; (2) The Social Risk Management Specialist; (3) The Safety, Health and First Aid Specialist;</p>	<p>Ensure the contractor has an environment, health and safety manager to look</p>	<p>32,000,000</p>

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
	<p>Eliminating the hazard by removing the activity from the work process. Examples include substitution with less hazardous chemicals, using different manufacturing processes.</p> <p>Controlling the hazard at its source through use of engineering controls. Examples include local exhaust ventilation, isolation rooms, machine guarding, acoustic insulating.</p> <p>Minimizing the hazard through design of safe work systems and administrative or institutional control measures. Examples include job rotation, training safe work procedures, lock-out and tag-out, workplace monitoring, limiting exposure or work duration.</p> <p>Avail the adequate number of a complete set of PPEs such as overall, safety boots, helmets, masks, gloves, goggles, full-face eye shields, and ear protection. (every worker must have a complete set of PPEs) and ensure workers get trainings on PPEs use and maintenance. The application of prevention and control measures to occupational hazards should be based on comprehensive job safety or job hazard analyses. The results of these analyses should be prioritized as part of an action plan based on the likelihood and severity of the consequence of exposure to the identified hazards.</p> <p>Inform the local authorities responsible for health, religious and security duly informed before commencement of civil works and establishment of construction camps so as to maintain effective surveillance over public health, social and security matters.</p>	<p>after the health and safety of the workers</p> <p>Ensure the contractor complies with Worker Health and Safety</p>	
<p>ESTC 19-002 Child and pregnant labor and Gender Based Violence (GBV)</p>	<p>The contractor and consultant will have GBV Specialists as part of the key staff of the team;</p> <p>Not hire children of less than 18 in accordance with the Law no 66/2018 regulating labor in Rwanda.</p> <p>Prepare a GBV action plan which will include but not limited to, the following activities:</p> <p>Action 1: Gather information to understand how violence directly impacts the project workers and communities around and the</p>	<p>Inspect the work site and employee’s records to check the contractor’s compliance to child and pregnant labor (ESTC 19-002)</p>	<p>N/A</p>

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
	<p>availability of services for victims and survivors of violence and exploitation in the project area</p> <p>Action 2: Develop strategies and plans to address GBV, sexual exploitation and other abuse among the project participants (workers and communities). Consider interventions for the short term (six months to one year) and medium term (project duration)</p> <p>Action 3: Equip the project team (GBV specialist, ESS Specialists) to respond appropriately to support those seeking assistance</p> <p>Action 4: Include violence prevention and response activities in weekly, monthly, quarterly and annual work plans;</p> <p>Mandatory and repeated training and awareness raising (induction training and daily tool box talks to workers) about refraining from unacceptable conduct toward local community members, specifically women. Local people will also be sensitized against GBV and child labor before the start of the works and quarterly during the project implementation;</p> <p>Informing workers about national laws (e.g. Law 2 of N°59/2008 of 10/09/2008) that make sexual harassment and gender-based violence a punishable offence which is prosecuted;</p> <p>Introducing a Worker Code of Conduct (Annex 12) as part of the employment contract, and including sanctions for non-compliance (e.g., termination) including pursuing workers who have impregnated local women;</p> <p>During works, separate facilities for women & men, GBV-free zone signage.</p> <p><i>In case of a grievance emanating from GBV, a special GBV task force will be established and will be in charge of receiving, assessing and handling all cases of sexual harassment and GBV. The taskforce will also handle GBV throughout the project implementation stage. The task force includes project staff namely: Human resource officer and social safeguards specialist</i></p>		

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
	<p>from the contractor, Social Safeguards Specialist from the concerned PIU (LODA, Musanze district administration), Gender Monitoring Officer and Environmental and Social Management Specialist from the District , Social Safeguards Specialist from the supervising firm, Women representative from the GRC at cell level and GBV service provider in the area of GBV prevention and handled referral pathways for the GBV survivors (see Annex 12 for more guidance).</p>		
<p>ESTC 19-003 First aid facilities and health care facilities</p>	<p>Avail at least 3 units of appropriately equipped first aid stations¹⁶ (one at campsite and two moving stations); Document and report occupational accidents, diseases, and incidents within 24 hours using the format in Annex 9. Prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, so far as reasonably practicable, the causes of hazards. In a manner consistent with good international industry practice. Identify potential hazards to workers, particularly those that may be life-threatening and provide necessary preventive and protective measures. Provide awareness to the construction drivers to strictly follow the driving rules</p>	<p>Inspect the work site to check the contractor’s compliance to provision of First aid facilities and health care facilities (ESTC 19-003)</p>	<p>7,600,000</p>
<p>ESTC 19-004 Campsite facilities</p>	<p>The Contractor shall implement the guidelines related to provision of water supply and sanitation facilities in the campsite (ESTC 19-002) including provision of safe and reliable water supply and hygienic sanitary facilities and those related to the storm water management (ESTC 19-003)</p>	<p>First aid facilities and health care facilities</p>	<p>Cost e covered in site installation</p>

¹⁶ The First Aid Kit should at least contain the Compression wrap, Antibiotic ointment, Tweezers, Antihistamine tablets, Hand sanitizer, Antiseptic wipes, Band-aids of various sizes and Eye wash

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
<p>ESTC 19-005 Water and sanitation facilities at the construction sites</p>	<p>The contractor shall provide portable toilets at the construction sites, if about 25 people are working the whole day for a month. Location of portable facilities shall be at least 6 m away from storm drain system and surface waters.</p> <p>These portable toilets shall be cleaned four times a day and all the sewerage shall be pumped from the collection tank once a day and shall be brought to the septic tank for further treatment or disposal.</p> <p>The contractor shall provide eating areas and drinking water to the construction workers at all the construction sites</p>	<p>Inspect the construction site to check the contractor’s compliance to provision of potable water and sanitation facilities at the construction sites (ESTC 19-004)</p>	<p>7,000,000</p>
<p>ESTC 19-006 Health risks to workers and general public</p>	<p>Implement the guidelines for Waste Management (ESTC 1, ESTC 2), Water Resources Management (ESTC 3), Drainage Management (ESTC 4), Air Quality Management (ESTC 10), Noise and Vibration Management (ESTC 11) and Road Transport and Road Traffic Management (ESTC 15)</p>	<p>Ensure the compliance of the project activities to guidelines for the management of Health risks to workers and general public (ESTC 19-005)</p>	<p>Cost covered in site installation</p>
<p>ESTC 19-007 Trainings</p>	<p>Conduct regular training (induction, daily tool box) to all construction workers in environmental, basic sanitation and health care issues (see Table 7-12 for more details).</p> <p>Train all construction workers in general health and safety matters, and on the specific hazards of their work. Training shall consist of basic hazard awareness, site specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate.</p> <p>Implement malaria, COVID 19, HIV/AIDS and STI education campaign targeting all workers hired, international and national, female and male, skilled, semi- and unskilled occupations, at the time of recruitment and thereafter pursued throughout the construction phase on ongoing and regular basis. This shall be complemented by easy access to condoms at the workplace as</p>	<p>Ensure workers get trainings on health and safety (ESTC 19-006)</p>	<p>Cost covered in ESH-001</p>

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
	well as to voluntary counseling and testing		
ESTC 20: Social impacts			
<p>ESTC 20-001 Best practices for utility services, access to homes, businesses, agricultural fields or other natural livelihood assets, Noise, dust and other nuisances</p>	<p>Avoid the disturbance of utility services, access to homes, businesses, agricultural fields or other natural livelihood assets, Noise, dust and other nuisances</p> <p>Maintain any existing right of way across the whole or part of the construction site and public and private access to adjoining frontages in a safe condition and to a standard not less than that pertaining at the commencement of the contract. If requested by the consultant or Musanze District, the Contractor shall provide acceptable alternative means of passage or access to the satisfaction of the persons affected.</p> <p>Provide the access road to all buildings especially those accommodating business activities;</p> <p>Provide alternative temporary spaces for informal businesses (mobile credits selling stands, motorcycles parking sites);</p> <p>Engage with formal businesses owners in dialogue on potential periods of disruption;</p> <p>Conduct the construction works in phases so as to allow some businesses to continue;</p> <p>Provide temporal access bridges to the businesses during construction works;</p> <p>Provide appropriate information to potentially affected local communities prior to the beginning of any works in order to allay fears, complaints or potential risks due to lack of information or awareness about the project activities;</p> <p>Ensure provision of the disability accessibility including footpaths and access with railings and handrails;</p> <p>In case electricity and water supplies are to be disrupted, the PMU must inform affected households and businesses of the same at least 2 days in advance.</p> <p>Place wooden planks over constructed ditches which have not been</p>	<p>Inspect the construction site to enforce the best practices for utility services, access to homes, businesses, agricultural fields or other natural livelihood assets, Noise, dust and other nuisances (ESTC 20).</p>	<p>Cost covered in site installation and civil works</p>

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
	<p>reinstated to ensure access to the households along the construction route.</p> <p>Inform the street household businesses of the construction activities and their potential impacts such, waste, dust, and noise, traffic, and construction schedule at least 2 weeks before start of the construction.</p> <p>Set up construction and traffic warning signs at the construction site.</p> <p>Provide safe and easy access to the household businesses putting clean and strong thick wood panels or steel plates over the open ditches.</p> <p>Avoid piling up materials and wastes within 20m from household businesses and shops.</p> <p>Spray sufficient water to suppress dust during dry and windy days at least three times a day at site.</p> <p>Clean up construction areas at the end of the day, especially construction areas in front of business shops.</p> <p>Provide night lighting system with luminously painted fence and night lamp.</p>		
<p>ESTC 20-002 Community health and safety risks due to lack of inadequate/ ineffective communication to local communities</p>	<p>Employ local casual labor and instruct them on environmental issues, safety and health before construction tasks are assigned.</p> <p>Communicate to migrant workers on local customs, practices and habits in order to avoid conflicts with local people.</p> <p>Maintain open communications channels with the local government and concerned communities; the contractor shall coordinate with local authorities (leaders of Cells or Villages, leaders of Sectors) for agreed schedules of construction operations in areas nearby sensitive places or during sensitive times (e.g. religious; sports events).</p> <p>A grievance mechanism/grievance committee will be set to mitigate or mediate for any project related issue to the community. The GRCs will be trained by the contractor on a quarterly basis (on training days, the contractor will provide transport allowances to</p>	<p>Inspect the construction site to enforce the best practices Community health and safety risks due to lack of Inadequate/ineffective communication to local communities (ESTC 20).</p>	<p>20,500,000</p>

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Environmental and Social Technical Clauses (ESTCs)	Management practices by the Contractors and sub-contractors	Management practices by the Consultant	Cost (FRw)
	<p>the GRC members who attend the training).</p> <p>Copies of Kinyarwanda versions of these Environmental and Social Technical Clauses and of other relevant environmental protection documents shall be made available to local communities and to workers at the site.</p> <p>Project information will be disseminated to affected parties (e.g. local authorities, businesses and affected households, etc.) through community meetings before construction commencement.</p> <p>A contact address will be provided to the community.</p> <p>Community concerns and requested information are to be monitored as the project progresses.</p> <p>Inquiries must be responded by telephone and written correspondence in a timely and accurate manner.</p> <p>Local residents/community verifiers must be informed about construction and work schedules, interruption of services, traffic detour routes and provisional bus routes, demolition operations, as appropriate.</p> <p>Technical documents and drawings will be provided to local authorities, especially the sketch of construction areas and the ESMP of the construction site.</p> <p>Notification boards shall be erected at all construction sites providing information about the project, as well as contact information about the site managers, environmental staff, health and safety staff, telephone numbers and other contact information so that affected people could have a channel to voice their concerns and suggestions</p>		
Total		146,100,000	

11. CONCLUSION

The RUDP II phase 3 for the construction of roads and storm water drainages in the Musanze Secondary City is economically feasible in regard to local residents with easy access to roads network. The project also has the potential to increase social, cultural/historical services, as well as business activities in the area by effectively reducing the travel time.

The scoping exercise has identified a number of issues pertaining to the proposed roads construction in the Musanze City. The issues/impacts have been assessed and described in some detail to gain an adequate understanding of possible environmental effects of the proposed project – from design to decommissioning, in order to formulate mitigation measures in response to negative aspects which have emerged.

Since roads upgrade, drainage and pond systems will largely follow existing alignments, ESIA findings indicate that direct impacts will be fairly benign and limited to the alignment areas where road and drainage works will be undertaken.

The Environmental and Social Management Plan (ESMP) identified mandatory prevention compensation and mitigation measures. The ESMP should be implemented as a prerequisite for a positive Record of Decision (RoD) by the appropriate authorities.

The Environmental Monitoring Plan provides parameters to be monitored, responsibilities, frequency and associated budget. The consultant is recommending that the Project Implementing Agency assigns its technical team to undertake the monitoring of the mitigation measures for the project through its existence. This way the developer will achieve sustainable project implementation at reduced cost for undertaking the monitoring. The figures given are considered to be absolute maximum such implementation and monitoring could cost. However, regular internal monitoring shall be carried out by the project proponent.

Given the nature and location of the project development activities, the conclusion is that the potential impacts associated with the proposed development are of a nature and extent that can be reduced, limited and eliminated by the application of the proposed appropriate mitigation

measures hence the construction of the roads and drainages in the Musanze city shall be successfully implemented with some recommendations.

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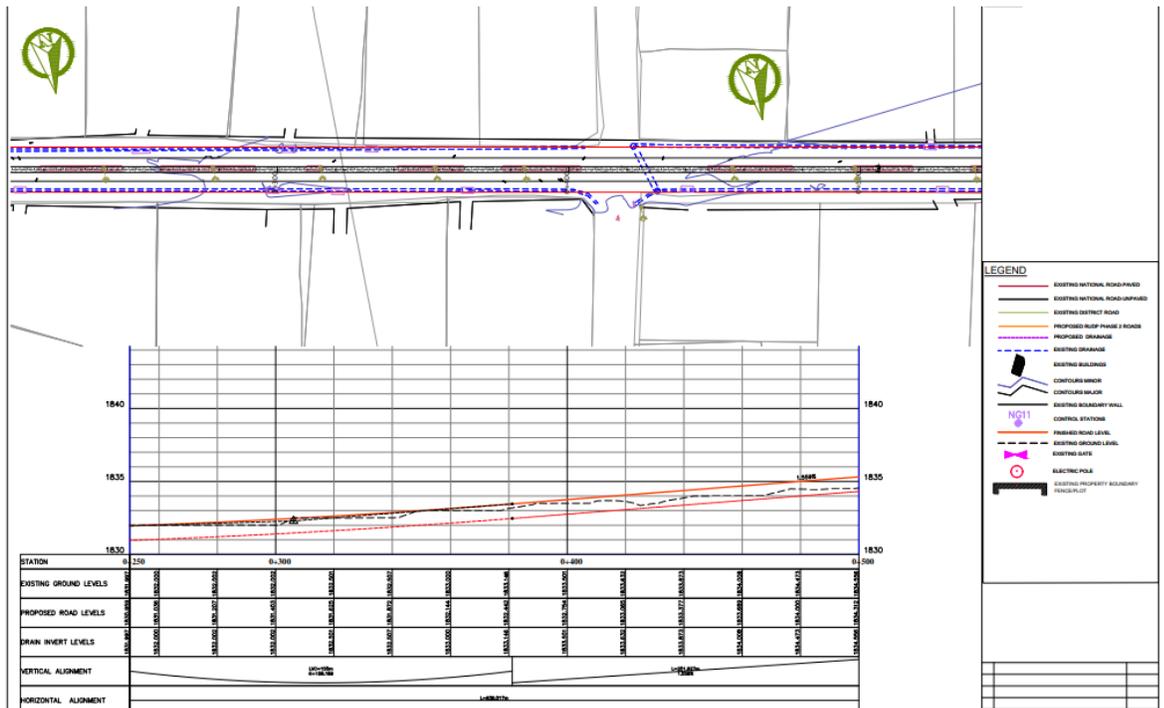
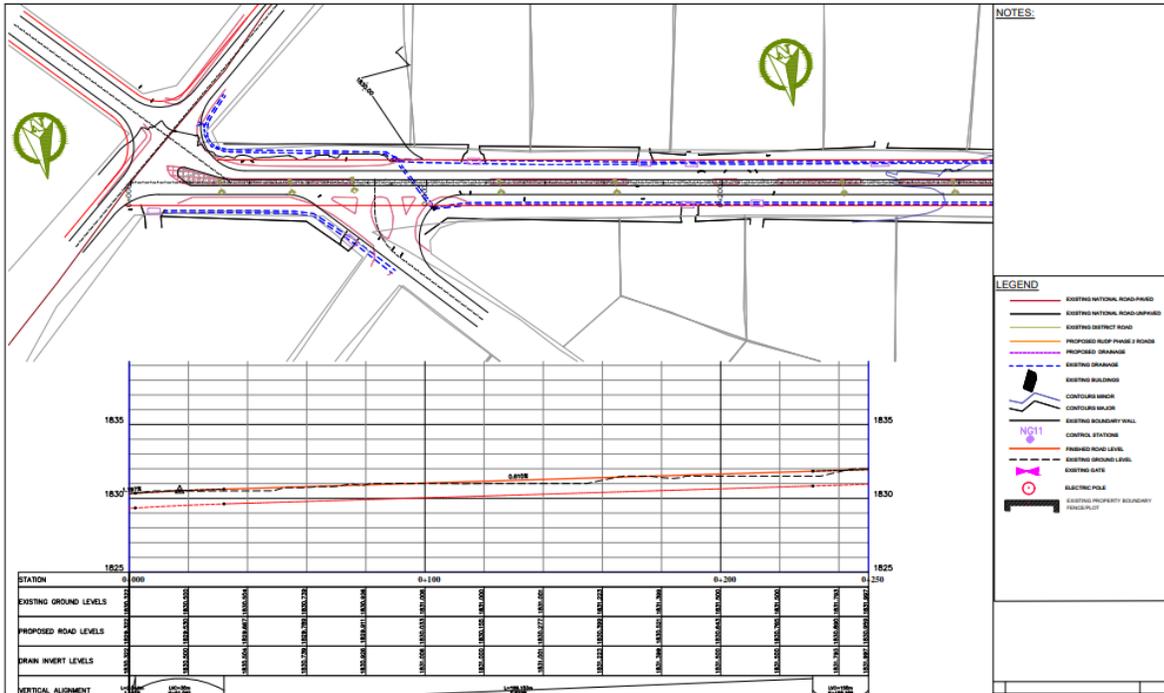
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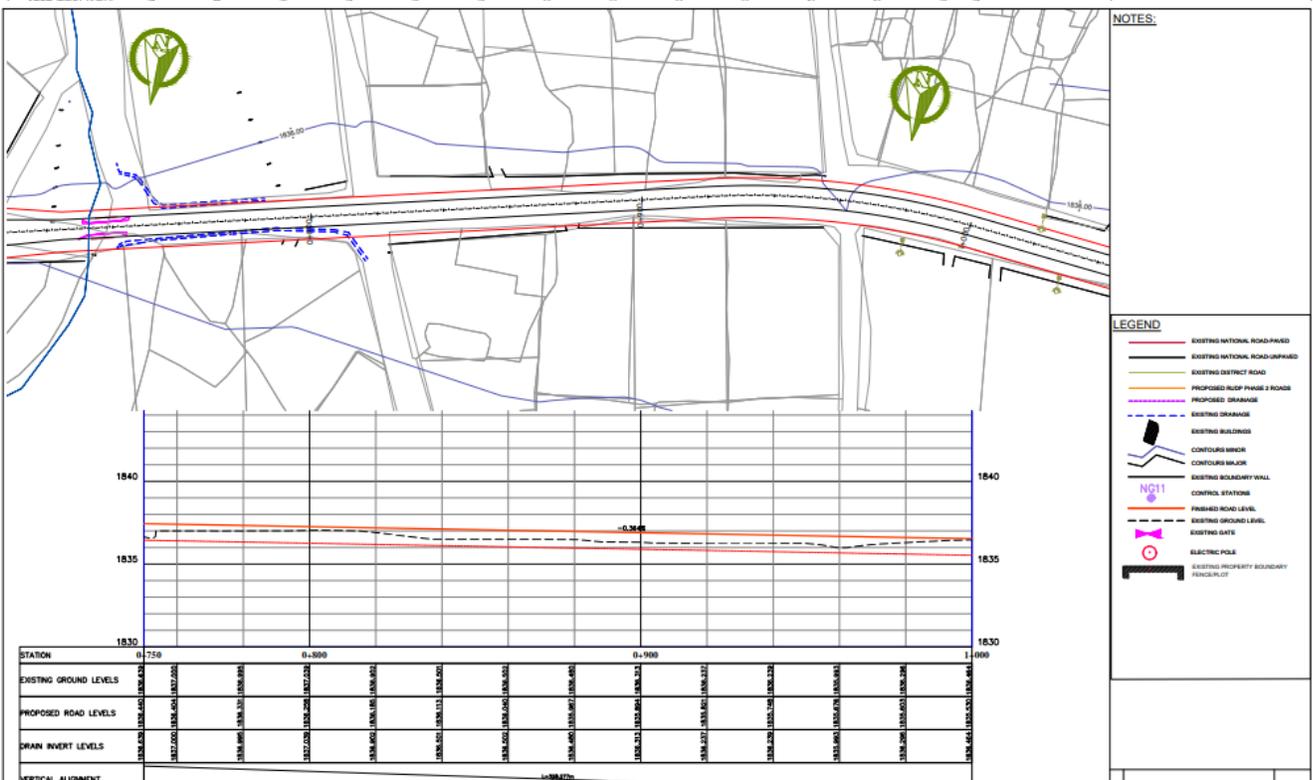
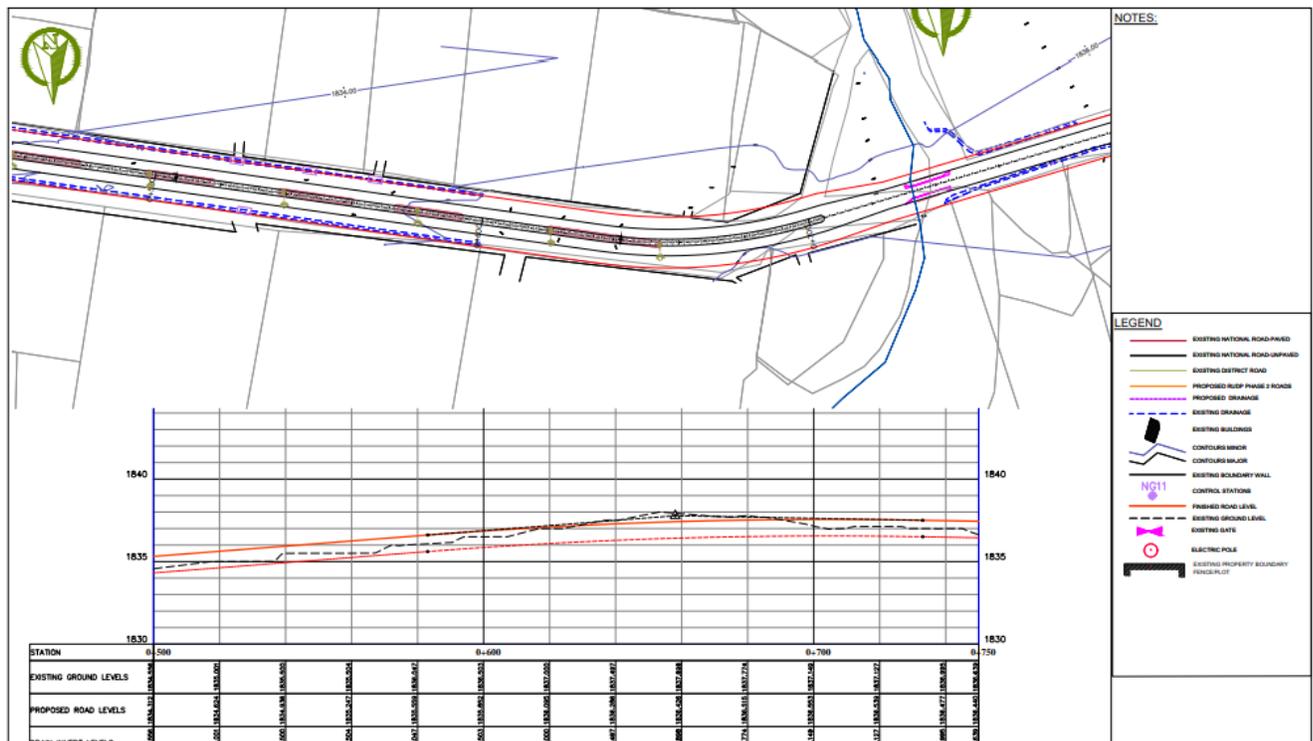
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ANNEXES

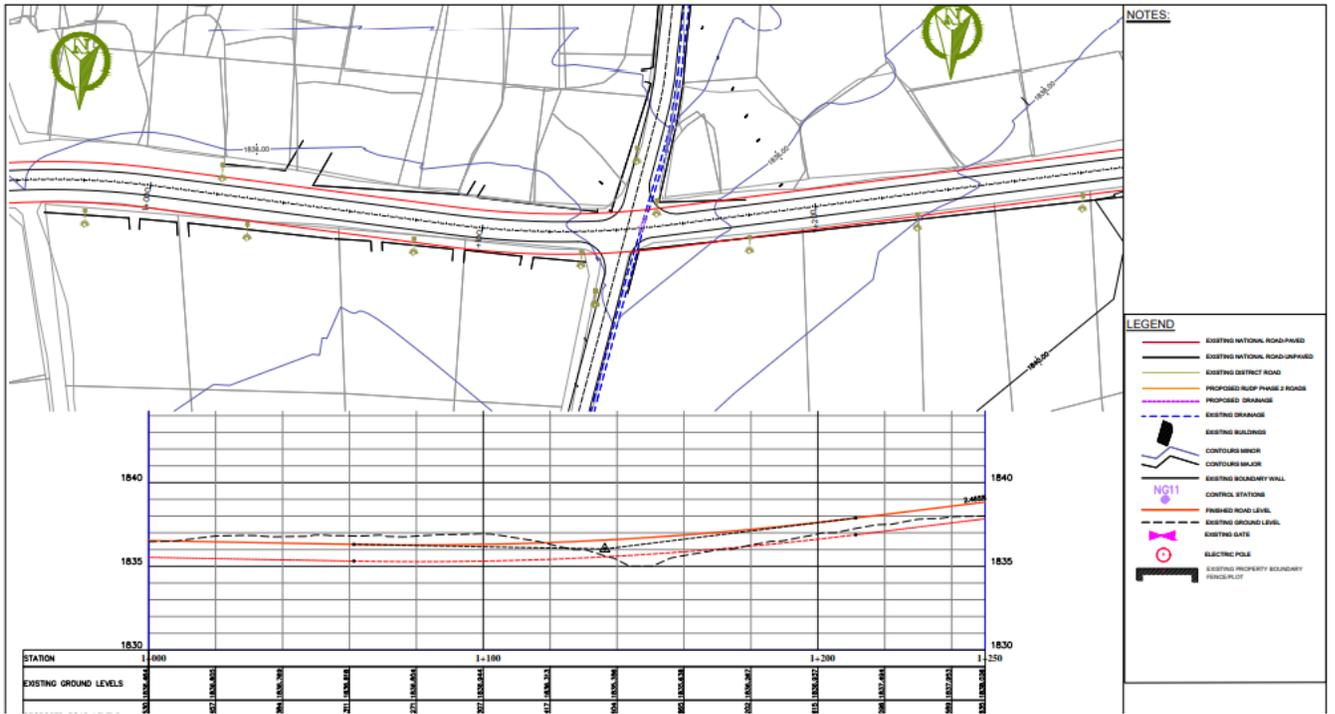
Annex 1: Road engineering design
 a. Ipositta-Excel School-Eveche-Yaunde asphalt road



ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

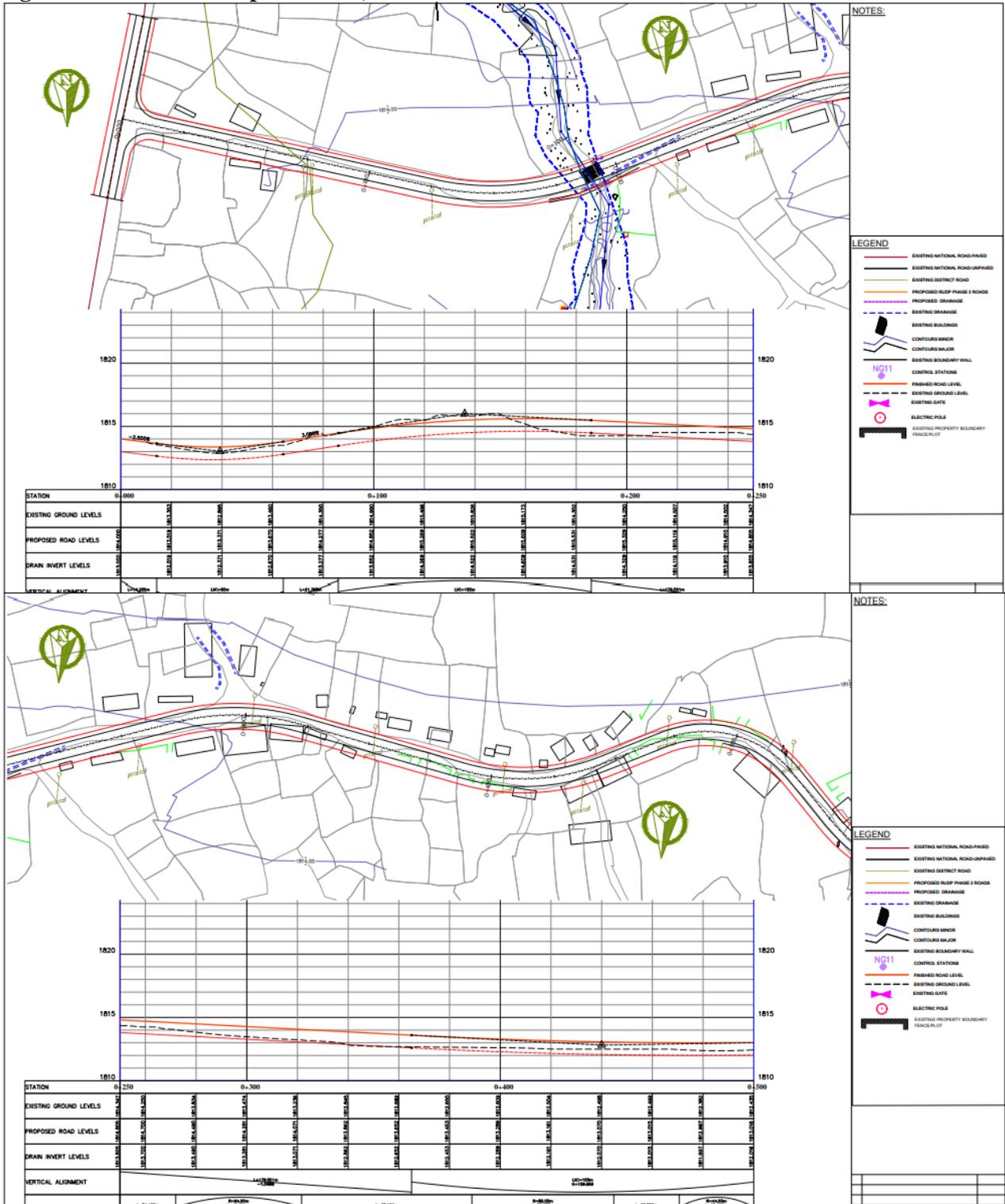


ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

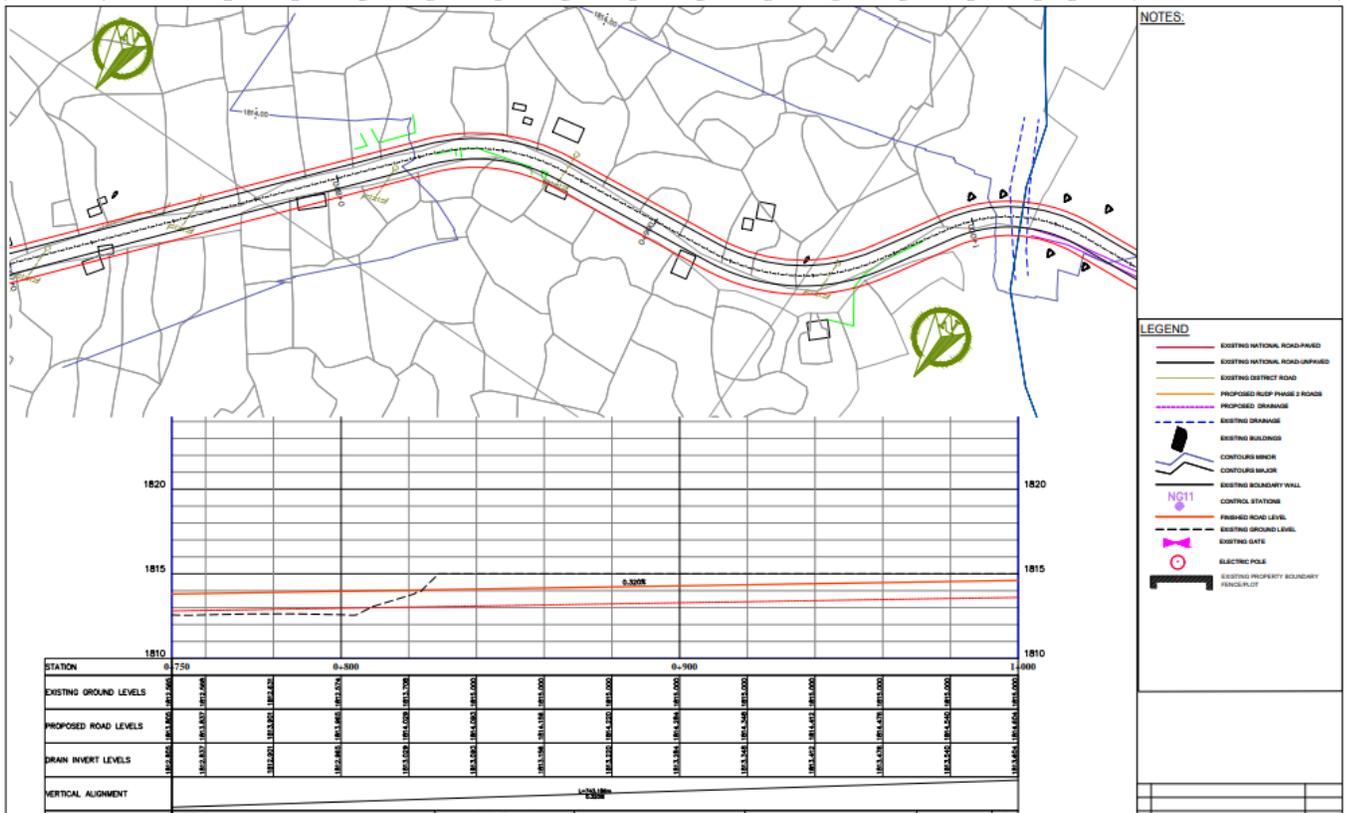


ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

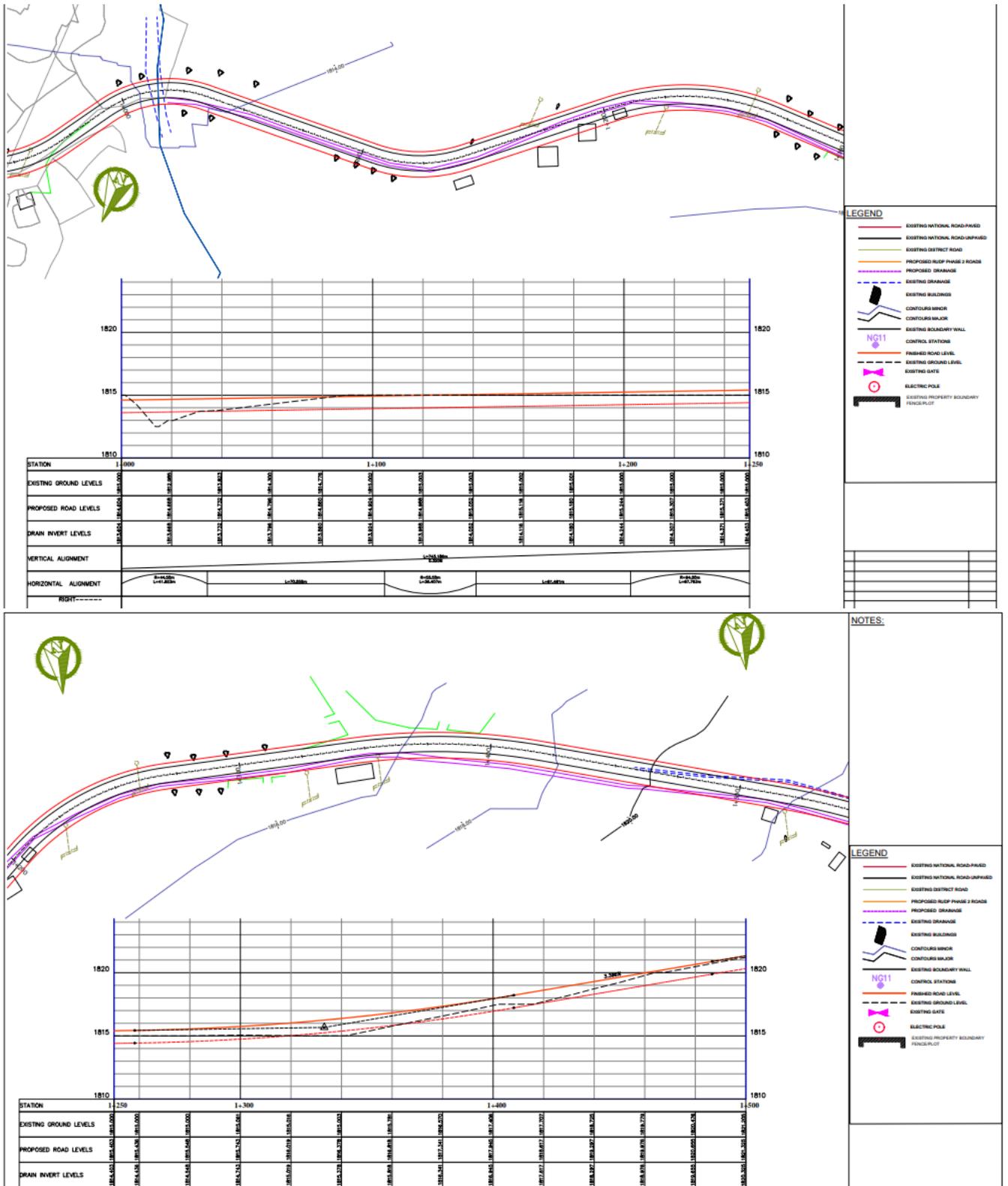
b. Road engineering design (Susa Informal Settlement, Nyamagumba-Regina Pacis Secondary scgool-Susa-Karisimbi asphalt roads)



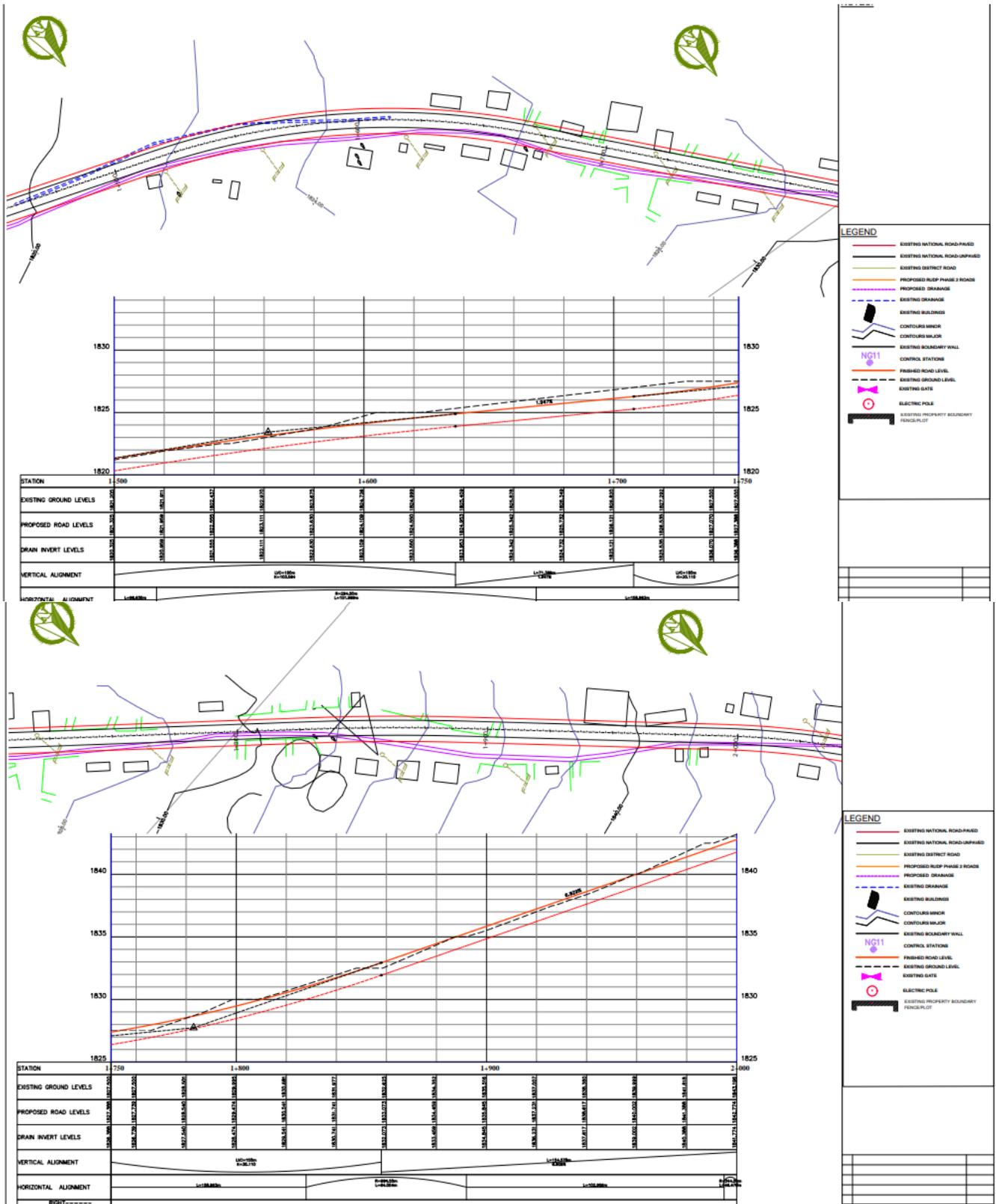
ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze



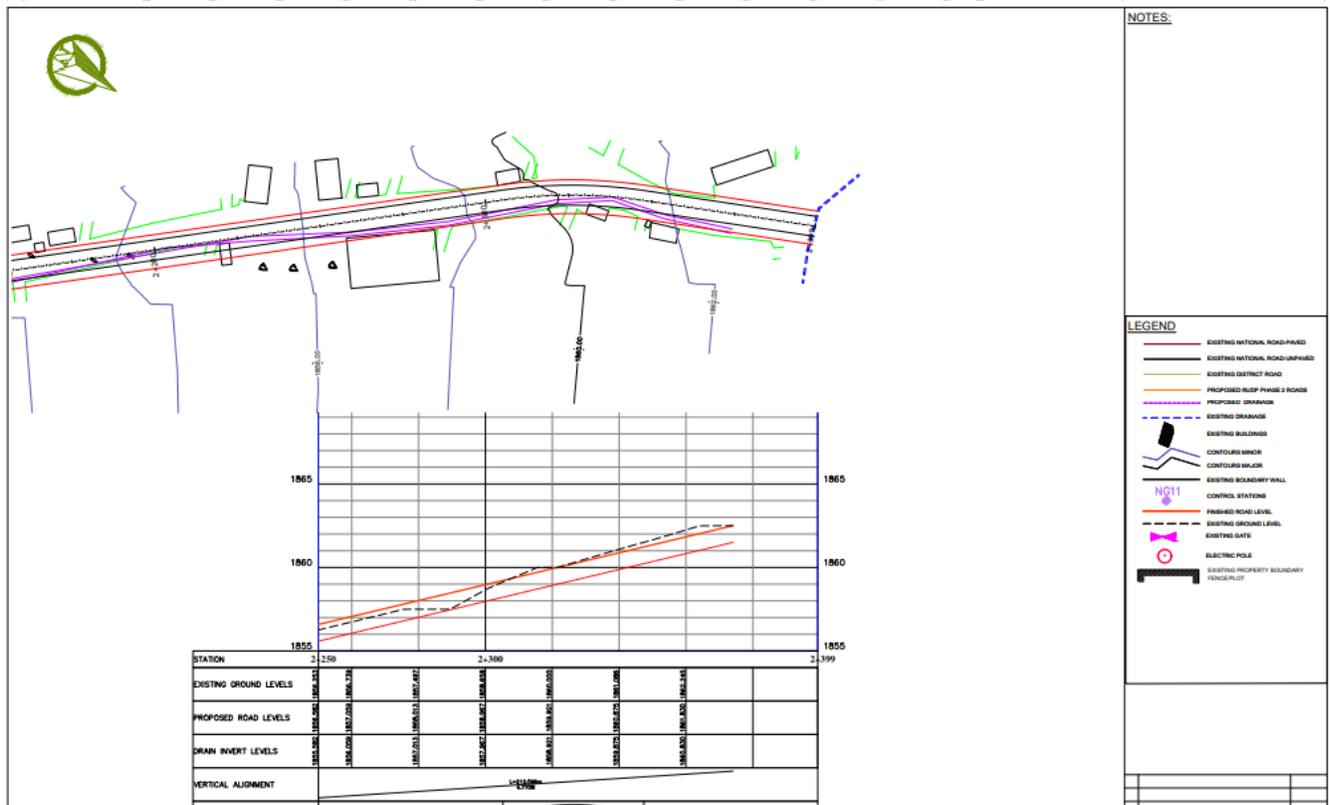
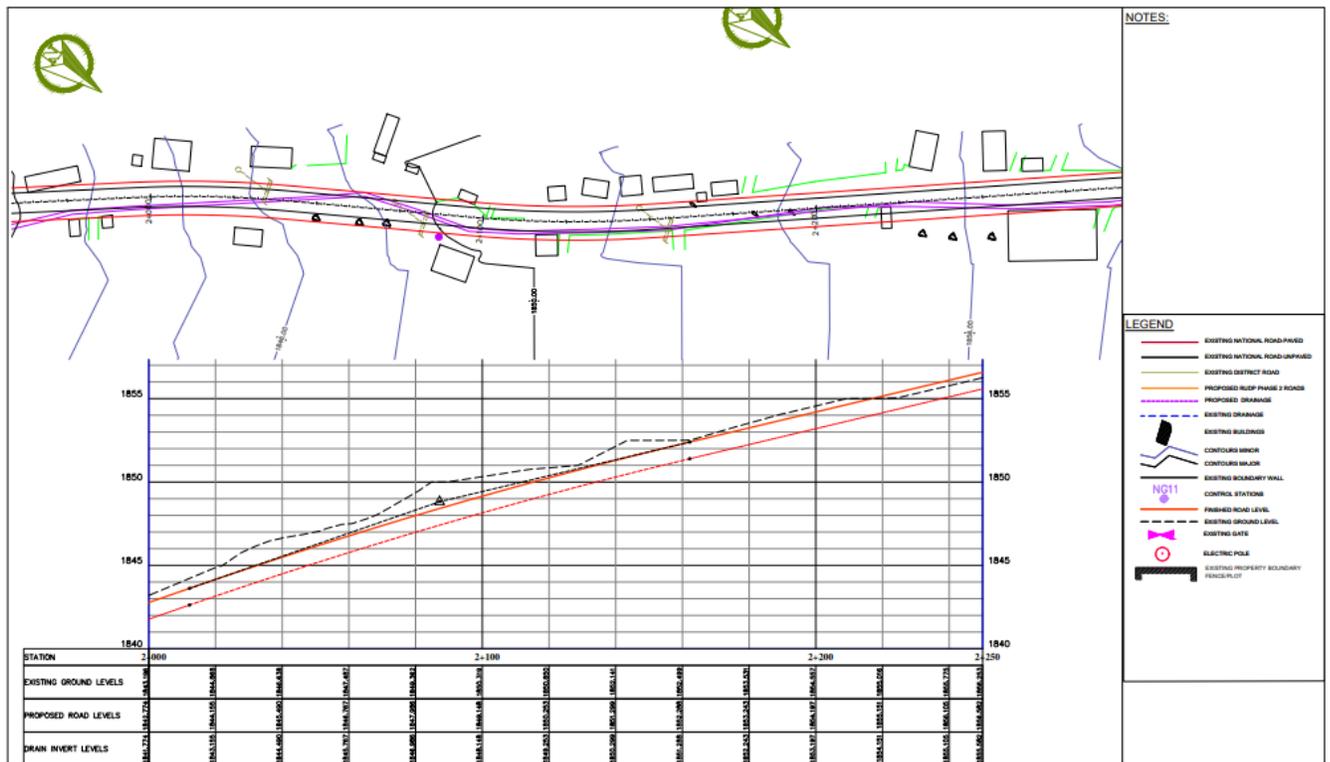
ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze



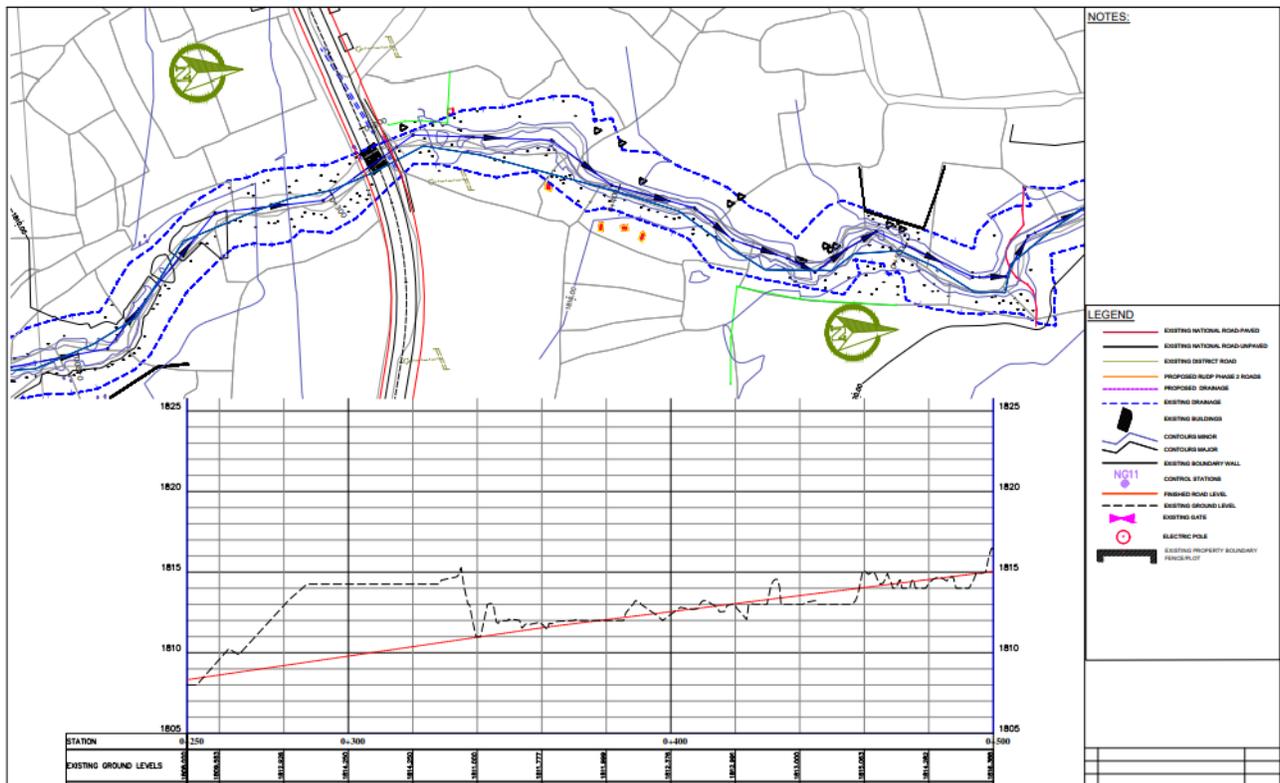
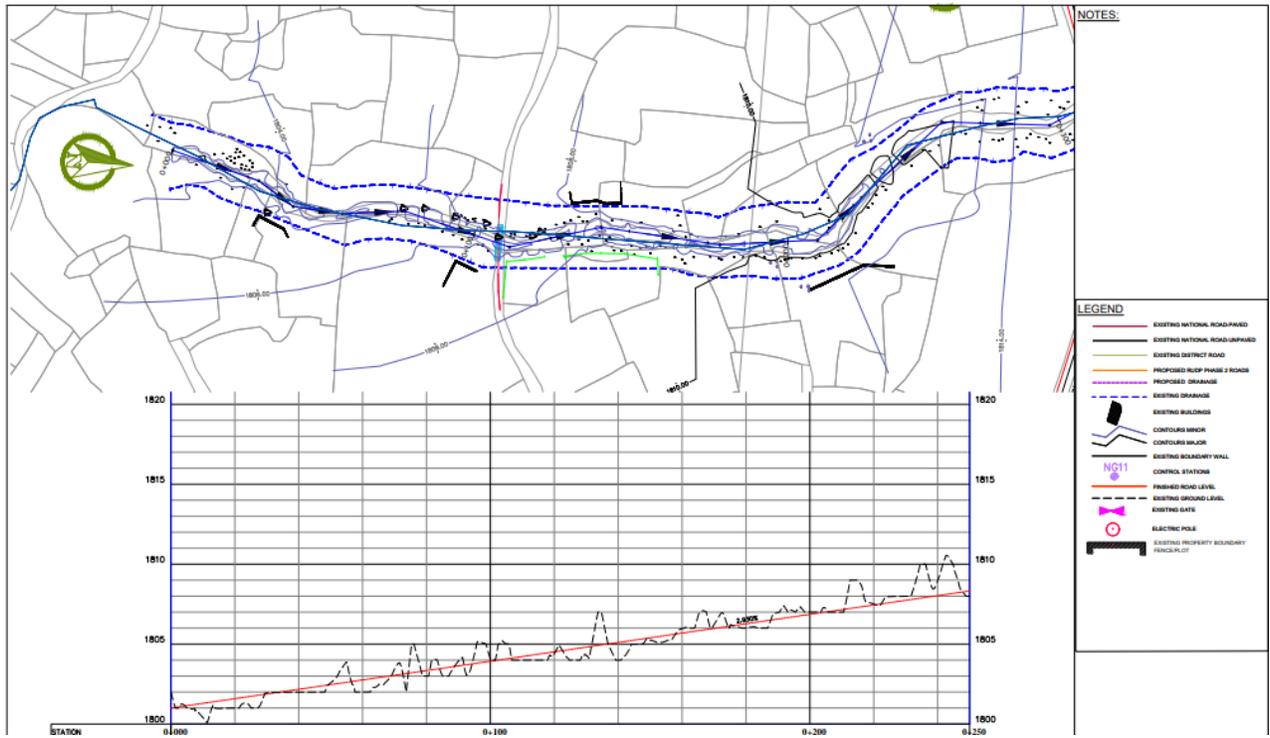
ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze



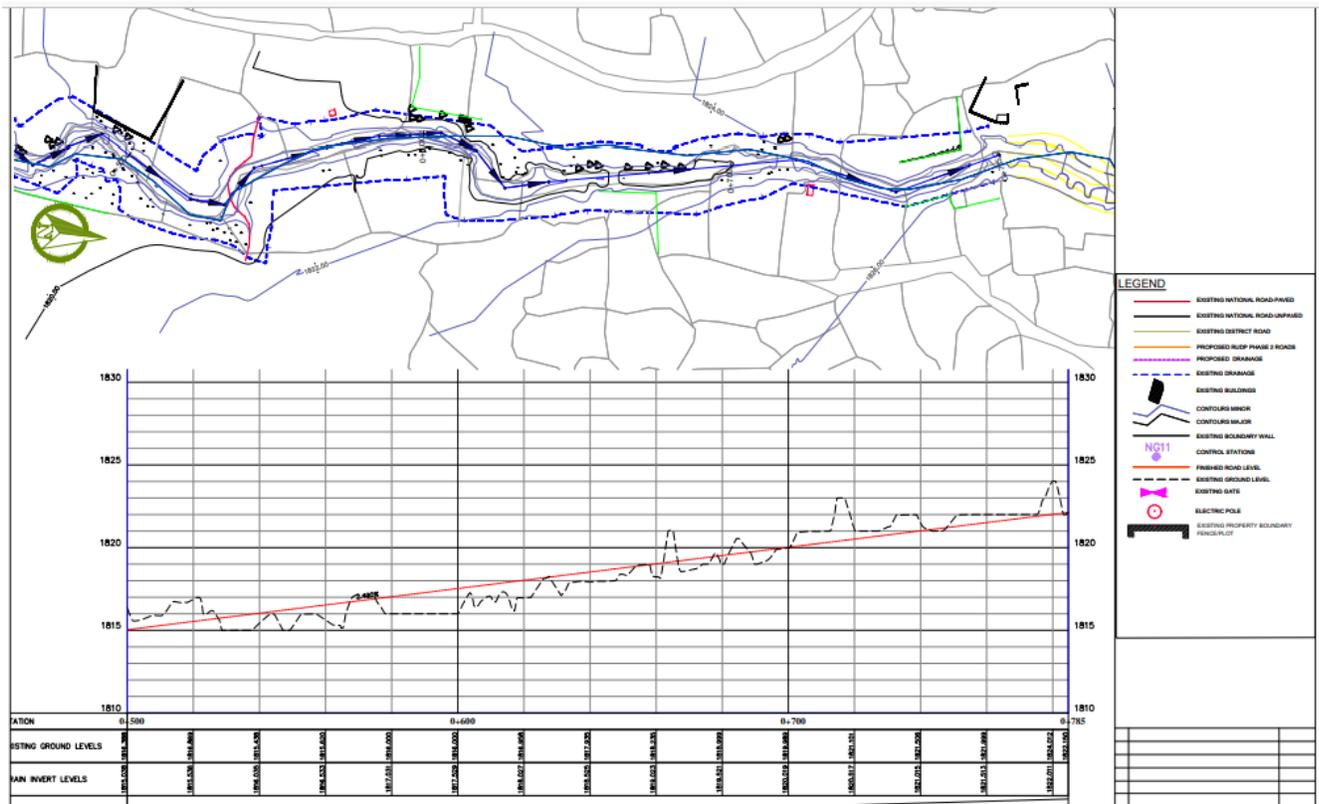
ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze



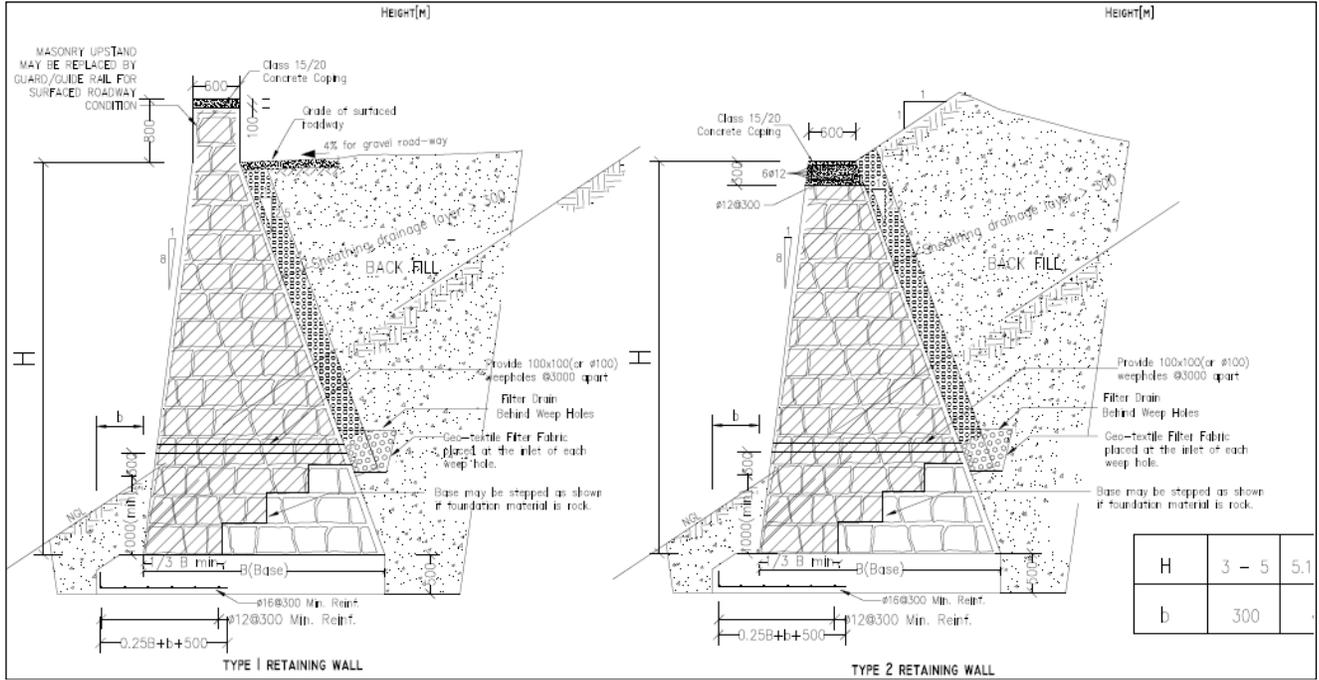
Annex 2: Drains Engineering design (Continuation of Rwebeya drain)



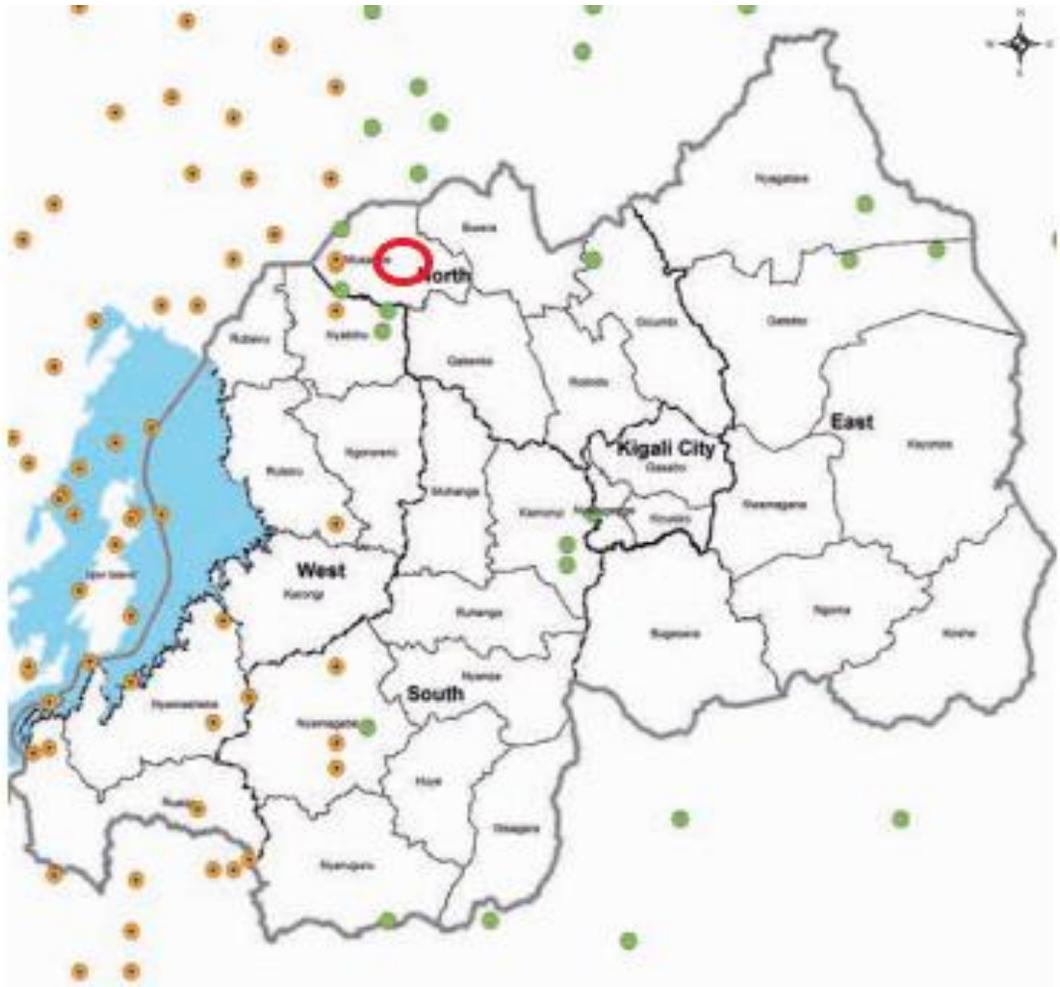
ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze



Annex 3: Retaining wall engineering design



Annex 4: Special distribution of seismicity events in and around Rwanda (with location of the proposed project area)



Project Title:
Development of Comprehensive
Disaster Risk Profiles for enhancing
Disaster Management in Rwanda



Coordinate System: WGS84 TM Rwanda
 Projection: Transverse Mercator
 Datum: WGS 1984
 False Easting: 500,000.0000
 False Northing: 5,000,000.0000
 Central Meridian: 30.0000
 Scale Factor: 0.9999
 Latitude of Origin: 0.0000
 Units: Meter

Scale:
 0 10 20 30 40 Km

Date:
 16 December 2014
Source:
 MIDIMAR 2014

Source: Adapted from MIDIMAR: The National Risk Atlas of Rwanda: ACP-EU Natural Disaster Risk Reduction Program (2015).

Annex 5: Interview Guide - Focused Group Discussion

Questionnaire for Social Economic Survey of the Environmental and Social Impact Assessment (ESIA) For Rwanda Urban Development Project (RUDP II)– Phase 3

This questionnaire is guidance for focused group discussion (local communities, female/vulnerable/young/business person/drivers) about RUDP II Phase 3

Information provided in this Questionnaire is Confidential for social research purposes and information provided shall not be used as a means of punishing the interviewee or for any selfish motive.

PRE-INTERVIEW INFORMATION

Group (local communities/female/young/business person/drivers)

Date-----Province-----District (Akarere) -----

Sector-----Cell (Akagari) -----Village (Umudugudu) -----

1. INFORMATION, EDUCATION AND COMMUNICATION

1.1 Have you ever got any information regarding the RUDP II Phase 1, 2, 3?

- a) Yes
- b) No (if no, the surveyor should now explain the RUDP II Phase 1, 2 and 3 and their components)

1.2 If yes, what kind of information did you get?

.....
.....

2. VIEWS AND EXPERIENCE FROM RUDP II PHASE 1 AND 2

2.1 What are the positive impacts of the RUDP previous phases to your family in general and to your group (local communities/female/young/business person/drivers female/young/business person/drivers) in particular?

- a.
- b.
- c.
- d.
- e.
- f.

2.2 What are the negative impacts of the RUDP previous phases to your family in general and to your group (local communities/female/young/business person/drivers female/young/business person/drivers) in particular?

- a.
- b.
- c.
- d.
- e.
- f.

2.3 The surveyor will explain to the participants that now we have another chance (RUDP II phase 3), and then ask them a question on what should be done to maximize positive impacts to their families in general and to the groups they belong to (local communities/female/young/business person/drivers female/young/business person/drivers) in particular?

- a.
- b.

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

- c.
- d.
- e.
- f.
- g.

2.4 For RUDP II phase 3, what should be done to avoid negative impacts such as those observed in phase 1 and 2?

- a.
- b.
- c.
- d.
- e.
- f.

THANK YOU VERY MUCH FOR YOUR TIME

Annex 6: Social Survey Questionnaire for PAPs

Questionnaire for Social Economic Survey of the Environmental and Social Impact Assessment (ESIA) For Rwanda Urban Development Project (RUDP II)–Phase 3

This questionnaire is designed for the communities living within or in the vicinity of the project right of way (Potential Project Affected Persons/PAPs)

Information provided in this Questionnaire is Confidential for social research purposes and information provided shall not be used as a means of punishing the interviewee or for any selfish motive.

PRE-INTERVIEW INFORMATION

HH No-----Date-----Province-----

District (Akarere) -----Sector-----Cell (Akagari) -----

Village (Umudugudu) -----

Ubudehe category.....

**Note: Only the head of the household or his / her spouse should be interviewed.
(Please circle the correct number)**

1. INFORMATION, EDUCATION AND COMMUNICATION

1.1. Which form of communication is easily available to you?

- a) Landline telephone b) E-mail c) Mobile telephone d) Public phones e) Person to person f) None

1.2. Have you ever heard of RUDP or got any information regarding the RUDP phase 1, 2, 3?

- a) Yes b) No (if no, the Researcher/Research Assistant should explain the RUDP phase 1, 2 and their components).

1.3. If yes, what kind of information did you get?

Note: The Researcher/ Research Assistant should explain the RUDP, its phases and their components

2. VIEWS AND EXPERIENCE FROM RUDP PHASE 1 AND 2

2.1 What are the positive impacts of the RUDP II Phase 1 and/ or 2/?

- a) Employment b) Upgrade of road infrastructure c) Upgrade of drains d) Increased value of land
e) Increased value of business opportunity f) Increased traffic safety g) other (specify) -----

2.2 What are the negative impacts of the RUDP II Phase 1 and 2?

- a) Loss of land b) Loss of properties c) Disruption of utility services d) Disrupted traffic flows
e) Disrupted access to places f) Traffic accident g) Work accident
h) Air Pollution i) Land Pollution j) Water Pollution k) Erosion, landslide & storm water inconvenience
j) other (specify) -----

2.2 Explain what should have been done to mitigate the negative impacts of the RUDP II Phase 1 and 2

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

- a) Loss of land
- b) Loss of properties
- c) Disruption of utility services
- d) Disrupted traffic flows
- e) Disrupted access to places
- f) Traffic accident
- g) Work accident
- h) Air Pollution
- i) Land Pollution
- j) Water Pollution
- i) Erosion, landslide & storm water inconvenience
- i) Other (specify) -----

3. INFORMATION, VIEWS AND CONCERNS ABOUT RUDP II PHASE 3

3.1 General Information

- 3.1.1 Have you ever got any information regarding the RUDP II Phase 3? -----
- 3.1.2. From whom did you get information about the RUDP II Phase 3 project from? (Multiple Answers)

- a) Village Committees b) Radio c) Newspapers d) Friends e) Relatives
- f) Workers g) Religious gathering
- g) Other (specify) -----

Note: The Researcher/ Research Assistant should now explain the RUDP II Phase 3 and its components)

3.1.3 Are you in agreement with the proposed RUDP II Phase 3 and its components?

- a) Yes b) No

If no why? -----

3.1.4. What suggestions would you put forward to agree on the project components?

3.1.5. What social benefits do you foresee from the proposed RUDP II Phase 3?

3.1.6. What recommendations do you have for the proposed RUDP II Phase 3 to increase your benefits from the project?

3.2 TRADITIONAL/CULTURAL SITES

3.2.1 Is there any traditional or cultural ground in the corridor or nearby the RUDPII Phase 3 components?

- a. Yes
- b. No
- c. I do not know

3.2.2 If yes, which ones?

a) Type of site	b) Distance to the alignment	b) Who uses it?	c) Is it possible to surrender it? 1. Yes 2. No	d) Explanation for (c)
Burial grounds				

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

Genocide memorial				
Healing shrines				
Religious shrines				
Archaeological				
Other (specify)				

3.2.3 If tombs exist, how many? -----

3.2.4 What are your suggestions towards the integrity or improvement of the site?

3.3 SENSITIVE ECOSYSTEMS AND AMMENITIES

3.3.1 Is there any sensitive ecosystem (unstable slope, flooding area, wetlands, water bodies, fishing grounds, woodland, quarry/mining, etc) within or around the RUDP II Phase 3 right of way?

- a. Yes
- b. No
- c. I do not know

3.3.2 If yes which ones?

a) Community property	b) Name of location where resource/facility is situated	c) Where is the actual location of the resource/facility? • <i>In the RUDP II Phase 3 corridor</i> • <i>In the vicinity</i>	d) Who owns it? • <i>Household</i> • <i>Private individual</i> • <i>Government</i> • <i>Community</i>	e) Who uses it? • <i>Youth</i> • <i>Women</i> • <i>Men</i> • <i>General public</i>
1. Unstable slope				
2. Flooding area				
3. Wetlands				
4. Water resources				
5. Fishing grounds				
6. Woodland				
7. Quarry/mining				
8. Cemetery				
9. Others (Specify)				

3.3.3 Is there any spring water, medicine plant or other useful vegetation, playing ground, street parking site for motorcycle & Bicycles, street vending site for airtime and other stuff within or around the RUDP II Phase 3 to be affected?

- a. Yes
- b. No

3.1 If yes which ones?

Community property	Name of location where resource/facility is situated	Where is the actual location of the resource/facility? <i>In the RUDP phase 3</i>	Who owns it? <i>Household</i> <i>Private individual</i>	f) Who uses it? <i>Youth</i> <i>Women</i>

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

		<i>corridor In the vicinity</i>	<i>Government Community</i>	<i>Men General public</i>
a.	Playing ground			
b.	Spring water			
c.	medicine plant or other useful vegetation			
d.	Street parking site for motorcycles			
e.	Street parking site for bicycles			
f.	Street vending sites for airtime			
g.	Street vending sites for other stuff			
h.	Others (Specify)			

3.4 HEALTH AND VULNERABILITY

3.4.1. Are there any physically challenged or chronically ill people in the household? YES NO

If YES: a) Type of disability/illness: -----

b) Any involvement request to the project to improve your livelihood? : -----

3.4.2 What are the most common diseases that affect the family?

No.	Disease	Occurrence		Treatment			
		Yes	No	Medical	Herbal	None	Other
1	Malaria						
2	Cough						
3	Pneumonia						
4	Cholera						
5	Dysentery						
6	Diarrhoea						
7	Intestinal worms						
8	Eye infections						
9	Ear infections						
10	COVID 19						
11	EBOLA						
12	HIV&AIDS						
13	Other diseases (specify) – please write them outside the table						

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

No.	Disease	Occurrence		Resolution			
		Yes	No	Mediation at Abunzi	Litigation (use of court of law)	Reporting to the Isange one stop centre	Other
1	Polygamy						
2	Concubinage						
3	Unwanted and early pregnancies among young girls						
4	Drug addiction among the young girls						
5	Sexual violence against women						
6	Physical violence against women						
7	Family wealth squandering						
8	Property conflicts in the family						
9	Women works longer than men (inequality in Employment)						
10	Women earns less than men						
11	Man are more employed than women						
12	Prostitution and promiscuity						
13	Drug abuse among adult people						
14	Excessive drinking/ Alcohol abuse						

3.5 WELFARE INDICATORS (encircle the right answer)

3.5.1. Where do you get drinking water from (encircle the right answer)?

- a) Rainwater harvesting at home b) Rainwater harvesting away from home c) Borehole
d) Protected spring e) Unprotected spring f) Motorised borehole g) Well with pump h) River
k) Other (specify) -----

3.5.2. What fuel do you use in the household for cooking?

- a) Firewood b) Gas c) Charcoal d) Solar e) Paraffin/Kerosene
f) Electricity g) Other (specify) -----

3.5.3. Source of Energy for lighting

- a) Generator b) Paraffin lamp c) Paraffin candle d) Wax candle e) Solar panel
f) Gas g) Electricity h) none i) other (specify) -----

3.5.4 Excreta disposal system available

- a) Shared-neighbours b) Shared-public c) Private

3.6 What are the most common gender issues that affect the family?

THANK YOU VERY MUCH FOR YOUR TIME

Annex 7: Interview Guide - Project Key Informants

Questionnaire for Social Economic Survey of the Environmental and Social Impact Assessment (ESIA) for Rwanda Urban Development Project (RUDP II) – Phase 3

This questionnaire is designed to collect information from the RUDP Key Informants (Contractors, District Road Engineers, Environmentalists, Social Safeguard officers, LODA Environmentalist and Social Specialists).

Information provided in this Questionnaire is Confidential for research purposes and information provided shall not be used as a means of punishing the interviewee or for any selfish motive.

PRE-INTERVIEW INFORMATION

Contractor Company or District Official -----Date-----

Province -----District (Akarere) -----Sector-----

Cell (Akagari) -----Village (Umudugudu) -----

1. VIEWS AND EXPERIENCE FROM CONTRACTORS, DISTRICT AND LODA FROM RUDP II PHASE 1 AND 2

1.1. Were you involved in RUDP II Phase 1 or 2?

- a) Yes [] b) No []

1.2. If yes, what were the challenges you faced in the implementation of the RUDP II Phase 1 and /or 2 in terms of the following: (Note: Be as detailed as possible)

a) Implementation of the Project Engineering Design

.....
.....

b) Implementation of the Contractor’s Environmental and Social Management Plan (CESMP) including budget, staff, logistics, etc.

.....
.....

c) Traffic Safety

.....

d) Work safety.....

.....

e) Labour management

.....

f) Gender and sexual abuse

.....

g) Storm water management

.....

h) Noise pollution and vibration

.....

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

-
.....
i) Utilities in the project right of way
-
.....
j) Disposal of soil spoil
-
.....
k) Disposal of oil, bitumen and chemical wastes.....
-
.....
l) Dust emission and pollution
-
.....
.....
m) Sanitation facilities
-
.....
n) Workers' Access to drinking water
-
.....
o) Biodiversity, wetlands or other sensitive ecosystems in the project right of way
-
.....
.....
p) Tombs or cultural sites in the project right of way.....
-
.....

1.2 Explain what should have been done to avoid the challenges mentioned above

- a) Implementation of the Project Engineering Design
-
.....
.....
b) Implementation of the Contractor's Environmental and Social Management Plan (CESMP) in general including budget, staff or logistics.
-
.....
c) Traffic Safety
-
.....
d) Work safety.....
-
.....
e) Labour management
-
.....
f) Gender and sexual abuse

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

-
.....
g) Storm water management
-
.....
h) Noise pollution and vibration
-
.....
i) Utilities in the project right of way
-
.....
j) Disposal of soil spoil
-
.....
k) Disposal of oil, bitumen and chemical wastes.....
-
.....
l) Dust emission and pollution
-
.....
m) Sanitation facilities
-
.....
n) Workers' Access to drinking water
-
.....
o) Biodiversity, wetlands and other sensitive ecosystem in the project right of way
-
.....
p) Tombs or cultural sites in the project right of way.....

1.3: What issues do you expect to arise during the implementation of RUDP II phase?

1.4 What improvements can you foresee in the implementation of RUDP II Phase 3 to mitigate the challenges mentioned above (the assistant repeat those challenges to the respondent)?

THANK YOU VERY MUCH FOR YOUR TIME

Annex 8: Grievance Redress Mechanism Log Frame Template

PROJECT:	District	Sector	Cell	Village
Grievance number:			
Name recorder:.....	of the		Title:..... ..	
Date: / /				
Complainant Names:		Signature of Complainant..... Date: / /		
Province	District	Sector	Cell	Village
Details of Complaint				
.....				

Grievance Clouse Out

Grievance number:

Define immediate action required:

..... Define Long term action

required (If necessary):

Corrective action plan taken	Due date

Responsible party (Filled in and signed by the complainant when she/he receives compensation or file closed):

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

Complainant Name:.....Date:../...../..... Signature.....

Responsible Grievance Redress Committee

1. Title..... Name.....Date../...../.....
Signature.....

2. Title..... Name.....Date../...../.....
Signature.....

3. Title..... Name.....Date../...../.....
Signature.....

Annex 9: Standardized Incident reporting format

Incident Report Format

To be completed by implementing agency/contractor staff within 24 hours of incident/accident

Incident date: Incident Time:
.....

Incident's place (District, Sector, Cell, Village):
.....

Injured/dead person name:
.....
.....

Address:
.....
.....

Phone number:
.....
.....

Male/Female:Date of Birth

Incident category:

Category 1: "Minor or negligible, no one was injured"

Category 2: Moderate, injuries with short term impairment

Category 3: Critical/ major, susceptible to lead to serious illness or death

Details of incident:

.....
.....
.....
.....
.....

Who was injured person?:
.....
.....

Injury type:
.....
.....

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

Does injury require hospital/Physician? Yes:No:

.....

Hospital name:

.....
.....

Address:

.....
.....

Hospital phone number:

.....
.....

Injured person/party signature/ date:

...../.....

Important notes / instructions

.....
.....
.....
.....

Prepared by:, **Signature:****Date**
and time:

Approved by:, **Signature:**,
Date and time:

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

16	Nyirakanyonge Lenatha Barera	0785764721	1198170095600074	F	Gen
17	URUVHOZA Delphine Buvum	0783244013	119877008434052	F	Dee
18	MUKASIMBA ALINA BULEDA	0782232499	1199420048599162	F	Dee
19	Harindintwari Schudea Sibo/Gef	0786888570	1198780068835044	M	Dee
20	Mukawana Gaspar E-scace	078016084	1199370132112077	F	Dee
21					
22					
23					
24					
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30					
32					
33					

IGITSINA GABO (MALE):

IGITSINA GORE (FEMALE):

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

URUTONDE RWABITABIRIYE INAMA ISOBANJIRA IKORWA RY'UMUHANDA MU MUSHINGA WA RUDP II PHASE 3 YABEREYE MU KARERE KA MUSANZE, UMURENGE WA MUHOZA MU KAGALI KA RUHENGURI MU MUDUGUDU WA SUSA YABAYE KU ITALIRI YA 09/11/2020

NUMERO /N UMBERE	AMAZINA YOMBUI/BOTH NAMES	UMUDUGUDU/ VILLAGE	NUMERO YA TELEPHONE/PHONE NUMBER	NUMERO Y'INDANGAMUNTU/ ID NUMBER	IGITSINA/ GENDER	UMUKONO/ SIGNATURE
1	BIGIRANKWA Bonat	SUSA	0784032680	1197380092728076	GABO	
2	MATAJABO SH. Emmanuel	SUSA	0788862894	1196080042844226	GABO	
3	KAYUNGA Celestin	SUSA	0780395299	1196480042316099	GABO	
4	HATEZUKIMANA Fabron	SUSA	0780395211420	Ntaro	GABO	
5	NTIBARI KUBÉ Thomas	SUSA	0788865613	1192180942790048	GABO	
6	NIAMARAJA Ribarika	SUSA	0783452664	119647004232405	GABO	
7	KABBYIZA Vimpetur	SUSA	0786295143	1194080107899095	GABO	
8	HAKIZIMANA Alex	SUSA	0787293545	119778006425807	GABO	
9	MURORUNKWERE Mchanda	SUSA	0783146457	1197370054462093	GORE	
10	KAYI BIRAMI Jean	SUSA	0784252242	1196480042944023	GABO	
11	GASHURI Eric	SUSA	0788902488	1197580099268000	GABO	
12	BIMENYIMA Japhet	SUSA	0783711537	1196080043625037	GABO	
13	MUKAPASIKA Agnes	SUSA	0783293741	119817009302307	GORE	
14	BUSABEMARIZA Jeanne	SUSA	0788744450	1197370055607033	GORE	
15	RUTEHAMANA Philbert	SUSA	0784468532	1198980096256130	GABO	

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16	MUTEZIMARE Kamanzi	SVSA	07887943936	1197080052522024	GABO	
17	SIFA Beatrice	SVSA	078860668	119727005243042	GABO	
18	TUYIJIMARE Irene	SVSA	0788806235	1198580109454044	GABO	
19	SEBUTIMARE Pascal	SVSA	0788541354	1196880047651013	GABO	
20	TUYIJIMARE Emmanuel	SVSA	0788646472	1197480059302080	GABO	
21	NAAGIJIMANA Vincent	SVSA	0788403254	1197880086647017	GABO	
22	NGUNGUNANA Benelash	SVSA	078854067	1197880080982742	GABO	
23	NYIRABASABWE Isidore	SVSA	0781625798	1196070043832030	GABO	
24	HAKUZIMANA Jean Baptiste	SVSA	0788553524	1198080024461003	GABO	
25	NIKURWIMANA Ga Felixien	SVSA	0788395062	1197280042889032	GABO	
26	MUTAWENIMANA Philippe	SVSA	0783670805	1197180042889057	GABO	
27	NYIRAMUKIRA Euphrasie	SVSA	0785156136	1195370024763013	GABO	
28	HAKUZIMANA Eric	SVSA	0783170986	1198580109458145	GABO	
29	NZAMONIMANA Leonard	SVSA	0783870346	1198080098646163	GABO	
30	SEBUTIMARE Alphonse	SVSA	0782142125	1194080015688084	GABO	
32	UVINERA shamimu	SVSA	0788596822	1197670071795047	GABO	
33	NIZEYIMANA M. J. Pierre	SVSA	0788656389	1198080098296207	GABO	

IGITSINA GABO (MALE):

IGITSINA GORE (FEMALE):

Annex 11: Minutes of Sensitization meetings

INYANDIKO MVUGO Y' INAMA Y' ABATURAGE ISOBANURA UMUSHINGA W' IKORWA RY' UMUHANDA MU MURENGE WA MUHOZA MU KAGALI KA RUHENGELI MU MUDUGUDU WA BURERA MU MUSHINGA WA RUDP ICYICIRO CYAWO CYA 3.

Umunsi inama yabereyeho: Kuwa 09 Ugushyirye 2020

Aho inama yabereye: Ku biro by'umudugudu wa Susa

Abitabiriye inama: Abaturage b'umudugudu wa Susa (nkuko bagaragara ku rutonde rw'abitabiriye

Ingingo zari ku murongo w'ibygwa:

1. Gusobanura umushinga w'iyubakwa ry'umuhanda
2. Gusobanura uburyo igenagaciro rizakorwa
3. Kwakira no gusubiza ibibazo n'ibyifuzo by'abaturage

Uburyo inama yagenze

Umunyanga nshingwabikorwa w' akagali ka ruhengeli madame MUKAMANA Jacqueline yahaye ikaze abitabiriye inama abasaba kumufasha kwakira abashyitsi baje ari intumwa za LODA. Yasobanuriye abaturage ko bahuriywe muri icyo nama n' impamvu zikorwa ry' umuhanda asobanura ibyiza by' ibikorwaremezo, ubundi aha ijamba madame INGABIRE Marie Ange, umwe mu mpuguke z' uyu mushinga kugirango asobanurire byimbitse imiterere y' umushinga.

Uko ibiganiro byagenze bikubiye mu mbonerahamwe ikurikira:

No	Ingingo	Ibiganiro	Umwanzuro
1	Gusobanura umushinga w'iyubakwa ry'umuhanda	Madame INGABIRE Marie Ange umwe mu mpuguke zuyu mushinga yasobanuye byimbitse umushinga wa RUDP II igice cyawo cya 3, yavuze ko ari umushinga ugamije gukora imihanda mu muryi wa Kigali ndetse no mu muryi itandatu yunganira umuryi wa Kigali ariyo Muhanga, Huye, Rusizi, Rubavu, Musanze na Nyagatare. Mu rwego rwo guteza imbere ibikorwa	Abitabiriye inama bashimiye ubuyobozi bwabageneye uyu mushinga ugamije iterambere. Bagaragaje kandi ko banyuzwe n' ibisobanuro byatanzwe na

		<p>remezo muri icyo macyi harimo kubakwa imihanda ya kaburimbo mu bice bitandukanye bigize icyo macyi. yasobanuye kandi ko impamvu yiyoye nama ari ukugirango begere kandi hasobanurire abagenerwa bikorwa b'uwo mushinga imiterere yawo ndetse banasobanurirwe ibimenyetso bitandukanye byashyizwe ku mitungo yabo izangizwa n' umuhanda.</p> <p>Madamu INGABIRE Marie Ange yavuzeko icyo mushinga ugiye kubakura imwe mu mihanda yari isanzweho ariko itarimo kaburimbo, murwego rero rwo kugirango icyo mihanda izagiriye abaturage akamara kandi ntibye ari mito cyane yavuzeko imihanda isanzweho ishobora gukenera kwagurwa mu bugali akaba ariyo mpamvu hari imwe mu mitungo izangizwa n'iyaguka ry' uwo muhanda. Yavuze ko imitungo yose izangizwa no kwagura ndetse n'ikorwa ry' umuhanda bizishyurwa mbere yuko byangizwa kandi mu gaciro kabwo. Yasobanuye ibimenyetso byashyizwe aho umuhanda uzanyura bigiye bitandukanye aho yavuze ko:</p> <ul style="list-style-type: none"> ➤ ikurikiwe n' umubare byerekana aho umuhanda ugomba kuba ugurukira ndetse uwo muhambere ukerekana metero z' ubugari bw' umuhanda uhagaze hagati mu muhanda. ➤ Iki kimenyetso gikurikiwe n' umubare bisobanura ingano ya metero umuhanda uzafata aho hantu, uhagaze aho icyo kimenyetso kiri. Yatanze 	<p>Madame INGABIRE Marie Ange.</p>
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Signature

ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

		<p>urugero rwa \pm 2.5 avuga ko bivugaga ko uhereye aho icyo kimeyeyeho giteye winjira imbere kuri uwo mutungo bazafataho metere 2.5.</p> <ul style="list-style-type: none"> ➤ XH : bisobanura ko inyubako birimo izakurwamo ➤ XF: bisobanura ko fence/ urugo bizavaho ➤ XA: bisobanura ko annex izavaho ➤ XV: bisobanura ko ibaraza rizavaho ➤ XFHA: bisobanura ko inyubako n' urugo rwayo bizavamo byose. <p>Yavuzeko hari igikorwa kiri mu nyigo y'umushinga kigamije kureba ishusho y'ubuzima rusange abatuye aho hano basanganwe gitangiyeho kigamije gukusanya amakuru arebana n' imibereho y' abaturage bafite imitungo izangizwa n' ishyirwa mu bikorwa ry' uwo mushinga, asaba abitabiriye inama kuzitabira icyo gikorwa kandi ahasaba kuzabakira no kubaha amakuru babakeneraho.</p>	
	Gusobanura uburyo igenagaciro rizakorwa	Madamu INGABIRE Marie Ange yabamenyesheje kandi ko hari abantu bashinzwe igenagaciro bazatangira kubageraho ku wa icane tariki ya 26 ugashyamba, 2020 kugirango batangire gukora igenagaciro ry' imitungo yabo izangizwa kugirango bazabone uko bishyurwa. Yabwiye abitabiriye inama	Abaturage bitabiriye inama bagaragaje ko banyuzwe n'ibisobanuro byatanze n'umukosi ubagarariye LODA, bemeye kandi ko

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		<p>ko igikorwa cyo kwishyura imitungo izangizwa kizakorwa n' akarere</p> <p>Yavuze ko ibikenerwa mu igenagaciro kugirango bazashobore kwishyurwa iyo mitungo yabo ari ibi bikurikira:</p> <ul style="list-style-type: none"> ➤ icyangombwa cy' ubutaka kiri mu mazina ya nyir' ubutaka ahuye nari kw' irangamuntu. Hano yavuze ko igenagaciro rikenera fotokopi y' icyo cyangombwa. ➤ Yababwiye kandi ko bagomba kuba bafite konti muri banki zihuye n' amazina ari ku byangombwa by' ubutaka kuko ariho amafaranga azanyuzwa. ➤ Abahagarariye imitungo y' abandi bantu bagomba kuba bafite uburenganzira bwanditse mu buryo bwemewe n' amategeko kandi hariho na kashe ya noteri imuhesha uburenganzira bwo guhagararira uwo mutungo. Abahagarariye imitungo banyiraye baba hanze y' igihugu yavuzeko nabo hamenyeshya ba nyiriyi mitungu iki gikorwa kandi bakaba bafite uburenganzira bwanditse mu buryo bwemewe n' amategeko, ubwo burenganzira bwanditse ba nyirimitungu ba shobora kubutanga binyuze muri ambassade y' u Rwanda mu bihugu harimo. 	<p>bazafasha abakozi b'uyu mashinga kubona amakuru yose asabwa mu gihe ibikorwa by'igenagaciro bizaba bitangiyeye.</p> <p>Ikindi abitabiriye inama biyemeje ni ugutegura ibisabwa byose kugirango bazabashye kwishyurwa nyuma yo kurangiza igenagaciro.</p>
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		<p>Yasabye kandi abitabiriye inama ko abadafite ibyangombwa by' ubutaka batangira kubishaka cyangwa se bagatangira gukemura ibibazo bitandukanye baba bafite kugirango mu gihe cyo kwishyurwa bazabe baramaze kuzuza ibisabwa kugirango batazatinda kubona amafaranga. Yavuze ko igikorwa cy' igenagaciro nikimara kuba hazabaho igikorwa cyo kubereka ibyo babariwe no kwemeza amakuru, ubyemera akabisinyira utanyuzwe nawe ntasinye ahubwo akandikira ibiro by'akarere abasaba uburenganzira bwo gukoresha igenagaciro rye (contre expertise) rikozwe n' umugenagaciro wemewe mu Rwanda yerekana impamvu atanyuzwe n' igenagaciro yakorewe, yamara kubyemererwa akariha akarere kugirango barebe aho bahuriza iryo genagaciro rye niry' Akarere byananirana akiyambaza inkiko.</p> <p>Yavuzeko icyo habayeho kutamvikana bidahagarika ishyirwamubikorwa ry' umushinga ahubwo ko ababyemera bishyurwa abatanyuzwe amafaranga yabo akaguma kuri compte y' akarere kugeza ikibazo gikemutse akabona kwishyurwa. yavuze kandi ko abaturage bashobora no gutanga ubutaka ku bushake mu rwego rwo gufasha akarere kabo muri iki gikorwa cy' iterambere, abifuzaga gutanga ubutaka bagirana amasezerano yo gutanga ubutaka kubushake n' ibiro byakarere .</p>	
3	Kwakira no gusubiza ibibazo	Umuturage yagize ati: mwatubwiye ko mu gikorwa cy'igenagaciro tugomba	Madame marie ange yasubijeko kuba

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<p>n'ibyifuzo by'abaturage</p>	<p>kuzaba dufite fotokopi y'icyangombwa cy'ubutaka kandi hano mu mudugudu wacu harimo abantu badafite ubyangombwa kubera ko ibyo twari dufite byajemo amakosa icyo cy'ubutaka kirongera kirabwirwara kubikosora ariko kugeza ubu ntiturongera kubibona. Ubuho twe bizagenda gute?</p> <p>hano hamaze iminsi umushinga wo gutanga amazi, bacukuye mu mutungo wacu bamaze gushyiramo amaziyo barigendera kuburyo kuhasubiranyaga byasabye ko dutanga amafaranga twabwacu kugirango bahasibye, baragiye nubwo ntabaratwishyara imitungo yacu, twabuze naho tubariza. None namwe mwazataganze mutyo?</p>	<p>ibyangombwa by'ubutaka bidahari uba bitatuma igenagaciro rikurwara ababwira ko rikurwara ariko bibaye byiza hakitwitishwa igikorwa cyo kubishakira kugirango buzuzwe ibisabwa nicyo gikorwa kandi ababwira ko bitakunda ko bishyurwa baterekanye icyangombwa cy'ubutaka kuko ari cyo cyerekana nyirumutungo.</p> <p>Madame marie ange yasubije ko abakoze uwo mushinga wo kubaha amazi ataribo bazanywe ikorwa ry'umuhanda. Yabibukije ko yavuze ko umushinga uguye gutunganya uwo muhanda ari urufatanye rwa leta y'urwanda na banki y'isi, ababwira ko yaba leta ndetse na</p>
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		<p>Undi wafashe ijamba yagize ati: Ngewe ntago ari ikibazo ahubwo ni igitekerezo mfite, nta kuntu mu gihe cy'ikorwa ry'umuhanda rwiyemezamirimo uzatsindira isoko mwamubwira akazaduha akazi twebwe tuhatuye ko byadufasha kwiteza imbere?</p> <p>Undi muturage yagize ati: Njye rero</p>	<p>bandi y'isi baharanira imibereho myiza badashobora gukora amakosa nkayo yo kubaheza mu gihirahiro, ababwira kandi ko iki ataricyo gice cya mbere cyuyu mushinga kandi ibindi bice byose byagenze neza ko niwabo naho bizagenda neza.</p> <p>Igitekerezo cyiza, nubundi mu mahame y'umushinga ni uko rwiyemezamirimo aha akazi abantu bashoboye gukora batuye muri ako gace kugirango bashobore kwiteza imbere mu mafaranga bazakorera aho hantu mbere yo kuja kuzana abandi bavuye ahandi.</p> <p>INGABIRE Marie</p>
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ESIA for the Second Rwanda Urban Development Project (RUDP II) Phase 3 Works – Road and Drainage Channels in the City of Musanze

		<p>ntago mbaza ahubwo ndashaka gushimira umuyobozi w'igihugu cyacu ariwe nyakubahwa perezida wa repabulika ndetse na banki y'isi ko badutekerejeho bakaba baje nkuduha umuhanda wa kaburimbo hano iwacu. Muzabatubwirire rwose ko tubashimira byimazeyo.</p> <p>Undi muturage yarabajije ati: Mwatubwiye ko imitungo izangizwa nikorwa ry'imihanda mwamaze kuyishyiraho ibimenyetso ikandi izishyurwa, none ndashaka kubaza ko hari igihe ziriya mashini zikora imihanda zangiza inzu kubera umuriri ziba zifite bizagenda gute kuri ba nyiriyi mitungo ishobora kuzangirika abandi baramaze kwishyurwa?</p>	<p>Ange yaramubwiye ati, murakoze gushima ubu butumwa bwanyu tuzabwandika muri raporo bazabibona.</p> <p>INGABIRE Marie Ange Muri iki gikorwa cy'uyu mushinga wa RUDP II phase 3 hahuriyemo inzobere zitandukanye, ibyo barabiteganyije ko ibo uvuze biya bibaho ariko ntago bamenya mbere ibizangirika muri ubwo buryo, gusa hari amafaranga yateganyijwe azakoreshwa mu gusana cyangwa se kwishyura ibizaba byangijwe mu gihe cy'ikorwa ry'umuhanda.</p>
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Inama yatangiye sa munaniirangira sa cyenda n'iminota mirongo ine n'itanu.

Umwanditsi
 Madame INGABIRE Marie Ange
 Sociologist

Umuyobozi w' Inama
 MUKAMANA Jacqueline
 ES/Rubengeri



**Annex 12: Code of Conduct for Contractors and workers hired under RUDP II project.
General Code of Conduct to be inserted in the CESMP**

This project (RUDPP II Phase 3) in Musanze will comply with ESS2 and ESS4 and the Environmental, Social Health and Safety Guidelines of the WB (ESHS) and the Occupational Health and Safety (OHS) and Labor regulations of Rwanda. The following is a general Code of conduct to be inserted in the contract of contractors for civil works.

1. Company Code of Conduct

Company Code of Conduct

Implementing ESHS and OHS Standards

Preventing Gender Based Violence and Violence against Children

The Contractoris committed to ensuring that the project is implemented in such a way which minimizes any negative impacts on the local environment, communities, and its workers. This shall be done by respecting the environmental, social, health and safety (ESHS) standards, and ensuring appropriate occupational health and safety (OHS) standards are met. The company is also committed to creating and maintaining an environment in which gender-based violence (GBV) and violence against children (VAC) have no place, and where they shall not be tolerated by any employee, associate, or representative of the company.

Therefore, in order to ensure that all those engaged in the project are aware of this commitment, the company (HNRB) commits to the following core principles and minimum standards of behavior that shall apply to all company employees, associates, and representatives including sub-contractors, without exception:

General

1. The company and therefore all employees, associates, and representatives—commits to complying with all relevant national laws, rules and regulations and the World Bank Environmental and Social Standards which can read in the internet in this website:

a. <https://www.worldbank.org/en/projects-operations/environmental-and-socialframework>

2. The contractor is responsible to comply with the requirements defined in ESMP Environmental and Social Technical Clauses (ESTC) which are both integral part of the contract.

3. The company commits to full implementing its ‘Contractors Environmental and Social Management Plan’ (C-ESMP) which will be prepared based on the ESIA/ESMP prepared for this project.

4. The company commits to treating women, children (persons under the age of 18), and men with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status. Acts of GBV and VAC are in violation of this commitment.

5. The company shall ensure that interactions with local community members are done with respect and non-discrimination.

6. Demeaning, threatening, harassing, abusive, culturally inappropriate, or sexually provocative language and behaviour are prohibited among all company employees, associates, and its representatives.
7. Respect to reasonable work instructions (including regarding environmental and social norms)
8. Protect and ensure proper use of property (for example, to prohibit theft, carelessness or waste)
9. Prohibit illegal activities by their workers such as: polluting the soil, rivers, wetlands, hunting, poaching wildlife, setting up fires, spilling diesel, oils in the soil, cutting trees without permit.

Health and Safety

10. The company shall ensure to hire professional in occupational health and safety to implement the ESMP and ESCT described in the bidding documents.
11. The company shall ensure that the project's occupational health and safety (OHS) management plan is effectively implemented, including wearing prescribed personal protective equipment, preventing avoidable accidents and reporting accidents of all type within less of 24 hours or conditions or practices in the project sites that pose a safety hazard or threaten the environment and the people.
12. The company will:
 - a. Prohibit the use of alcohol during work activities.
 - b. The company shall prohibit the use of illegal substances, at all times.
13. The company shall ensure that adequate eating, changing and sanitation facilities are available on site and at any worker accommodations provided by the contractor.
14. The company will obey labor, contracting and health and safety regulation in case of accidents, death and incapacity of workers (skilled or no skilled) and pay the compensation required by law.

Gender Based Violence and Violence against Children

15. Acts of GBV or VAC constitute gross misconduct and are therefore grounds for sanctions, which may include penalties and/or termination of employment. All forms of GBV and VAC, including grooming are unacceptable, regardless of whether they take place on the work site, the work site surroundings, at worker's camps or at worker's homes.
16. In addition to company sanctions, legal prosecution of those who commit acts of GBV or VAC shall be pursued if appropriate.
17. Sexual contact or activity with children under 18—including through digital media—is prohibited. Mistaken belief regarding the age of a child is not a defence. Consent from the child is also not a defence or excuse.
18. Sexual Harassment—for instance, making unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct, of a sexual nature, including subtle acts of such behavior, is prohibited. For example: Looking somebody up and down; kissing, howling or smacking sounds; hanging around somebody; whistling and catcalls; giving personal gifts; making comments about somebody's sex life; etc. is prohibited.

19. Sexual favours—for instance, making promises or favourable treatment dependent on sexual acts—or other forms of humiliating, degrading or exploitative behavior are prohibited.

20. Unless there is full consent¹⁷ by all parties involved in the sexual act, sexual interactions between the company’s employees (at any level) and members of the communities surrounding the work-place are prohibited. This includes relationships involving the withholding/promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex—such sexual activity is considered “nonconsensual” within the scope of this Code.

21. All employees, including volunteers and sub-contractors are highly encouraged to report suspected or actual acts of GBV and/or VAC by a fellow worker, whether in the same company or not. Reports must be made in accordance with GBV and VAC Allegation Procedures.

22. Managers are required to report suspected or actual acts of GBV and/or VAC as they have a responsibility to uphold company commitments and hold their direct reports responsible.

Implementation

To ensure that the above principles are implemented effectively the company commits to ensuring that:

23. All managers sign the ‘Manager’s Code of Conduct’ detailing their responsibilities for implementing the company’s commitments and enforcing the responsibilities in the ‘Individual Code of Conduct’.
24. All employees sign the project’s ‘Individual Code of Conduct’ confirming their agreement to comply with ESHS and OHS standards, and not to engage in activities resulting in GBV or VAC.
25. Displaying the Company and Individual Codes of Conduct prominently and in clear view at workers’ camps, offices, and in public areas of the work-place. Examples of areas include waiting, rest and lobby areas of sites, canteen areas, health clinics.
26. Ensure that posted and distributed copies of the Company and Individual Codes of Conduct are translated into the appropriate language of use in the work site areas as well as for any international staff in their native language.
27. An appropriate person is nominated as the company’s ‘Focal Point’ for addressing GBV and VAC issues, including representing the company on the GBV and VAC Compliance Team (GCCT) which is comprised of representatives from the client, contractor(s), the supervision consultant, and local service provider(s).
28. Ensuring that an effective GBV and VAC Action Plan is developed in consultation with the GCCT which includes as a minimum:
 - a. **GBV and VAC Allegation Procedure** to report GBV and VAC issues through the project Grievance Redress Mechanism (GRM);

¹⁷ **Consent** is defined as the informed choice underlying an individual’s free and voluntary intention, acceptance or agreement to do something. No consent can be found when such acceptance or agreement is obtained through the use of threats, force or other forms of coercion, abduction, fraud, deception, or misrepresentation. In accordance with the United Nations Convention on the Rights of the Child, the World Bank considers that consent cannot be given by children under the age of 18, even in the event that national legislation of the country into which the Code of Conduct is introduced has a lower age. Mistaken belief regarding the age of the child and consent from the child is not a defense.

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- b. **Accountability Measures** to protect confidentiality of all involved; and,
 - c. **Response Protocol** applicable to GBV and VAC survivors and perpetrators.
29. That the company effectively implements the GBV and VAC Action Plan, providing feedback to the GCCT for improvements and updates as appropriate.
30. All employees attend an induction training course prior to commencing work on site to ensure they are familiar with the company’s commitments to ESHS and OHS standards, and the project’s GBV and VAC Codes of Conduct.
31. All employees attend a mandatory training course once a month for the duration of the contract starting from the first induction training prior to commencement of work to reinforce the understanding of the project’s ESHS and OHS standards and the GBV and VAC Code of Conduct.

I do hereby acknowledge that I have read the foregoing Company Code of Conduct, and on behalf of the company agree to comply with the standards contained therein. I understand my role and responsibilities to support the project’s OHS and ESHS standards, and to prevent and respond to GBV and VAC. I understand that any action inconsistent with this Company Code of Conduct or failure to take action mandated by this Company Code of Conduct may result in disciplinary action.

Company name: _____

Signature: _____

Printed Name: _____

Title: _____

Date: _____

2. Manager's Code of Conduct

Manager's Code of Conduct Implementing ESHS and OHS Standards Preventing Gender Based Violence and Violence Against Children

Managers at all levels have a responsibility to uphold the company's commitment to implementing the ESHS and OHS standards, and preventing and addressing GBV and VAC. This means that managers have an acute responsibility to create and maintain an environment that respects these standards and prevents GBV and VAC. Managers need to support and promote the implementation of the Company Code of Conduct. To this end, managers must adhere this Manager's Code of Conduct and also sign the Individual Code of Conduct. This commits them to supporting the implementation of the C-ESMP and the OHS Management Plan and developing systems that facilitate the implementation of the GBV and VAC Action Plan. They need to maintain a safe workplace, as well as a GBV-free and VAC-free environment at the workplace and in the local community. These responsibilities include but are not limited to:

Implementation

1. To ensure maximum effectiveness of the Company and Individual Codes of Conduct:
 - a. Prominently displaying the Company and Individual Codes of Conduct in clear view at workers' camps, offices, and in public areas of the work-place. Examples of areas include waiting, rest and lobby areas of sites, canteen areas, health clinics.
 - b. Ensuring all posted and distributed copies of the Company and Individual Codes of Conduct are translated into the appropriate language of use in the work site areas as well as for any international staff in their native language.
2. Verbally and in writing explain the Company and Individual Codes of Conduct to all staff.
3. Ensure that:
 - a. All direct reportees sign the 'Individual Code of Conduct', including acknowledgment that they have read and agree with the Code of Conduct.
 - b. Staff lists and signed copies of the Individual Code of Conduct are provided to the OHS Manager, the GCCT, and the client.
 - c. Participate in training and ensure that staff also participate as outlined below.
 - d. Put in place a mechanism for staff to:
 - i. report concerns on ESHS or OHS compliance; and,
 - ii. confidentially report GBV or VAC incidents to the Grievance Redress Mechanism (GRM)
 - e. Staff are encouraged to report suspected or actual ESHS, OHS, GBV or VAC issues, emphasizing the staff's responsibility to the Company and the country hosting their employment, and emphasizing the respect for confidentiality.
4. In compliance with applicable laws and to the best of your abilities, prevent perpetrators of sexual exploitation and abuse from being hired, re-hired or deployed. Use background and criminal reference checks for all employees.
5. Ensure that when engaging in partnership, sub-contractor or similar agreements, these agreements:
 - a. Incorporate the ESHS, OHS, GBV and VAC Codes of Conduct as an attachment.

- b. Include the appropriate language requiring such contracting entities and individuals, and their employees and volunteers, to comply with the Individual Codes of Conduct.
 - c. expressly state that the failure of those entities or individuals, as appropriate, to ensure compliance with the ESHS and OHS standards, take preventive measures against GBV and VAC, to investigate allegations thereof, or to take corrective actions when GBV or VAC has occurred, shall constitute grounds for sanctions and penalties in accordance with the Individual Codes of Conduct.
6. Provide support and resources to the GCCT to create and disseminate internal sensitization initiatives through the awareness-raising strategy under the GBV and VAC Action Plan.
 7. Ensure that any GBV or VAC issue warranting police action is reported to the client and the World Bank immediately.
 8. Ensure that any major ESHS or OHS incidents are reported to the client and the supervision engineer immediately.

Training

9. The managers are responsible to:
 - a. Ensure that the OHS Management Plan is implemented, with suitable training required for all staff, including sub-contractors and suppliers; and,
 - b. Ensure that staff have a suitable understanding of the C-ESMP and are trained as appropriate to implement the C-ESMP requirements.
10. All managers are required to attend an induction manager training course prior to commencing work on site to ensure that they are familiar with their roles and responsibilities in upholding the GBV and VAC elements of these Codes of Conduct. This training shall be separate from the induction training course required of all employees and shall provide managers with the necessary understanding and technical support needed to begin to develop the GBV and VAC Action Plan for addressing GBV and VAC issues.
11. Managers are required to attend and assist with the project facilitated monthly training courses for all employees. Managers shall be required to introduce the trainings and announce the self-evaluations, including collecting satisfaction surveys to evaluate training experiences and provide advice on improving the effectiveness of training.
12. Ensure that time is provided during work hours and that staff prior to commencing work on site attend the mandatory project facilitated induction training on:
 - a. OHS and ESHS; and,
 - b. GBV and VAC required of all employees.
13. During civil works, ensure that staff attend ongoing OHS and ESHS training, as well as the monthly mandatory refresher training course required of all employees to combat increased risk of GBV and VAC.

Response

14. Managers shall be required to take appropriate actions to address any ESHS or OHS incidents.
15. With regard to GBV and VAC:
 - a. provide input to the GBV and VAC Allegation Procedures and Response Protocol developed by the GCCT as part of the final cleared GBV and VAC Action Plan.

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- b. Once adopted by the Company, managers shall uphold the Accountability Measures set forth in the GBV and VAC Action Plan to maintain the confidentiality of all employees who report or (allegedly) perpetrate incidences of GBV and VAC (unless a breach of confidentiality is required to protect persons or property from serious harm or where required by law).
 - c. If a manager develops concerns or suspicions regarding any form of GBV or VAC by one of his/her direct reportees, or by an employee working for another contractor on the same work site, s/he is required to report the case using the GRM.
 - d. Once a sanction has been determined, the relevant manager(s) is/are expected to be personally responsible for ensuring that the measure is effectively enforced, within a maximum timeframe of 14 days from the date on which the decision to sanction was made
 - e. If a Manager has a conflict of interest due to personal or familial relationships with the survivor and/or perpetrator, he/she must notify the respective company and the GCCT. The Company shall be required to appoint another manager without a conflict of interest to respond to complaints.
16. Managers failing to address ESHS or OHS incidents or failing to report or comply with the GBV and VAC provisions may be subject to disciplinary measures, to be determined and enacted by the company’s CEO, Managing Director or equivalent highest-ranking manager. Those measures may include:
- f. Informal warning.
 - g. Formal warning.
 - h. Additional Training.
 - i. Loss of up to one week's salary.
 - j. Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.
 - k. Termination of employment.
17. Ultimately, failure to effectively respond to ESHS, OHS GBV and VAC cases on the work site by the company’s managers or CEO may provide grounds for legal actions by authorities.

I do hereby acknowledge that I have read the foregoing Manager’s Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to ESHS, OHS GBV and VAC requirements. I understand that any action inconsistent with this Manager’s Code of Conduct or failure to take action mandated by this Manager’s Code of Conduct may result in disciplinary action.

Signature: _____

Printed Name: _____

Title: _____

Date: _____ 3- Code of Conduct to be signed by individual workers (skilled and unskilled, casual or no casual)

RUDPP II will comply with ESS2 and ESS4 and the Environmental, Social Health and Safety Guidelines of the WB (ESHS) and the Occupational Health and Safety (OHS) and Labor regulations of Rwanda. The following is Code of conduct to be inserted in the contract of workers for civil works.

3. Code of Conduct to be signed by individual workers (skilled and unskilled, casual or no casual)

Preventing Gender Based Violence (GBV) and Violence against Children (VAC)

I, _____, acknowledge that adhering to environmental, social health and safety (ESHS) standards, following the project’s occupational health and safety (OHS) requirements, and preventing gender-based violence (GBV) and violence against children (VAC) is important. All forms of GBV or VAC are unacceptable, be it on the work site, the work site surroundings, at worker’s camps, or the surrounding communities.

The company considers that failure to follow ESHS and OHS standards, or to partake in GBV or VAC activities, constitute acts of gross misconduct and are therefore grounds for sanctions, penalties or potential termination of employment. Prosecution of those who commit GBV or VAC may be pursued if appropriate.

I agree that while working on the project I will:

- Attend and actively partake in training courses related to ESHS, OHS, HIV/AIDS, GBV and VAC as requested by my employer.
- Shall wear my personal protective equipment (PPE), in the correct prescribed manner, at all times when at the work site or engaged in project related activities.
- Take all practical steps to implement the contractor’s environmental and social management plan (CESMP).
- Implement the OHS Management Plan.
- Adhere to a zero-alcohol policy during work activities, and refrain from the use of illegal substances at all times.
- Consent to a police background check.
- Treat women, children (persons under the age of 18), and men with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
- Not use language or behavior towards women, children or men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
- Not participate in sexual contact or activity with children—including grooming or contact through digital media. Mistaken belief regarding the age of a child is not a defense. Consent from the child is also not a defense or excuse.
- Not engage in sexual harassment—for instance, making unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct, of a sexual nature, including subtle acts of such behavior. Ex. Looking somebody up and down; kissing, howling or smacking sounds; hanging

around somebody; whistling and catcalls; giving personal gifts; making comments about somebody's sex life; etc.

- Not engage in sexual favors—for instance, making promises or favorable treatment dependent on sexual acts—or other forms of humiliating, degrading or exploitative behavior.
- Unless there is the full consent¹⁸ by all parties involved, I shall not have sexual interactions with members of the surrounding communities. This includes relationships involving the withholding or promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex—such sexual activity is considered “nonconsensual” within the scope of this Code.
- Consider reporting through the GRM (Grievance Redress Mechanism) or to my manager any suspected or actual GBV or VAC by a fellow worker, whether employed by my employer or not, or any breaches of this Code of Conduct.

With regard to children under the age of 18:

- Wherever possible, ensure that another adult is present when working in the proximity of children.
- Not invite unaccompanied children unrelated to my family into my home, unless they are at immediate risk of injury or in physical danger.
- Not sleep close to unsupervised children unless absolutely necessary, in which case I must obtain my supervisor's permission, and ensure that another adult is present if possible.
- Use any computers, mobile phones, or video and digital cameras appropriately, and never to exploit or harass children or to access child pornography through any medium (see also “Use of children's images for work related purposes” below).
- Refrain from physical punishment or discipline of children.
- Refrain from hiring children for domestic or other labor which is inappropriate given their age or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.
- Comply with all relevant local legislation, including labor laws in relation to child labor.

Use of children's images for work related purposes

When photographing or filming a child for work related purposes, I must:

- Before photographing or filming a child, assess and endeavor to comply with local traditions or restrictions for reproducing personal images.
- Before photographing or filming a child, obtain informed consent from the child and a parent or guardian of the child. As part of this I must explain how the photograph or film shall be used.
- Ensure photographs, films, videos and DVDs present children in a dignified and respectful manner and not in a vulnerable or submissive manner. Children should be adequately clothed and not in poses that could be seen as sexually suggestive.
- Ensure images are honest representations of the context and the facts.

¹⁸ **Consent** is defined as the informed choice underlying an individual's free and voluntary intention, acceptance or agreement to do something. No consent can be found when such acceptance or agreement is obtained through the use of threats, force or other forms of coercion, abduction, fraud, deception, or misrepresentation. In accordance with the United Nations Convention on the Rights of the Child, the World Bank considers that consent cannot be given by children under the age of 18, even in the event that

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- Ensure file labels do not reveal identifying information about a child when sending images electronically.

Sanctions

I understand that if I breach this Individual Code of Conduct, my employer shall take disciplinary action which could include:

- Informal warning.
- Formal warning.
- Additional Training.
- Loss of up to one week’s salary.
- Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.

national legislation of the country into which the Code of Conduct is introduced has a lower age. Mistaken belief regarding the age of the child and consent from the child is not a defense.

- Termination of employment.
- Report to the police if wanted.

I understand that it is my responsibility to ensure that the environmental, social, health and safety standards are met. That I shall adhere to the occupational health and safety management plan. That I shall avoid actions or behaviours that could be construed as GBV or VAC. Any such actions shall be a breach this Individual Code of Conduct. I do hereby acknowledge that I have read the foregoing Individual Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to ESHS, OHS, GBV and VAC issues. I understand that any action inconsistent with this Individual Code of Conduct or failure to take action mandated by this Individual Code of Conduct may result in disciplinary action and may affect my ongoing employment.

Signature: _____

Printed Name: _____

Title: _____

Date: _____

Contractor _____

Supervisor _____

Date _____

Annex 13: COVID-19 prevention and risk management plan preparation and monitoring template for RUDP II sub-project locations

In order to prevent and manage the risks associated to Covid-19 pandemics or other zoonotic diseases outbreaks, a Covid-19 prevention and risk management plan has been prepared, following the guidance of the ESMF-Annex17 (and Labor Management Procedures) and the GoR measures. The most effective approach to addressing COVID-19 at project site include to establish procedures to address the issues, and then to ensure that the procedures are implemented systematically. Procedures should be clear and straightforward, improved as necessary, and supervised and monitored by the COVID-19 focal point(s). Procedures should be documented, distributed to all contractors, and discussed at regular meetings to facilitate adaptive management. The issues set out below include a number that represent expected good workplace management but are especially pertinent in preparing the project response to COVID-19.

a) Assess workforce characteristics

Since most construction sites have a mix of workers (e.g. workers from the local communities; workers from a different part of the country; workers from another country), the contractor will assess different aspects of the workforce to help in identifying appropriate mitigation measures:

- The Contractor should prepare a detailed profile of the project work force, key work activities, schedule for carrying out such activities, different durations of contract and rotations (e.g. 4 weeks on, 4 weeks off).
- This should include a breakdown of workers who reside at home (i.e. workers from the community), workers who lodge within the local community and workers in on-site accommodation. Where possible, it should also identify workers that may be more at risk from Covid-19, those with underlying health issues or who may be otherwise at risk.
- Consideration should be given to ways in which to minimize movement in and out of site. This could include lengthening the term of existing contracts, to avoid workers returning home to affected areas, or returning to site from affected areas.
- Workers accommodated on site should be required to minimize contact with people near the site, and in certain cases be prohibited from leaving the site for the duration of their contract, so that contact with local communities is avoided.
- Consideration should be given to requiring workers lodging in the local community to move

to site accommodation (subject to availability) where they would be subject to the same restrictions.

- Workers from local communities, who return home daily, weekly or monthly, will be more difficult to manage. They should be subject to health checks at entry to the site (as set out above) and at some point, circumstances may make it necessary to require them to either use accommodation on site or not to come to work.

b) Entry/exit to the work site and Checks on commencement of work

Entry/exit to the work site should be controlled and documented for both workers and other parties, including support staff and suppliers. Possible measures may include:

- Establishing a system for controlling entry/exit to the site, securing the boundaries of the site, and establishing designating entry/exit points (if they do not already exist). Entry/exit to the site should be documented.
- Training security staff on the (enhanced) system that has been put in place for securing the site and controlling entry and exit, the behaviors required of them in enforcing such system and any COVID -19 specific considerations.
- Training staff who will be monitoring entry to the site, providing them with the resources they need to document entry of workers, conducting temperature checks and recording details of any worker that is denied entry.
- Confirming that workers are fit for work before they enter the site or start work. While procedures should already be in place for this, special attention should be paid to workers with underlying health issues or who may be otherwise at risk. Consideration should be given to demobilization of staff with underlying health issues.
- Checking and recording temperatures of workers and other people entering the site or requiring self-reporting prior to or on entering the site.
- Providing daily briefings to workers prior to commencing work, focusing on COVID-19 specific considerations including cough etiquette, hand hygiene and distancing measures, using demonstrations and participatory methods.
- During the daily briefings, reminding workers to self-monitor for possible symptoms (fever, cough) and to report to their supervisor or the COVID-19 focal point if they have symptoms or are feeling unwell.

- Preventing a worker from an affected area or who has been in contact with an infected person from returning to the site for 14 days or (if that is not possible) isolating such worker for 14 days.
- Preventing a sick worker from entering the site, referring them to local health facilities if necessary or requiring them to isolate at home for 14 days.

c) General Hygiene

Requirements on general hygiene should be communicated and monitored, to include:

- Training workers and staff on site on the signs and symptoms of COVID-19, how it is spread, how to protect themselves (including regular handwashing and social distancing) and what to do if they or other people have symptoms (for further information see WHO COVID-19 advice for the public).
- Placing posters and signs around the site, with images and text in local languages.
- Ensuring handwashing facilities supplied with soap, disposable paper towels and closed waste bins exist at key places throughout site, including at entrances/exits to work areas; where there is a toilet, canteen or food distribution, or provision of drinking water; in worker accommodation; at waste stations; at stores; and in common spaces. Where handwashing facilities do not exist or are not adequate, arrangements should be made to set them up. Alcohol based sanitizer (if available, 60-95% alcohol) can also be used.
- Review worker accommodations, and assess them in light of the requirements set out in IFC/EBRD guidance on Workers' Accommodation: processes and standards, which provides valuable guidance as to good practice for accommodation.
- Setting aside part of worker accommodation for precautionary self-quarantine as well as more formal isolation of staff who may be infected (see paragraph (f)).

d) Cleaning and Waste disposal

Conduct regular and thorough cleaning of all site facilities, including offices, accommodation, canteens, common spaces. Review cleaning protocols for key construction equipment (particularly if it is being operated by different workers). This should include:

- Providing cleaning staff with adequate cleaning equipment, materials and disinfectant.
- Review general cleaning systems, training cleaning staff on appropriate cleaning procedures

and appropriate frequency in high use or high-risk areas.

- Where it is anticipated that cleaners will be required to clean areas that have been or are suspected to have been contaminated with COVID-19, providing them with appropriate PPE: gowns or aprons, gloves, eye protection (masks, goggles or face screens) and boots or closed work shoes. If appropriate PPE is not available, cleaners should be provided with best available alternatives.
- Training cleaners in proper hygiene (including handwashing) prior to, during and after conducting cleaning activities; how to safely use PPE (where required); in waste control (including for used PPE and cleaning materials).
- Any medical waste produced during the care of ill workers should be collected safely in designated containers or bags and treated and disposed of following relevant requirements (e.g., national, WHO). If open burning and incineration of medical wastes is necessary, this should be for as limited a duration as possible. Waste should be reduced and segregated, so that only the smallest amount of waste is incinerated (for further information see WHO interim guidance on water, sanitation and waste management for COVID-19).

e) Adjusting work practices

Consider changes to work processes and timings to reduce or minimize contact between workers, recognizing that this is likely to impact the project schedule. Such measures could include:

- Decreasing the size of work teams.
- Limiting the number of workers on site at any one time.
- Changing to a 24-hour work rotation.
- Adapting or redesigning work processes for specific work activities and tasks to enable social distancing, and training workers on these processes.
- Continuing with the usual safety trainings, adding COVID-19 specific considerations. Training should include proper use of normal PPE. While as of the date of this note, general advice is that construction workers do not require COVID-19 specific PPE, this should be kept under review (for further information see WHO interim guidance on rational use of personal protective equipment (PPE) for COVID-19).
- Reviewing work methods to reduce use of construction PPE, in case supplies become scarce

or the PPE is needed for medical workers or cleaners. This could include, e.g. trying to reduce the need for dust masks by checking that water sprinkling systems are in good working order and are maintained or reducing the speed limit for haul trucks.

- Arranging (where possible) for work breaks to be taken in outdoor areas within the site.
- Consider changing canteen layouts and phasing meal times to allow for social distancing and phasing access to and/or temporarily restricting access to leisure facilities that may exist on site, including gyms. At some point, it may be necessary to review the overall project schedule, to assess the extent to which it needs to be adjusted (or work stopped completely) to reflect prudent work practices, potential exposure of both workers and the community and availability of supplies, taking into account Government advice and instructions.

f) Project medical services

Consider whether existing project medical services are adequate, taking into account existing infrastructure (size of clinic/medical post, number of beds, isolation facilities), medical staff, equipment and supplies, procedures and training. Where these are not adequate, consider upgrading services where possible, including:

- Expanding medical infrastructure and preparing areas where patients can be isolated. Guidance on setting up isolation facilities is set out in WHO interim guidance on considerations for quarantine of individuals in the context of containment for COVID-19). Isolation facilities should be located away from worker accommodation and ongoing work activities. Where possible, workers should be provided with a single well-ventilated room (open windows and door). Where this is not possible, isolation facilities should allow at least 1 meter between workers in the same room, separating workers with curtains, if possible. Sick workers should limit their movements, avoiding common areas and facilities and not be allowed visitors until they have been clear of symptoms for 14 days. If they need to use common areas and facilities (e.g. kitchens or canteens), they should only do so when unaffected workers are not present and the area/facilities should be cleaned prior to and after such use.
- Training medical staff, which should include current WHO advice on COVID-19 and recommendations on the specifics of COVID-19. Where COVID-19 infection is suspected, medical providers on site should follow WHO interim guidance on infection prevention and

control during health care when novel coronavirus (nCoV) infection is suspected.

- Training medical staff in testing, if testing is available.
- Assessing the current stock of equipment, supplies and medicines on site, and obtaining additional stock, where required and possible. This could include medical PPE, such as gowns, aprons, medical masks, gloves, and eye protection. Refer to WHO guidance as to what is advised (for further information see WHO interim guidance on rational use of personal protective equipment (PPE) for COVID-19).
- If PPE items are unavailable due to world-wide shortages, medical staff on the project should agree on alternatives and try to procure them. Alternatives that may commonly be found on construction sites include dust masks, construction gloves and eye goggles. While these items are not recommended, they should be used as a last resort if no medical PPE is available.
- Ventilators will not normally be available on work sites, and in any event, intubation should only be conducted by experienced medical staff. If a worker is extremely ill and unable to breathe properly on his or her own, they should be referred immediately to the local hospital (see (g) below).
- Review existing methods for dealing with medical waste, including systems for storage and disposal (for further information see WHO interim guidance on water, sanitation and waste management for COVID-19, and WHO guidance on safe management of wastes from health-care activities).

g) Local medical and other services

Given the limited scope of project medical services, the project may need to refer sick workers to local medical services. Preparation for this includes:

- Obtaining information as to the resources and capacity of local medical services (e.g. number of beds, availability of trained staff and essential supplies).
- Conducting preliminary discussions with specific medical facilities, to agree what should be done in the event of ill workers needing to be referred.
- Considering ways in which the project may be able to support local medical services in preparing for members of the community becoming ill, recognizing that the elderly or those with pre-existing medical conditions require additional support to access appropriate treatment if they become ill.

- Clarifying the way in which an ill worker will be transported to the medical facility, and checking availability of such transportation.
- Establishing an agreed protocol for communications with local emergency/medical services.
 - Agreeing with the local medical services/specific medical facilities the scope of services to be provided, the procedure for in-take of patients and (where relevant) any costs or payments that may be involved.
- A procedure should also be prepared so that project management knows what to do in the unfortunate event that a worker ill with COVID-19 dies. While normal project procedures will continue to apply, COVID-19 may raise other issues because of the infectious nature of the disease. The project should liaise with the relevant local authorities to coordinate what should be done, including any reporting or other requirements under national law.

h) Instances or Spread of the Virus

WHO provides detailed advice on what should be done to treat a person who becomes sick or displays symptoms that could be associated with the COVID-19 virus (for further information see WHO interim guidance on infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected). The project should set out risk-based procedures to be followed, with differentiated approaches based on case severity (mild, moderate, severe, critical) and risk factors (such as age, hypertension, diabetes) (for further information see WHO interim guidance on operational considerations for case management of COVID-19 in health facility and community). These may include the following:

- If a worker has symptoms of COVID-19 (e.g. fever, dry cough, fatigue) the worker should be removed immediately from work activities and isolated on site.
- If testing is available on site, the worker should be tested on site. If a test is not available at site, the worker should be transported to the local health facilities to be tested (if testing is available).
- If the test is positive for COVID-19 or no testing is available, the worker should continue to be isolated. This will either be at the work site or at home. If at home, the worker should be transported to their home in transportation provided by the project.
- Extensive cleaning procedures with high-alcohol content disinfectant should be undertaken in the area where the worker was present, prior to any further work being undertaken in that

area. Tools used by the worker should be cleaned using disinfectant and PPE disposed of.

- Co-workers (i.e. workers with whom the sick worker was in close contact) should be required to stop work, and be required to quarantine themselves for 14 days, even if they have no symptoms. Family and other close contacts of the worker should be required to quarantine themselves for 14 days, even if they have no symptoms.
- If a case of COVID-19 is confirmed in a worker on the site, visitors should be restricted from entering the site and worker groups should be isolated from each other as much as possible.
- If workers live at home and has a family member who has a confirmed or suspected case of COVID-19, the worker should quarantine themselves and not be allowed on the project site for 14 days, even if they have no symptoms.
- Workers should continue to be paid throughout periods of illness, isolation or quarantine, or if they are required to stop work, in accordance with national law.
- Medical care (whether on site or in a local hospital or clinic) required by a worker should be paid for by the employer.

i) Continuity of supplies and project activities

Where COVID-19 occurs, either in the project site or the community, access to the project site may be restricted, and movement of supplies may be affected.

- Identify back-up individuals, in case key people within the project management team (PIU, Supervising Engineer, Contractor, sub-contractors) become ill, and communicate who these are so that people are aware of the arrangements that have been put in place.
- Document procedures, so that people know what they are, and are not reliant on one person's knowledge.
- Understand the supply chain for necessary supplies of energy, water, food, medical supplies and cleaning equipment, consider how it could be impacted, and what alternatives are available. Early pro-active review of international, regional and national supply chains, especially for those supplies that are critical for the project, is important (e.g. fuel, food, medical, cleaning and other essential supplies). Planning for a 1-2 month interruption of critical goods may be appropriate for projects in more remote areas.
- Place orders for/procure critical supplies. If not available, consider alternatives (where

feasible).

- Consider existing security arrangements, and whether these will be adequate in the event of interruption to normal project operations.
- Consider at what point it may become necessary for the project to significantly reduce activities or to stop work completely, and what should be done to prepare for this, and to re-start work when it becomes possible or feasible.

j) Training and Communication with workers

Workers need to be provided with regular opportunities to understand their situation, and how they can best protect themselves, their families and the community. They should be made aware of the procedures that have been put in place by the project, and their own responsibilities in implementing them.

- It is important to be aware that in communities close to the site and amongst workers without access to project management, social media is likely to be a major source of information. This raises the importance of regular information and engagement with workers (e.g. through training, town halls, tool boxes) that emphasizes what management is doing to deal with the risks of COVID-19. Allaying fear is an important aspect of work force peace of mind and business continuity. Workers should be given an opportunity to ask questions, express their concerns, and make suggestions. Training of workers should be conducted regularly, as discussed in the sections above, providing workers with a clear understanding of how they are expected to behave and carry out their work duties.
- Training should address issues of discrimination or prejudice if a worker becomes ill and provide an understanding of the trajectory of the virus, where workers return to work.
- Training should cover all issues that would normally be required on the work site, including use of safety procedures, use of construction PPE, occupational health and safety issues, and code of conduct, taking into account that work practices may have been adjusted.
- Communications should be clear, based on fact and designed to be easily understood by workers, for example by displaying posters on handwashing and social distancing, and what to do if a worker displays symptoms.

k) Communication and Contact with the community

Relations with the community should be carefully managed, with a focus on measures that are being implemented to safeguard both workers and the community. The community may be concerned about the presence of non-local workers, or the risks posed to the community by local workers presence on the project site. The project should set out risk-based procedures to be followed which may reflect WHO guidance (for further information see WHO Risk Communication and Community Engagement (RCCE) Action Plan Guidance COVID-19 Preparedness and Response).

The following good practice should be considered:

- Communications should be clear, regular, based on fact and designed to be easily understood by community members.
- Communications should utilize available means. In most cases, face-to-face meetings with the community or community representatives will not be possible. Other forms of communication should be used; posters, pamphlets, radio, text message, electronic meetings. The means used should take into account the ability of different members of the community to access them, to make sure that communication reaches these groups.
- The community should be made aware of procedures put in place at site to address issues related to COVID-19. This should include all measures being implemented to limit or prohibit contact between workers and the community. These need to be communicated clearly, as some measures will have financial implications for the community (e.g. if workers are paying for lodging or using local facilities). The community should be made aware of the procedure for entry/exit to the site, the training being given to workers and the procedure that will be followed by the project if a worker becomes sick.
- If project representatives, contractors or workers are interacting with the community, they should practice social distancing and follow other COVID-19 guidance issued by relevant authorities, both national and international (e.g. WHO).

Annex 14: Tolerance limits for discharged industrial wastewater

S/N	Parameter	Permissible limits	Test methods
1	Ph	5-9	ISO 10523
2	Temperature increase °C	<3	Thermometer1
3	Total suspended solids mg/l	50	ISO 11923
4	Total Dissolved Solids mg/l	2000	ISO 7888
5	Oil and grease mg/l	10	ISO 9377
6	BOD5 mg/l (20°C)	50	ISO 5815
7	COD mg/l	250	ISO 6060
8	Faecal Coliforms cfu /100ml	400	ISO 4831
9	Ammonia (as N) mg/l	20	ISO 6778
10	Phosphates mg/L	<10	Analytical tests (capillary electrophoresis)
11	Free chlorine mg/L	<1.0	ASTM D1253-14
12	Arsenic mg/l	0.01	ISO 11969
13	Benzine mg/l	0.1	ISO 11423
14	Cadmium mg/l	0.01	ISO 5961
15	Hexavalent Chromium mg/l	0.05	ISO 23913
16	Copper mg/l	3	ISO 8288
17	Cyanide mg/l	0.1	ISO 6703
18	Iron mg/l	3.5	ISO 6332
19	Lead mg/l	0.1	ISO 8288
20	Mercury mg/l	0.0002	ISO 5666
21	Nickel mg/l	3	ISO 8288
22	Phenol mg/l	0.2	ISO 8165
23	Sulphide mg/l	1.0	ISO 13358
24	Zinc mg/l	5	ISO 8288
25	Selenium mg/L	<0.02	ASTM D3859-15
26	Pesticides mg/L	Not detectable	ASTM D8025-16
Note 1 The total amount of heavy metals shall not exceed 10.0 mg/l			
Note 2 The thermometer used should be calibrated according to National Measurement Law.			

Source: GoR: Rwanda Standard: Water Quality-Discharged domestic industrial wastewater-Tolerance limits, 2017 (RS 109:2017)

Annex 15: Tolerance limits for discharged domestic wastewater

S/N	Parameter	Permissible limits	Test methods
1	Ph	5-9	RS ISO 10523
2	Temperature increase °C	<3	Thermometer (1)
3	Total suspended solids mg/l	50	RS ISO 11923
4	Total Dissolved Solids mg/l	2000	RS ISO 7888
5	Oil and grease mg/l	10	ISO 9377
6	BOD5 mg/l (20°C)	50	RS ISO 5815
7	COD mg/l	250	RS ISO 6060
8	Faecal Coliforms cfu /100ml	400	RS ISO 4831
9	Ammonia (as N) mg/l	20	RS ISO 6778
10	Phosphates mg/L	10	Analytical tests (capillary electrophoresis)
11	Free chlorine mg/L	1.0	ASTM D1253-14
12	Arsenic mg/l	0.01	ISO 11969
13	Benzine mg/l	0.1	ISO 11423
14	Cadmium mg/l	0.1	ISO 5961
15	Hexavalent Chromium mg/l	0.05	ISO 23913
16	Copper mg/l	3	ISO 8288
17	Cyanide mg/l	0.1	ISO 6703
18	Iron mg/l	3.5	RS ISO 6332
19	Lead mg/l	0.1	ISO 8288
20	Mercury mg/l	0.002	ISO 5666
21	Nickel mg/l	3	ISO 8288
22	Phenol mg/l	0.2	ISO 8165
23	Sulphide mg/l	1.0	ISO 13358
24	Zinc mg/l	5	ISO 8288
25	Selenium mg/L	0.02	ASTM D3859-15
26	Pesticides mg/L	Not detectable	ASTM D8025-16

Source: GoR: Rwanda Standard: Water Quality-Discharged domestic wastewater-Tolerance limits, 2017 (RS 110:2017)

Annex 16: Chance Find Procedure

Purpose of the chance find procedure

The chance find procedure is a project-specific procedure that outlines actions required if previously unknown heritage resources, particularly archaeological resources, are encountered during project construction or operation.

Scope of the chance find procedure

This procedure is applicable to all activities conducted by the personnel, including the contractor and sub-contractors, that have the potential to uncover a heritage item/site. The procedure details the actions to be taken when a previously unidentified and potential heritage item/site is found during construction activities. Procedure outlines the roles and responsibilities and the response times required from both project staff, and any relevant heritage authority.

Induction/Training

All personnel, especially those working on earth movements and excavations, are to be inducted on the identification of potential heritage items/sites and the relevant actions for them with regards to this procedure during the Project induction and regular toolbox talks.

Chance find procedure

If any person discovers a physical cultural resource, such as (but not limited to) archaeological sites, historical sites, remains and objects, or a cemetery and/or individual graves during excavation or construction, the following steps shall be taken:

- 1) Stop all works in the vicinity of the find, until a solution is found for the preservation of these artefacts, or advice from the relevant authorities is obtained;
- 2) Immediately notify a foreman. The foreman will then notify the Construction Manager and the Environment Officer (EO);
- 3) Record details in Incident Report and take photos of the find;
- 4) 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 take over;
- 5) Preliminary evaluation of the findings by archaeologists or other relevant expert. The archaeologist must make a rapid assessment of the site or find to determine its importance. Based on this assessment the appropriate strategy can be implemented. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage such as aesthetic, historic, scientific or research, social and economic values of the find;
- 6) Sites of minor significance (such as isolated or unclear features, and isolated finds) should be recorded immediately by the archaeologist, thus causing a minimum disruption to the work schedule of the Contractor. The results of all archaeological work must be reported to the relevant Ministry/Agency, once completed.
- 7) In case of significant find the Agency/Ministry (Agency for Protection of National
- 8) Heritage or Archaeological Research Centre, hereinafter referred to as Heritage team) should be informed immediately and in writing within 7 days from the find (ref.law on heritageprotection).
- 9) The onsite archaeologist provides the Heritage team with photos, other information as relevant for identification and assessment of the significance of heritage items.
- 10) The Ministry must investigate the fact within 2 weeks from the date of notification and provide response in writing.
- 11) Decisions on how to handle the finding shall be taken by the responsible authorities. This could

include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage;

- 12) Construction works could resume only after permission is granted from the responsible authorities.
- 13) In case no response received within the 2 weeks period mentioned above, this is considered as authorisation to proceed with suspended construction works.

One of the main requirements of the procedure is record keeping. All finds must be registered. Photolog, copies of communication with decision making authorities, conclusions and recommendations/guidance, implementation reports ± kept.

Additional information

Management options for archaeological site

Site avoidance. If the boundaries of the site have been delineated attempt must be made to redesign the proposed development to avoid the site. (The fastest and most cost-effective management option)

Mitigation. If it is not feasible to avoid the site through redesign, it will be necessary to sample it using data collection program prior to its loss. This could include surface collection and/or excavation. (The most expensive and time-consuming management option.)

Site Protection. It may be possible to protect the site through the installation of barriers during the time of the development and/or possibly for a longer term. This could include the erection of high visibility fencing around the site or covering the site area with a geotextile and then capping it with fill. The exact prescription would be site- specific.

Management of replicable and non-replicable heritage

Different approaches for the finds apply to replicable and non-replicable heritage.

Replicable heritage

Where tangible cultural heritage that is replicable¹⁹ and not critical is encountered, mitigation measures will be applied.

The mitigation hierarchy is as follows:

- Avoidance;
- Minimization of adverse impacts and implementation of restoration measures, in situ;
- Restoration of the functionality of the cultural heritage, in a different location;
- Permanent removal of historical and archaeological artefacts and structures ;
- Compensation of loss - where minimization of adverse impacts and restoration not feasible.

Non-replicable heritage

Most cultural heritage is best protected by in situ preservation, since removal is likely to result in

¹⁹ Replicable cultural heritage is defined as tangible forms of cultural heritage that can themselves be moved to another location or that can be replaced by a similar structure or natural features to which the cultural values can be transferred by appropriate measures. Archaeological or historical sites may be considered replicable where the particular eras and cultural values they represent are well represented by other sites and/or structures.

irreparable damage or even destruction of the cultural heritage.

Nonreplicable cultural heritage²⁰ must not be removed unless all of the following conditions are met:

- There are no technically or financially feasible alternatives to removal; x The overall benefits of the project conclusively outweigh the anticipated cultural heritage loss from removal; and
- Any removal of cultural heritage must be conducted using the best available technique advised by relevant authority and supervised by archaeologist.

Human Remains Management Options

The handling of human remains believed to be archaeological in nature requires communication according to the same procedure described above.

There are two possible courses of action:

- **Avoid.** The development project is redesigned to completely avoid the found remains. An assessment should be made as to whether the remains may be affected by accumulative impacts associated with the development, and properly addressed by a comprehensive management plan.
- **Exhume.** Exhumation of the remains in a manner considered appropriate by decision makers. This will involve the predetermination of a site suitable for the reburial of the remains. Certain ceremonies or procedures may need to be followed before development activities can recommence in the area of the discovery.

Emergency Contacts

Institute of National Museums of Rwanda (INMR) Adresse : KN 90 St2, Kigali

Téléphone : 0730 741 09

Email: info@museum.gov.rw

Website: www.museum.gov.rw

²⁰ Non replicable cultural heritage may relate to the social, economic, cultural, environmental, and climatic conditions of past peoples, their evolving ecologies, adaptive strategies, and early forms of environmental management, where the (i) cultural heritage is unique or relatively unique for the period it represents, or (ii) cultural heritage is unique or relatively unique in linking several periods in the same site. Examples of non-replicable cultural heritage may include an ancient city or temple, or a site unique in the period that it represents.

Annex 17: Checklist for supervision

1. Environmental parameters for monitoring purposes

Environmental parameter	Milestone/ expected	Situation at site	Remarks	Way forward
Soil				
Construction debris and other solid wastes				
Hazardous waste (explosives, chemicals, bituminous waste, etc.)				
Excavated soils				
Erosion				
Borrow pits and quarry sites				
Contamination of Soil by Fuel and Lubricant				
Water and sanitation				
-Potable water at construction sites and camp (including water quality parameters) -Water (water sources, River, stream, lake) pollution -Sanitation facilities and waste water disposal at construction sites/camps				
Air Pollution				
Generation of dust				
Concrete mix plants and batching plants				
Odor from construction camps				
Pollution from crusher				
Noise pollution				
Noise/vibration from vehicles, machinery, plants and equipment				
Flora and Fauna				
Loss or damage of vegetation				
Loss, damage or disruption to fauna				
Disruption to Users				
Loss of access				
Traffic jams and congestion in road crossing areas				
Traffic control and safety				
Workers' accident risks				
Risk from operations				
Risk from electrical equipment				
Risk at hazardous activity				
First aid				
Rehabilitation of construction camp				
Damage and loss of cultural properties				
Conservation of religious structures				
Chance found archaeological property				
Environmental enhancement				
Sites landscape/rehabilitation				

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2. Social Safeguards issues

no:	Issues	Milestone/expected	Situation at site	Remarks	Way forward
1	Number of affected Persons on site				
2	Compensation paid				
3	Compensation Eligibility and Entitlements: outstanding issues				
4	Vulnerable groups				
5	Number of Properties Affected by construction activities				
6	Public Consultation/stakeholders engagement activities				
7	Grievance redress Mechanism: GRC activities, complaints.				
8	Gender Issues				
9	Employment: number of workers by gender, contracts, working conditions etc				
10	Record Keeping				
11	Health issues: HIV / AIDS Mitigation Measure; Covid-19 Mitigation Measure; PPEs, toilets and hand washing stations, clean drinking water etc				
12	Any other incidence on site				

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Annex 18: Consultant Team

Name	Position on Study Team
Ms. Helen NZAINGA	Team Leader
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