



Environmental and Social Impact Assessment for Bugesera Special Economic Zone, Rwanda

ESIA Appendices

PREPARED FOR



Bugesera Special Economic Zone Limited

DATE

1 March 2024

REFERENCE

00672166



DOCUMENT DETAILS

The details entered below are automatically shown on the cover and the main page footer. PLEASE NOTE: This table must NOT be removed from this document.

DOCUMENT TITLE	Environmental and Social Impact Assessment for Bugesera Special Economic Zone, Rwanda
DOCUMENT SUBTITLE	ESIA Appendices
PROJECT NUMBER	0672166
Date	01 March 2024
Version	0.1
Author	ERM
Client name	Bugesera Special Economic Zone Limited

DOCUMENT HISTORY

				ERM APPROVAL TO ISSUE		
VERSION	REVISION	AUTHOR	REVIEWED BY	NAME	DATE	COMMENTS
0.1	0	Boaz Bett	Clara Goncalves	Nigel Seed	01 March 2024	

Environmental and Social Impact Assessment for Bugesera Special Economic Zone, Rwanda

ESIA Appendices

0672166

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Nigel Seed

Partner in Charge

Environmental Resources Management

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APPENDIX A EARTH SYSTEMS RWANDA
CONSULTANCY REGISTRATION AND
PRACTICING LICENCES



PRACTICE LICENCE

for Environmental Assessment (EA) in Rwanda

EARTH SYSTEMS

has qualified as a

Firm of Expert

and active member of RAPEP
for the period of 2022 - 2023

Registration: RAPEP/EA/160

Certified by:

Richard Ngenzahayo

Signature:

Date:



1st August 2022

Note: This Certificate is valid until 31 July 2023

Date of issuance: **12/05/2016**Company Code: **106243480****CERTIFICATE OF DOMESTIC COMPANY REGISTRATION***(Article 16 of law No 07/2009 of 27/04/2009 relating to companies)*

Registration date: 15/02/2016
Company Name: EARTH SYSTEMS Ltd
Category: Private
Type: Limited by shares

Registered Office Address:

Address: Kinyinya, Gasabo, Umujyi wa Kigali, RWANDA
Phone number : +250787 807 49
Email: nigel.murphy@earthsystems.com.au

Management details:**Managing Director :**

Name : Nigel Cournane Murphy
ID Document : PASSPORT Card No.: E3078379

Main Business Activity:

No.	Code	Description	Date
1	M7110	Architectural and engineering activities and related technical consultancy	15/02/2016

Other Business Activities:

No.	Code	Description	Date
1	M7020	Management consultancy activities	15/02/2016
2	M7120	Technical testing and analysis	15/02/2016
3	M7210	Research and experimental development on natural sciences and engineering	15/02/2016
4	M7490	Other professional, scientific and technical activities n.e.c.	15/02/2016



Louise Kanyonga
Registrar General

Serial No: **372995**

Page No: 1 / 1

Check the validity of the certificate by visiting the link <http://www.rdb.rw/> using the serial number.

Statutory Tax filing due dates

	Tax type	Filing due date
1	Profit Income tax	January 1st -31st March of the following year of registration
2	Quarterly Income tax prepayment	First quarter (April 1st – 30th June), second quarter (July 1st – 30th Sept) Third quarter (October 1st – 31st December)
3	VAT Monthly	1st – 15th of the following month after the VAT monthly tax period
4	VAT Quarterly	1st – 15th of the following month after the VAT quarterly tax period
5	PAYE (Pay As You Earn)	1st – 15th of the following month after the PAYE monthly tax period
6	PAYE Quarterly	1st – 15th of the following month after the PAYE quarterly tax period

Note :

1. Once you are registered for business, Profit income tax and Quarterly Income Tax prepayment Tax Accounts are automatically generated and you have obligation to make their declaration and payments where applicable in their respective due dates.
2. Other types of taxes mentioned in the table above and others not mentioned are being registered for during the course of business as they become mandatory except from VAT which is either mandatory when you reach on an annual turnover of 20M Frw or 5MFrw million on quarterly basis, then Voluntary VAT registration when your annual turnover is bellow 20mFrw.
3. The first Quarterly Income Prepayment is made after the first profit Income Tax has been declared.

Article 219	Any company, other than a small private company shall have one or more employee whose duties shall be as indicated in this article in the companies' Act
Article 220	The Company shall within (30) days notify to the Registrar General whether the appointed employee resigned or was removed from office, the office of that employee shall not be left vacant for 3 months.
Article 233	The change of the registered office shall be notified to the Registrar General for registration by the Board of Directors. The change of the registered of the registered office shall take effect the date contained in the notice
Article 238	A company shall at each annual meeting appoint an auditor. The Registrar General shall have the powers to have the company appoint its auditor within thirty (30) days, if the post goes vacant for a month.
Article 253	The board of directors of every company shall ensure that within three (3) months following the end of financial statement, the audit is made and signed by at least one of the representative of the company. Such an audit shall be submitted to the Registrar General.
Article 258	Every company other than small private company shall ensure that, within thirty (30) days after the financial statement of the company and any group financial statements are required to be signed. Copies of those statements together with the auditor's report on those statements are filed with the Registrar General for registration
Article 259	A small private company shall file with the Registrar General a financial summary for registration
Article260	A company shall have a balance sheet date in each calendar year. A company may not have a balance sheet date in calendar year in which it is incorporated where its first financial statement date is in following calendar year and is not later than eighteen (18) months after the date of its formation or incorporation.
Article 330	A foreign company shall, within three (3) months of its annual meeting of shareholders, file with the Registrar General, and fulfill what is mentioned in this article.
Article 332	A foreign company shall, in addition to balance sheet and other documents required to be filed, comply with International Accounting Standards, fairly showing the assets employed in, and liabilities arising out of, and its profit and loss arising out of operations conducted in or from Rwanda.
Article 333	A foreign company shall file with the Registrar General in each year at the time a copy of its balance sheet is filed, a notice containing the particulars with respect to the business being carried out by the company in Rwanda.



APPENDIX B

LAND TITLE DEED OF THE PROJECT
SITE

CONTRACT OF EMPHYTEUTIC LEASE No 5157/BUG/GAS/RAM/1

Pursuant to Law No 27/2021 of 10/06/2021 governing land, especially in Article 9;

The Republic of Rwanda, represented by the Registrar of Land Titles "the landowner" enters into a contract with the lessee (s) relating to the contract of Emphyteutic lease on land as follow:

1. This contract concerns the land rights of emphyteutic lease for plot with UPI 5/07/01/05/5157
2. The duration of emphyteutic lease is 49 years renewable in accordance with relevant laws;
3. During the lease period, the lessee must maintain and improve the land and use it in accordance with the land use master plan and other relevant laws;
4. The lessee has an obligation of exploiting a land in a productive way in accordance with the provisions of this contract and other relevant laws. The lessee must comply with the land use and development master plan, rules and regulations applicable to land, take all necessary measures to protect land, take all steps to prevent soil from erosion, pollution or waste, or obstruct the flow of water;
5. The lessee must take all necessary measures to keep boundary to neighboring land visible and shall not change them. The investor may not change the land use without prior written authorization in accordance with laws and regulations governing land;
6. As long as the lessee observes and performs obligations contained in this contract, he/she has the right to possession and full enjoyment of the land and production without any disturbance of the State or any person rightfully claiming through the State unless the laws provide otherwise;
7. In case of joint ownership, the representative is not allowed to transfer the land rights through purchase, donation, exchange, rent, mortgage, sublease or any other transfer without prior written consent of all the registered right holders on the land title. However, the transfer of land rights jointly detained by spouses, is approved by both of them, even if one of the spouses is not registered on the land title;
8. For activities which require permit, the lessee must first get a prior written authorization from the competent authority;
9. The lessee cannot deny officers from the institution in charge of management of land or any person duly authorized entry into the land at such time as may be reasonable to inspect the use of land and the compliance with the terms of relevant laws;
10. As long as the lessee observes the terms of this contract, he/she has the right to possession and full enjoyment of the land and all products during the term of lease without any disturbance of the State or any person rightfully claiming through the State unless the laws provide otherwise;
11. The lessee has right to transfer the land rights through purchase, donation, exchange, rent, mortgage, sublease or any other legal transaction on the land;
12. The lessee must not obstruct underground activities or those in the space above his or her land when the activities are of public interest and are done in accordance with relevant laws;
13. The lessee must pay land taxes and other charges, if any, payable with respect to the land in accordance with relevant laws;
14. The lessee receives fair and just compensation from the lessor or any other person duly authorised in case the activities of public interests cause him/her any damage;
15. The lessor may terminate this contract, after issuing to the lessee a written notice of ninety (90) days, if the lessee has not complied with the terms of contract and other relevant laws. However, the land owner cannot terminate the land ownership contract if the land owner has provided reasonable grounds for not complying with the contract;
16. This lease contract can also be terminated by the lessee with a written notice of ninety (90) days, after providing to the lessor the reasonable grounds;

Lessee representative
ARNAB BOSE

For the Republic of Rwanda



22/06/2023

Registrar of Land Titles



Bugesera Special Economic Zone Ltd

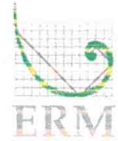
S no	UPI Number	Company Name	Area (Ha)		LAND TILE STATUS	Observation as per Master Plan
1	3413	Power X	1.8331		✓	
2	3412	Sunrise Overseas Ltd	1.0625		✓	
3	3434		1.5124		x	NEW HOPE RWANDA INDUSTRIAL PARK
4	5158		2.5541		x	KIGALI MINYANG PAPER CO Ltd
5	3427	MAHWI Grain Milers Ltd	1.584		✓	
6	3396		1.6621		x	AFROTURK SANITARY INDUSTRY Ltd
7	4384	Rwanda Fertilizer Company (OCP)	8.0071		✓	
	Sub-Total for 7 plots		18.2153	Ha	Note	
	5157	Area mentioned in land Title- 22 June 24	266.3729	Ha	✓ Land Title Available x Land Title Not Available but Information available on Mobile Available thru UPI	
	Total Area in (Ha)		284.5882	Ha		



APPENDIX C MINUTES OF MEETING BETWEEN RDB,
ARISE & ERM ON ESIA APPROACH

ERMERM Southern Africa Pty (Ltd.)
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Park
Woodlands Drive, Woodmead
Johannesburg, South AfricaTelephone: + 27105963465
www.erm.com**MEETING MINUTES**

Stakeholder Consulted	Rwanda Development Board (RDB)
Subject/Project	Environmental and Social Impact Assessment Update for Bugesera Special Economic Zone, Rwanda
Project Number	0678581
Venue	RDB Offices
Date of Meeting	18 th August 2023.
Minutes by	Boaz Bett.
Distribution	To be shared with ARISE and RDB

**1. Present**

No.	Name	Organisation	Designation	Email
1	Diane Sayinzoga	RDB	HOD SEZs & Export Facilitation	diane.sayinzoga@rdb.rw
2	Jules Cesar Dushimimana	RDB	Environmental Specialist	julescesar.dushimimana@rdb.rw
3	Hubert Kisebo	RDB	Civil Engineer	hubert.kisebo@rdb.rw
4	Naphtal Kazoora	RDB	Civil Engineer	naphtal.kazoora@rdb.rw
5	Leyla Mouli	ARISE	ESG Manager, BSEZ	levla.mouli@arisenet.com
6	Arnab Bose	ARISE	General Manager, BSEZ	arnab.bose@arisenet.com
7	Boaz Bett	ERM	BSEZ ESIA Project Manager	boaz.bett@erm.com

SEZ Development Analyst

2. Agenda

1. Introductions
2. ESIA Status/overview
3. Discussions on ESIA approach
4. Conclusions/way forward

3. Introduction

The meeting began at 10:30 AM. The Head of Department (HoD) for Special Economic Zones at RDB welcomed the Bugesera Special Economic Zone (SEZ) developer; ARISE Integrated Platform and the Environmental Impact Assessment Consultant for the SEZ from Environmental Resources Management (ERM). She then invited the team for a round of introductions.

4. ESIA Status/overview

In her introductory remarks, the HoD sought to know the key discussion areas for the meeting. Mr. Boaz from ERM stated ERM has been appointed by ARISE to undertake the Environmental and Social Impact assessment for the proposed project and that ERM will be working with local partner, Earth Systems during the ESIA process. He mentioned that a project brief for the BSEZ Project had been submitted for review by RDB and that RDB had undertaken a site visit to BSEZ. Mr. Boaz then highlighted the key areas for discussion which included: the need to align in terms of the expectations from the ESIA process, obtaining a consensus on how to describe the project area and how to structure the ESIA licensing for the SEZ.

5. Key Discussion Points

No.	Issue/Area	Description	Response
1.	Zoning of Bugesera Special Economic Zone	RDB indicated that they would prefer to have zoning at BSEZ. They were keen to make sure the mistakes seen in other SEZs will not be repeated at Bugesera. RDB therefore requested ARISE provide zoning for BSEZ for reference.	ARISE responded that they will provide zoning for phase 1 and Phase 1a. For phase 2, the project will start in 2026 and they may not have visibility on the kind of industries they are likely to attract.
2.	Project Description of SEZ	ERM sought to have consensus on how to describe the project in the EIA report taking cognizance that some areas particularly in Phase 1 were already developed and had been issued with an EIA license. There was need to ensure there is no overlap in licensing.	RDB acknowledged that indeed some areas were developed and have an EIA license. They however reiterated that they would want to have a description of the whole SEZ area since it bears one title and would be great to refer to one EIA document. Jules nonetheless suggested not to put much emphasis on the area which is already licensed but to instead focus most of the project description on the area to be licensed.
3.	Licensing of SEZ	ERM sought to know from RDB whether they would provide a separate license for the project area not licensed.	RDB responded that the updated ESIA license will cover the whole project area. Therefore, they anticipate that BSEZ will have one updated ESIA license.
4.	Wastewater treatment technology	Jules from RDB wanted to understand the technology and the type of wastewater treatment system to be employed by BSEZ	Boaz from ERM responded that the technology will be described in the project description chapter of the ESIA report. The quantities of wastewater anticipated to be generated will be disaggregated by phase.

6. Way forward

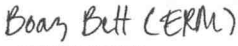
No.	Issue/Area	Agreed way forward
1.	Zoning of Special Economic Zone	ARISE to provide tentative zoning for BSEZ. The zoning will be subject to periodic update and anticipated to change over time.
2.	Project Description of SEZ	The project description chapter should describe all phases of BSEZ. The ESIA update will thus be for the whole project area. All new industries will however be required to undertake site specific EIAs.
3.	Licensing of SEZ	RDB will issue one EIA license for BSEZ. All new industries to seek individual EIA licenses from RDB (if required) prior to starting development.

7. Closure

In general, RDB wants to make BSEZ a model project for all other SEZs. As such, the planned comprehensive ESIA should incorporate all the views of key stakeholders, anticipated environmental and social risks and the suggestions/comments from RDB. There being no other business, the meeting ended at 11:45AM.

8. Approval

Minutes prepared by:

Name	Organisation	Position	Signature
Boaz Bett	ERM	BSEZ ESIA Project Manager	DocuSigned by:  65E2EA8EC194491... Sep 14, 2023 06:35 EDT

Minutes reviewed and approved by:

Name	Organisation	Position	Signature
Arnab Bose	ARISE	General Manager, BSEZ	DocuSigned by:  17F3AE5CEFED438... Sep 14, 2023 06:39 EDT
Diane Sayinzoga	RDB	HOD SEZs & Export Facilitation 	 04/10/2023



APPENDIX D

STAKEHOLDER ENGAGEMENT PLAN
(SEP)



Environmental and Social Impact Assessment for Bugesera Special Economic Zone, Rwanda

Stakeholder Engagement Plan

PREPARED FOR



Bugesera Special Economic Zone Limited

DATE

14 February 2024

REFERENCE

0672166



DOCUMENT DETAILS

The details entered below are automatically shown on the cover and the main page footer. PLEASE NOTE: This table must NOT be removed from this document.

DOCUMENT TITLE	Environmental and Social Impact Assessment for Bugesera Special Economic Zone, Rwanda
DOCUMENT SUBTITLE	Stakeholder Engagement Plan
PROJECT NUMBER	0672166
Date	14 February 2024
Version	0.1
Author	ERM
Client name	Bugesera Special Economic Zone Limited

DOCUMENT HISTORY

				ERM APPROVAL TO ISSUE		
VERSION	REVISION	AUTHOR	REVIEWED BY	NAME	DATE	COMMENTS
0.1	0	Danielle Sanderson	Boaz Bett Clara Gonçalves	Nigel Seed		

Environmental and Social Impact Assessment for Bugesera Special Economic Zone, Rwanda

Stakeholder Engagement Plan

0672166

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Nigel Seed

Partner in Charge

Environmental Resources Management

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ACRONYMS AND ABBREVIATIONS

Acronyms	Description
AoI	Area of Influence
ARISE IIP	Arise Integrated Industrial Platforms
CBOs	community-based organisations
EIA	Environmental and Social Impact Assessment
EUCL	Rwanda Energy Group/Energy Utility Corporate Limited
GMP	Grievance Management Procedure
HR	Human Resources
IFC	International Finance Corporation
IFC PSs	IFC Performance Standards on Environmental and Social Sustainability
KPI	Key Performance Indicator
MINALOC	Ministry of Local Government
MINICOM	Ministry of Trade and industries
MININFRA	Ministry of Infrastructure
NGOs	Non-Governmental Organisations
NLA	National Land Authority
RDB	Rwanda Development Board
REMA	Rwanda Environment Management Authority
RENGOF	Rwanda Environmental NGOs Forum
RHA	Rwanda Housing Authority
RTDA	Rwanda Transport Development Agency
SEP	Stakeholder Engagement Plan

1. INTRODUCTION

This Stakeholder Engagement Plan (SEP) has been developed specifically for the EIA associated with the proposed Bugesera Special Economic Zone (BSEZ) Industrial Park (hereafter referred to as the Project or the BSEZ) Moreover, it provides an implementation framework for post-EIA engagement (i.e., from the remainder of the feasibility and permitting phases, through construction, operation and decommissioning). The SEP seeks to define a technically and culturally appropriate approach to consultation and disclosure. The SEP seeks to ensure that adequate and timely information is provided to stakeholders, and that these groups are given sufficient opportunity to voice their opinions and concerns, which in turn will have a positive influence on Project execution.

The SEP is a working document that will be updated and adjusted as required during Project development and execution.

This SEP draw reference to the following existing policies for BSEZ or Bugesera Special Economic Zone Ltd (BSEZ Ltd.) company subsidiary of Arise Integrated Industrial Platforms Ltd – “Arise IIP”) documentation pertaining to stakeholder engagement:

- *BSEZ Ltd. Environmental, Social and Governance (ESG) Policy*
- *BSEZ Ltd.’s Code of Conduct*
- *BSEZ Ltd. Health and Safety Policy (HSP)*
- *BSEZ Ltd. Employee’s Grievance mechanism*
- *ARISE Sustainability Charter*
- *ARISE Fair Employment Policy*
- *ARISE Sexual Harassment Policy*
- *ARISE Security Policy*

1.1 PURPOSE

The aim of the SEP is to describe how the Project will engage external stakeholders during environmental and social impact assessment (EIA), pre-construction, construction, operations, and decommissioning phases. It demonstrates the commitment of BSEZ Ltd. to an ‘international best practice’ approach to stakeholder engagement. BSEZ LTD. is committed to full compliance with the Rwandan Environmental Impact Assessment (EIA) Regulations, which includes the Environmental Impact Assessment Act, No. 86 of 1992. In addition, BSEZ Ltd will align with the International Finance Corporation Performance Standards on Environmental and Social Sustainability, 2012 (IFC PSs).

In line with current international best practice, this SEP aims to ensure engagement that is free of manipulation, interference, coercion and intimidation.

To this end, this SEP provides the following:

- Requirements for consultation and disclosure;

- Identification and prioritisation of stakeholders;
- Strategy and timetable for sharing information and consulting with stakeholders;
- Identification of structures and processes to deal with conflicts and grievances; and
- Resources and responsibilities for implementing stakeholder engagement activities.

1.2 OBJECTIVES

The objectives of this SEP are as follows:

- To understand the interests, influence, and concerns of various Project stakeholders.
- To ensure effective, transparent, and timely communication between the Project and its stakeholders, to engender an environment of trust and mutual respect.
- To engage stakeholders on their concerns regarding the Project, and appropriately address these through dialogue and corrective actions.
- To establish effective means of communication to disseminate information from the Project to stakeholders.
- To design stakeholder engagement mechanisms and standards that respect local traditions and cultural norms.
- To effectively manage the expectations of stakeholders regarding socio-economic benefits derived from the Project.
- Establish the appropriate management mechanisms and identify necessary capacity building and training requirements for the effective implementation of the SEP.

1.3 PROJECT DESCRIPTION

The current Plan of the Government of Rwanda for the development of Rwanda includes the establishment of nine Special Economic Zones (SEZ) across the country. The BSEZ will be one of these projects (occupying 334.38 ha), having good accessibilities, being located close to the NR5 highway, that connects the Project with the capital Kigali and to Burundi. It is only 8 km away from the Bugesera International Airport and 42 km from the Kigali international airport. Figure 4.1 presents the local context of the BSEZ.

The Bugesera SEZ is being developed as part of a joint venture signed between Arise Integrated Industrial Platforms Ltd ("ARISE IIP") and the Government of Rwanda (GoR), who created the Bugesera Special Economic Zone Ltd (BSEZ Ltd.) – the current project proponent.

ARISE IIP has submitted a Letter of Intent (LOI) / Proposal in July 2021 for developing the Bugesera SEZ and based on the discussions held with GoR, also developed a Business Plan for the development of the industrial zone in the Bugesera Industrial Park. Then, on 2nd May 2023, RDB approved the Master Plan for the development of the Bugesera SEZ, granting the BSEZ Ltd the rights to develop/operate the SEZ and related conditions. BSEZ Ltd seeks to establish BSEZ with connectivity, shared infrastructure, utilities and amenities in order to attract tenants/customers and link them to the international supply chains.

BSEZ Ltd. has been allocated 334.38 ha of the Bugesera SEZ of land (including Phase 1, Phase 1A and Phase 2), which are different stages of development:

- Phase 1 – 91.64 ha (under development) ;
- Phase 1A – 98.66 ha (planned);
- Phase 2 – 143.69 ha (planned).

The nature of BSEZ is industrial, however, whereas the plots have been identified for development, the details of the individual industries that will eventually occupy the plots remain largely unknown. Potential production activities identified in the Bugesera Business Plan developed by ARISE IIP in 2022 considered chemical & pharmaceutical industries, clay products, agriculture equipment, cold storage, packaging, agri-processing (banana, beans), plastic industry, electrical & telecom cables, painting industries, assembly industries appliances. Within the scope of the Project, BSEZ Ltd is in charge of the basic infrastructure (such as accesses, warehouses, administrative buildings, logistic and parking, internal road networks, drainage, and sewerage, etc.) for the entire 334.38 ha site and prepare all utilities to be ready for the enterprises to make use of. It will be responsibility of each particular enterprise to construct the required special infrastructure based on their specific project design, and to obtain the necessary environmental permits and approvals as per Rwandan regulations.

1.4 STRUCTURE OF THE SEP

The remainder of this Document is structured as follows:

- **Section 2:** Legal Framework
- **Section 3:** Principles of Engagement
- **Section 4:** Project Stakeholders
- **Section 5:** Summary of Previous Engagement
- **Section 6:** Organisational Capacity
- **Section 7:** Stakeholder Engagement Plan
- **Section 8:** Reporting, Monitoring, and Disclosure
- **Section 9:** Grievance management procedure (GMP)

2. LEGAL FRAMEWORK

2.1 RWANDAN LEGISLATIVE REQUIREMENTS

During EIA implementation, the EIA law requires adequate public consultation (Organic Law N° 04/2005 of 08/04/2005). This requirement is incorporated into the stakeholder engagement programme.

Availability of and access to the environmental impact study is left to the discretion of the Authority. According to the EIA Guidelines: "After submitting an EIA report to the Authority, it shall be a public document and any person can access it, except for that information which a developer asked to be maintained confidential. RDB shall publicize the report (excluding the confidential portions) to the public together with locations where it would be available for public viewing. RDB shall also make copies of the EIA study for relevant stakeholders." EIA Guidelines, sec. 6.2(c)

The main purpose for consultations at the EIA phase is to provide feedback to stakeholder as to EIA progress and preliminary results (which may include early identification of key risks/impact issues and mitigation measures). This is also a stage when it may be clear that certain risk/impact issues are more, or less, important than first thought and, indeed, that new risk/impact issues are identified that need investigation.

The following are national legislations relevant to this SEP:

- Constitution of the Republic of Rwanda of 2003 revised in 2015
- Organic Law N° 04/2005 of 08/04/2005
- Law regulating labor in Rwanda, 2019
- Law on Land in Rwanda, 2021

2.2 INTERNATIONAL REQUIREMENTS

The following *Section* sets out the engagement-specific requirements aligning to international good practice standards.

2.2.1 THE IFC PERFORMANCE STANDARDS

The IFC PSs are considered a benchmark for good practice for environmental and social (E&S) risk management in private sector developments. The IFC PSs require that clients engage affected communities through disclosure of information, consultation, and informed participation, in a manner proportional to the risks to and impacts of the project on the affected communities.

The IFC PSs include specific guidance on conducting stakeholder engagement both during the planning phase and throughout the project lifecycle.

Stakeholder engagement requirements are contained in PS 1: Assessment and Management of E&S Risks and Impacts. The key requirements for consultation and disclosure through the life of the Project are summarised in Box 2.1.

BOX 2.1 REQUIREMENTS FOR STAKEHOLDER ENGAGEMENT IN IFC PS 1

Aims:

To ensure that affected communities are appropriately engaged on issues that could potentially affect them; to build and maintain a constructive relationship with communities; and to establish a grievance redress mechanism.

Who to Consult:

Specifically with:

- Directly and indirectly affected communities;
- Positively and negatively affected communities/individuals;
- Those with influence due to local knowledge or political influence;
- Elected representatives;
- Non-elected community officials and leaders;
- Informal/traditional community institutions and/or elders;
- Indigenous peoples, where the Project is identified to have adverse impacts on them;
- Non-Governmental Organisations (NGOs) and community-based organisations (CBOs);
- Key interest groups; and
- Communities in the wider area of influence (AoI).

When to Consult:

As early as possible, or at the latest consultation should begin prior to construction. Consultation should be an on-going process throughout the life of the Project, i.e., iterative. Consultation should also allow for a feedback mechanism where affected people are able to present their concerns and grievances for consideration and redress.

What to Consult on:

Disclosure of Project information (purpose, nature, scale);

- Disclosure on the E&S Action Plan as a result of consultation, with periodic reports to demonstrate implementation;
- Risks and impacts of the project; and
- Updates actions and proposed mitigation measures to address negative impacts and areas of concern for affected communities.

How to Consult:

Consultation should:

- Be inclusive and culturally appropriate;
- Allow for free, prior and informed participation of affected communities;
- Be in the language preferred by the affected communities;
- Consider the needs of disadvantaged and vulnerable groups;
- Be fed into the decision-making process including proposed mitigation, sharing of benefits and opportunities;
- Be iterative;
- Be documented;
- Be responsive to community concerns and grievances;
- Be easily understood and transparent; and
- Allow for differentiated means of engagement particularly for disadvantaged or vulnerable groups.

** Where engagement relies substantially upon a community representative the client will aim to ensure that the views of affected communities are communicated, and that the results of consultation are communicated back to the community.*

Source: IFC Performance Standard 1, (paragraphs 25-35),

3. PRINCIPLES OF ENGAGEMENT

The key principles guiding the Project's approach to stakeholder engagement are as follows:

- **Transparency:** to be open and transparent with stakeholders.
- **Accountability:** to be willing to accept responsibility as a corporate citizen and to account for impacts associated with the Project activities.
- **Trust:** to have a relationship with stakeholders that is based on mutual commitment to acting in good faith.
- **Mutual Respect:** to respect stakeholders' interests, opinions and aspirations.
- **Collaboration:** to work cooperatively with stakeholders to find solutions that meet common interests.
- **Responsiveness:** to coherently respond in good time to stakeholders.
- **Proactiveness:** to act in anticipation of the need for information or potential issues.
- **Fairness:** to engage with stakeholders such that they feel they are treated fairly, and their issues and concerns are afforded fair consideration.
- **Accessibility:** to be within reach of stakeholders so that they feel heard and to provide meaningful information as needed.
- **Inclusivity:** to proactively anticipate, identify and include all stakeholders.

These principles have informed the Project's approach to stakeholder engagement.

4. PROJECT STAKEHOLDERS

To develop an effective SEP, it is necessary to identify Project stakeholders and understand their interest, priorities and objectives in relation to the Project. For the purposes of this SEP, a stakeholder is defined as **any individual or group who is potentially affected by the Project, or who has an interest in the Project and its potential impacts**.

By classifying and analysing the influence and support of various levels of stakeholders, it is possible to develop a Plan that is tailored to the needs of different stakeholder groups. It is also important to understand how each stakeholder may be affected by the Project (or perceives they may be affected by the Project) so that engagement can be tailored to address their views and concerns in an appropriate manner.

4.1 STAKEHOLDER IDENTIFICATION AND MAPPING

4.1.1 EXTERNAL CONTEXT

The proposed project site falls within the Gashora Sector of Bugesera District, and the AoI cuts across three sectors namely Mayange, Rweru and Gashora. The key languages spoken are Kinyarwanda, English, French and Swahili. The majority of residents in the region are of Christian faith (80%), followed by Islam (4%).

The local economy of Bugesera, as a predominantly rural district, is driven by the primary sector, namely agriculture (subsistence and commercial), forestry, fishing and quarrying. Other sectors include manufacturing, industrial activities and service (or tertiary) sector, including retail and wholesale, logistics, finance, education and healthcare.

Bugesera District is a rural District in the Eastern Province whose is principally dominated by Primary, Secondary and Tertiary sectors. These sectors are not yet modernized and hence production and productivity are still very low. Many challenges observed in these sectors constitute barriers to district's development, consequently, contribute to Poverty.

The Area of Direct Influence for the proposed project encompasses the geographical area immediately neighbouring the site up to 1 km from the site boundary.

This area was identified as the geographical extent most likely to be directly impacted or influenced by the proposed project. Including economic benefits (e.g. direct and indirect employment and socio-economic development), increased pressure on social resources (due to influx of labour and job seekers into the area), and environmental impacts such as noise, air quality, and traffic impacts. This area encompasses primarily agricultural land and formal and rural settlements. The settlement of Kagasa is a formerly planned residential area laid out in grid street pattern. The community living in Kagasa comprises primarily low-income households. Key forms of income are generated through agriculture (crop cultivation), salaried or wage work, and /or trades. There are over 494 households within the Kagasa settlement, with an average of four people per household, the population is estimated at 1976 people (Table 1 2).

It must be noted that the original BSEZ required the resettlement of a number of households from the SEZ the site approximately 10 years ago. A total of 76 Project resettled households were identified and surveyed. These Project affected households now reside in the following four villages (Figure 4-1):

- Village of Kagasa 1
- Village of Kagasa 2
- Village of Biryogo
- Village of Rweru 2

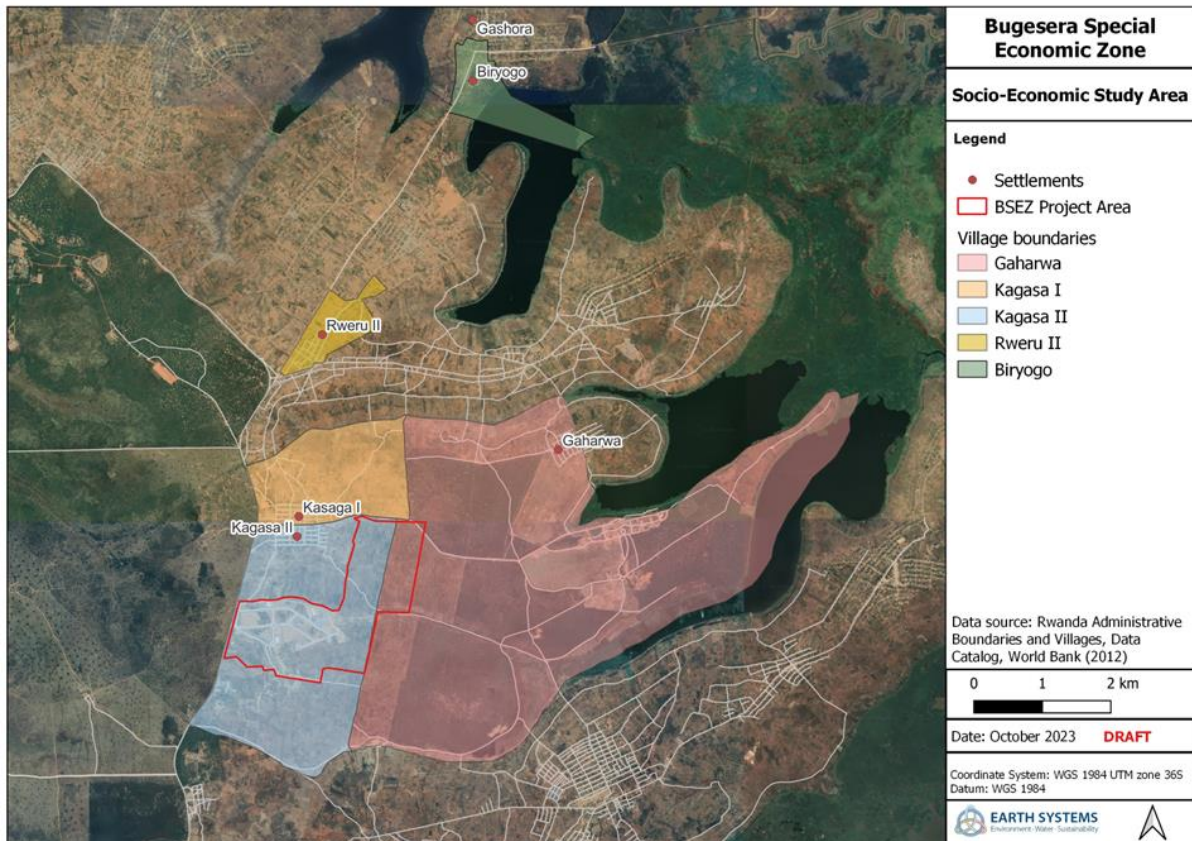


FIGURE 4-1 SOCIO-ECONOMIC SURVEY AREA

Other settlement within area of Direct Impact comprise rural agricultural settlements not formerly planned. These are generally along roads and pathways for ease of access to transport and fields. The majority of the agricultural area is, however, unsettled with individual plots clearly demarcated, which are presumed to be used by individual households in Kagasa and neighbouring areas for crop farming.

4.1.2 STAKEHOLDER IDENTIFICATION

To undertake effective engagement, it is necessary to identify Project stakeholders and understand their interest, priorities, and objectives in relation to the Project. For the purposes of this report, a stakeholder is defined as any individual or group who is

potentially affected by the Project, or who has an interest in the Project and its potential impacts.

Table 4-1 below presents the stakeholders currently identified for the Project.

Key stakeholder groups for the Project include Project Affected Communities, natural resource users, local businesses, non-government institutions, and the Government of Rwanda at local and central levels. The key stakeholder groups for the Project and their key interests are shown in Table 4 1:

TABLE 4-1 STAKEHOLDER IDENTIFICATION¹

Category	Stakeholder Groups	Stakeholder Interests
Communities/Project affected people ²	<ul style="list-style-type: none"> • Women Forum • Youth Forum • Association of People living with Disabilities • Faith Based Organization 	<ul style="list-style-type: none"> • Livelihood restoration and compensation • Grievance resolution • Community development initiatives • Economic development • Employment opportunities and skills development • Community health and safety. • Protection of vulnerable and disadvantaged members of the community
Government/ traditional authorities	<ul style="list-style-type: none"> • Local Administration • Ministry of Trade and industries (MINICOM) • Ministry of Infrastructure (MININFRA) • Rwanda Development Board (RDB) • Rwanda Environment Management Authority (REMA) • National Land Authority (NLA) • Ministry of Local Government (MINALOC) • Rwanda Housing Authority (RHA) • Water and Sanitation Corporation • Rwanda Transport Development Agency (RTDA) • Rwanda Energy Group/Energy Utility Corporate Limited (EUCL) 	<ul style="list-style-type: none"> • Economic development • Livelihood restoration and compensation • Grievance Resolution • Employment and skills development • Social infrastructure (potable water, health centres, etc) • Community health and safety • Cultural heritage • Access routes and accessibility; and • Agro-pastoral activities.
Public and commercial interests	<ul style="list-style-type: none"> • Private Sector Federation, Bugesera District • Federation of Farmers Cooperatives 	<ul style="list-style-type: none"> • Economic development • Community health and safety • Cumulative impacts.
Non-government / Civil Society Organisations	<ul style="list-style-type: none"> • Rwanda Environmental NGOs Forum (RENGOF) 	<ul style="list-style-type: none"> • Conservation and protection of rare and threatened flora and fauna species • Biodiversity values

¹ A full database of all stakeholders should be maintained separately from the SEP and should be updated as new stakeholders are identified, or at least on an annual basis.

² Project affected people refers to the portions of the local communities who were relocated during Phase 1 of the BSEZ development in 2012

Category	Stakeholder Groups	Stakeholder Interests
	<ul style="list-style-type: none"> Centre of Excellence in Biodiversity and Natural Resources Management 	<ul style="list-style-type: none"> Protection of threatened species and habitats Protected area management.
Other	Media	<ul style="list-style-type: none"> Information on the project
Public Institutions/Schools	<ul style="list-style-type: none"> Rwanda Institute for Conservation Agriculture 	<ul style="list-style-type: none"> Technology/skills Transfer

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4.2 STAKEHOLDER ANALYSIS AND PRIORITISATION

It is not practical, and not necessary, to engage with all stakeholder groups with the same level of intensity all the time. Analysing and prioritizing stakeholders is important to determine appropriate engagement methods. Given the dynamic nature of stakeholder and community contexts, stakeholder analysis will be revisited throughout the Project lifecycle.

The broad groups of stakeholders identified in Table 4-1 have been further analysed below in terms of potential influence on Project activities and level of support for the Project (Table 4-2). An engagement approach is also suggested for each category of stakeholder (

Table 4-3).

TABLE 4-2 IMPACT-SUPPORT MATRIX

Stakeholder Cluster	Influence Level	Support Level	Engagement Approach
Communities/Project affected people	Medium	Medium	Keep Engaged
Traditional Leaders / Local Government	High	Medium	Keep Engaged
Government/ traditional authorities	High	High	Work Together
Public and commercial interests	High	Medium	Keep Engaged
Non-government / Civil Society Organisations	Low	Medium	Keep Informed
Women	Low	Medium	Keep Informed
Youth	Low	Medium	Keep Informed
Other	Medium	Low	Keep Informed

TABLE 4-3 SUMMARY OF POTENTIAL ENGAGEMENT APPROACHES

Engagement Approach	Process
Work Together	<ul style="list-style-type: none"> • Share information. • Consult on key Project issues. • Collaborate on Project delivery.
Keep Engaged	<ul style="list-style-type: none"> • Share information. • Consult on key Project issues.
Keep Informed	<ul style="list-style-type: none"> • Share information.

Show Consideration

- Share information.
- Consult on key Project issues.

Priority should be given to stakeholders that are highly influential including those that are both supportive and unsupportive.

Engaging stakeholders who are unsupportive and influential, or those with deep-rooted challenges, requires engagement with pro-active and hands on approach. Effective engagement typically combines approaches - from informing to activities such as consultation or collaboration. In analysing these stakeholders and developing an approach to engagement, consideration has also been given to:

- Level of interest in the Project/operation;
- Anticipated impact of the Project on the stakeholder;
- Vulnerability status of the stakeholder; and
- Relationships with high influence stakeholders, including their ability to influence these stakeholders.

Stakeholders that have low influence but are unsupportive should be monitored closely, with a particular focus on their ability to influence, and their relationships with, other stakeholders. Less intensive forms of engagement such as monitoring or disseminating information will be adequate for engaging less influential, supportive stakeholders.

Individual stakeholders can share a collective voice and access to legal guidance and resources thereby becoming more influential. Considering the outcomes of the stakeholder analysis, the high priority stakeholders for this Project are:

- Environmental and Permitting Authorities;
- Federal government;
- State government
- Local government;
- Traditional leaders; and
- Community leaders.

5. SUMMARY OF PREVIOUS ENGAGEMENT

Stakeholder consultations began with the identification of the different stakeholders and the evaluation of stakeholder’s needs, expectations, interests, and objectives in relation to the Project. This information was used to tailor engagement activities to each type of stakeholder. The broader stakeholder categories which were identified included:

- Project affected people;
- Primary stakeholders;
- Secondary stakeholders; and
- Vulnerable people.

Furthermore, individuals or groups that found it more difficult to participate and those who were differentially or disproportionately affected by the project due to their marginalized or vulnerable status were identified.

During consultations, stakeholders expressed their views and grievances for the Phase 1 operations, and they also presented suggestions and recommendations for the implementation and operation of the upcoming Phase 1A and 2. Focus group discussions with representatives at the village, cell and sector level were conducted with the youth, women, and people living with disabilities. Each group discussion comprised of:

- Three representatives from the village;
- One from the cell; and
- One from the sector.

Additionally key informant interviews were conducted with government stakeholders including:

- Ministry of Trade and industries (MINICOM);
- Ministry of Public Service and Labour (MIFOTRA);
- Rwanda Development Board (RDB); and
- Rwanda Environment Management Authority (REMA) and National Land Authority (NLA).

TABLE 5-1 EIA BASELINE SURVEYS AND CONSULTATIONS (SEPTEMBER & NOVEMBER 2023)

Method of Engagement	Location	Date
<ul style="list-style-type: none"> • Focus Group Discussion with the Youth Forum in Gashora Sector 	Kagasa Cell office Gashora Sector	September 2023 November 2023
<ul style="list-style-type: none"> • Focus Group Discussion with people living with disabilities 	Kagasa market	November 2023
<ul style="list-style-type: none"> • Focus Group Discussion with young women in Gashora Sector 	Kagasa Cell office Gashora Sector	September 2023 November 2023

• Key Informant Interview with Private Sector Federation, Bugesera	Bugesera District in Nyamata town	September 2023
• Community meetings with Project affected people.	Kagasa Centre in Gashora Sector	September 2023
• Key Informant Interview with the Federation of Maize Cooperatives Farmers in Bugesera	Gashora Sector, Lake Cyohoha	September 2023
• Key Informant Interview with Rwanda Environment Management Authority	REMA office Kigali	September 2023
• Key Informant Interview with Ministry of Trade and industries (MINICOM)	MINICOM office Kigali	November 2023
• Key Informant Interview with Rwanda Development Board (RDB)	RDB office Kigali	November 2023
• Key Informant Interview with Ministry of Public Service and Labour (MIFOTRA)	MIFOTRA office Kigali	November 2023
• Key Informant Interview with National Land Authority (NLA)	NLA office Kigali	November 2023

5.1 EXISTING STAKEHOLDER CONCERNS

During the stakeholder consultation process, several anticipated project benefits and key community concerns were raised. Anticipated Project benefits identified from consulted communities include:

- Employment and skills development opportunities;
- Land compensation;
- Health infrastructure opportunities; and
- Further water infrastructure development.

Employment opportunities, particularly for the youth, were identified by the villages as a key anticipated benefit, which is a common expectation for rural communities located near major project developments. It was reported that factories in the BSEZ Phase 1 gave women and youth priority in employment. Additionally, during the stakeholder engagements, the representatives from the maize farmers Cooperatives Federation confirmed receiving farming inputs, tools, and materials from maize flour processing company in the economic zone. Compensated landowners were also given enough time to harvest their farms.

Moreover, the management of BSEZ Ltd collaborates with district and local authorities at Sector and Cell level. The collaboration includes information exchange especially reporting of community grievances. Furthermore, the Private Sector Federation in Bugesera is pleased to have good relationship with a number of factories within the

BSEZ. The *Project affected people* recognised the successes registered over Phase 1 activities and the important contribution of different stakeholders however, they highlighted significant challenges resulting from the operation of Phase 1.

The key issues of concern were raised in relation to the Phase 1 of BSEZ development. Some of the *Project affected people*, who were relocated during Phase 1, raised grievances related to the resettlement process and compensation that was allocated to them. It is important to note that these began before BSEZ Ltd were in operation. In order to address these issues, BSEZ Ltd is setting up a grievance mechanism and continuously engaging with all parties including government, communities and the current industries. Copies of grievance tracker currently in use for community, employees, industries and contractors are appended to this SEP (Appendix B). The following grievances were reported by stakeholders and *Project affected people*:

- Limited stakeholder engagement activities: the project implementers held various meetings and interviews during Phase 1. Nonetheless, there are many people affected by Phase 1 whose complaints are unaddressed.
- Civil society might have felt excluded.
- Limited compliance with environmental standards.
- Reported cases of corruption by youth.
- Reported cases of sex extortion from female employees.
- Reported cases of gender-based violence.
- The use of media and radio was very limited.
- Land compensation was delayed in some communities which generated many claims.
- Safety of factory workers is not guaranteed.

6. ORGANISATIONAL CAPACITY

This *Section* sets out the internal capacity commitments that BSEZ LTD has in order to achieve successful implementation of stakeholder engagement planning and strategy, and to ensure the overall success of stakeholder management.

6.1 MANAGEMENT STRUCTURE

The organisational structure of the BSEZ LTD team is presented in Figure 6-1, and further detail on key roles is provided in Section 9.5. Overall, the Managing Director is in charge of industrial relations and corporate affairs, the Human Resources manager is in charge of employee relations and internal grievances and the ESG Manager is in charge of community liaison and grievances (incl. grievances from industries, contractors, state, etc). They will be supplemented by the communication and marketing manager to assist in all the communication needs. Further, there is also HSE Manager who handles health and safety aspects. .

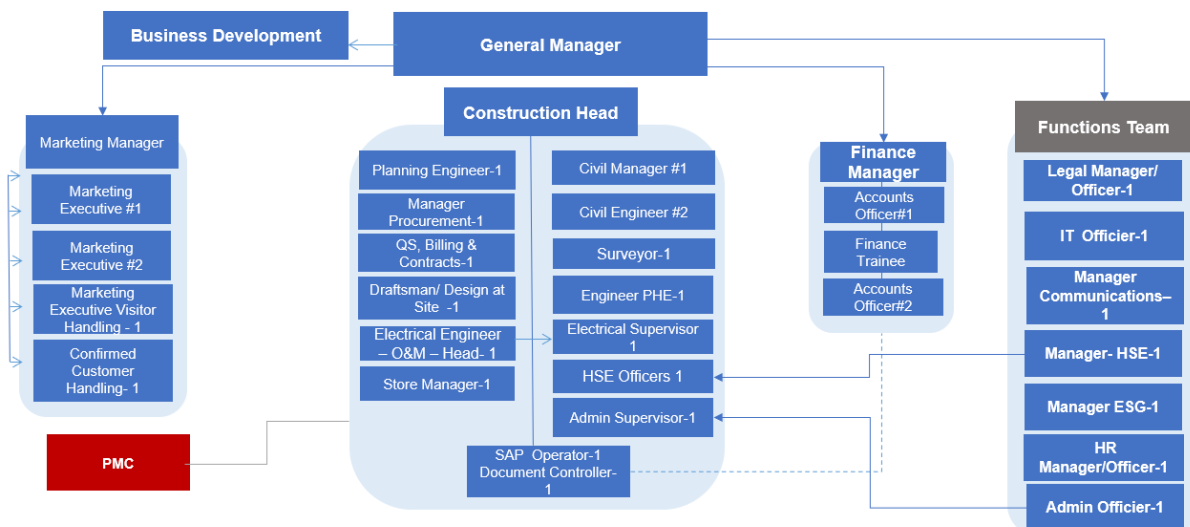


FIGURE 6-1 MANAGEMENT STRUCTURE

7. STAKEHOLDER ENGAGEMENT PLAN

This SEP covers stakeholder engagement activities for the EIA and includes a framework for post-EIA engagement (i.e. pre-construction, construction, operational and decommissioning phases) of the Project.

7.1 ENGAGEMENT PHASES

A summary of all engagement activities is presented in Table 7-1. As the SEP is a working document, this Plan will be updated should the need arise for more intensive engagement with certain stakeholder groups or should there be a substantial change to the Project plan.

TABLE 7-1 STAKEHOLDER ENGAGEMENT PHASES AND ACTIVITIES

Engagement Phase	Engagement Activities
EIA	EIA disclosure
	EIA comment and objection
Pre-Construction	Develop and implement a grievance mechanism aligned with IFC PS1.
	Ongoing engagement with project affected people (local communities) to ensure fair compensation for resettlement during Phase 1 and Phases 1A and 2 of the BSEZ.
	Quarterly engagement with local leadership to provide project updates, and with relevant sub committees/representatives on employment, community development projects, grievance management.
	Engagement with unions and business forums (if applicable)
Construction Phase	Quarterly engagement with local leadership to provide project updates
	Quarterly engagement with youth, women, vulnerable groups and leadership sub committees on employment.
	Monitoring of grievances
Operational Phase	Annual engagement with local leadership, youth, women, vulnerable groups and unions.
	Provide broader project updates as required
	Monitoring of grievances
Decommissioning Phase	Announcement of intended decommissioning
	Biannual engagement with local leadership, unions, youth, women and vulnerable groups.
	Provide broader decommissioning updates as required
	Monitoring of grievances

7.1.1 EIA PHASE

This phase involves engagement activities related to the completion of the EIA process, and subsequent disclosure of the EIA findings. Engagement activities include:

EIA Disclosure/Public Hearings

Following the completion of the EIA, findings should be disclosed to all stakeholders. In compliance with the Law no 001/2019 of 15/04/2019, once the EIA is under review by the Rwanda Development Board (RDB) the EIA documents may be requested by RDB to be disclosed publicly for 21 days.

The range of individuals, agencies and organizations to be involved in public hearings will include as a minimum: government ministries likely to have their areas of responsibilities affected by the Project, local government bodies responsible for the area where a Project is proposed, private sector organizations such as trade associations, general public, local communities and NGOs.

To align with the IFC's best practice, the EIA must be disclosed publicly through online and in hard copy. In addition, a non-technical summary provided to local communities, translated into the appropriate local language, and key information should be shared verbally (and preferably with relevant visual aids and in the local language/s) in a public forum (e.g. a public meeting or town hall meeting). This will ensure that all stakeholders, especially the project-affected communities, have knowledge of the process, outcomes, and a means of raising issues and concerns.

EIA Comment and Objection

RDB will make reasonable opportunity available to stakeholders to comment or object to the EIA findings. This will be conducted in compliance with Law no 001/2019 of 15/04/2019 to incorporate Public Consultation and will include advertisements in local newspapers to invite the public to participate in the EIA review process, radio announcements and putting up posters at the project site where necessary. Where the comments or objections are deemed reasonable and eligible, BSEZ Ltd will endeavor to address them through an updated EIA report or through further engagement with the objecting stakeholders.

7.1.2 PRE-CONSTRUCTION PHASE

This phase outlines engagements that will be undertaken post the EIA process but prior to the commencement of construction.

Grievance Management Procedure (GMP)

BSEZ Ltd must implement a robust grievance mechanism and management process that is aligned with IFC PS1, to receive and facilitate resolution of Affected Communities' concerns and grievances about the Project. It should seek to resolve concerns promptly, using an understandable and transparent consultative process that is culturally appropriate and readily accessible, and at no cost and without retribution. The mechanism should not impede access to judicial or administrative remedies. BSEZ Ltd will inform the Affected Communities about the mechanism, with a particular emphasis on how stakeholders may register grievances with the Project.

Quarterly engagement with project affected people

It is crucial that project affected people are engaged on a continuous basis. At least quarterly engagement during pre-construction is required to ensure the project affected people are aware the progress of the project, to address historical issues, and any new grievances raised during the Phase 1A and 2 process and currently ongoing constructions in Phase 1.

Ongoing engagement with communities, employers, and employee representatives

At least biannual engagement with communities, employers, and employee representatives, including trade unions and business forums, of the BSEZ Ltd. The aim will be to provide updates on the progress of the project, and relevant skills and employment opportunities, labour policies and feedback on grievances raised (as appropriate).

Quarterly Engagement with Local Leadership³

During the pre-construction phase, the local leadership will receive updates on the progression of planning for construction commencement. The local leadership will play an important role in continually communicating relevant Project information with communities and other stakeholders.

7.1.3 CONSTRUCTION PHASE

Quarterly Engagement with Local Leadership

Throughout the construction phase, BSEZ Ltd will meet with the local leadership quarterly. The local leadership will serve as the main vehicle of communication between the Project and host communities. The local leadership will, at a minimum, discuss the following issues:

- Employment opportunities for local communities, and monitoring of achievement of quotas.
- Subcontracts / procurement opportunities for contractors from communities, and monitoring of local content achievement.
- Community development projects.
- Provision of scholarships and vocational training.
- Micro Grant for women

Engagement with the local leadership will be appropriately documented through capturing of minutes, action items, as well as updating the Project's commitment register.

³ In the context of this SEP, local leadership refers to specific mechanisms established by Arise IIP to facilitate engagement with host communities. This may take form of, for example, project committees or engagement forums.

Quarterly engagement with youth, women, vulnerable groups.

Quarterly updates regarding the progression of construction, as well as any other pertinent information to be disclosed, will be provided through engagements with traditional and community leaders, as well as youth structures, and any other stakeholders deemed necessary as determined by the proposed outcomes of the engagement.

Monitoring of Grievances

At the commencement of construction and during construction of Phase 1 - currently ongoing, the Project will actively monitor grievances raised against BSEZ Ltd or sub-contractor staff, as per the process outlined in Section 9 (Grievance Management Procedure). Where recurring grievances are identified, BSEZ Ltd will actively engage with stakeholders and aggrieved parties to address the cause of such recurring grievances.

Specific focus should be to close out any issues raised in relation to historical resettlement (Phase 1) or Phases 1A and 2.

7.1.4 OPERATIONAL PHASE

Annual Engagement with Local Leadership

The Project will continue to engage with local leadership on an annual basis, and more often if communities or other stakeholder groups require.

Provide Broader Project Updates as Required

BSEZ Ltd will continue to provide broader feedback and updates to stakeholders beyond the local leaders regarding the operation of the Project, as well as any other pertinent information to be disclosed such as environmental exceedances and corrective measures to be implemented. Such engagements will take place on an *ad hoc* basis as the need arises, and the necessary stakeholders will be determined given the engagement objectives.

Monitoring of Grievances

The Project will actively monitor grievances raised against BSEZ Ltd or sub-contractor staff throughout the operational life of the Project, as per the process outlined in Chapter 9. Where recurring grievances are identified, BSEZ Ltd will actively engage with stakeholders and aggrieved parties to address the cause of such recurring grievances.

7.1.5 DECOMMISSIONING PHASE

This section has been written on the assumption that decommissioning will apply to all infrastructure developed by BSEZ Ltd in the Phases 1, 1A and 2 of the BSEZ. Should decommissioning of the entire BSEZ Ltd occur, additional planning beyond the scope of this SEP will need to take place. Furthermore, the below should be considered as guidelines which will be further refined based on contextual factors at the time of decommissioning.

Announcement of Intended Decommissioning

Stakeholders will be informed of the intended decommissioning as soon as reasonably and practically possible, but no less than three months prior to the commencement of decommissioning activities. BSEZ Ltd will communicate the intended decommissioning via the local leaders, traditional leaders, community leaders, union representatives and youth leaders.

Quarterly Engagement with Local Leadership

During the decommissioning process, BSEZ Ltd will meet with the local leadership quarterly to discuss the potential impacts of the decommissioning on host communities, as well as how these may be mitigated. Furthermore, BSEZ Ltd will discuss plans with the local leadership for the timely completion of commitments, as stipulated in the relevant MOUs as signed with the host communities, prior to the completion of decommissioning.

Provide Broader Decommissioning Updates as Required

BSEZ Ltd will continue to provide broader feedback and updates to stakeholders beyond the local leadership regarding the decommissioning of the Project, as well as any other pertinent information such as anticipated impacts on host communities. Such engagements will take place on an *ad hoc* basis as the need arises, and the necessary stakeholders will be determined given the engagement objectives. Sensitivity will be demonstrated for the potential consequences of decommissioning on livelihoods and socioeconomic opportunities for host communities.

Monitoring of Grievances

At the commencement of decommissioning, the Project will actively monitor grievances raised against BSEZ Ltd or sub-contractor staff, as per the process outlined in Section 9 (Grievance Mechanism). Where recurring grievances are identified, BSEZ Ltd will actively engage with stakeholders and aggrieved parties to address the cause of such recurring grievances.

8. REPORTING, MONITORING, AND EVALUATION

In order to assess the effectiveness of this SEP and associated engagement activities, the Project will implement a data management and monitoring process as part of the overall monitoring of commitments, grievances, and performance.

8.1 REPORTING

The reporting and monitoring process will include stakeholder participation and ensure that areas of improvement and stakeholder feedback are addressed. It is noted that the GoR via RDB allotted to BSEZ Ltd an area of 266.37 ha and currently the land ownership statute comprise 49 years lease starting from 22/06/2023 held by BSEZ Ltd. The agreements have been made between ARISE IIP and the GoR which correspond to a total area of 334.48 ha. It should be noted that a total of 18 ha is held by private investors within BSEZ land. The remaining area will not be developed without the requisite land registration documents.

All engagement activities throughout the life of the Project will be documented and appropriately stored in order to track and refer to records when required and ensure delivery of commitments made to stakeholders. The following stakeholder engagement records and documentation will be used:

- **Minutes of the Meeting (MOM) / Resolutions during Stakeholder Engagement:** The proceedings of stakeholder engagements shall be recorded in MOM / Resolutions. In addition, the grievances raised during stakeholder engagement shall be logged in the grievance register. The Community Relations Officer will monitor a log of actions and progress toward implementing these commitments regularly.

The copies of MOM and resolutions will be made available to representatives of stakeholders present in the engagement process in response to addressing issues or grievances or made as part of management or mitigation measures.

- **Meeting Template:** Used to collect full meeting minutes to be captured within the stakeholder database.
- **Stakeholder Database:** A database of all Project stakeholders will be maintained throughout the life of the Project. The database should include contact information (name, contact number, email address, and affiliated stakeholder group). The database should also act as the repository for all stakeholder engagement logs and meeting minutes and should be maintained in such a way for ease of reference and auditing purposes.
- **Grievance Log:** To record all grievances received and progress in resolving them, to identify patterns, avoid recurrent problems and improve BSEZ Ltd's overall social performance. Grievances are to be addressed as per the requirements included in the Grievance Management Procedure.

8.2 MONITORING

The SEP will be monitored and evaluated regularly using the indicators as recommended by international best practice (e.g., IFC Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets (2007)). The monitoring

results, both qualitative and quantitative, will be disclosed as required by regulatory authorities and lenders. Suggested monitoring and evaluation activities are outlined below:

- Monitor the grievance register in terms of response times to address complaints logged as well as the recurrence of complaints over time.
- Review and maintain an updated stakeholder list.
- Keep records of all engagement activities.
- Keep a library (electronic or hard copy) of all communication material.
- Develop and assess performance in terms of Key Performance Indicators (KPIs), such as:
 - Number of engagement activities facilitated by stakeholder group and engagement type;
 - Number of attendees at stakeholder engagement activities (expected vs actual);
 - Number of grievances received per annum; and
 - Overall perceptions of the Project and company.
- BSEZ Ltd (and in particular the head of HR and Industrial Relations) should ensure that the SEP be updated annually based on outcomes of monitoring exercise.
- A revision of the SEP should be conducted every 5 years, if there are any significant changes in stakeholder engagement dynamics.

9. GRIEVANCE MANAGEMENT PROCEDURE (GMP)

9.1 INTRODUCTION

The management of grievances is a vital component of stakeholder management and an important aspect of risk management for the Project. Grievances can be an indication of growing stakeholder concerns (real and or perceived).

The GMP will actively track and manage external grievances, and the commitments associated with the grievance, to ensure that appropriate actions are taken, and resolutions achieved.

9.2 PURPOSE

The purpose of this Grievance Management Procedure (GMP) is to outline BSEZ Ltd's approach to accepting, assessing, resolving, and monitoring grievances from those affected by BSEZ Ltd, its Contractors' and activities in relation to the BSEZ. The aim is to identify and manage grievances from individual stakeholders or stakeholder groups. Timely redress or resolution of such grievances is vital to ensure effective stakeholder management.

Grievances can encompass minor concerns, as well as serious or long-term issues. They may be felt and expressed by a variety of parties including individuals, groups, communities, entities, or other parties affected or likely to be affected by the social or environmental impacts of the Project. It is essential to have a robust and credible mechanism to systematically handle and resolve any complaints that might arise to avoid escalation and the realisation of a risk to operations or the reputation of the BSEZ Ltd (nationally or internationally). If well-handled, an effective grievance management procedure can help foster positive relationships and build trust with stakeholders.

The mechanism for addressing employee grievances is not addressed through this SEP, which is intended to solely manage the interface with external stakeholders. For management of employee grievances, refer to the BSEZ Ltd *Employee Grievance Management Procedure*.

9.3 SCOPE

This GMP will be applied to stakeholder complaints and grievances, perceived or actual, which relate to the activities of the BSEZ Ltd, and its Contractors' undertaken in relation to all phases of the Project.

A complaint or grievance is an issue, concern, problem, or claim (perceived or actual) that an individual stakeholder or community group has related to the BSEZ Ltd and its contractors' operations and activities. The mechanism does not impede access to judicial or administrative resolutions.

9.4 APPLICATION

The objective of this mechanism is to:

- Provide a predictable, transparent, and credible process to all parties for resolving grievances, resulting in outcomes that are seen as fair, effective, and lasting;
- Build trust as an integral component of broader community relations activities; and
- Enable more systematic identification of emerging issues and trends, facilitating corrective action and pre-emptive engagement.

To maximise the effectiveness of the GMP, BSEZ Ltd shall uphold the following values during implementation and operation of the system:

- Commitment to fairness in both process and outcomes;
- Freedom from reprisal for all involved parties – within BSEZ Ltd and in the external stakeholder group;
- Clear operating rules, and accountability;
- Validity of all complaints submitted;
- Culturally accessible and applicable;
- Accessible to vulnerable groups of stakeholders; and
- Confidentiality if requested.

9.5 ROLES AND RESPONSIBILITIES

Implementation of the GMP for the BSEZ Ltd will be the ultimate responsibility of the Head - Community Relations and Development who will be supported by a wider team. The various roles of the Grievance Management Team are detailed below.

9.5.1 ESG MANAGER

The ESG Manager will:

- Implement the GMP procedure and management system providing guidance on solutions to complaints and grievances in consultation with the relevant departments and ensure consistency of redress for all grievances received in relation to the Project.
- Promote the GMP to maintain momentum and ensure company wide and community commitment to, and understanding of, its implementation and operation.
- Involvement in the investigation of grievances and the agreement of redress as well as overseeing interaction between various Departments and contractors as well as the senior managers as required.
- Develop and maintain good working relationships with the local communities
- Develop and maintain a stakeholder database and communications schedule.
- Engage with communities, vulnerable groups and local and regional leadership on a regular basis.
- Identify potential, perceived or actual stakeholder issues
- Clearly communicate identified issues with the broader team to ensure that risks or managed or mitigated timeously, are culturally appropriate, and meaningful, or logged through the GM.

9.5.2 ALL BSEZ LTD DEPARTMENTS AND CONTRACTORS

BSEZ Ltd Departments and Contractors will:

- Receive and acknowledge any issue, concern, complaint, or grievance from the community, verbally or in writing. They will record the issue and report it to the Grievance Manager in compliance with the GMP.
- Involvement in the investigation of grievances as required depending on the nature and severity of the grievance and as directed by the Grievance Management team.

9.5.3 HUMAN RESOURCES MANAGER AND MANAGING DIRECTOR

Buy-in from senior leadership is vital to the success of a GMP, therefore, the Human Resources Manager and Managing Director, working through appropriate channels within the BSEZ Ltd will:

- Ensure that this GMP procedure is applied through all BSEZ Ltd and Contractor departments and levels that are undertaking activities related to the Project;
- Apply necessary controls to minimise risks that could result in stakeholder grievances; and
- Contribute to the resolution and closure of any grievances which have international repercussions.

The following resources will also need to be in place:

- An auditable system for receipt, recording and tracking of the process (for example a grievance log, database etc.) shall be in place.
- Dedicated budget for resourcing management of Grievance Mechanism and addressing grievances through financial or in-kind compensation as and when needed.

GRIEVANCE REDRESS PROCESS

The Project's GMP presents a simple process through which stakeholders can submit their complaints free of charge and, if necessary, anonymously or via third parties. Complaints may be submitted in more than one format. The preferable channels for reporting grievances will be confirmed with communities and will be discussed with the community as part of community engagement, primarily using the local leadership as a communication vehicle.

The Project's Grievance Redress Process is administered in six steps, as follows:

- Step 1: Receive and log grievance;
- Step 2: Acknowledge grievance;
- Step 3: Assess and Investigate;
- Step 4: Grievance Resolution;
- Step 5: Sign-off on grievance; and
- Step 6: Monitor.

Step 1: Receive and Log Grievance

Grievances can be submitted in writing, telephonically or presented verbally to the ESG Manager using the following details:

- **In Person:** At the Community Relations and Development office of BSEZ Ltd where the grievance officer will be at hand to take down the grievances in the grievance logbook.
- **Local leadership Representatives, and Local Government.** The BSEZ Ltd Grievance Officer will collect grievances informally through these stakeholders.
- **Electronic:** E-mail Leyla.mouli@arisenet.com **Traditional means:** Phone number: +250 799 300 010
- **Letters:** Norrsken House
KN 78 St
Kigali, Rwanda
Gasabo District, Nyarugenge Sector
Kiyovu Cell, Indangamirwa Village.
- **The Grievance logbook / register** - is placed in every host community. The grievance register is entrusted to local leadership member from respective communities who are members Grievance Sub Committee. Grievance subcommittee members interact on regular basis as per the situation. The grievance subcommittee reviews the grievances on monthly basis. Further, grievances are quarterly reviewed in local leadership meeting.
- **Face-to-face:** At regular local leadership meetings at the BSEZ Ltd (or other appropriate venue), Town halls and other community meetings (determined by the stakeholder engagement plan)
- BSEZ Ltd ensures that any personnel and contractors that could potentially receive claims will be knowledgeable about the grievance management process and ready to accept feedback. BSEZ Ltd will stress that there will be no costs or retribution associated with lodging grievances.

To facilitate tracking, evaluation and response to grievances, standardized information should be collected and recorded on the Grievance Recording logbook (Appendix A). The grievance is received by BSEZ Ltd or a Contractor representative and is forwarded to the Grievance Manager.

All grievances shall be logged using the Stakeholder Grievance Form (Appendix A). BSEZ Ltd will log, document and track all grievances received within the grievance database (refer to Appendix A) for an example of a grievance database). Grievances shall be assigned a case number and records of communication/consultation shall all be securely stored within the Grievance database. The database shall be monitored regularly for recurring grievances so that appropriate mitigation can be developed. As a minimum, the following information shall be recorded:

- Log number;
- Complainant's name and contact details;
- Date of complaint;

- Details of complaint;
- History of other complaints / queries / questions (if known);
- Resolutions discussed and agreed with the party(ies) in question;
- Actions implemented (including dates); and
- Outcome of the actions implemented.

Step 2: Acknowledging Receipt of a Grievance

BSEZ Ltd shall acknowledge receipt of any grievance within seven days from the date it was submitted and shall inform the complainant about the timeframe in which a response can be expected. If the grievance is not well understood or if additional information is required, clarification will be sought from the complainant.

Step 3: Assess and Investigate Grievance

The following steps shall be undertaken to investigate all grievances:

- Capture as much information as possible from the person who received the complaint, as well as from the complainant.
- Undertake a site visit, if required, to clarify the parties and issues involved. Gather the views of other stakeholders including BSEZ Ltd employees, if necessary, and identify initial options for settlement that parties have considered.
- Determine whether the grievance is eligible.
 - Eligible grievances include all those that are directly or indirectly related to the BSEZ Ltd Project and that fall within the scope of the GMP as outlined above.
 - Ineligible complaints may include those that are clearly not related to the BSEZ Ltd Project or its contractors' activities, whose issues fall outside the scope of the GMP or where other BSEZ Ltd or community procedures would be more appropriate to address the grievance.
- If the grievance is deemed ineligible it can be rejected, however, a full explanation as to the reasons for this must be given to the complainant and recorded in the Grievance Database.
- If the grievance is eligible, determine its severity level using the significance criteria in Box 9.1. This will determine whether the grievance can be resolved immediately or requires further investigation and whether senior management will need to be informed of the grievance.
- If the grievance concerns physical damage, (e.g. crop, house, community asset) take a photograph of the damage and record the exact location as accurately as possible.
- Inform the complainant of the expected timeframe for resolution of the grievance.
- Enter the findings of the investigation in the Grievance Database.

BSEZ Ltd will aim to resolve any grievances within 30 days from date of receipt. This timeframe can be extended to 60 days for more complex grievances e.g. level 4 grievances (refer to Box 9.1 for the significance rating criteria of grievances), if required, and following communication and engagement with the complainant.

BOX 9.1 SIGNIFICANCE RATING CRITERIA

Significance Level	Type of Grievance	Responsibility
Level 1	A grievance that is isolated or 'one-off' and essentially local in nature and restricted to one complainant. Note: Some one-off grievances may be significant enough to be assessed as a Level 4 grievance e.g. when a national or international law is broken (see Level 4 below)	ESG Manager
Level 2	A grievance that extends to the local community or region and has occurred more than once, which is judged to have the potential to cause disruption to the BSEZ operations or to generate negative comment from local media or other local stakeholders	ESG Manager
Level 3	A grievance which is widespread and repeated or has resulted in long term damage and/or has led to negative comment from local media, or is judged to have the potential to generate negative media and local stakeholder comments (e.g. damage to a sacred site or flooding of local school)	BSEZ Ltd Managing Director
Level 4	A one-off complaint, or one which is widespread or repeated and, in addition , has resulted in a serious breach of BSEZ and ARISE IIP policies, Rwandan or International Law and/or has led to negative national/international media attention, or is judged to have the potential to generate negative comment from the media or other key stakeholders (e.g. failure to pay compensation where appropriate, e.g resettlement)	Arise Chief Executive Officer

Step 4: Grievance Resolution

All grievances will be dealt with on a case-by-case basis. The approach adopted will seek to facilitate dialogue with complainants and community members to jointly identify and select measures for grievance settlement. This will help to increase ownership of solutions and to mitigate perceptions that resolutions unfairly benefit BSEZ LTD.

An incident investigation team from BSEZ Ltd may be tasked with seeking resolution to the grievance. This may entail a dialogue or series of dialogues between affected parties to find a solution to the grievance. Alternatively, it may entail investigating the underlying cause of the grievance and action any changes required to internal systems to prevent a recurrence of a similar grievance.

An Incident Investigation Report will be completed within 28 days (considered good practice). During the 28 days of dialogue or investigation, the Grievance Manager will coordinate conflict resolution activities necessary to contain and resolve any actual or potential conflicts arising from the reported grievance. If the case is complex and the stated resolution timeframe cannot be met, an interim response will be provided (oral or

written) that informs the stakeholder of the delay, explains the reasons, and offers a revised date for next steps.

Where possible, grievances will be addressed directly by BSEZ Ltd. The resolution proposal shall be respectful and considered, including a substantiating rationale for the decision and any data used in reaching it. If wider consultation is necessary, grievances will be forwarded to a third party. This third party should be neutral, well-respected, and agreed upon by both BSEZ Ltd and the affected parties. These may include public defenders, legal advisors, local or international NGOs, or technical experts. In cases where further arbitration is necessary, appropriate government involvement will be requested.

As a last resort, aggrieved parties have a right to take legal action. This more formal rights-based approach shall only be taken if all other approaches have failed or when there are serious conflicts about facts and data. The final decision will be taken by the arbitrator or courts based on compliance with laws, policies, standards, rules, regulations, procedures, past agreements or common practice.

Step 5: Closure of Grievance

The Head - Community Relations and Development will communicate to the complainant(s) that the grievance has been resolved. In instances where the stakeholder is not satisfied with actions taken, the grievance will either:

- Be escalated to senior management and a decision will be taken either to implement supplementary actions or to consider initiating an appeal process;
OR
- The Grievance Manager will approach a neutral or third party to assist in mediating and resolving the grievance;
OR
- The Grievance Manager will approach the host country's judiciary to further address the grievance.

Following this process, the Grievance Manager will communicate that actions implemented have resolved the grievance.

The staff member who signs off on the closure of the grievance should have sufficient knowledge about the topic to provide assurance.

Once sign-off has occurred, this should be recorded in the Grievance Log.

Step 6: Monitoring and Reporting

BSEZ Ltd management will monitor grievances routinely as part of the broader management of the Project. This entails good record keeping of complaints raised throughout the life of the construction and operation of the Project. On receipt of grievances, electronic notification to management must be distributed. Grievance records must be made available to management at all times.

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Quarterly internal reports will be compiled by the Grievance Manager and distributed to the management team. These grievance reports will include:

- The number of grievances logged in the proceeding period by level and type.
- The number of stakeholders that have indicated after 30 days that they are not satisfied with the resolution.
- The number of grievances unresolved after 60 days by level and type.
- The number of grievances resolved between BSEZ LTD and complainants, without accessing legal or third-party mediators, by level and type.
- The number of grievances of the same or similar issue.
- The measures taken to incorporate these grievance outcomes into Project design and implementation.

These reports and other records will be made available for external review if required. An appropriate grievance report should form part of Bugesera BSEZ LTD's annual reporting.



APPENDIX A

GRIEVANCE RECORDING LOGBOOK
FORMAT



APPENDIX B GRIEVANCE MANAGEMENT ANALYSIS
AND TRACKING (COMMUNITY,
EMPLOYEES, INDUSTRIES AND
CONTRACTORS)



ERM HAS OVER 160 OFFICES ACROSS THE FOLLOWING COUNTRIES AND TERRITORIES WORLDWIDE

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Australia	New Zealand
Belgium	Peru
Brazil	Poland
Canada	Portugal
China	Puerto Rico
Colombia	Romania
Denmark	Senegal
France	Singapore
Germany	South Africa
Ghana	South Korea
Guyana	Spain
Hong Kong	Switzerland
India	Taiwan
Indonesia	Tanzania
Ireland	Thailand
Italy	UAE
Japan	UK
Kazakhstan	US
Kenya	Vietnam
Malaysia	
Mexico	
Mozambique	

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APPENDIX E DETAILED MINUTES OF STAKEHOLDER
ENGAGEMENT MEETINGS CONDUCTED
DURING THE ESIA PROCESS,
INCLUDING ATTENDANCE REGISTERS/
STAKEHOLDERS' COMMENTS

ERM2464 – Socioeconomic baseline meeting with the community of Ramiro Cell

Date & Time:	Wednesday, 20 th September 2023 – 16:30 – 18:00 (GMT)
Location:	Ramiro Cell
Attendees:	Germain Rwibutso (Earth Systems), Sheriffa Shengero (Earth Systems), Raphaella Rukerikibaye Kayitesi (Earth Systems), Julie Ikome (Earth Systems), Leyla Mouli (Arise), Enumerators team, Jean Ntazinda (Earth Systems).

Agenda

List of Earth Systems Key Discussion Points for the Meeting

- **Project description** – Earth Systems will provide a description of the project, its purpose, advantages to the area, and activities that will be done during the development of the project;
- **Update on the development of the project** – Earth Systems with Arise will give an update on how the project is progressing. The scope of the next phases II and III will be presented and feedback from the population on the operation of Phase I will be recorded;
- **Description of the socioeconomic assessment, air quality and noise monitoring activities**- Earth Systems will explain how the assessments are going to be conducted, their timelines, and the population’s involvement.

Meeting Notes

Project description

- The project development has been divided into 3 phases. Phase I is currently operational; while phases II and III are to be developed;
- The development of the different phases will create jobs and many other economic opportunities; including businesses such as kiosks selling food to workers in the industrial zone.

Update on the development of the project

- The next two phases will include the establishment of more industries once the different project phases are operational
- More work is being done in the Project area, including fencing, road construction and more;
- Arise will need the community’s collaboration for their operations to run smoothly including effective communication;
- The socioeconomic surveys will give an opportunity to the community to share their concerns about the project and to give feedback on how they are affected by the project.

Description of the socioeconomic assessment, air quality and noise monitoring activities.

- Socioeconomic surveys will be conducted for about a week plus with the PAPs (people who sold their plots located in the Project area);
- Focus group discussions with women, vulnerable people, and the youths will be done as part of the stakeholder engagements;
- An air quality monitoring device will be installed in the Project area to collect data for 30 days;
- A noise monitoring device will be installed in the Project area to collect data for a week.

ERM2464 – Socioeconomic baseline meeting with the Youth Forum of Gashora Sector

Date & Time:	Wednesday, 20 th September 2023 – 12:00 – 13:00 (GMT)
Location:	Ramiro Cell
Attendees:	Raphaella Rukerikibaye Kayitesi (Earth Systems), Leyla Mouli (Arise), Youth Representatives Committee, Jean Ntazinda (Earth Systems).

Agenda

List of Earth Systems Key Discussion Points for the Meeting

- **Involvement of the youth in the development of the project-** Earth Systems and ARISE will explain how the youth can play a vital role in the development of the project.
- **Challenges faced by the youth as a direct impact of the project implementation** – Earth Systems and ARISE will get information from the youth committee on the impacts of the project development and implementation on the youths
- **Recommendations and way forward-** ARISE will provide next steps in addressing the challenges mentioned above and take suggestions from the youth committee.

Meeting Notes

Involvement of the youth in the development of the project

- The next phase of the project will involve the creation of more job opportunities, consequently, ARISE encouraged the youth to be more involved in village and sector level community discussions to learn more about such opportunities and to spread the word with other youths.
- By learning valuable skills through the various opportunities available, the youth can actively participate in the economic and social development of not only Gashora sector, but also Bugesera district.

Challenges faced by the youth as a direct impact of the project implementation and/or development.

- The youth emphasized the issue of local community being often disregarded when companies in the BSEZ are looking for workers, hence reducing their chances of obtaining jobs and upskilling.
- The unemployed youths are faced with corruption and sexual harassment cases, especially women.
- There is a lack of information sharing between ARISE, BSEZ established companies, sector level officials and the community living in close proximity to the project area.
- There are not any known mechanisms in place for dealing with discrimination and/or other cases of violations.

Recommendations and way forward

- ARISE will put in place a committee at the cell level to investigate grievances. This committee will be working closely with community leaders to address issues raised from the BSEZ. Suggestion boxes for those who want to remain anonymous will be provided.
- ARISE will ensure that the companies in the BSEZ have a clear and just process of hiring workers based on merit and capabilities, as well as fair working conditions in adherence to national labour laws.

Bugesera Special Economic Zone






Stakeholders Engagement
Transportation Payment Sheet

District: Bugesera

Sector: Gashora

Cell: Ramiro

Date:

#	Names	Phone	Amount	Signature
1	NDACYA YISABA YVES	0783180173	5000FS	
2	MURERUMA, GATARINA	0781287351	5000FS	
3	MUR, NDATABI Harmon	0785650530	5000R-	
4	Bizimana Sibiriyone	0786967598	5000	
5	UMURISA Delphine	0785787052	5000	

Bugesera Special Economic Zone

Stakeholders Engagement

Focus Group Discussion: Persons living with Disabilities






District: Bugesera

Sector: Gashora

Cell: Ramiro

Date:

Attendance List

#	Names	Function	Phone Number	Signature
1	MURINDAKAZI Amin	Sector Coordinator	0785630530	
2	NDAGAYISABA Yves	Imberaho MUYI ZA	0783180273	
3	MUNEWA Catherine	MUKAGALI Imberaho	0781287351	
4	BIZIMANA Siffier	MUKAGALI Ubutungu	0788967558	
5	UMUSA Delphine	Ubutabera Muminenge	0783787052	

Bugesera Special Economic Zone

Stakeholders Engagement
Focus Group Discussion: Women Representatives




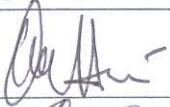

District: Bugesera

Sector: Gashora

Cell: Ramiro

Date:

Attendance List

#	Names	Function	Phone Number	Signature
1	MUKORAKYE Césaire	member of women council / sector level	0788235670	
2	MUKAVISA Thérèse	member of women village level	0790761688	
3	MURAMUHONDA Claudine	member of women council at village	0785521568	
4	MUKABUKUNDA Joceline	member of women council at village level	0788484204	
5	MUKESHIMANA Eugénie	member of women council at village level	0786811395	

Bugesera Special Economic Zone






Stakeholders Engagement
Transportation Payment Sheet

District: Bugesera

Sector: Gashora

Cell: Ramiro

Date:

#	Names	Phone	Amount	Signature
1	NTAKIRUTIMANA Issihaka	078792633	5000 Rwf	
2	NSABIMANA Antoine	0788518625	5000 Rwf	
3	NMWARUGIRA Jean Claude	0737626520	5000 Fiw	
4	UMUTESI Kavera	0783001847	5000 Rwf	
5	NTIGURIRWA Samuel	0788420140	5000 Rwf	

Bugesera Special Economic Zone






Stakeholders Engagement
Transportation Payment Sheet

District: Bugesera

Sector: Gashora

Cell: Ramiro

Date:

#	Names	Phone	Amount	Signature
1	MUHORAKYE Césaire	0788235670	5000 Frw	
2	MUKAYISA Thérèse	0790761688	5000 Frw	
3	Mujiramuho nola coudine	0785521568	5000 Frw	
4	MUKALUKUNDA Joceline	0788484206	5000 Frw	
5	MUKESHIMANA Eugénie	0786811995	5000 Frw	

Bugesera Special Economic Zone

Stakeholders Engagement Focus Group Discussion: Youth Representatives






District: Bugesera

Sector: Gashora

Cell: Ramiro

Date:

Attendance List

#	Names	Function	Phone Number	Signature
1	NTAKI RUTIMANA ISSIHAKA	NYC Coordinator	0780798633	
2	NDAWARUGIRAJAN Cloude	NYC UE Coordinator	0787686520	
3	NSABIMANA Antoine	IM. YOBORERE Muzi	0788518625	
4	UMUTESI Xavier	NYC Cell Coordinator	0783201847	
5	NTIGURIRWA Samuel	NYC Comiser Good Govern	0788420140	



APPENDIX F 2011 EIA LICENSE

Application reference: 544/15.00.02/MIN/2012
Certificate N° RDB/3/EC/JDK/ 97 /04/12

CERTIFICATE OF APPROVAL OF ENVIRONMENTAL IMPACT ASSESSMENT*

This is to certify that the Environmental Impact Report (EIR) received from the **MINISTRY OF TRADE AND INDUSTRY**, of P.O. Box 73, KIGALI Rwanda was submitted to Rwanda Development Board (RDB) in accordance with Article N° 67 of Environmental Law N° 04/2005 of 8/4/2005 with respect to the project named **"ESTABLISHMENT OF BUGESERA PROVINCIAL INDUSTRIAL PARK"** located in **Nemba Cell, Gashora Sector, of Bugesera District in the Eastern Province**. The project consists of the development of a 200 Ha land into plots ready to accommodate large to small scale industries, commercial activities, utilities, administrative and residential areas, green areas and recreational facilities, with a centralised wastewater system and an improved road network. The objective of this project is to improve the business environment in Rwanda by ensuring the development and modernizing of the physical infrastructure, stimulating the Rwandan and foreign capital investments.

The Environmental Impact Report (EIR) was reviewed and found to have adequate mitigation measures related to the identified adverse environmental impacts of the envisaged activities of the project, and was therefore approved subject to the fulfilment of the conditions attached.

Signed by:



For **Clare AKAMANZI**
Chief Operating Officer
Rwanda Development Board (RDB)

Dated this 14th.....day of April 2012

* To be issued in Quadruplicate: original to Developer; copies to MININFRA, MINALOC, REMA, and Bugesera District.

CONDITIONS OF APPROVAL

- The developer shall, in addition to physical land planning techniques and standards requirements, conform to minimum basic safety, health, operational and environmental protection, and shall present his commitments to RDB undertaking to comply with the following conditions:
- ☞ All works should start only when all expropriation and compensations are duly done or mechanisms for their completion are agreed upon between the affected people and the project developer with involvement of the District;
 - ☞ Project site should be well demarcated and mapped;
 - ☞ No works shall be carried out during night hours in order to avoid noise pollution to the community in the vicinity of the project site;
 - ☞ All construction practices should observe Rwanda Building Control Regulations, 2009;
 - ☞ Avoid by all means the emission of dust emanating from earth works on site, transportation of debris and excavated soil to dumping sites and road use;
 - ☞ The Developer should put emphasis on a tree planting program within and around his project site as a mitigation measure to the noise and dust emitted in the atmosphere, and as a compensation to those trees that will be cut/uprooted during project implementation;
 - ☞ Put in place a reliable mechanism to control soil erosion caused by storm water during the execution phase of the project;
 - ☞ All workers should be provided with personal protective equipments during execution of the project;
 - ☞ Fix road sign posts at the proximity of the plot to warn of the ongoing construction activities;
 - ☞ The centralised wastewater treatment system (Airoxy) proposed for that project should be well designed taking into account the possible number of users (quantity of influent) at pick;
 - ☞ The waste water treatment plant and the sewerage network should be in place before or at the same time with the first industry buildings, ready to receive and treat liquid wastes to the acceptable standard;
 - ☞ All drainage systems (storm water drainage, sewerage system) and road network should be designated taking into consideration future possible developments (improvements, widening, telecommunication, etc.);
 - ☞ Potable water and temporal toilets (ECOSAN) should be installed on site during site preparation works;
 - ☞ All projects to be implemented in the planned area, should undergo EIA process like provided for in the article 67 of the organic law N° 04/2005 of 08/04/2005, in the Ministerial Orders N° 003/2008 of 15/08/2008 relating to the requirements and



procedure for environmental impact assessment and No 004/2008 of 15/08/2008 establishing the list of works, activities and projects that have to undertake an environment impact assessment;

- ☞ Solid wastes shall be managed by segregating the wastes at their production point according to their type (biodegradable and non biodegradable) and each type of waste shall have its appropriate and approved dumping site. There should be a site reserved for solid wastes collection serving as a sorting site where wastes are shortly kept for segregation before they are taken to District approved dumping site or landfill;
- ☞ The developer has to sign a contract with a private company for solid waste and sludge collection and disposing of. Alternatively, industry developers may form a cooperative that may deal with all matters concerning wastes (liquid & solid) management, sanitation and cleanliness within the industrial park;
- ☞ A one year after sale service contract should be signed with the waste water system supplier and installer. During this period, he/she will demonstrate its functioning and train the users on its use, and on the maintenance of the plant to assure its efficiency throughout its life span;
- ☞ A maintenance contract shall be signed with a technician in charge of regular maintenance of the wastewater treatment system;
- ☞ The Developer shall on quarterly basis produce the effluent quality monitoring report to verify compliance with effluent quality requirements. If it is noticed that the quality of the effluent from the plant does not comply with the environmental regulations, the EIA Certificate may be withdrawn ;
- ☞ An environmental monitoring system/mechanism should be set to follow and supervise the regular implementation of the Environmental Management Plan and suggest solutions and mitigation measures for eventual unforeseen situations and events;
- ☞ The EIR is thus approved subject to the fulfilment of the conditions described above together with all mitigation measures proposed in your Environmental Management Plan.

N.B. Note that in case of non compliance of the conditions described above, RDB reserves the right to withdraw the certificate.



For **Clare AKAMANZI**
Chief Operating Officer
Rwanda Development Board

Signed by



Emmanuel HATEGEKA
Permanent Secretary
Ministry of Trade and Industry



APPENDIX G TRAFFIC ASSESSMENT REPORT



BSEZ
Bugesera Special Economic Zone

REPORT FOR TRAFFIC SURVEY ON NR5 AT BUGESERA SPECIAL ECONOMIC ZONE

29th November to 4th November 2023

Prepared By:

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1. INTRODUCTION

1.1. Survey Background

BSEZ Ltd. is a company that was created as per the Joint Venture Agreement signed between Arise IIP and Government of Rwanda on 2nd September 2022, with the mandate to design, build, and operate Bugesera Special Economic Zone. As part of our commitment to ensuring that the most environmentally friendly practices are adopted throughout the development process, we are working with world-class environmental consultancies to conduct an ESIA in compliance with Rwanda regulations and IFC standards. This ESIA includes collecting baseline information on the traffic in front of the Special Economic Zone to evaluate the potential impacts of the current vehicle traffic on our project, as well as the impacts of our project on traffic.

BSEZ Ltd have therefore contracted the services of EMENCON Ltd to undertake a traffic count on both sides of the road at PK 51, NR5, for a period of seven (7) days (29/10/23 - 04/11/23). The traffic count only records the type of vehicles crossing (motorcycle, car, bus, etc.) the survey area.

1.2. Survey objectives

Traffic volume studies are conducted to determine the number, movements, and classifications of roadway vehicles at a given location. This data can help identify critical flow time periods, determine the influence of large vehicles or pedestrians on vehicular traffic flow. The length of the sampling period depends on the type of count being taken and the intended use of the data recorded.

1.1. Scope of Work for Classified Traffic Volume Counts

- Classified Traffic Volume Counts (TVC) shall be carried out for 3 days (6:00am or 8:00am on the first day to 6:00am or 8:00am on the fourth day without a break) at the selected locations.
- Survey shall be carried out as per the format given with tally marks at 15 min intervals.
- The count shall be done for both directions for the same interval of time.
- Necessary lighting arrangements shall be made for counts at nighttime.
- Concerned police station shall be informed officially and necessary permission shall be taken prior to survey.

Other precautions are related to site location based on security of enumerator during survey as:

- To be away from the edge of the roadway.
- Necessary lighting during night.
- Where they can get shelter for rain and sunny



Figure 2: Traffic survey near the entrance of Bugesera special economic Zone

3. SURVEY RESULTS AND ANALYSIS

3.1. Average daily traffic

ADT: Average daily traffic or ADT, and sometimes also mean daily traffic, is the average number of vehicles two-way passing a specific point in a 24-hour period, normally measured throughout a year. ADT is the standard measurement for vehicle traffic load on a section of road, and the basis for most decisions regarding transport planning, or to the environmental hazards of pollution related to road transport. Road authorities have norms based on ADT, with decisions to expand road capacity at given thresholds.

To calculate the Average Daily Traffic (ADT) one can proceed as follows: the average of seven days Daily Traffic is calculated by adding recorded data of both directions. To that aggregated ADT, average night Traffic Data are added to give at the end the total ADT (24 hours ADT) as it is illustrated in the Table 3. The traffic dominant with cycle of 61% followed by motorcycles of 11% other are below to 10% as shown in the figure 3.



Figure 3: summary of ADT

3.2. Hourly Traffic data presentation

The traffic survey has revealed through to the average hourly traffic that the direction of Kigali to Nemba border has peak the morning time, from 6:00 to 9:00am while direction Nemba Border to Kigali has peek hour from 5:00 to 6:00pm , as shown in the following figures:

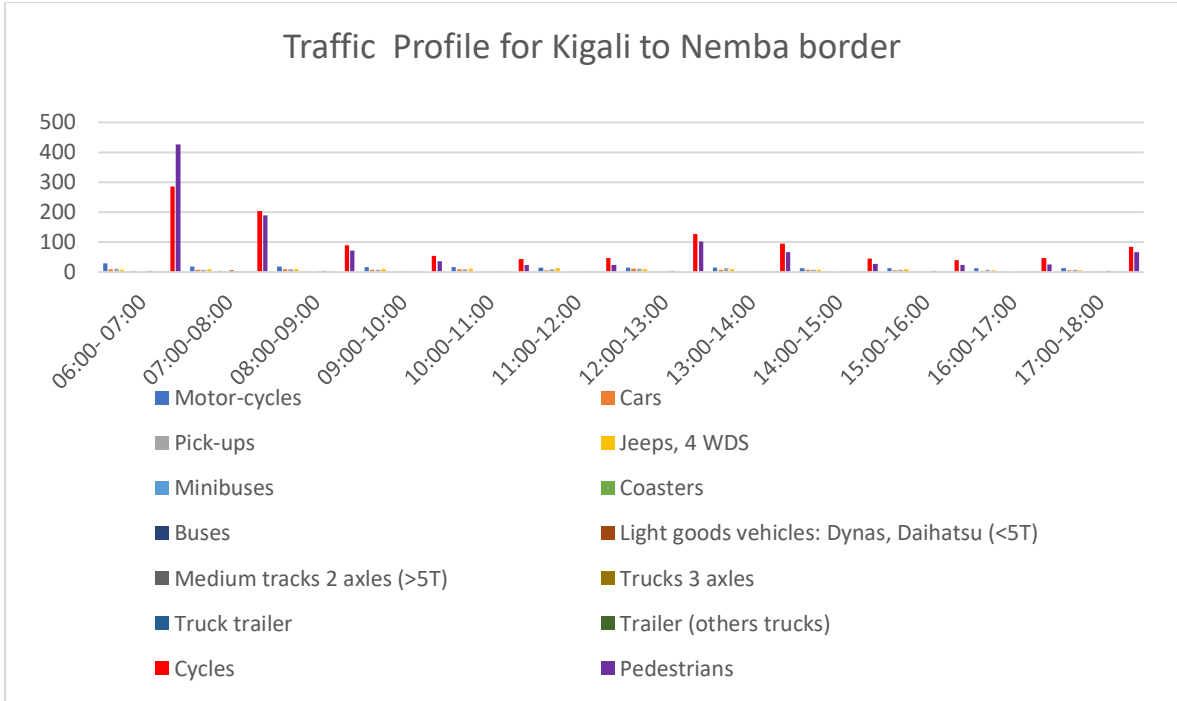


Figure 4: Average Hourly Traffic profile for the Direction of Kigali to NEMBA Border

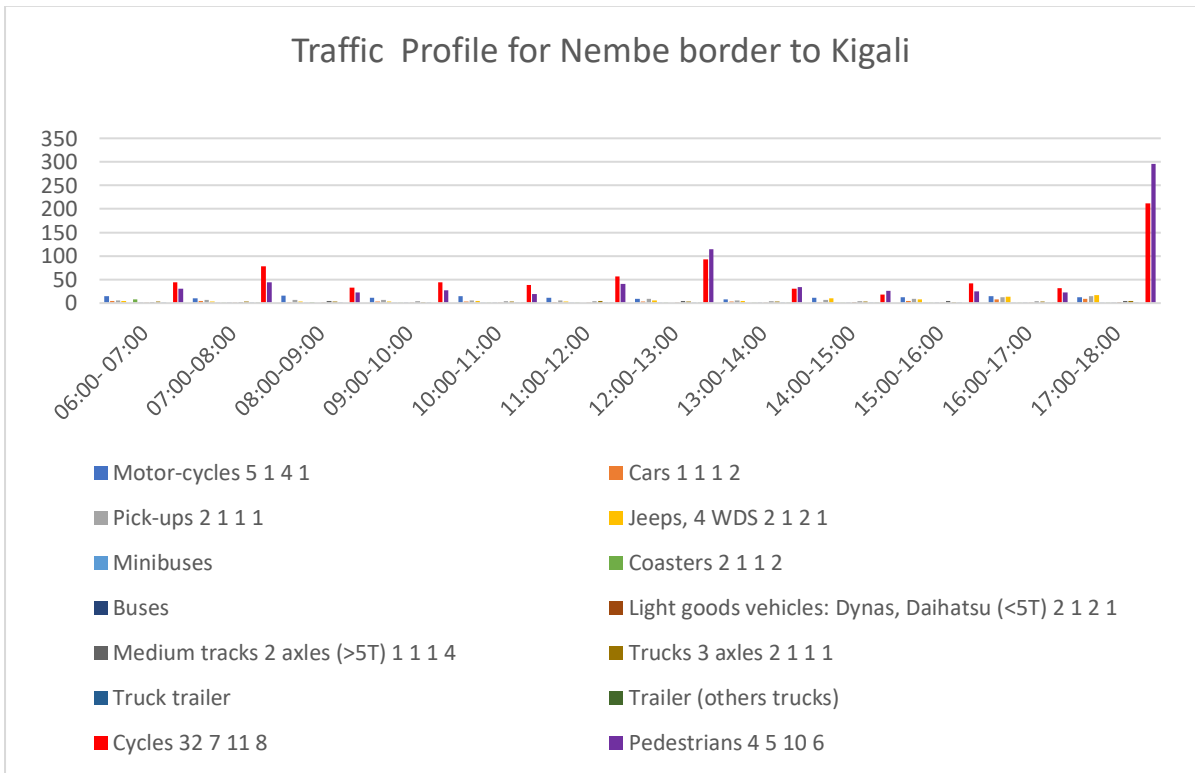


Figure 5: Average Hourly Traffic profile for the Direction of NEMBA Border to Kigali

Table 1: Summary of traffic for direction of KIGALI TO NEMBA BORDER

	Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium tracks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians	TOT without motorcycles and Cycle	TOT (All vehicles included)
Sunday	125	58	53	73	1	17	2	16	20	9	1	4	533	371	254	912
Monday	344	121	142	137	16	61	6	48	61	31	13	0	1787	1774	636	2767
Tuesday	278	164	166	195	6	62	4	54	56	41	11	1	1564	1703	760	2602
Wednesday	267	120	143	125	7	43	2	42	53	29	15	1	1609	1593	580	2456
Thursday	130	69	83	65	5	20	4	25	37	24	9	2	973	731	343	1446
Friday	145	86	118	90	7	19	1	25	19	15	7	0	974	968	387	1506
Saturday	155	74	91	101	10	28	2	22	28	28	15	2	1037	761	401	1593
Total(week)	1444	692	796	786	52	250	21	232	274	177	71	10	8477	7901	3361	13282
ADT	206	99	114	112	7	36	3	33	39	25	10	1	1211	1129	480	1897

Table 2: Summary of traffic for direction of NEMBA BORDER To KIGALI

	Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium tracks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians	TOT without motorcycles and Cycle	TOT (All vehicles included)
Sunday	124	47	53	62	0	13	6	12	26	31	10	2	560	430	262	946
Monday	203	73	107	92	12	64	6	15	40	35	10	5	772	964	459	1434
Tuesday	159	66	112	122	3	26	2	13	79	56	8	3	782	790	490	1431
Wednesday	277	54	135	129	5	26	2	36	92	76	22	4	1339	1181	581	2197
Thursday	102	58	84	66	4	13	2	18	30	28	15	1	800	842	319	1221

Friday	119	55	122	77	13	14	3	13	28	49	8	0	484	592	382	985
Saturday	138	60	87	87	7	21	3	17	32	80	20	0	781	473	414	1333
Total(week)	1122	413	700	635	44	177	24	124	327	355	93	15	5518	5272	2907	9547
ADT	160	59	100	91	6	25	3	18	47	51	13	2	788	753	415	1364

Table 3: Summary of traffic for Both direction

	Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium tracks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians	TOT without motorcycles and Cycle	TOT (All vehicles included)
Sunday	249	105	106	135	1	30	8	28	46	40	11	6	1093	801	516	1858
Monday	547	194	249	229	28	125	12	63	101	66	23	5	2559	2738	1095	4201
Tuesday	437	230	278	317	9	88	6	67	135	97	19	4	2346	2493	1250	4033
Wednesday(24Hrs)	544	174	278	254	12	69	4	78	145	105	37	5	2948	2774	1161	4653
Thursday	232	127	167	131	9	33	6	43	67	52	24	3	1773	1573	662	2667
Friday	264	141	240	167	20	33	4	38	47	64	15	0	1458	1560	769	2491
Saturday(24Hrs)	293	134	178	188	17	49	5	39	60	108	35	2	1818	1234	815	2926
Total(week)	2566	1105	1496	1421	96	427	45	356	601	532	164	25	13995	13173	6268	22829
ADT	367	158	214	203	14	61	6	51	86	76	23	4	1999	1882	895	3261
Night	91	33	44	37	4	15	1	20	24	43	15	1	401	340	340	340
TOT ADT	458	191	257	240	17	76	7	70	110	119	38	4	2400	2221	1235	3601

3.3. Traffic Type presentation

The types of traffic observed mostly are non-motorized (pedestrian and cycles) of 75% followed by Commercial vehicle (Motorcycles, Cars, Pick up, Minibus& Jeep4x4) of 19%. Commercial vehicles are less.

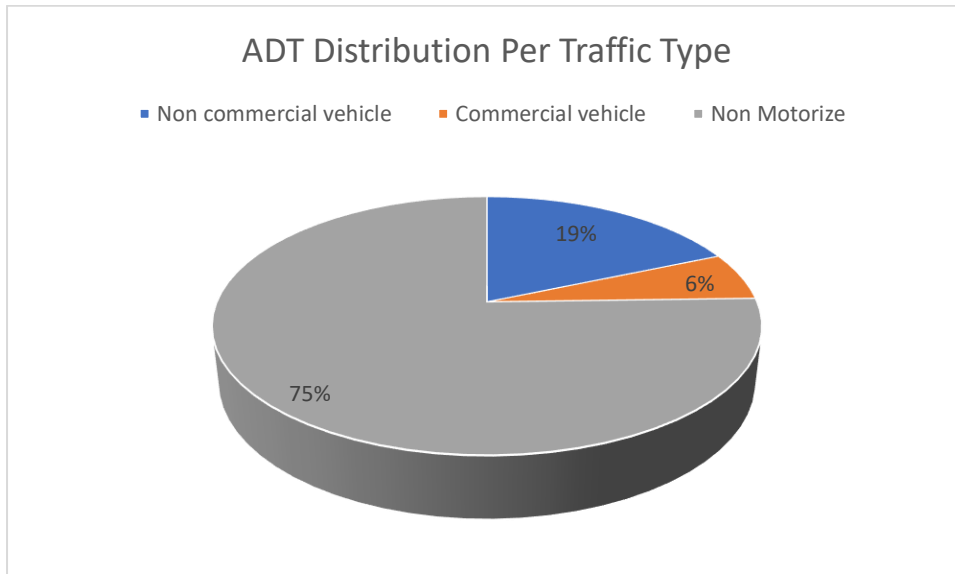


Figure 6: Traffic distribution per type of traffic

3.4. Commercial vehicles Vs Non Commercial vehicles

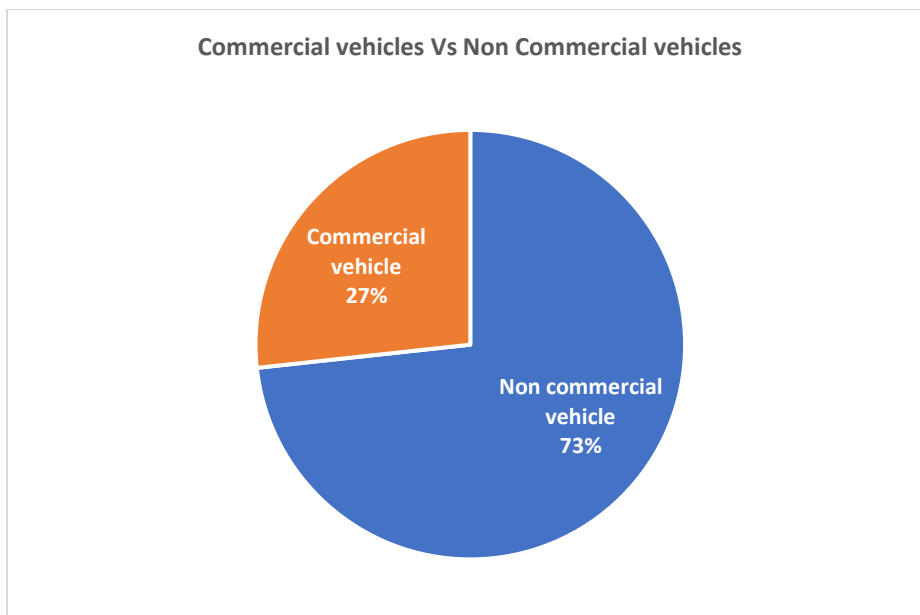


Figure 7: Commercial vehicles Vs Non Commercial vehicles

4. CONCLUSION

EMENCON Ltd were commissioned to undertake a peak hour traffic count on both sides of the road at PK 51, NR5, for a period of seven (7) days (29/10/23 - 04/11/23). The traffic count only records the type of vehicles crossing (motorcycle, car, bus, etc.) the survey area to evaluate the potential impacts of the current vehicle traffic on our project, as well as the impacts of our project on traffic.

The findings of the traffic survey indicate that the front Bugesera special economic zone, National Road5 accommodate different type of traffic which is dominant by pedestrian and cycle. The peak hour was observed at 6:00 am to 9: am for direction of Kigali to Nemba Border and 5:00 to 6:00 pm for direction of Nemba Border to Kigali.

5. REFERENCES

1. TRL limited, (2004). A guide to axle load surveys and traffic counts for determining traffic loading on pavements. Overseas Road Note 40.
- 2.
3. AASHTO Guidelines for Traffic Data Programs. American Association of State Highway and Transportation Officials. 1992.

ANNEXES

1. Traffic Count Form
2. Recorded Daily Data
3. Summary of traffic calculation

Classified Traffic Volume Count Survey

Location : _____

Date : _____

Enumerator : _____













Day : _____

Sheet No. : _____

Direction : _____

Weather : Sunny / Cloudy / Rainy

Shift : _____

	Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynos, Daihatsu (<5T)	Medium tracks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians
From														

.....:00 to:15														
.....:15 to:30														
.....:30 to:45														
.....:45 to:00														
Hourly Total														

Signature of Enumerator

Signature of Supervisor

FROM KIGALI TO NEMBA BORDER																
	Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium tracks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians	TOT without motorcycles and Cycle	TOT (All vehicles included)
Sunday	125	58	53	73	1	17	2	16	20	9	1	4	533	371	254	912
Monday	344	121	142	137	16	61	6	48	61	31	13	0	1787	1774	636	2767
Tuesday	278	164	166	195	6	62	4	54	56	41	11	1	1564	1703	760	2602
Wednesday(24Hrs)	267	120	143	125	7	43	2	42	53	29	15	1	1609	1593	580	2456
Thursday	130	69	83	65	5	20	4	25	37	24	9	2	973	731	343	1446
Friday	145	86	118	90	7	19	1	25	19	15	7	0	974	968	387	1506
Saturday(24Hrs)	155	74	91	101	10	28	2	22	28	15	2	2	1037	761	401	1593
Total(week)	1444	692	796	786	52	250	21	232	274	177	71	10	8477	7901	3361	13282
ADT	206	99	114	112	7	36	3	33	39	25	10	1	1211	1129	480	1897

FROM NEMBA BORDER TO KIGALI																
	Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium tracks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians	TOT without motorcycles and Cycle	TOT (All vehicles included)
Sunday	124	47	53	62	0	13	6	12	26	31	10	2	560	430	262	946
Monday	203	73	107	92	12	64	6	15	40	35	10	5	772	964	459	1434
Tuesday	159	66	112	122	3	26	2	13	79	56	8	3	782	790	490	1431
Wednesday(24Hrs)	277	54	135	129	5	26	2	36	92	76	22	4	1339	1181	581	2197
Thursday	102	58	84	66	4	13	2	18	30	28	15	1	800	842	319	1221
Friday	119	55	122	77	13	14	3	13	28	49	8	0	484	592	382	985
Saturday(24Hrs)	138	60	87	87	7	21	3	17	32	80	20	0	781	473	414	1333
Total(week)	1122	413	700	635	44	177	24	124	327	355	93	15	5518	5272	2907	9547
ADT	160	59	100	91	6	25	3	18	47	51	13	2	788	753	415	1364

	Non commercial vehicle					Commercial vehicle							Non Motorise		TOT without motorcycles and Cycle	TOT (All vehicles included)
	Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium tracks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians		
Sunday	249	105	106	135	1	30	8	28	46	40	11	6	1093	801	516	1858
Monday	547	194	249	229	28	125	12	63	101	66	23	5	2559	2738	1095	4201
Tuesday	437	230	278	317	9	88	6	67	135	97	19	4	2346	2493	1250	4033
Wednesday(24Hrs)	544	174	278	254	12	69	4	78	145	105	37	5	2948	2774	1161	4653
Thursday	232	127	167	131	9	33	6	43	67	52	24	3	1773	1573	662	2667
Friday	264	141	240	167	20	35	4	38	47	64	15	0	1458	1560	769	2491
Saturday(24Hrs)	293	134	178	188	17	49	5	39	60	108	35	2	1818	1234	815	2926
Total(week)	2566	1105	1496	1421	96	427	45	356	601	532	164	25	13995	13173	6268	22829
ADT	367	158	214	203	14	61	6	51	86	76	23	4	1999	1882	895	3261
Night	91	33	44	37	4	15	1	20	24	43	15	1	401	340	340	340
TOT ADT	458	191	257	240	17	76	7	70	110	119	38	4	2400	2221	1235	3601

Classified Volume Traffic Survey at on National Road 5, PK 51

Date : 29th Oct 2023

FROM KIGALI TO NEMBA BORDER

	Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu	Medium tracks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians
06:00to06:15	4	1							2				10	10
06:15to06:30	2	3			1			1		1			11	6
06:30to06:45	2	1	2	2									4	11
06:45to07:00		1						1	1				22	3
07:00to07:15	3	1	3										7	
07:15to07:30	4	3	2							2			8	3
07:30to07:45	2	2	4			1							6	3
07:45to08:00	3	1	2										5	8
08:00to08:15	2	2	1										10	8
08:15to08:30	5	5	1	3		1							2	8
08:30to08:45	3	5	1	3		1							5	7
08:45to09:00	3	1	4			1							9	4
09:00to09:15	5	1	1			1							9	7
09:15to09:30	5	2	1	3				1	1				13	3
09:30to09:45	1	3	3	1		1			1				6	2
09:45to10:00		1	1										1	2
10:00to10:15		1	5	2				2						
10:15to10:30	1	3	1										6	1
10:30to10:45	2	1	1	1		1				1			3	3
10:45to11:00		2	2					1	1				14	1
11:00to11:15	2	1	3	2				1	2	1		1	20	4
11:15to11:30	1		3	3									22	15
11:30to11:45	1		4			1			2	2			9	11
11:45to12:00	1		3										10	8
12:00to12:15	1	1	1					1					8	6
12:15to12:30	2	1	1	1					4	1			7	1
12:30to12:45	6	3	4			1							11	5
12:45to13:00	4	1	3	1					1				9	5
13:00to13:15	7	1	3										5	7
13:15to13:30	3	1	3	2								1	12	9
13:30to13:45	4	1	2	1				1	1	1			9	3
13:45to14:00	2	1	1			1							4	5
14:00to14:15	5		2	1									6	2
14:15to14:30	1	1	4	1									5	2
14:30to14:45	5	1	1	2		1							6	15
14:45to15:00	1	1	2										10	10
15:00to15:15	5	1	2	1		1		2	1				20	15
15:15to15:30	5	2				1						1	7	4
15:30to15:45	4	3	1										10	9
15:45to16:00	2		1			1		2					16	9
16:00to16:15	2	2											7	19
16:15to16:30	3	1	1	1					1				9	12
16:30to16:45	1		2										26	20
16:45to17:00	3					1							40	17
17:00to17:15		1				1		1					39	30
17:15to17:30	1	2	2							1			12	9
17:30to17:45	1	1				1		1					20	17
17:45to18:00	2	1	2	3				2					23	12
TOTAL DAILY TRAFFIC	125	58	53	73	1	17	2	16	20	9	1	4	533	371

FROM NEMBA BORDER TO KIGALI

	Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (>5T)	Medium tracks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians
1	1	3						1	1	1			16	1
1		1				1	1						8	5
2								1	1				6	5
2	1	1	2										9	12
2	1	1	1							2	3		4	8
2	1	1				1							5	
2		1						1					2	
2	1								1					3
13	1	1							1				17	2
2													9	1
3	1	3	2										8	3
4	4	2											12	2
4	1							1					11	4
5	2	2				1							6	2
5	2	1	2							1			15	7
5								2					5	
1	3							1		2	1		8	8
3		1	1					1					24	41
4		1	1										21	8
4								1						7
4			3						3	2			26	2
1	3							1		3	1		10	4
1		3								1			13	5
1		3	3					1					23	19
1	2	1									2		12	10
2	2	1	4						2	1			10	11
2	1	1	4					1			1		4	10
1		1	1						1				3	22
4		2								2			2	13
3	2	1											9	6
4	3	3						1					2	8
3		1	1						3	4			10	4
5	3	2	1						2	2			7	10
3		1	1										8	1
3		2	1										10	1
5	1	1	3					3			1		4	3
2	1	1	5							1			6	14
2	1	1	1								1		10	7
2	2	1	4						1				15	1
3	1	1											11	14
2	1	1											3	10
2	1	1	1										12	1
4		1	1	3									24	16
1		2											4	
1	3	1	2						1	2			19	2
3	2	1	2					1			1		28	18
5	3	4	6					2	1				66	68
1	1	2	5										8	20
3	3	1	3					1					15	3
TOTAL DAILY TRAFFIC	124	47	53	62	0	13	6	12	26	31	10	2	560	430

Classified Volume Traffic Survey at on National Road 5, PK 51

Date : 30th Oct 2023

FROM KIGALI TO NEMBA BORDER													
Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium trucks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians
06:00to06:15	65	15	15					4				80	80
06:15to06:30	16		3	5				3				80	80
06:30to06:45	16		5	4			1	4	1			80	80
06:45to07:00	30	3	7	5	1		1	2				80	80
07:00to07:15	14	2	2	2	2	2	2	2	2	1		100	100
07:15to07:30	10	5	3	4	2	3	2	2	2	1		100	100
07:30to07:45	16	1	4	2	3	2	3	2	2			100	100
07:45to08:00	10	2	2	3	2	2	2	4	3			100	100
08:00to08:15	4	2	2	2	2	2	2	2				100	100
08:15to08:30	6	5	4	4	1	2	2	2				80	80
08:30to08:45	9	2	3	4	2	2	2	2				35	40
08:45to09:00	10	5	5	5	2	2	1	2				20	20
09:00to09:15	10	2	5	2	2	2						50	27
09:15to09:30	8	1	1	1	1			3	2			30	35
09:30to09:45	10	2	1	1			1	1				12	11
09:45to10:00	3	1	2	2	1		2	2				9	9
10:00to10:15	10	2	3	4	2		1		2	1		4	10
10:15to10:30	3	2	1	2			1		1			5	10
10:30to10:45	3	3	2	2			1					11	5
10:45to11:00	6	4	4	4	1		2					2	1
11:00to11:15	8	3	3	3								30	30
11:15to11:30	3	2	3	2			1					15	10
11:30to11:45	3	2	2	2			1					15	5
11:45to12:00	3	4	2	4			2		1			25	3
12:00to12:15	3	3	3	3	2	2						45	65
12:15to12:30	2	5	4	4	1							60	70
12:30to12:45	4	2	3	5	3	1	1	4				45	45
12:45to13:00	4	2	3	4	3	2	1		1			80	105
13:00to13:15	2	2	2	3			1		1			55	40
13:15to13:30	4	2	5	4			1	3	2			17	11
13:30to13:45	2	1		4			1	1	1			10	5
13:45to14:00	6	2	2	2	2		1	1	1			35	6
14:00to14:15	6	2	1	5			1	1	1			25	25
14:15to14:30	3	3	1	3			1	1	1	1		11	2
14:30to14:45	3	3	1	3			1	3	2	1		10	2
14:45to15:00	1	2	1	4								10	10
15:00to15:15	4	2	2	3	2		1	2				15	20
15:15to15:30	2	1	2	2	2		1	2	2			10	10
15:30to15:45	4	1	3	3			2		1			15	8
15:45to16:00	7	2	6	4			1					22	30
16:00to16:15	5	2	3	2			2	2		3		17	15
16:15to16:30	4	3	4	1	1		1	1	1			25	20
16:30to16:45	4	3	5	2				3		2		25	2
16:45to17:00	3	3	1	1			1		2	1		2	4
17:00to17:15	3	3	3	2			2			2		9	15
17:15to17:30	3	2			2		1	2	1			18	85
17:30to17:45	5	1		1			1	1				35	45
17:45to18:00	4		3				1					28	18
TOTAL DAILY TRAFFIC	344	121	142	137	16	61	6	48	61	31	13	1787	1774

FROM NEMBA BORDER TO KIGALI													
Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium trucks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians
15	10	7	5									29	45
15	10	1	7									25	45
20			1					1				20	20
11		3					1					31	20
5	10	3	10	2	2	2	2	2	2	2	2	37	20
2	10	15	3	2	2	2	2	2	2	2	2	30	4
4	1	3			2	1	2					21	6
2	1	2										10	5
10		1	1	1			1	1	1			10	15
10		1	1	1	1		1	1	1			25	1
3		1	1	1	1		1	2		1		7	3
2			1	1	2			1	1			2	2
4		2	2							1		4	
4		1	1	1			1					1	1
4		2	1									4	
2	1	2	2					1				15	1
2		2	1					1				7	1
2	1	2	2					2				5	6
6	1	2	2	1			2		1			6	3
6		2	2					1	1			7	5
3	1	3	1	1				1				30	2
2	1	1										13	7
2	1	1										18	2
4	1	5	2	1	2		2			1		65	145
4	4						1					23	40
1	1	3	2	2	1			1		1		34	5
2	2	1	1	1	1							15	2
5	1	1										30	4
2	1	4	2									10	45
1		1	1									2	9
4	4	3	2	2				2				8	4
3		2	2	2				2				2	
4		1	7					2				3	6
4		1	4	4	1	2		4	1	1		4	5
1		2	2	3								2	2
1	2	2	3					2	1			3	4
8	1	4	3	2								3	7
3	2						1					3	2
3	1	2										1	
5		6	5	1								14	5
7	4	2	2	2								8	5
1		3	3					1	1			5	6
4		1	2					1				6	
4	2	2	2				1					23	105
2	1	1	6									80	215
4	2	6	1									34	49
6	1	1	1					2	1			27	85
TOTAL DAILY TRAFFIC	203	73	107	92	12	64	6	15	40	35	10	772	964

Classified Volume Traffic Survey at on National Road 5, PK 51

Date : 31th Oct 2023

FROM KIGALI TO NEMBA BORDER													
Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium trucks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians
06:00to06:15	5	2	3	2	4		3	2	1			85	205
06:15to06:30	3	4	2	3	1	2	1	1				100	225
06:30to06:45	4	2	3	2	1		1	1				100	180
06:45to07:00	9	2	4	1			2	2	3			125	235
07:00to07:15	5	5	3	2	1		2	1	2			80	80
07:15to07:30	5	4	4	5			1	1				80	80
07:30to07:45	6	3	4	2			6	2				65	70
07:45to08:00	3	1	3	3			1	1				30	40
08:00to08:15	7	2	2	2	1		1					60	60
08:15to08:30	6	3	4	4				1				32	20
08:30to08:45	5	3	2	2				4	1			20	
08:45to09:00	3	4	2	2				1	1			21	
09:00to09:15	7	2	2	3	2		2	1				26	15
09:15to09:30	7	2	3	5	1		1	1	1			8	1
09:30to09:45	6	2	4	6			1	1	2			6	5
09:45to10:00	6	4	3	4			1	1	1			6	5
10:00to10:15	10	12	5	16			1	2				25	
10:15to10:30	8	6	6	6	3			1				15	
10:30to10:45	8	5	1	4	1			1				6	
10:45to11:00	5	5	4	3			1	1				9	
11:00to11:15	7	3	5	7	2	1	1	1	2			20	15
11:15to11:30	7	2	2	12	4		1	2	1	1		5	3
11:30to11:45	2	4	4	9	4		2	1	1			10	3
11:45to12:00	4	4	1	4	1	1		2				15	5
12:00to12:15	6	3	4	5	1		1	1	1			20	10
12:15to12:30	6	2	3	2	1		2	1	3			6	5
12:30to12:45	8	6	5	7	1		3	1	1			55	30
12:45to13:00	8	8	11	3	1		2	2	11			80	100
13:00to13:15	9	5	5	6	2	1	2	3	2			85	85
13:15to13:30	5	6	5	11	3		3	3				85	60
13:30to13:45	3	2	7	1			1	1	1			13	14
13:45to14:00	10	2	3	2	1			1				15	8
14:00to14:15	6	2	3	2			1	2	2			16	10
14:15to14:30	3	5	4	3	2		2	3	3			11	11
14:30to14:45	3	1	3	3			1	2	2			12	2
14:45to15:00	7	4	4	4	1		3					7	7
15:00to15:15	6	5	6	6	3		2	2	1			9	4
15:15to15:30	5	2	3	2	1		1	1				10	4
15:30to15:45	4	4	3	3	3		2	2	1			11	5
15:45to16:00	2	2	2	5			1	1	3	2		14	
16:00to16:15	5	2	1	3			1	1	1	2			
16:15to16:30	2	3	2	1	2			3	3			13	7
16:30to16:45	3	1	1	2						1		5	1
16:45to17:00	6	2	6	2				1	2			10	13
17:00to17:15	3	2	3	4			1	3	1			16	5
17:15to17:30	10	3	2	6	1			1	1			45	45
17:30to17:45	7	4	3	2			1	1	1	1		31	10
17:45to18:00	5	2	4	1	1		1	2	1			46	20
TOTAL DAILY TRAFFIC	278	164	166	195	6	4	54	56	41	11	1	1564	1703

FROM NEMBA BORDER TO KIGALI													
Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium trucks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians
5	1	2	2		2		2	1	2			32	4
1	1	1	1		1		1	1	1			7	5
4	1	1	2	1	1		2	1	1			11	10
1	2	1	1		2		1	4	1			8	6
5		2	1					1				50	60
3	2	1	5		1			2	1			100	80
1	2	3										3	5
3	1	1	1				1		2			7	16
12	1	6	1		1			3				17	3
4	1	1	1	1	1			2	2			10	2
	2	2	2	2	1			1	1			15	20
6	5	1	1	1	1			2	1			20	25
2			2					2	1			6	
7	1	4	1					2	3			12	4
3	1	1	1					1	1			5	4
3		2	2	1	1			1	1			4	
1	1	3	3		1			1	4			1	
2	1	1	2	2	2			1	1	1		2	
2		1	1					1	1			7	5
3	1	1	2					1	1			5	4
1		1	1		1			1	1			10	
1		1	1					2	2			5	
2	1	6	2	1	2			3	4	2	1	105	108
2	2	2	2									10	13
3	1	1	1						1	1	1	6	5
5	1	2	2					7	2			6	2
3	1	1	2					1	1			3	4
1	1	1	2					1	1			5	
1	1	3	1					1	1			9	2
7	2	2	2					2	2			4	17
3	3	2	2					1	2			2	14
6	3	2	2					1	3	1		3	
1		1	1					1	2			2	
7	1	3	2					2	3			12	7
5	1	5	3					1	5	2	1	6	4
3	1	1	2					1	2			6	10
5	1	2	3					2	3			3	6
3	1	2	1					1	1	1		2	
6	2	1	5		1			2				6	2
6	2	4	7	1	1			2				10	6
2	9	3	10						2			10	17
4	8	8	7		1			2	2	1		61	74
6	1	13	7					1	6	1		74	59
5	6	8	8		1			1	4	1		30	82
3	1	3	10	1	1			1	2			74	98
TOTAL DAILY TRAFFIC	159	66	112	122	3	26	13	79	56	8	3	782	790

Classified Volume Traffic Survey at on National Road 5, PK 51

Date : 01st Nov 2023

FROM KIGALI TO NEMBA BORDER													
Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium trucks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians
06:00to06:15	5	5	4	5		1	1					80	135
06:15to06:30	4	4	1	1	2	1	1		1		1	80	90
06:30to06:45	7	3	5	2	2				1			80	95
06:45to07:00	10	1	5	2	1		2	1	1			60	125
07:00to07:15	2	3	3	2	2		4	2	1			75	80
07:15to07:30	5	2	1	2	3							80	45
07:30to07:45	6	2	1	2	3							40	30
07:45to08:00	8	2	2	1	1			1				55	60
08:00to08:15	6	4	2	3	1		1	3	1			30	20
08:15to08:30	3	2	2	3				2	1			17	15
08:30to08:45	6	3	4	3				2				15	19
08:45to09:00	5	1	2	4	1		2					20	15
09:00to09:15	5	3	2	2	1			1	1			41	40
09:15to09:30	4	6	3	3	1		1					30	15
09:30to09:45	5	2	4	5			4	3				22	15
09:45to10:00	4	3	1	2			1	2				16	5
10:00to10:15	5	2	4	3	1		1		1			37	37
10:15to10:30	3	1	2	4				1	1			25	15
10:30to10:45	7	1	2	2	1	1	2	1	1			20	20
10:45to11:00	4	3	4	5	2					1		25	20
11:00to11:15	3	2	4	3	1		1	1	1			10	4
11:15to11:30	10	3	1	5			1	1	1			13	3
11:30to11:45	5	1	2	3	1			2		1		9	4
11:45to12:00	5	2	2	2			1					4	3
12:00to12:15	8	5	1	3				1	1			15	10
12:15to12:30	3	2	3	1	1		1		2			5	5
12:30to12:45	4	3	2		1		1	2				55	95
12:45to13:00	4	2	3		2			1				80	92
13:00to13:15	5	2	3	3	1			1				60	81
13:15to13:30	4	2	4	1				1				20	5
13:30to13:45	5	4	4	3	1	1	2	1				13	7
13:45to14:00	2	1	4	3				1	1			16	10
14:00to14:15	2	4	2	1	1			1				15	3
14:15to14:30	1		3	1	1							15	2
14:30to14:45	4	3	3	1			1					10	31
14:45to15:00	3	3	2	1	1			1	1			17	5
15:00to15:15	6	1	3	2	1			1	3			12	5
15:15to15:30	3	4	2	3				1				12	5
15:30to15:45	1	2	2	3	1			1				11	5
15:45to16:00	4	1	1	2				2				11	
16:00to16:15	7	3	3	7	1							9	3
16:15to16:30	2	1	3	1								6	3
16:30to16:45	5		2				2	1				9	4
16:45to17:00	1		3	1			1	1				15	2
17:00to17:15	3	1	4	5				3				11	8
17:15to17:30	7		2	1								16	5
17:30to17:45	7	1	3		2		1		1			16	45
17:45to18:00	5	2	2	1			1	2	1			25	27

FROM NEMBA BORDER TO KIGALI													
Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium trucks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians
1		1	2						1			4	
2		1	1									7	
3			1		1		1	1	2	1		15	
4					1							9	1
4	1	1						1	2			37	
4	1				1							7	2
4	1	1								1		5	5
6		1	1						1	1	1	4	4
3	1	3	3		1		1	1	1			2	4
2		2	2					1	1	1			6
3		2						1		2			
2		2	3				1	1				4	3
7	1	5			1		1	3	1			30	20
3	1	1										30	20
12		1	1					1	1			60	35
4		1	1					1	2			45	60
7	1	3	2	1	1		1	1		1		25	
6	3	1	2					1	2		1	30	
12	1	1	1		1		1	1	1		1	6	2
4		3	1				1	1	2	1	1	4	2
5		2	2					1				9	3
13		6	2				1	1				20	
15	3	2	1		1		1	1	2	1		50	6
5	2	5	5	1				2				60	100
5	1	1	2		1							75	80
1	1	2	2									70	100
5		4	1					3				13	6
2	1							1	2			9	5
2			3					5		1		20	19
2	1		2					1				1	10
2		5	2							1		20	25
3	1	1	2					1				10	20
5	1	2	4					2				2	20
7	1		1				1		1		1	2	10
3	1	5	2	1	1		1	2	5	1	1	6	15
2			1					1	2			1	2
2			5				3	5	1			50	10
2	1	2	4					5	1			2	10
2		5	5							1		60	10
3	1	2	3					1				15	10
17	3	5	5	1				8	2	1		10	5
2		1	2		1							6	1
3	1	2	2				1	1				6	9
2	2	3	1					1				8	5
3		2	8						2			60	121
4	1	3	2				2		1			46	67
4	1	7	2		1		1					46	31
2	2	4	4			1	1			1		23	64

Classified Volume Traffic Survey at on National Road 5, PK 51

Date : 01st Nov 2023

	FROM KIGALI TO NEMBA BORDER													
	Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium trucks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians
18:00to18:15	2	1	2	1						1			25	4
18:15to18:30	2	2	2	3		1							19	25
18:30to18:45	4						2						44	25
18:45to19:00	2	1		1		1							30	28
19:00to19:15	3		2										12	
19:15to19:30	4		2		1				1				36	33
19:30to19:45	6	1	1										1	1
19:45to20:00	2		1	2									1	1
20:00to20:15				1									1	2
20:15to20:30	1	1				1				1			1	1
20:30to20:45	1												1	5
20:45to21:00													1	
21:00to21:15		1											1	2
21:15to21:30			2										1	
21:30to21:45	1												1	
21:45to22:00	1								1				1	
22:00to22:15													4	
22:15to22:30													1	
22:30to22:45							1			1			1	
22:45to23:00	1												1	
23:00to23:15													1	
23:15to23:30		1											1	
23:30to23:45													1	
23:45to00:00													1	
00:00to00:15										1			1	
00:15to00:30													1	
00:30to00:45													1	
00:45to01:00													1	
01:00to01:15													1	
01:15to01:30													1	
01:30to01:45													1	
01:45to02:00													2	
02:00to02:15				1						2			1	
02:15to02:30													1	
02:30to02:45													1	
02:45to03:00													1	
03:00to03:15							1						1	
03:15to03:30	3									3			3	4
03:30to03:45	2									5			4	13
03:45to04:00													5	2
04:00to04:15	2						1						16	55
04:15to04:30										2			1	
04:30to04:45													1	
04:45to05:00													1	
05:00to05:15	3												3	4
05:15to05:30	2												4	13
05:30to05:45													5	2
05:45to06:00													1	4
TOTAL DAILY TRAFFIC	267	120	143	125	7	43	2	42	53	29	15	1	1609	1593

	FROM NEMBA BORDER TO KIGALI													
	Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium trucks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians
18:00to18:15	4	2	3	6		1		2	1	1			54	74
18:15to18:30	1	2	3	4		2		2	2				27	33
18:30to18:45	1	1	1	1				1	1	1			11	10
18:45to19:00	3	1						1	1				30	13
19:00to19:15	4	1	2	1					1	1			59	8
19:15to19:30	5	1						1	2				13	8
19:30to19:45	7	1	1	2									6	6
19:45to20:00	2			1							2		4	
20:00to20:15	2			2									2	
20:15to20:30	4	1	2	1	1				2				4	
20:30to20:45													4	
20:45to21:00													1	
21:00to21:15													1	
21:15to21:30													1	
21:30to21:45													1	
21:45to22:00	1	1	1					1	1	2	1			2
22:00to22:15	1							1	2	1	1			
22:15to22:30		1							2					
22:30to22:45	1								1				3	
22:45to23:00	2									2			1	1
23:00to23:15										2				
23:15to23:30									2					
23:30to23:45									1				1	
23:45to00:00									1					
00:00to00:15													1	
00:15to00:30													1	
00:30to00:45													1	
00:45to01:00													1	
01:00to01:15													1	
01:15to01:30													1	
01:30to01:45													1	
01:45to02:00													2	
02:00to02:15													1	
02:15to02:30													1	
02:30to02:45													1	
02:45to03:00													1	
03:00to03:15													1	
03:15to03:30													4	
03:30to03:45													1	2
03:45to04:00													5	2
04:00to04:15													2	1
04:15to04:30										1			1	
04:30to04:45										1			1	
04:45to05:00										2			7	
05:00to05:15	13	6	15	11				1	2	7			14	27
05:15to05:30	6								5	2	1		21	24
05:30to05:45	2								1	4			15	9
05:45to06:00	3								2	2			30	37
TOTAL DAILY TRAFFIC	277	54	135	129	5	26	2	36	92	76	22	4	1339	1181

Classified Volume Traffic Survey at on National Road 5, PK 51

Date : 02nd Nov 2023

		FROM KIGALI TO NEMBA BORDER											
Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium trucks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians
06:00to06:15	1	3	1		1							55	90
06:15to06:30	1							1		1		60	95
06:30to06:45	2	2	1		1		1		2			60	99
06:45to07:00	5		3	1	1				2	1		85	110
07:00to07:15	9	2	2	2	2		1	1				75	75
07:15to07:30	2		1	1			1			1		50	55
07:30to07:45	6	1					1					35	14
07:45to08:00	4	2	2	1			4		3			17	8
08:00to08:15	2	2	3	2		1	1					7	4
08:15to08:30	4	1	2	1				2	1			18	5
08:30to08:45	5	2	4	1				1				28	3
08:45to09:00	5		2	2		1						7	2
09:00to09:15	3	2		5		1						3	1
09:15to09:30	1	2	1	1	1		1					9	2
09:30to09:45	2	1	1	1								9	
09:45to10:00	4	3	4	2		1		1				8	2
10:00to10:15	2		4	2				2				9	
10:15to10:30	7	3	2	3				2	2			7	5
10:30to10:45	2	1	1	2		1						8	4
10:45to11:00	2	2	2	3		1	1	1	1			8	5
11:00to11:15	3		3	2				2	1			11	13
11:15to11:30	3		3	2			1					4	3
11:30to11:45	1	1	3	2		1			1			4	1
11:45to12:00	4	1	1	1								6	1
12:00to12:15	6	6	1				1	3				6	5
12:15to12:30	1	1	3	1			1	1				5	
12:30to12:45	3	5	2	3	1	1		1				50	8
12:45to13:00	2	2	1			1						95	18
13:00to13:15	2	2	4		1		1					30	3
13:15to13:30	2	1	4	3								30	30
13:30to13:45	2	3	2									8	
13:45to14:00	1		4	1				2	1			29	5
14:00to14:15	1		1									10	
14:15to14:30	2	1	3		1		2	2		1		10	1
14:30to14:45	2	2	4	1			2	2	1			5	1
14:45to15:00	2	1	2	2		1		2		1		8	7
15:00to15:15	3		6					2	2			6	5
15:15to15:30	3	1		2								17	
15:30to15:45	1	1		2		1		1		2		5	
15:45to16:00	2		2			1						4	9
16:00to16:15	2	1		1								10	5
16:15to16:30	2				1			1				3	1
16:30to16:45	1	1	2					1	1			7	5
16:45to17:00	2							1	1			10	3
17:00to17:15	5	1		1	1		1	1		1		9	3
17:15to17:30	3	4	2	1				2		1		10	6
17:30to17:45	2	2	2	1			1	1		1		15	18
17:45to18:00	1	3	1						2			12	2
TOTAL DAILY TRAFFIC	130	69	83	65	5	4	25	37	24	9	2	973	731

		FROM NEMBA BORDER TO KIGALI											
Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium trucks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians
1	1	1						1	1	1		5	10
2								1	1	1		13	
1	1		1					1				3	1
3	1	1					1		1			18	5
3	1	2	1				1	1				47	14
2		2								1		5	9
2		2							3			5	6
2		1	1					1	1			6	
1		1						1					2
4												3	15
3		5	1				2	3	1	1		7	
3								2	1			2	
3	1									1		4	3
2	2	2					1	1				2	1
1	4	1	2					1		1		10	2
1	2	2	1					1	1			10	2
1		3										12	
7	4	1	3					1				19	4
2	4	2	1	1					2	1			
3	1		1	1				1	1	1		3	1
1		2								1		1	6
5	1											45	1
6		1	1					2				45	50
2	1												
2													
2	1											2	4
2		1	1	4				1				1	7
2	1	3	2									8	2
1	1	1	1										
3	1	2	2									13	
2		1	2	1								3	5
9	2	1	1									11	
1	6	5	10					1	2	1	1	9	10
3	3	10	10							1	2	100	175
5	3	6	5									175	180
5	5	10										140	135
3	4	3	6					1				100	175
2	4	2	2					1				175	180
2	3	2	2					1				140	135
2	3	2	5					2				100	150
3	1	3	3	1				3	1			100	150
TOTAL DAILY TRAFFIC	102	58	84	66	4	13	2	18	30	28	1	800	842

Classified Volume Traffic Survey at on National Road 5, PK 51

03rd Nov 2023

FROM KIGALI TO NEMBA BORDER														
Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium trucks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians	
06:00to06:15	5	4	4	6	1	1	1	1				95	155	
06:15to06:30	3	2	2	4	2	1	1					100	140	
06:30to06:45	2	1	1	1		1	1					70	145	
06:45to07:00	3	2	1	1								45	130	
07:00to07:15	3	5	2	5	1	2	1					80	55	
07:15to07:30	5	1	2	1	1	1						35	40	
07:30to07:45	1					2						30	35	
07:45to08:00	2	2	5		1	2						7	10	
08:00to08:15	4	1	2	2								13	22	
08:15to08:30	2	1	2	2		1	1	1				20	16	
08:30to08:45	2	3	2	1								19	8	
08:45to09:00	2	1	1									9	2	
09:00to09:15	3		2	2		1						8	4	
09:15to09:30	5	1	2	2	1			1				2	8	
09:30to09:45	4	2	1	1	1		1					11	9	
09:45to10:00	3	1	3	2				1				19	2	
10:00to10:15	5	1	2	1		1						21	2	
10:15to10:30	1		1	1								8	16	
10:30to10:45	4	3	4	3			2					8	8	
10:45to11:00	2	4	2	1	1			1				6	4	
11:00to11:15	2			1			2			1		10	2	
11:15to11:30	6	1	6	1		1						20	2	
11:30to11:45	1	2	3	5	1							11	17	
11:45to12:00	3	3	3	2		1						11	2	
12:00to12:15	4	2	5	1	1	1		1				13	2	
12:15to12:30	2	2	4	1								10	8	
12:30to12:45	2	2	1	4	2	1		1				12	5	
12:45to13:00	3	1	1	2	2	1	1					45	10	
13:00to13:15	3	2	4	2			1	1				23	18	
13:15to13:30	1	2	2	1	1	1		2	1			4	10	
13:30to13:45	2	2	6	3				2	1			13	12	
13:45to14:00	3	4	8	3				2				31	7	
14:00to14:15	3	2	2	2	1		1					27		
14:15to14:30	6	2	2	1								7	7	
14:30to14:45	2	4	8	2	1		1					8	7	
14:45to15:00	6	3	2	1	1							13		
15:00to15:15	3	1	2	4		1						5		
15:15to15:30	1	4	2	1	1	2	1					2	4	
15:30to15:45	2	2	2	1					1			2		
15:45to16:00	5	3	2	2		2			1			9	6	
16:00to16:15	4		1					1				3		
16:15to16:30	7	2	2	1	1	1	2					7	5	
16:30to16:45		1	1	1	1							13	5	
16:45to17:00	4	1	4	4								8	2	
17:00to17:15	4	1	1	5	1	1		1				10	4	
17:15to17:30	2	2	3	1		1		1				15	15	
17:30to17:45	1		3			1	1					15		
17:45to18:00	2	1	2				1	1				21	7	
TOTAL DAILY TRAFFIC	145	86	118	90	7	19	1	25	19	15	7	0	974	968

FROM NEMBA BORDER TO KIGALI														
Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium trucks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians	
1	1	3			1		1		2	1		1	5	
2		2	1						1					
1	1	1	1						1				5	
1		1	1		1			2	6				6	
1	1	1		1	1	1	1	1	1				25	
4												10	30	
3	1	1						1				30	25	
2		1										14	4	
1	2	1	2	1	1		2					3		
6		5	4		1							10	13	
1		2	4									3		
4	1	1	1	1								5	3	
1	2	1	2	1				2	1			1	6	
1		3	2					1	1			1	1	
2	1	3	2	6	1					1		6	6	
3	1	1	2		1		1	1				5		
5	1	3	1					1		1		1	2	
4		2	1	1					2			6	2	
1	1	2	1	1								5	3	
1	2	1	2	2	1			2	1			1	6	
1		2	2	1				1	1			1	1	
6	1	6	3	1			1	2	4			75	150	
2	1	2	2	2	1			1				10	3	
4		4	4				1	1		1		13	20	
1		2	3									12	30	
1	1	5	1	1								1	3	
2		2	1	1								4		
3	2	2	1	3				3	4			1	13	
3		2	2							1		6	5	
1	2	1	3	3			1					4		
5	1	5	3	1			1		1			13	4	
2		3	2	2	1							3	3	
6	1	4	2	2						1		7	3	
1	1	5	1	1								7	12	
5	4	2	2									11	2	
8	1	4	1	1					1			6	24	
1	2	6	3	1				2		1		10	7	
6	1	4	3							3	1	4	2	
5	3	6	3	1	2			1	3			7		
5	3	1	3	1	1			2	1			9	15	
2	2	2	2	3	1	1						9	25	
3	1	2	8									36	85	
2	4	6	8	1								44	40	
1	4	10	2	2				2	2			21	11	
1	3	2	3					1	3			25	13	
TOTAL DAILY TRAFFIC	119	55	122	77	13	14	3	13	28	49	8	0	484	592

Classified Volume Traffic Survey at on National Road 5, PK 51

Date : 04th Nov 2023

	FROM KIGALI TO NEMBA BORDER													
	Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium trucks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians
06:00to06:15	2	1	2	1						2			80	105
06:15to06:30	2	2	2	3			1						100	100
06:30to06:45		2	3	1						1			90	95
06:45to07:00	5	1		1		2	1	2	1				80	80
07:00to07:15	2	2	4	2		1	1						95	90
07:15to07:30	2	1	1	4		1	1						37	20
07:30to07:45	2	1		1		1	1						17	14
07:45to08:00	3	1		3	1	1			1				22	13
08:00to08:15	1	1		1									12	8
08:15to08:30	4	1	3			1							6	3
08:30to08:45	4	3	1	1				1					9	5
08:45to09:00	6	3	4	1		1	1		3				7	7
09:00to09:15	6		2	1		1							6	2
09:15to09:30			2	3					1				12	10
09:30to09:45	1	1	3	1				1	2				3	3
09:45to10:00	1	2	1	2									4	13
10:00to10:15	2		1	3		1			1				9	10
10:15to10:30	5	1	3	1				1	1				8	6
10:30to10:45	1	3		2		1			1				3	
10:45to11:00	2	1	2	3		1							5	6
11:00to11:15	6	1	1	1				1	1	1	1		6	3
11:15to11:30	2	1	2	3		1		2	1				5	3
11:30to11:45	4	1	2	3					1				6	
11:45to12:00	1		1	1									13	
12:00to12:15	3	2	3	4		1	1	1	1				7	5
12:15to12:30	2	2	3	4		1		1	2				11	2
12:30to12:45	2	1	1	4	1		1	1					5	1
12:45to13:00	1		3	3		1		1					45	6
13:00to13:15	3	1	3	5	3					1			14	13
13:15to13:30	1	2	3	4				1	1				14	3
13:30to13:45	3	2	2	2			1		1	2			9	3
13:45to14:00	4	2		3					1				7	4
14:00to14:15	5	2	1	1	1			1					25	5
14:15to14:30	4	1		4		1		1					16	9
14:30to14:45			1	1	1				1				3	15
14:45to15:00	1	2	1										3	
15:00to15:15	3	2	1							1			4	4
15:15to15:30	2	3		1		1			3				4	3
15:30to15:45	2			2			1						5	
15:45to16:00	3			2				1	1	1			5	1
16:00to16:15	3	1	1				1			1			7	
16:15to16:30	1			2		1		1					9	3
16:30to16:45	1	1	1	2					1				13	1
16:45to17:00	4	2	3				1	1	1	3			15	2
17:00to17:15	1	2	2	1	1		1	1					6	
17:15to17:30	2	2	1	1		1			2				7	1
17:30to17:45	2	1	2	3									20	6
17:45to18:00	1	1	1			1							22	7

FROM NEMBA BORDER TO KIGALI														
Motor-cycles	Cars	Pick-ups	Jeeps, 4 WDS	Minibuses	Coasters	Buses	Light goods vehicles: Dynas, Daihatsu (<5T)	Medium trucks 2 axles (>5T)	Trucks 3 axles	Truck trailer	Trailer (others trucks)	Cycles	Pedestrians	
		2							1			1	3	
	1	1										11		
3	2	1			2		1		1			10		
3		3	1				1					2	4	
2		1	1						1	1		20		
1		1										15	1	
1							1	1				7		
1	1	1										11	6	
3	3	3	1		1		8	11				8	3	
3	1	2	1									7	7	
3								1	1			13	2	
3	1	2	3		1							3		
1	1	2	2					2	2			2	1	
1		2	1						1	3		2		
2		6		1					1			11	17	
5	1	2	2		1			2	2			12	2	
5	1	1	1					4	1			9		
2		1	1					1				7	27	
2	1	2	3		1		1					6	7	
2	1	3	1									9		
4		2	3									3	1	
7		1					1			1		10	5	
2		2	1									37	17	
4	1	3	2		1		2	2	2			22	8	
1	1	4	2									17	1	
2	4	1	1						2	1		23	6	
3		1	1									14	10	
3	1	2	1									1	7	
2	1	1	3									15	10	
1		1								1		3	3	
2	1	1	1	2				1	1			18	22	
3		1					1					5	10	
3		1	6		1			1				12	5	
2	1	3	7					1				4	15	
4	1	2	2	1			2					4		
2	1	2	1							1		5	3	
2	2	3	3		1				1			5	7	
1	1	3	3						2	2		5	4	
2	1	1	1							1		10	7	
2	2		5						1			14	2	
3	1		1					1	1			11	12	
1	1	2	1	3								3	9	
3	1	1	2									11	1	
3	2	1	2					1	1			34	11	
1	5	4	3					1	2			40	29	
2	1	2	1			1				2	1	59	82	

pour Reception.
B. E Cellule RAMIRO
MUNYABURANKA
Marie Rose

27 October 2023

Reference: BSEZ/ESG/002/102023

To whom it may concern,

Notification of Traffic Count on National Road 5, PK 51

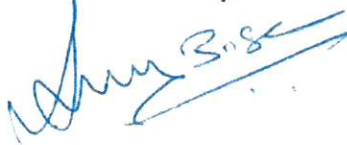
We are writing this communication to inform all concerned parties that Bugesera Special Economic Zone (BSEZ) Ltd. has contracted Emencon Ltd. to conduct a traffic count on National Road 5, PK 51, from 29 October 2023 to 04 November 2023 as part of the elaboration of an Environmental and Social Impact Assessment (ESIA).

BSEZ Ltd. is a company that was created as per the Joint Venture Agreement signed between Arise IIP and Government of Rwanda on 2nd September 2022, with the mandate to design, build, and operate Bugesera Special Economic Zone. As part of our commitment to ensuring that the most environmentally friendly practices are adopted throughout the development process, we are working with world-class environmental consultancies to conduct an ESIA in compliance with Rwanda regulations and IFC standards. This ESIA includes collecting baseline information on the traffic in front of the Special Economic Zone in order to evaluate the potential impacts of the current vehicle traffic on our project, as well as the impacts of our project on traffic.

We have therefore contracted the services of Emencon Ltd. to undertake a traffic count on both sides of the road at PK 51, NR5, for a period of seven (7) days (29/10/23 – 04/11/23). The traffic count only records the type of vehicles crossing (motorcycle, car, bus, etc.) the survey area. No identifying information is collected.

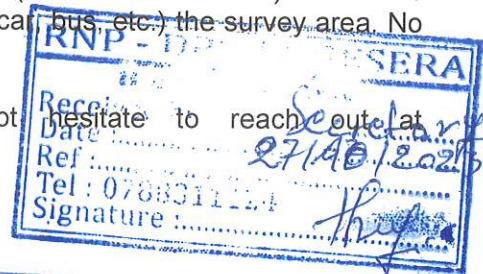
We are grateful for your collaboration, and do not hesitate to reach out at Leyla.mouli@arisenet.com should there be any query.

Yours Sincerely,



Arnab Bose

Managing Director, BSEZ



CC:

1. Executive Secretary of the Cell/Ramiro
2. Executive Secretary of the Sector/Ramiro
3. Mayor of Bugesera District
4. District Police Commander/ Bugesera

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APPENDIX H

BSEZ CLIMATE CHANGE RISK
ASSESSMENT



CLIMATE CHANGE RISK ASSESSMENT

BUGESERA SPECIAL ECONOMIC ZONE (BSEZ), RWANDA

01 November 2023



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ABBREVIATIONS

BAU - business as usual

BSEZ - Bugesera Special Economic Zone

CCRA - Climate Change Risk Assessment

CMIP6 - Coupled Model Inter-comparison Project

ESIA- Environmental and Social Impact Assessment

GHG - Greenhouse gas

IPCC- Intergovernmental Panel on Climate Change

ISIMIP - Inter Sectoral Impact Model Intercomparison Project

SSP - Shared Socioeconomic Pathways

TCFD - Task Force on Climate-Related Financial Disclosures

1 INTRODUCTION

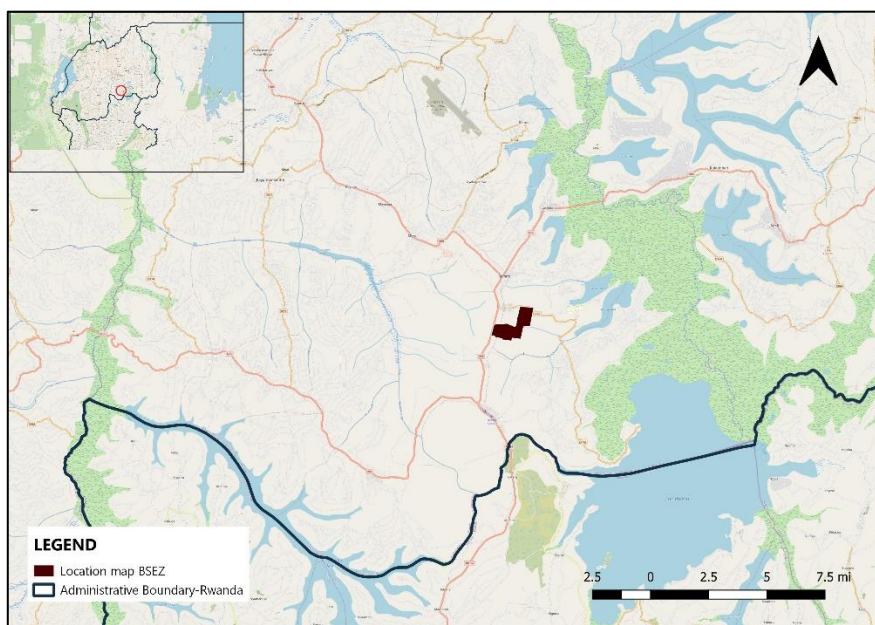
1.1 Overview

This document is Climate Change Risk Assessment (CCRA) of a 335 ha Industrial Economic Zone- Bugesera Special Economic Zone (BSEZ) in Rwanda (hereafter referred as the "Project"). The Bugesera Special Economic Zone (SEZ) ("BSEZ", "the Site", "the Project") is located approximately 57 km southeast of Kigali, capital of Rwanda, and is accessible via NR5 Highway, connecting the Site to Bugesera and Kigali airports, Burundi border in the south and Gatuna border in the east. There are no seaports in Rwanda, and the nearest seaport is Dar es Salam port in Tanzania, approximately 1470 km. Bugesera SEZ is in the Bugesera district of Rwanda and consists of three areas located adjacent to each other and proposed to be developed in stages:

1. Phase 1 (91.63ha)
2. Phase 1A (99.45ha) and
3. Phase 2 (144.59ha)

The total area of the SEZ is 335.67ha. Phase 1 and 1-A are along the NR5 Highway and Phase 2 is located approximately 1.5km inland in the northeast of Phase 1.

Map 1: Location map of BSEZ



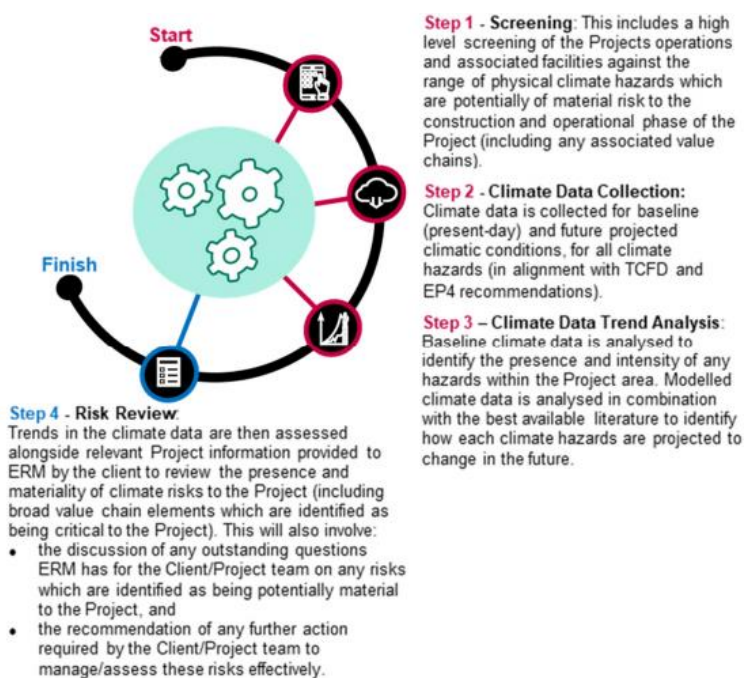
1.2 Methodology

Four-Step Assessment Process

The Physical CCRA is undertaken through four key steps as seen in Figure 1.1 below:

- Step 1-3 (red) involve the screening of construction and operations associated with the Project – through the collection and analysis of climate data and climate trends.
- Step 4 involves the identification and review of any hazards which are identified as posing potentially material risks to the construction and operations associated with the Project.

Figure 1: Methodology for CCRA¹



1.2.1 Steps 1-3: Approach for the Preliminary CCRA – Physical Risk Screening

The preliminary CCRA for physical risk screening identifies potential key physical risks of the project during the construction and operation phases. It consists of an initial screening exercise to identify any potential material issues to carry further in the assessment. This is based on research using publicly available sources. The first step of this physical risk screening involves an identification of the physical climate risks the project is exposed to. Then in the second step, data on these baseline risks and their future projection is collected, thirdly, this baseline and

¹ Source: Environmental and Social Impact Assessment, IVC

projections data is analyzed, namely how the identified physical risks may change in the project area in different future scenarios. In further sections of the report, the last and fourth step, the risk review, is explained in more detail.

The baseline and projections data used to inform these steps is described in the following sections.

1.2.1.1 Climate Data and Projections

Step 4 undertakes a review of the climate data which has been collected for each hazard included within the assessment. This includes the analysis of baseline and future projected trends for each climate hazard included within the assessment, a review of the potential materiality of any risk present under baseline conditions, and how this risk could potentially change in the future – according to the key trends in the climate data. Baseline and future projected trends in climate hazards will be assessed using a mixture of climate data collected and qualitative research which has been collated from industry – leading, academic, and governmental sources.

1.2.1.2 Material Climate hazards

The Bugesera Special Economic Zone (BSEZ) is exposed to various natural hazards. The risk thresholds are ranked according to their return period, meaning how likely the chance is that the risk will occur in a certain time period. For example, a high risk is attributed if the hazard may occur at least once or more in the next decade, a medium risk at least once in 50 years and low risk once in 100 years.

Table 1: Relevant Climate Hazards in the AAD²

Hazard Level Valuation	Risk Return Period
High	1 in 10 years chance
Medium	1 in 50 years chance
Low	1 in 100 years or Low occurrence
Very low	>1 in 1000 years

² Source: thinkhazard.org

1.2.1.3 Climate Projections

Material climate hazards are reviewed against future projections (next table), which provide an indication of how each hazard’s occurrence and intensity could potentially change under future projected conditions.

Table 2: Climate Change Threshold Definitions³

Threshold	Description
Projections Thresholds	
Significant Increase	The projected increase in this variable has the potential to result in a <i>significant increase</i> in the intensity and/or presence of a hazard at the location of the asset being assessed.
Moderate Increase	The projected increase in this variable has the potential to result in a <i>moderate increase</i> in the intensity and/or presence of a hazard at the location of the asset being assessed.
Minimal Change	The projected change in this climate variable is expected to have a minimal impact on the intensity and/or presence of a hazard at the location of the asset being assessed.
Moderate Decrease	The projected decrease in this variable has the potential to result in a moderate decrease in the intensity and /or presence of a hazard at the location of the asset being assessed.
Significant Decrease	The projected decrease in this variable has the potential to result in a significant decrease in the intensity and/or presence of a hazard at the location of the asset being assessed.

1.2.1.4 Projections Data

The document uses climate projections data for assessing the impact of climate change on climate hazards for any given location. The Intergovernmental Panel on Climate Change (IPCC)’s Sixth Assessment Report open-source data from the Coupled Model Inter-comparison Project (CMIP6) is the source of data used in the Inter-Sectoral Impact Model Intercomparison

³ Source: Environmental and Social Impact Assessment, IVC

Project (ISIMIP) and basis for many climate change prediction models to assess these future changes.

The IPCC (Intergovernmental Panel on Climate Change) model provides a series of 'Shared Socioeconomic Pathways' (SSPs) which are a series of scenarios that vary depending based on the projected greenhouse gas (GHG) emissions over the next century. With increasing projected GHG emissions, there is the potential for a change in the climate conditions at a given area (e.g., increased, or decreased precipitation and/or temperatures).

The TCFD recommends that two scenarios are used for this type of assessment, one for a future projected 'business as usual' (BAU) climate change scenario (SSP 5-8.5) and an additional scenario reflecting a lower emissions outcome. For such assessments, this report uses SSP 2-4.5, as this aligns most closely with the goals of the Paris Agreement. The table below lists the two SSPs used for this assessment.

Table 3: Representative Concentration Pathways⁴

SSPs	Scenario
SSP 2-4.5 (medium - low emission)	Intermediate pathway requiring that CO2 emissions start slowly declining by approximately 2030 to reach roughly half of the levels of 2050 by 2100.
SSP 5-8.5 (BAU - high emission)	Pathway where emissions continue to rise throughout the 21 st century (business-as-usual-BAU-scenario), suggesting society does not make efforts to reduce GHG emissions and therefore reflects a worst-case scenario for the physical impacts of climate change.

1.2.1.5 Time Periods included within the CCRA

The construction period is assumed to take a total of 36 months, including preparatory works, and to be completed by 2026. The operation lifetime of the BSEZ is expected to be of minimum 30 years, thus the periods of 2030 and 2060 are chosen.

The initial year of 2030 is used to assess the potential change in climate risk during the initial operational period of the BSEZ. On the other hand, the year 2060 has been chosen as by this

⁴ Source: IPCC, 2022

time the minimum lifespan will have elapsed and the BSEZ may need major re-building, or re-construction of some installations.

1.2.1.6 Limitations of Climate Data

This CCRA provides a relatively high-level review of the possible risk posed to the Project. As a result, this CCRA has been generated with the aim of identifying hazards and areas of the project design that should be assessed further, as planning and design associated with the Project progresses. However, there are also several limitations that accompany this type of approach, which should be recognized when interpreting the result of this assessment. These include:

- This is a fully desk-based assessment, meaning that no on-site visits have been conducted directly and thus assessments of the exposure of each asset are based upon secondary information.
- This assessment uses future projections to understand the climate risk of the project site.
- This CCRA is based on numerous assumptions, projections and models from credible sources.
- This high-level screening exercise should not be considered as a credit risk assessment.

1.2.2 Step 4: Approach for the Climate hazard and Risk review

Step 4 undertakes a review of how the assessed physical climate risks and their future changes might impact the Project in its construction and operation phases. The risk review specifically assesses how the different physical climate risks will affect key components, or risk areas, of the Project (including broad value chain elements critical to the Project). Subsequently, an identification of any items of potential risk to different risk areas of the Project is provided. Such a risk valuation is based upon the projected climate data and the exposure of the assets and operations included as a part of the Project. The risk materiality categories (table) are assigned separately for the construction and operational phases of the Project. As the construction phase of the Project is expected to be completed before 2026, risk materiality categories are assigned to the construction phase based upon the baseline level of risks. The operational lifetime of BSEZ is expected to end around 2060, for the purpose of this CCRA – whilst recognizing that the true lifetime of the BSEZ will extend beyond this period.

Table 4: Definitions of the Potential Risk Areas to each phase of the project⁵

Project Phase	Risk area	Definition and extent of the risk area
Constructions & Operations phase	Site personnel	Any site personnel working on-site during the construction and/or operational phase of the project.
	Access roads	Access roads which are expected to be used during the construction and/or operational phase of the project.
	Equipment and machinery	Equipment/machinery which is expected to be used during the construction of the project.
	Public utilities	Public utilities (electricity supply, wastewater supply)
Operations	Infrastructure	Physical installations part of the BSEZ.

Table 5: Risk Materiality Categories and Associated Definitions⁶

Risk Materiality Category		Definition
Unlikely material		A risk item is considered as being unlikely to cause material impacts to the Project, under baseline or future projected climate conditions. Impacts with this category (such as those related to operational, financial, or other types of impacts) are unlikely to be material. This means that, for example, (a) operational impacts could be expected to be short term, impacting a limited proportion of the overall asset and its operations, or (b) financial impacts would be expected to be minimal relative to the Project's overall revenue and/or costs.
Likely material	Low to moderate	This risk item is considered as being likely to have the potential to cause low-moderate material impacts to the Project, under baseline or future projected climate conditions. Impacts with this category (such as those related to operational, financial,

⁵ Source: Environmental and Social Impact Assessment, IVC

⁶ Source: Environmental and Social Impact Assessment, IVC

		or other types of impacts) are likely to be of low-moderate materiality. This means that, for example, (a) operational impacts could be expected to be short to medium term, impacting a low to moderate proportion of the overall asset and its operations, or (b) financial impacts would be expected to be small to moderate relative to the project's overall revenue and/or costs.
	High	This risk item is considered as being likely to have the potential to cause highly material impacts to the Project, under baseline or future projected climate conditions. Impacts associated with this category (such as those related to operational, financial, or other types of impacts) are likely to be of high materiality. This means that, for example, (a) operational impacts could be expected to be medium to long term, impacting a low to moderate proportion of the overall asset and its operations, or (b) financial impacts would be expected to be moderate to high relative to the project's overall revenue and/or costs.

The areas that have been categorized as “Likely Material” are based on the impacts that the risk will carry on different construction and operation functions.

Table 6: Next step categories and their Associated Definitions⁷

Next Steps Category	Definition
No further action required	The report does not identify any further action being required by ARISE.
Potential value in assessing the risk further	The report identifies that a specific climate hazard/risk item could provide additional value to the Project team if assessed in further detail. This would typically be

⁷ Source: Environmental and Social Impact Assessment, IVC

	recommended for risk items which are classified as being 'Likely Material - Low to Moderate
High value in assessing the risk further	The report identifies that a specific climate hazard/risk item could provide a large amount of additional value to the Project team if assessed in further detail. This would typically be recommended for risk items which are classified as being 'Likely Material - High'.

1.3 Existing Baseline- Rwanda

1.3.1 Geographic Profile

Rwanda is in the eastern part of central Africa, covering an area of 26,338 square kilometers. It is positioned between 1°4' and 2°51' south latitude and 28°53' and 30°53' east longitude. Geographically, it is situated approximately 120 kilometers south of the equator, about 1,100 kilometers from the Indian Ocean, 1,920 kilometers from the Atlantic Ocean, 3,750 kilometers from the Mediterranean Sea, and 3,980 kilometers from South Africa's Cape. Rwanda shares its borders with Uganda to the north, Tanzania to the east, Burundi to the south, and the Democratic Republic of Congo to the west.⁸



Figure 2: Location of Rwanda in Africa

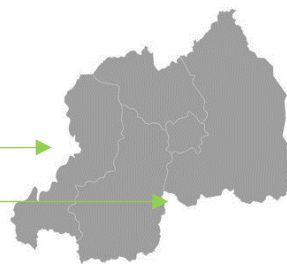


Figure 3: Map of Rwanda

Source: Google Images

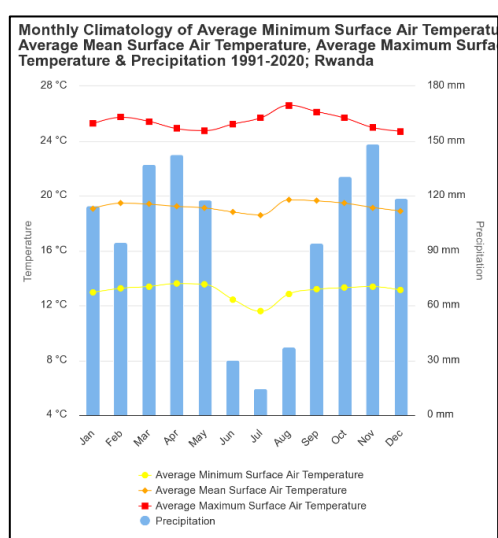
⁸ Source: climateportal.rema.gov.rw

1.4 Physical Environment

1.4.1 Climate and Weather

Rwanda's climate is tropical, but it is influenced by its hilly terrain that stretches from east to west. The country can be categorized into four primary climatic zones: the eastern plains, central plateau, highlands, and areas around Lake Kivu. In the eastern plains, the annual rainfall ranges from 700 mm to 1,100 mm, and the average annual temperature fluctuates between 20°C and 22°C. Meanwhile, the central plateau region experiences rainfall between 1,100 mm and 1,300 mm annually, with an average temperature of 18°C to 20°C throughout the year.⁹

Figure 4: Climate Data (1991-2020), Rwanda¹⁰



2 CLIMATE HAZARD AND RISK REVIEW

The Climate Hazard and Risk Review is based on the results of the ESIA (Environment and Social Impact Assessment) Report mentioned in the section- Climate Change Risks. Relevant climate change hazards in the BSEZ are outlined in Table 7 and discussed in further detail in sections below.

⁹ Source: climateportal.rema.gov.rw

¹⁰ Source: [Rwanda - Mean Projections Expert | Climate Change Knowledge Portal \(worldbank.org\)](https://climateknowledgeportal.worldbank.org/rwanda/mean-projections-expert)

Table 7: Hazards and criticality levels¹¹

Hazard	Criticality
River flood	<i>High</i>
Wildfire	<i>High</i>
Water Scarcity	<i>Medium</i>
Extreme heat	<i>Low</i>
Urban flood	<i>Very low</i>
Landslide	<i>Very low</i>

2.1 Flooding

ThinkHazard classifies floods into three categories: river floods, urban floods, and coastal floods. The BSEZ is located about 7 km from Lake Cyohoha and about 160km from the ocean. Hence the baseline physical risk of coastal flooding according to Think Hazard - can be assessed as negligible and this risk is therefore not featured in table above. In the following section, the risks of river floods and urban floods are examined.

There are several surface water drainages and lakes near the Project:

Mubanza Creek to the west of the Project, drains to Lake Cyohoha, Mbunganzeru Creek to the south of the Project, drains to Lake Gaharwa. A man-made drainage channel within the Project Area, drains to Lake Gaharwa. Surface water drainage (topographic low) to the north of the Project, drains to Lake Kilimbi.

2.1.1 Climate Data and Trends

2.1.1.1 River (Fluvial) Flooding

Rainfall in Bugesera occurs during September to November which is a short rainy season and a longer season between March and May. Particularly during these periods, river flooding is classified as a high risk in the Bugesera Autonomous District.

¹¹ Source: thinkhazard.org

Table 8: Baseline and Projected Fluvial Flooding Data¹²

Baseline		Projections					Preliminary
Hazard Level	Risk Return Period	Year	2030		2060		Risk rating
		Parameter	SSP 2-4.5	SSP 5-8.5	SSP 2-4.5	SSP 5-8.5	
High	1 in 10 years chance	Change in maximum of daily river discharge in %	+6.8	+10.8	+16.4	+1.9	Moderate increase
		Relative change in precipitation (%)	+2.6	+3.6	+7.3	+14.1	Moderate Increase

In the Bugesera district, river flood hazard is classified as high which means that potentially damaging and life-threatening river floods are expected to occur at least once in the next 10 years. By 2060, the change in maximum daily river discharge is projected to increase by Project planning decisions, project design, and construction methods must consider the level of river flood hazard. Surface flood hazard in urban and rural areas is not included in this hazard classification and may also be possible in this location.

¹² Source: [Climate Analytics — Climate impact explorer, Rwanda - Mean Projections Expert | Climate Change Knowledge Portal \(worldbank.org\)](https://climateanalytics.org/)

2.1.1.2 Urban Flooding

Table 9: Urban Flooding¹³

Baseline		Projections					Preliminary Risk rating
Hazard Level	Risk Return Period	Year	2030		2060		
		Parameter	SSP 2-4.5	SSP 5-8.5	SSP 2-4.5	SSP 5-8.5	
Very Low	>1 in 1000 years	Relative change in surface runoff in %	+10.7	+11.7	+21.7	+37.6	Moderate Increase
		Relative change in precipitation (%)	+2.6	+3.6	+7.3	+14.1	Moderate Increase

Although relative change in precipitation is projected to increase moderately by 2060, as seen in Table 9, it may pose a risk in urban and industrial areas due to the sealing of surfaces. Thus, an increase in urbanization may increase the risk of urban flooding in the future due to a greater built-up area decreasing percolation into the subsurface and increasing runoff which is projected to increase by 21.7% and 37.6% in the SSP 2-4.5 and 5-8.5 scenarios respectively (Table 9).

2.1.2 Risk Review

Potential climate hazards associated with flooding and extreme rainfall events have been identified under the projected climatic conditions. The risk valuation has also considered the BSEZ exposure to the risk of flooding regarding the distance to water bodies. The BSEZ is exposed to high risk of river flooding and urban flooding.

¹³ Source: World Bank Knowledge Portal (2022)

Table 10: Potential Risk areas and Materiality- Associated with flooding and Extreme Rainfall

Risk Area	Description of potential risks and materiality to BSEZ	Project phase and risk materiality category	
		Construction (Baseline)	Operation (2060)
Site personnel (Construction)	Flood waters may cause working condition to become unsafe for on-site personnel during the construction phase of the Project- and may remain unsafe for short to medium periods of time if areas which are inundated by flood waters are not managed effectively.	Unlikely material	Unlikely material
Access roads, Infrastructure (Construction, Operation)	Flooding has the potential to cause both long and short-term damage to BSEZ structure and access road surfaces, and therefore poses a potential material risk to the construction phase of the project. Risks include- delays to the construction of the project, damaged infrastructure from floods, inundated access roads preventing personnel accessing the construction site/workplace and other damage caused to various aspects of the project.	Likely Material- Low Moderate	Likely Material- Low Moderate
Public utilities (Construction Operation)	Infrastructure supporting the Project (e.g., electricity and quarries) could become flooded and damaged, disrupting the supply of energy and quarried materials to the Project.	Likely Material- Low Moderate	Likely Material- Low Moderate
Equipment and machinery	Although many items of construction equipment and machinery are built to be water resistant, there are many items of	Unlikely material	Unlikely material

(Construction, Operation)	machinery which could be vulnerable to damage if left outdoors and submerged by flood waters during the construction and operational phase of the project.		
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2.1.3 Next Steps

This section provides an overview of recommended next steps for all risk areas which have been identified within the 'Risk review' section as being 'Likely Material'. The recommended next steps within this section are based upon the risk review undertaken for each risk area.

Table 11: Next steps for each risk associated with flooding and Extreme Rainfall

Risk Area	Next Steps	Justification
Access roads, Infrastructure and Public Utilities (Construction, Operation)	Develop a Contingency and Emergency Response Management Plan (ERP) that shall be adapted to the project to include appropriate prevention measures and to assist in the management of risks in case of a flooding event.	ERP will provide targeted guidance for construction and operation site personnel to follow in the event of flooding. ARISE must put in place emergency risk mitigation measures during the operation stage for risk related to public utilities that have a probability of failure in the event of a hazard.

2.2 Wildfires

2.2.1 Climate Data and Trends

Climate data for wildfires is provided in Table 12 below. This climate data is provided in baseline and future projected climatic conditions.

Table 12: Climate Risk projections¹⁴

Baseline		Projections					Preliminary Risk rating
Hazard Level	Risk Return Period	Year	2030		2060		
		Parameter	SSP 2-4.5	SSP 5-8.5	SSP 2-4.5	SSP 5-8.5	
High	1 in 2 years chance of wildfire prone weather	Land fraction to Wildfires in %	-0.01	-0.01	-0.02	-0.07	Minimal Change

In the Bugesera district, the wildfire hazard is classified as high which means that there is greater than a 50% chance of encountering weather that could support a significant wildfire that is likely to result in both life and property loss in any given year. The land fraction exposed to wildfire in Bugesera, which is the annual aggregate of land area burnt at least once a year by wildfires, is projected to change minimally in the future. Therefore, the risk of wildfires is considered as the most significant risk to the BSEZ Project.

Note that damage can not only occur due to direct flame and radiation exposure but may also include ember storm and low-level surface fire. In extreme fire weather events, strong winds and winds born debris may weaken the integrity of infrastructure. It would be prudent to consider this effect in the design and construction phase of the project.

Direct heat, flames, dust, and smoke (including smoke produced by wildfires which do not directly intersect the Project area) associated with wildfires have the potential to put the H&S of personnel working on-site during the construction and operational phase of the Project at risk (e.g., direct heat, flames, and reduced air quality at and around the Projects area impacting the H&S of personnel working on-site during the construction and operational phase of the Project at risk (e.g., direct heat, flames, and reduced air quality at and around the Project area

¹⁴ Source: [Climate Analytics — Climate impact explorer](#)

impacting the H&S of site personnel through smoke inhalation). These impacts have the potential to cause a delay in the completed construction of the Project, cause a delay in the repair/maintenance during wildfire events and cause reputational and financial damages if on-site personnel are injured because of wildfire activity whilst working.

Furthermore, direct heat and flames associated with wildfires have the potential to cause physical damage to road surfaces and infrastructure of the park (including melting and deformation as described for extreme heat). Similarly, wildfires have the potential to damage surrounding vegetation and result indirectly in the obstruction and blockage of facilities and their access roads for personnel.

2.2.2 Risk Review

A series of potential risks to the Project associated with wildfires have been identified under baseline and future projected climatic condition. These are described in Table 13 below.

Table 13: Potential Risk areas and Materiality- Associated with wildfires

Risk Area	Description of potential risks and materiality to BSEZ	Project phase and risk materiality category	
		Construction (Baseline)	Operation (2060)
Site personnel (Construction)	Direct heat, flames, dust, and smoke (including smoke produced by wildfires which do not directly intersect the Project area associated with wildfires have the potential to put the H&S of personnel working on-site during the construction and operational phase of the Project at risk (e.g., direct heat, flames, and reduced air quality at and around the Projects area impacting the H&S of site personnel through smoke inhalation). These impacts have the potential to cause a delay in the completed construction of the Project, cause a delay in the repair/maintenance during	Likely Material- Low Moderate	Unlikely Material

	wildfire events and cause reputational and financial damages if on-site personnel are injured because of wildfire activity whilst working.		
Access roads, Infrastructure (Construction, Operation)	Direct heat and flames associated with wildfires have the potential to cause physical damage to road surfaces and infrastructure including melting and deformation (as described for extreme heat). Similarly, wildfires have the potential to damage surrounding vegetation and result indirectly in the obstruction and blockage of facilities and their access roads for personnel. Both of these impacts have the potential to cause a delay in the initial construction of the Project and reduce on-site personnel's ability to access during the construction and operational phase of the Project.	Likely Material- Low Moderate	Likely Material- Low Moderate

2.2.3 Next Steps

This section provides an overview of recommended next steps for all risk areas which have been identified within the 'Risk review' section as being 'Likely Material'. The recommended next steps within this section are based upon the risk review undertaken for each risk area.

Table 14: Next steps for each risk associated with wildfires

Risk Area	Next Steps	Justification
Site personnel (Construction)	Integrate wildfires into the EPRP	ARISE designers need to integrate wildfire risk into the Emergency Preparedness and Response Plan (EPRP).

Access roads, Infrastructure (Construction, Operation)	Potential value in assessing the risk further	Completion of specific fire risk assessment (including the review of nearby land cover, the presence of relevant and susceptible ground materials/wildfire fuel and the potential for wildfire activity near the project).
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2.3 Water Scarcity

The project is in a low (<10%) water stress region – according to the WRI Aqueduct Water Stress tool. Similarly, Think Hazard values it as medium level hazard, which means that there is up to 20% chance droughts will occur in the coming 10 years.

Table 15: Baseline and Projected Water Stress Climate Data¹⁵

Baseline		Projections Water Stress* ¹⁶					Preliminary Risk rating
Hazard Level	Risk Return Period	Year	2030		2060		
		Parameter	SSP 2- 4.5	SSP 5- 8.5	SSP 2- 4.5	SSP 5- 8.5	
Medium	1 in 20 years chance	Projected change in water stress	No change	No change	2.8x or greater increase	2.8x or greater increase	Moderate increase

At the Project area, near normal conditions in water stress are predicted for 2030 while in 2060 a 2.8x or greater increase is predicted (See Table 15 above).

¹⁵ Source: [Aqueduct Water Risk Atlas \(wri.org\)](http://wri.org)

*Percent chance of entering a period of water stress. Water stress occurs when the demand for water exceeds the available amount during a certain period or when poor quality restricts its use. Water stress is an indicator of competition for water resources and is defined informally as the ratio of demand for water by human society divided by available water.

2.3.1 Risk Review

A series of potential risks to the Project associated with water scarcity have been identified under baseline and future projected climatic conditions. These are described in Table 16 below.

The present hazard level may decrease in the future because of climate change. However, this is uncertain, and it may still be prudent to design projects in this area to be robust to increased drought hazard and water scarcity in the long-term.

Based on this information, the impact of drought must be considered in all phases of the project, in particular its effect on personnel and stakeholders, and during the design of buildings and infrastructure. Project planning decisions, project design, and construction methods should consider the level of drought hazard. Further detailed information should be obtained to adequately account for the level of hazard.

Table 16: Potential risk areas and Materiality- Associated with Water Scarcity

Risk Area	Description of potential risks and materiality to BSEZ	Project phase and risk materiality category	
		Construction (Baseline)	Operation (2060)
Site personnel (Construction)	Even though the projections for water stress in the region show moderate increase compared to the baseline, materiality is unlikely due to very low baseline hazard level. A lot of drinking water will be needed for workers in the hotter, drier periods of the year, all of which could suffer detrimental impacts during more pronounced spells of water scarcity.	Unlikely Material	Unlikely Material
Equipment and machinery, public utilities (Construction, Operation)	During construction, water scarcity could hamper the effectiveness of machinery and equipment requiring an important amount of cooking and cleaning water. A great deal of	Unlikely Material	Unlikely Material

	water might also be needed to limit the spread of dust in dry periods during construction.		
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Given the unlikely material risks to the project from Water scarcity, no further recommendations are needed for this hazard.

2.4 Extreme Heat

Climate data for extreme heat in BSEZ is provided in Table 17 below. The climate data is provided in baseline and future projected climatic conditions.

Table 17: Baseline and Projected Extreme Heat Climate Data¹⁷

Baseline		Projections					Preliminary Risk rating
Hazard Level	Risk Return Period	Year	2030		2060		
		Parameter	SSP 2-4.5	SSP 5-8.5	SSP 2-4.5	SSP 5-8.5	
Low	1 in 20 years chance	Change in maximum air temperature in °C	+0.9	+1.0	+1.7	+2.5	Moderate change
		Change in labor productivity due to heat stress in %	-2.8	-3.2	-5.7	-9	Moderate change
		Days with >35 °C	0	0	0	0	Minimal change

Rwanda's average temperature varies according to its topography. Low temperatures are observed in the regions of high altitude with average temperatures ranging between 15 and

¹⁷ Source: [Rwanda - Mean Projections Expert | Climate Change Knowledge Portal \(worldbank.org\)](#)

17°C. In some parts of the volcanic region, temperatures can go below 0°C. Moderate temperatures are found in areas with intermediary altitude where average temperatures vary between 19 and 21°C. In the lowlands (east and southwest), temperatures are higher, and the extreme can go beyond 30°C in February and July-August.

The projected climate data collected from Climate change knowledge portal (World Bank) shows that there is a moderate change in the temperatures which will keep the risk of extreme heat hazard low for the project.

2.4.1 Risk Review

A series of potential risks associated with extreme heat to the project have been identified under baseline and future projected climatic conditions. These are described in Table 18 below.

Table 18: Potential Risk areas and Materiality- Associated with Extreme heat

Risk Area	Description of potential risks and materiality to BSEZ	Project phase and risk materiality category	
		Construction (Baseline)	Operation (2060)
Site personnel (Construction, Operation)	Extreme heat events have the potential to pose risks to the H&S of the staff and personnel working on-site during the construction. Personnel could experience dehydration, heat stress, heat exhaustion and in extreme cases, heat stroke. Extreme heat events could also mean that personnel require additional breaks, water and access to shaded areas – potentially reducing their operational efficiency during the course of the Project. For the construction phase of the Project, extreme heat has the potential to cause delays for construction activities. As a result, the ARISE management may want to account for impacts associated with	Unlikely Material	Unlikely Material

	<p>adverse weather conditions associated with extreme heat through the development of an EPRP for the Project. Provided that an EPRP is followed by site personnel, detrimental impacts associated with extreme heat events and site personnel are understood to be 'Unlikely Material' to the construction phase of the Project.</p> <p>Although future climate projections indicate an increase in average air temperatures in the Project area, the noted projected increases in temperature are not expected to be large enough to increase the materiality of this climate hazard to the Project. Therefore, the risk materiality category assigned to the operational phase of the Project is also 'Unlikely Material'.</p>		
<p>Access Roads, Infrastructure (Construction, Operation)</p>	<p>During extreme heat events, concrete surfaces absorb heat from sunlight. Depending on the material and color that the facility is built from, as well as the surrounding air temperature, the surfaces can reach high enough temperatures where they deform, melt, and become damaged. It is noted that darker colored surfaces (e.g., asphalt) experience higher surface temperatures in comparison to lighter – colored counterparts. This therefore has the potential to increase a surfaces risk from</p>	<p>Unlikely Material</p>	<p>Unlikely Material</p>

	<p>melting and becoming damaged/deformed.¹⁸</p> <p>This poses risks to the construction and to a lesser extent, the operational phase of the Project. If access road surfaces become damaged/ deformed, this could hamper construction vehicles and personnel accessing the Project area causing delays in construction. During operation, access to the BSEZ by personnel might also be hampered due to the deterioration of access roads caused by extreme heat. During the operation phase of the Project periods of extreme heat might cause damage to infrastructure by overheating and potential thermal expanding of steel infrastructure.</p>		
<p>Equipment and machinery, public utilities (Construction, Operation)</p>	<p>During extreme heat events, any construction equipment or supporting infrastructure that is sensitive to high temperatures could be impacted by extreme temperatures (this could be associated with high air or road-surface temperatures) - potentially causing disruptions to the completed construction and maintenance of the Project (e.g., if equipment malfunctions inhibiting the operational efficiency of personnel) and</p>	<p>Unlikely Material</p>	<p>Unlikely Material</p>

¹⁸ Source: [Full article: A case study of environmental characteristics on urban road-surface and air temperatures during heat-wave days in Seoul \(tandfonline.com\)](#)

	<p>could require increased operational expenditure (e.g. to accommodate increased energy demand for cooling any heat-sensitive equipment). Impacts associated with this risk area are expected to be short-term in nature, and financial impacts are anticipated to be limited in comparison to the Projects overall revenue/ costs. Therefore, the risk area is categorized as 'Unlikely Material'.</p>		
--	--	--	--

2.5 Landslide

Table 19: Baseline and Projected Landslides Climate Data¹⁹

Baseline		Projections					Preliminary Risk rating
Hazard Level	Risk Return Period	Year	2030		2060		
		Parameter	SSP 2-4.5	SSP 5-8.5	SSP 2-4.5	SSP 5-8.5	
Very Low	>1 in 1000 years	Relative change in precipitation (%)	+2.6	+3.6	+7.3	+14.1	Moderate Increase

Based upon Think Hazard's valuation landslides are characterised under low risk for Bugesera Autonomous district. Change in Precipitation is projected to increase moderately in 2060 in both SSP 2-4.5 and 5-8.5 scenarios, respectively. Thus, the risk of landslides is likely to remain low over the course of next decades.

¹⁹ Source: [Think Hazard - Bugesera - Landslide](#)

2.5.1 Risk Review

A series of potential risks to the project associated with landslides have been identified under baseline and future projected climatic conditions as outlined within the Table 20 below.

Table 20: Potential Risk areas and Materiality- Associated with Landslides

Risk Area	Description of potential risks and materiality to BSEZ	Project phase and risk materiality category	
		Construction (Baseline)	Operation (2060)
Site personnel (Construction, Operation)	Since Rwanda has hilly topography, there is a risk of increased landslides due to increase in rainfall. As a result of mass movement of sediment during landslide events, working conditions during the construction phase of the project could become unsafe.	Unlikely Material	Unlikely Material
Access roads, infrastructure (Construction, Operation)	Landslides have the potential to cause damage to the structural integrity of the project installations (e.g., mass movement of sediments causing physical damage to structures.)	Unlikely Material	Unlikely Material
Public Utilities (Construction, Operation)	As a result of the mass movement of sediment during a landslide event, supporting infrastructure could become damaged (e.g., causing physical damage to overhead electricity pylons and over/underground water pipes or to equipment, machinery, and materials). This in turn could disrupt the supply of electricity, water and quarried materials being used during the construction phase of the Project delaying the completed construction of the Project.	Unlikely Material	Unlikely Material

3 SUMMARY AND CONCLUSIONS

There are a range of climate hazards present within proximity of the Project area, posing several types of potential risks with various degrees of materiality (ranging between Very Low and High). This assessment identifies river flooding and wildfires as posing the largest number of potentially material risk to the Project.

Several other hazards also pose a variety of potentially material risks to the Project, such as water scarcity. However, these are expected to be of a lower materiality to the Project' construction and operational phases when compared with flooding and with flooding and wildfires.

ARISE will make sure that these key risks of flooding, wildfires and water scarcity are addressed by the Emergency Management Plans in accordance with the ARISE health and safety policy and environmental sustainability policy.

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APPENDIX I

GREENHOUSE GAS ASSESSMENT
REPORT



Bugesera Economic Zone

Special

GHG Assessment and Climate Change Risk
Assessment

20 November 2023

Project No.:

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Acronyms and Abbreviations

GHG- Greenhouse Gases

TCFD - Task Force on Climate-Related Financial Disclosures

DESCRIPTION OF EXISTING BASELINE

Greenhouse Gas Emissions

The Bugesera Special Economic Zone (BSEZ) is an industrial zone designed, built, financed, and operated by BSEZ the Rwandan subsidiary of ARISE IIP. The land allocated for this project development is 335,67 hectares area, approximately 100km from Kigali. The project will be developed in 3 subsequent phases:

- Phase 1 (91,63 ha) is an area that was already operated by various industries, and that will be extended during the construction phase.
- Phase 1A (99,45 ha) is being constructed now
- Phase 2 (144,59) will be constructed next year

This GHG assessment encompasses the 3 phases mentioned above, with a hypothesis of 18 month construction period.

Except the Phase 1 whose land occupation was already industrial, the current state of Phase 1A and Phase 2 prior to construction is mainly croplands, and sparse woody vegetation.

Considering this, the development of the project itself (i.e., construction and operation of the basic infrastructure on 335 ha) will have limited greenhouse gas (GHG) relevance. However, activities that will have significant impact on GHG emissions will be caused by the land clearing activities, and the transformation of croplands to impermeabilized soils (i.e., due to road constructions and industrial plots developments).

In addition, the combined activities/emissions of the future tenants will potentially increase the amount of GHG emissions contributing to climate change. This is particularly true as most of the industries present or planned to occupy the zone are energy-intensive: glass manufacturing, fertilizing, paper manufacturing, etc.

The GHG emissions during construction primarily relate to the fuel consumption for construction equipment and emissions due to change in the land use which account to Scope 1 emissions, electricity consumption which accounts for Scope 2 emissions, and waste generation during construction phase account to Scope 3 emissions. During operation, GHG emissions stem from power consumption for operating equipment and fuel consumption of operation equipment and direct waste generation from ARISE. The projected GHG emissions for the Project are calculated in Chapter 2 and GHG inventory for the Project is provided in [Appendix A](#).

CLIMATE CHANGE

This chapter provides an overview of the climate change aspects of the Project.

The Greenhouse Gas (GHG) Inventory assessment, as per IFC standard¹ and EP4 requirements², are included in [Appendix A](#).

The GHG Inventory includes:

- A description of the Project GHG generating sources;
- A calculation of the project carbon footprint; and
- Key recommendations of GHG mitigation measures.

¹ IFC, 2007

² Equator Principles, 2020. EP4

For the GHG inventory only Scope 1 (Direct GHG emissions), Scope 2 (indirect GHG emissions from the use of purchased electricity) and waste data of Scope 3 (upstream and downstream not directly controlled by the reporting organization) emissions were assessed.

Activities to be carried out within the Project

The Project activities include the construction of the infrastructure on approximately 250 ha for BSEZ (i.e., For the extension of Phase 1, the construction of Phase 1A and Phase 2). The GHG assessment covers a projection of expected GHG emission during the construction phase and a projection of the expected emissions during the operational phase, when third party industries will be building and occupying industrial plots.

Activities forecasted during the construction phase are:

- Land clearing on approximately 62 hectares
- Construction of 10,5 km of roads
- Construction of utilities and facilities like office buildings, a single-window clearance, a fire station, a sewage treatment plant, water connection, and fences

Activities expected during the operational phase are industrial activities in the fields of glass manufacturing, paper production, oxygen bottling, fertilizer production, plastic recycling, etc.

List of emission categories generated by the project and their sources

The GHG assessment will focus on energy, land use and waste as outlined in the table hereafter.

Emission Categories	Emission Sources	Included in the assessment?
Energy		
Electricity	<ul style="list-style-type: none"> ■ Diesel generators for offices ■ Electricity consumption after grid connection during construction ■ Electricity consumption of industries during operations 	<ul style="list-style-type: none"> ■ Through diesel consumption ■ Yes ■ Yes
Fuel	<ul style="list-style-type: none"> ■ Diesel generator ■ Staff transportation ■ Contractors' vehicles used for construction 	<ul style="list-style-type: none"> ■ Yes ■ Yes ■ Yes
Lubricants	<ul style="list-style-type: none"> ■ None – no use of lubricants witnessed 	<ul style="list-style-type: none"> ■ No
Air Conditioning	<ul style="list-style-type: none"> ■ The site is not using any refrigerant system 	<ul style="list-style-type: none"> ■ No
Land Use		
Change in land use	<ul style="list-style-type: none"> ■ Land clearing from crop to concrete 	<ul style="list-style-type: none"> ■ Yes
Waste		
Industrial Waste	<ul style="list-style-type: none"> ■ Construction activities 	<ul style="list-style-type: none"> ■ Yes
Domestic Waste	<ul style="list-style-type: none"> ■ Office spaces 	<ul style="list-style-type: none"> ■ No, very minimal
Wastewater	<ul style="list-style-type: none"> ■ Domestic use 	<ul style="list-style-type: none"> ■ No, very minimal
Dangerous waste	<ul style="list-style-type: none"> ■ Industrial activities 	<ul style="list-style-type: none"> ■ No, not constated

Purchases		
All purchases	<ul style="list-style-type: none"> ■ Common procurement 	<ul style="list-style-type: none"> ■ Conservatively excluded
Freight and transportation		
Imports	<ul style="list-style-type: none"> ■ Imports of purchased goods 	<ul style="list-style-type: none"> ■ Conservatively excluded
Commuting	<ul style="list-style-type: none"> ■ Transport of BSEZ staff and contractors 	<ul style="list-style-type: none"> ■ Conservatively excluded
Business trips	<ul style="list-style-type: none"> ■ Admin trips during construction ■ International visits ■ Site promotion 	<ul style="list-style-type: none"> ■ Conservatively excluded

List of Greenhouse Gases Generated by the Project considered and their Sources

The following Table 0-1 describes the main GHGs emitted by the Project and their different sources of emissions.

Table 0-1 GHGs Generated by the Project

Greenhouse gases generated by the Project	Project activity source of GHG emissions
Carbon Dioxide (CO ₂)	<ul style="list-style-type: none"> ■ Diesel fuel usage during construction; ■ Diesel fuel usage during operation; ■ Emissions from different land uses- Logistic zone, warehouse, residential, facilities, utilities, change in land use. ■ Power usage ■ Industrial waste
Methane (CH ₄)	<ul style="list-style-type: none"> ■ Grid losses from electricity generation
Nitrous Oxide (N ₂ O)	<ul style="list-style-type: none"> ■ Grid losses from electricity generation ■ Industrial waste treatment

Ranking of Most Significant GHG Emissions

Based on the GHG assessment, Table 0-2 below shows the ranking of the most significant GHG emissions from the Project.

Table 0-2 Ranking of Most Significant GHG Emissions of Activities

Ranking of Most Polluting Activities in Decreasing Order
Electricity used during the operational phase
Change in land use during construction phase
Electricity used during the construction phase
Fuel used during construction phase
Fuel used during operations
Waste generation during construction phase
Wastewater treatment during operations

Carbon footprint of the Project

The calculations for the carbon footprint of the Project are presented in Appendix A. To summarise, on basis of the estimated data, it can be assumed that about 14,500 t CO₂e will be produced in Scope 1, 2 and 3³ during the whole 18 months construction phase. During the operation phase, about 78,640 t CO₂e will be released in Scope 1, 2 & 3 each year (Table 0-3).

Table 0-3 Summary of all Emissions for Construction Phase for Scope 1, 2 & 3

Phase	Total Emissions [t CO ₂ e]
Construction	~ 14,500
Scope 1	~ 11 149
Scope 2	~ 2 843
Scope 3 (Waste only)	~ 790

Table 0-4 Summary of all Emissions for Operations Phase for Scope 1, 2 & 3

Phase	Total Emissions [t CO ₂ e]
Operation	~87 679
Scope 1	~ 80 350
Scope 2	~ 186
Scope 3 (Waste only)	~ 7 178

³ In accordance with GHG protocol: Scope 1: Direct GHG emissions; Scope 2: Indirect GHG emissions from the use of purchased electricity, heat or steam, Scope 3: Indirect emissions from waste generation, employees commuting, use of products; Available online at : <https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf>

Recommendations and Mitigation Measures

Construction Phase

During the 18 months of construction, the main source of emissions is from change of land use and fuel usage in construction equipment's, transportation (14,500 t CO₂e). ARISE will encourage fuel efficiency of its contractors during construction as far as reasonably feasible. This can be achieved, for example, by optimising the transport routes on the construction site. Furthermore, it should be ensured that no machines are running when they are not needed. In general, given that fuel is expensive and reduces the profit margins of the contractors, there is a natural economic incentive for contractors to operate their vehicles and other equipment in a fuel-efficient manner.

Operation Phase

During operation the Project causes approximately 87 700 t CO₂e. Most of the operation emissions per year will come from energy consumption, and in particular from electricity consumption (87 700 t CO₂e with fuel only accounting for 150 tCO₂e). In addition, a very minor % of emission comes from (2 t CO₂e) waste generation. Tree planting activities planned will only reduce the emissions of approximately 80 tCO₂e, considering that they are coming in replacement of crops.

Therefore, ARISE should consider installing energy-saving lightning system within the Project site and encourage the tenants to do so as well. In a future scenario of low carbon transition, it is likely that the grid electricity supplied to the Project site in the operational lifetime will be from 'greener' energy sources such as renewables, thus minimising future GHG emissions.

ARISE as a standard Group practice seeks to lessen their reliance on carbon-intensive energy sources in their projects by allocating funds to decarbonisation and climate change adaptation techniques. ARISE should be working on a design and implementation of a Net Zero Strategy⁴ which will:

- Establish a carbon baseline across global operations;
- Determine areas of opportunity and emission reduction;
- Promote knowledge sharing with business partners such as host governments, employees, contractors, and local communities; and
- Create a Science-based reduction plan to become net zero by 2030.

Furthermore, regarding the industrial zones projects of ARISE, the strategic initiatives towards carbon neutral goal include:

- Invest in renewable energy in proximity to industrial zones;
- Ensure that businesses may utilize renewable energy resources; and
- Provide incentives to industries that promote renewable energy.

⁴ „ARISE IIP Brochure - Committed to making Africa Thrive“, ARISE, 2022. More information on <https://www.ariseiip.com/carbon-neutral-initiatives-in-africa/>

Table 0-5 Climate Change Mitigation Measures and Residual Impact Assessment

Project phase	Activity/ Source of impact	Environmental component affected	Nature of impact (Direct/ Indirect)	Mitigation measure recommended	Magnitude		Significance	
					Pre-mitigation	Post-mitigation (Residual)	Pre-mitigation	Post-mitigation
Development & construction phase	Fuel Consumption and Electricity use	Climate Change	Direct	<ul style="list-style-type: none"> Transport logistics (locations/routes) will be optimised to ensure efficient carriage of raw materials and promote fuel efficiency; Vehicle idling times will be reduced through focus on scheduling of construction operations; The use of fuel-efficient transportation vehicles will be prioritised when possible, and regular maintenance of vehicles ensured; Energy efficiency specifications for new and retrofitted site accommodation will be created; Sourcing renewable energy fuels will be considered if feasible; and/or Energy efficiency usage among workers will be promoted. 	Medium	Medium	Medium	Minor
	Electricity use	Climate Change	Direct	<ul style="list-style-type: none"> Decarbonizing energy use, when possible through renewable sources or waste to energy plants; Consider the use of Renewable Energy Certificates (RECs), and/or Power Purchase Agreements, and/or; Promote Energy efficiency 	Medium	Negligible	Medium	Negligible
	Crops destruction	Climate Change	Direct	<ul style="list-style-type: none"> Limit deforestation and crop destruction to the strict necessary; Conserve existing vegetated areas, Plant trees for carbon sequestration, in areas that should not come in replacement of crops, and/or; Maintain crop areas through agroforestry practices. 	Medium	Medium	Medium	Medium

Operation phase	Fuel Consumption and	Climate Change	Direct	<ul style="list-style-type: none"> ■ The use of fuel-efficient transportation vehicles will be prioritised, and regular maintenance of vehicles ensured; ■ Sourcing renewable energy will be considered if feasible; and/or ■ Energy efficiency usage among workers will be promoted. 	Negligible	Negligible	Negligible	Negligible
	Electricity use	Climate Change	Direct	<ul style="list-style-type: none"> ■ Decarbonizing energy use, when possible through renewable sources or waste to energy plants; ■ Consider the use of Renewable Energy Certificates (RECs), and/or Power Purchase Agreements, and/or; ■ Promote Energy efficiency 	Medium	Minor	Medium	Minor

APPENDIX A- GREENHOUSE GAS INVENTORY

INTRODUCTION

This Appendix is the Greenhouse Gas (GHG) inventory for the Environmental and Social Impact Assessment (ESIA) of a 335 ha Industrial Economic Zone, Bugesera Special Economic Zone in the Bugesera district of Rwanda. (hereafter "the Project").

This Greenhouse Gas (GHG) inventory constitutes a supplemental study as part of the Environmental and Social Impact Assessment (ESIA) package, required by International Standards. Financing for the Project is provided from international lenders and therefore the Project must comply with IFC Performance Standards and Equator Principles 4 (EP4) requirements. Considering this, the Project GHG emissions are estimated in this report for the Project construction and operation phases.

The objectives for this assessment are:

- To undertake a GHG inventory of the construction and operational carbon footprint of Scope 1, 2 and 3 emissions of the project.
- To contextualise annual emissions against international thresholds; and
- To determine whether expected GHG emissions are deemed to be 'significant'.

This GHG inventory report covers specifically the Project-related emissions, meaning ARISE's construction and operation of the basic infrastructure for the Project. At this stage the specific industries (i.e., tenants) that will occupy the EZ in future are not defined, so there was no assessment conducted of the potential emissions of the GHGs from these industries. Each future tenant will need to obtain their own E&S permits and conduct their own respective GHG inventory assessment, following Ivorian requirements and international standards.

RELEVANT APPLICABLE STANDARDS

The following Applicable Standards are relevant for this assessment:

- OECD Common Approaches, 2016;
- IFC Performance Standards, 2012;
- Equator Principles 4, 2020;

In summary, the Applicable Standards require consideration of the GHG emissions (combined Scope 1 and Scope 2 emissions) associated with the Project during its initial design/construction and later operational stages to determine:

- If the GHG emissions of the Project exceed 25,000 tonnes of CO₂ equivalent annually, the client will quantify direct emissions from the facilities owned or controlled within the physical project boundary, as well as indirect emissions associated with the off-site production of energy used by the project.⁵
- If the GHG emissions of the Project exceed 100,000 tonnes of CO₂ equivalent annually, then consideration must be given to relevant Climate Transition Risks as defined by the Task Force on Climate-related Financial Disclosures (TCFD⁶) and an alternatives analysis which evaluates lower GHG intensive alternatives.⁷

⁵ International Finance Corporation, Performance Standard 3, 2012

⁶ TCFD, 2017. Recommendations of the Task Force on Climate-related Financial Disclosures

⁷ Equator Principles, Principle 4: Environmental and Social Management System, 2020.

APPROACH

This section describes the methodology of GHG emissions assessment. The following figure shows the 4 main steps of the assessment elaborated further.

Figure 0-1: Methodology Overview



Step 1- Calculation Methodology

The GHG emissions are calculated using the following guidance references:

- World Resources Institute/World Business Council for Sustainable Development, The Greenhouse Gas Protocol: Corporate Accounting & Reporting Standard (2004);⁸
- World Resources Institute/World Business Council for Sustainable Development, The Greenhouse Gas Protocol: The GHG Protocol for Project Accounting (2005);⁹
- International Organization for Standardization (ISO), ISO 14064 (2018).¹⁰
- Recommendations of the Task Force on Climate-related Financial Disclosures 2017).¹¹

GHG emissions are calculated via the application of documented emission conversion factors. These factors are calculated ratios relating GHG emissions to a proxy measure of activity at an emissions source. For this assessment, mainly the guidance UNFCCC GHG Emissions Calculator is used.

Step 2- Organisational Boundaries

The organisational boundaries of the GHG assessment were set for this assessment using the so-called "control principle" per the methodology of ISO 14064. This means all emissions by entities and activities controlled by the organisation (i.e., ARISE) must be included; for this Project this refers mainly to all the construction and operational activities within the scope of the ESIA and over which ARISE has direct control. Not included within this boundary would be e.g., the operations of third-party quarries.

Step 3- Operational Boundaries

In accordance with the GHG protocol, direct and indirect emissions are categorised into three broad scopes (see Figure 5-2):

Scope 1: Direct GHG emissions;

Scope 2: Indirect GHG emissions from the use of purchased electricity, heat, or steam; and

Scope 3: Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities not covered in Scope 2, outsourced activities, waste disposal, etc.

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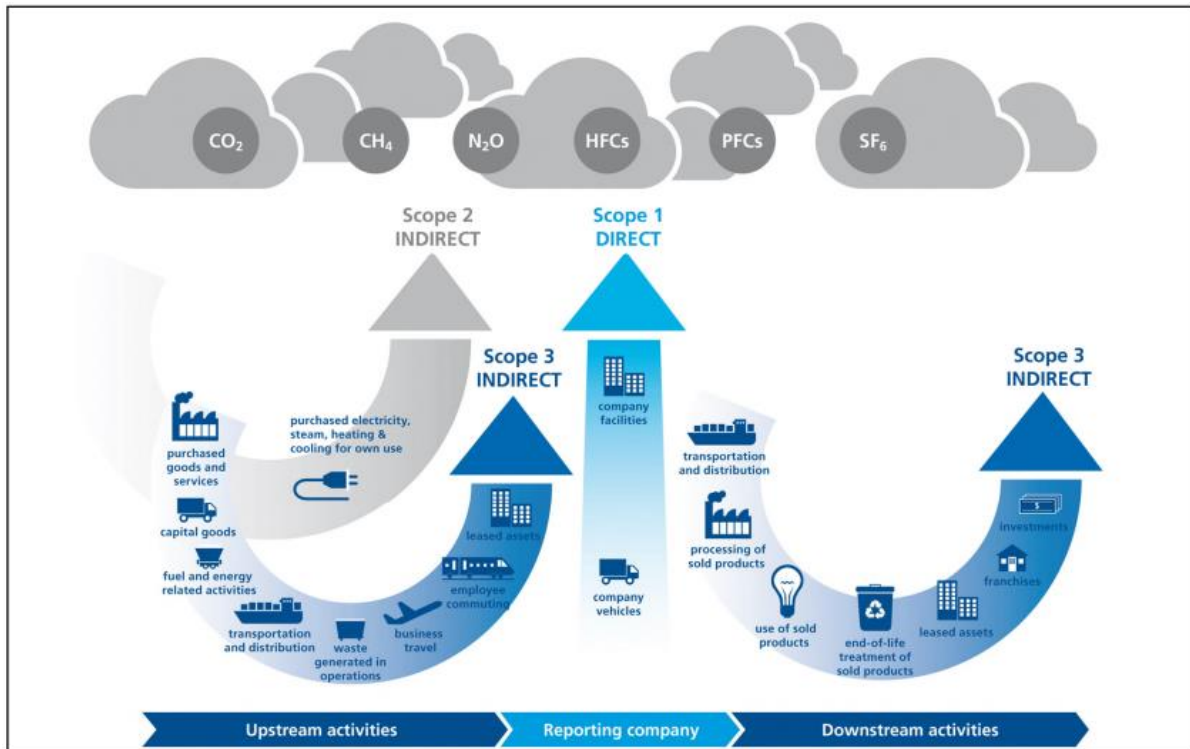


Figure 0-2: Overview of GHG Emissions Scopes¹²

The construction phase and the operation of the Project will result in direct Scope 1 GHG emissions primarily associated with:

- Combustion of fossil fuels due to the transportation of materials to site, the use of construction equipment on site and diesel generators,
- Combustion of fossil fuels for the use of vehicles during operation.

Indirect GHG emissions in Scope 2 include emissions from the use of electricity from the grid that is generated elsewhere (i.e., not generated at the Project area. Grid electricity will be used to:

- Supply the workers' camp/rest areas during construction, and
- Electricity supply for the operation of the basic infrastructure on the BSEZ.

In line with Applicable Standards, the operational boundaries of this study include all emissions released during **Scope 1, 2 and 3 (waste only)**.

The GHG emissions of a project can usually only be accurately determined based on actual data on relevant activities, such as X litres of diesel or Y kWh of electricity consumed in each month during construction. Calculations for this assessment have been undertaken based on data estimations provided by BSEZ Ltd.

Step 4- Impact Assessment Methodology

Impact assessments are normally conducted by determining how the proposed activity will affect the baseline environment. In the case of GHG emissions, however, the potential impact of GHG emissions occurring on a global basis and the specific source of GHG emissions cannot be linked directly to the future potential impact at a specific location. In the absence of such causal links, this section presents an alternative risk-based methodology per international good practice.

In general, the methodology for assessing GHG impacts is based on the evaluation of impact *Magnitude* and the *Likelihood*, which yields a resulting impact *Significance*. The *Likelihood* factor, as explained further below, replaces the usual factor of '*Vulnerability*'.

Magnitude

Impact magnitude is a function of the potential intensity of the impact, moderated by the extent and duration of that impact. When considering GHGs, the extent and duration of the potential impact will always be the same. The extent is international as it is the total stock of world GHG emissions trapped in the atmosphere (leading to global warming).

The duration of the impact is regarded as permanent as the persistence of CO₂ emissions in the atmosphere ranges between 100 and 300 ¹³years and thus continues well beyond the life of the Project.

Table 5-1 shows a *Magnitude* scale for project wide GHG emissions that is in line with reporting thresholds adopted by several international lender organisations and the Applicable Standards.

Table 0-1: Magnitude Scale for Project GHG Emissions

Project-wide GHG Emissions/annum	Magnitude Rating
>1,000,000 t CO ₂ e	Very Large
100,000 – 1,000,000 t CO ₂ e	Large
25,000 – 100,000 t CO ₂ e	Medium
5,000 – 25,000 t CO ₂ e	Small
<5,000 t CO ₂ e	Negligible

Likelihood

Likelihood is described as '*Unlikely*', '*Seldom/Occasional*' or '*Likely*' according to the definitions outlined in the Table 5-2.

Table 0-2: Likelihood Definitions

Project-wide GHG Emissions/annum	Magnitude Rating
Unlikely	Reasonable to expect that the consequence will not occur at this facility during its lifetime.
Occasional	Exceptional circumstances/conditions may allow the consequence to occur within the facility lifetime.
Likely	Consequence can reasonably be expected to occur within the life of the facility.

In the case of this Project, the *Likelihood* of carbon emissions occurring during construction and operational phases is 100%, and therefore classified as 'Likely' as per the above table.

Determination of Significance

The combination of the Magnitude of a potential impact and the Likelihood yields the degree of the Significance of a potential GHG impact. This is illustrated in Table 5-3.

As stated above, by definition the Likelihood of GHG emissions from the Project activities is given as Likely, and therefore only the Likely column in Table 5-3 is relevant for this assessment.

Table 0-3 Impact Significance Rating Matrix

		LIKELIHOOD		
		Unlikely	Occasional	Likely
MAGNITUDE	Very Large	MAJOR	MAJOR	MAJOR
	Large	MODERATE	MAJOR	MAJOR
	Medium	MINOR	MODERATE	MAJOR
	Small	NEGLIGIBLE	MINOR	MINOR
	Negligible	NEGLIGIBLE	NEGLIGIBLE	NEGLIGIBLE

GHG INVENTORY

This section will cover the estimated GHG emissions during the emissions during the construction and operation phase of the Project.

Construction Phase

During construction of the Project, GHG emissions will be generated by the following activities:

- Use of diesel fuel for construction equipment’s and diesel generators
- Electricity consumed and produced
- Change of Land use
- Direct Waste (Industrial waste, wastewater)

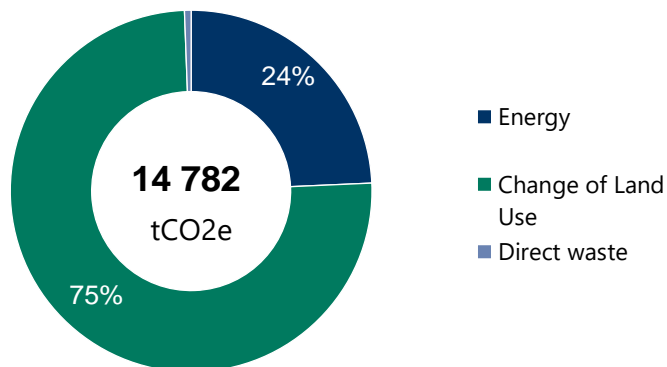


Figure X: Summary GHG emissions from Construction activities, by source

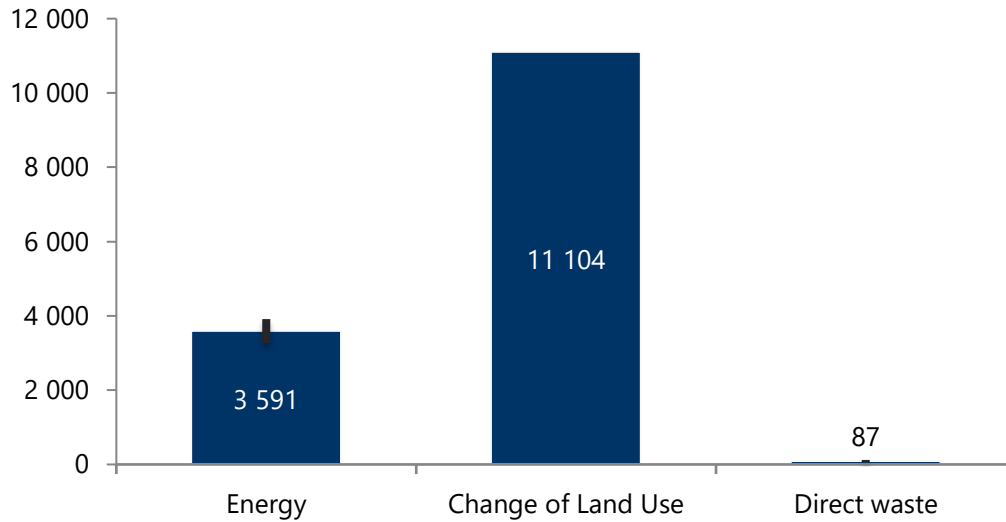


Figure X: Summary: GHG emissions and uncertainties by source, in tCO₂e

Energy Emissions

Scope 1 emissions for the construction phase stem from diesel usage from owned and operated vehicles. The expected annual emissions from diesel use for the construction activities shown in the table 6-1.

Table 0-1 Expected Energy Emissions during Construction

Energy	Emissions (tCO₂ eq.)	Share (%)
Fuels used	495	3%
Electricity purchased and produced	3,096	21%
Total emissions	3,591	24%

The expected emissions from fuel use during the construction phase is 3,591 t CO₂eq in 18 months of the construction phase.

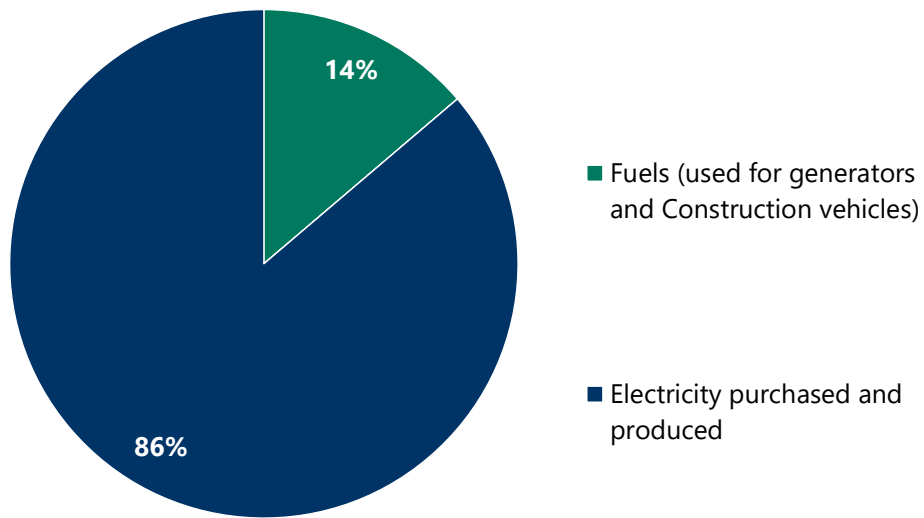


Figure 0-2 Energy GHG emissions by source, in %

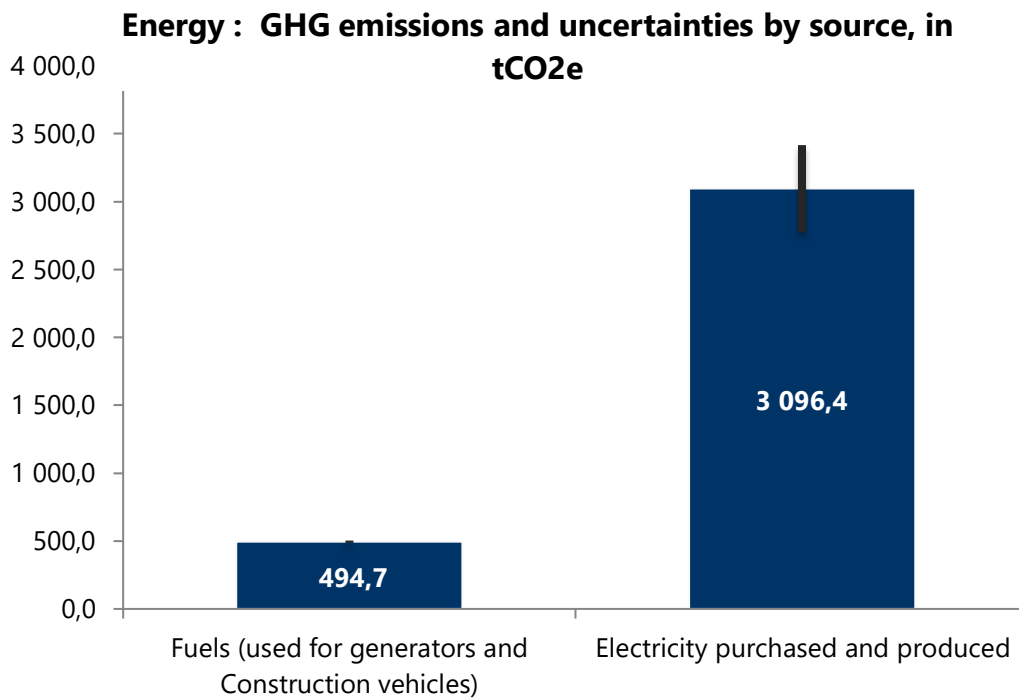


Figure 6.3. GHG emissions and uncertainties by source, in tCO2e

Land Use Emissions

Change of Land use during construction phase will be accounted in Scope 1 emissions (see table 6-2)

Table 0-2 Change in Land use during Construction

Conversion	Emissions (t CO ₂ eq)	Share (%)
Land use change from crops to sealed soil	11,104	75%

The expected emissions from change in land use during the construction phase is 11,591 t CO₂eq in 18 months of the construction phase.

Waste Emissions

Table 0-3 Waste generation during Construction

Direct Waste	Emissions (t CO ₂ eq)	Share (%)
Dangerous waste (industrial waste)	67	76%
Wastewater	21	24%
Total emissions	88	100%

The expected emissions from waste generation during the construction phase is 87 t CO₂eq in 18 months of the construction phase.

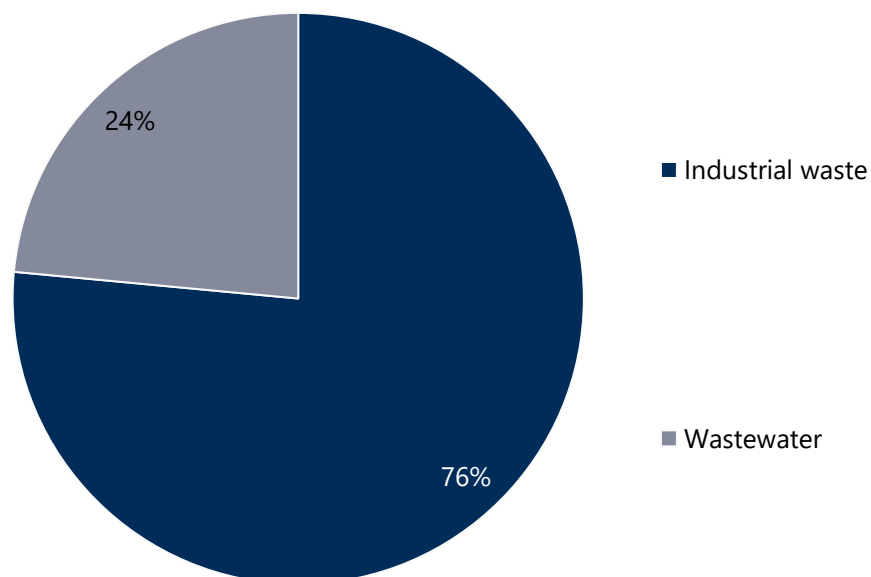


Figure 6.4 Direct waste – GHG emissions by source, in %

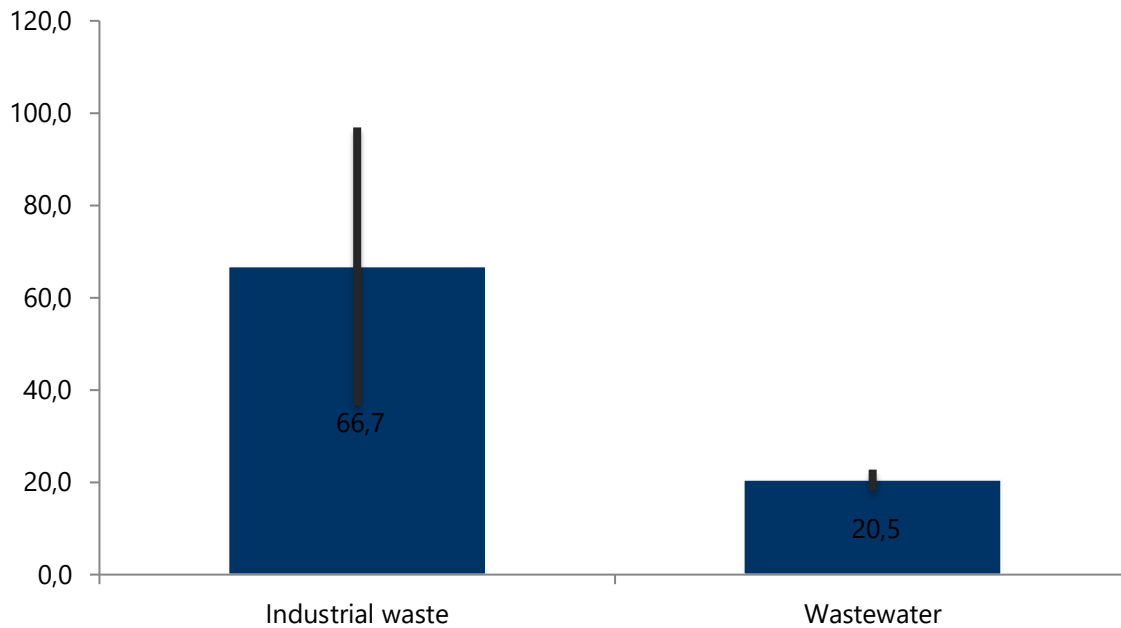


Figure 6.5 – Direct waste: GHG emissions and uncertainties by source, in tCO₂e

Operation Phase

During operation of the Project, GHG emissions will be generated by the following activities:

- Electricity provided to the industries
- Fuel used for staff transportation
- Absorptions from tree planting
- Wastewater treatment

An air conditioning system will probably be installed during the construction phase, but this was conservatively excluded.

Expected energy emissions

Energy emissions during the operation phase stem from diesel usage and electricity used by industries. Electricity projections have been derived from capacity that will be installed and hypothesis that businesses will be running on a 2*8 bases. The following figures thus represent maximum expected annual emissions from electricity consumption if the zone is fully occupied. The fuel used is projected for the staff transportation, and the assumption that employment will double when the zone is fully operational.

Table 0-4 Expected Energy Emissions during Operation Activities

Energy	Emissions (t CO ₂ eq)	Share (%)
Fuels	186	0,0001%
Electricity purchased and produced	87,526	100%
Total emissions	87,712	100%

The expected annual emissions from fuel use during the operations phase is approx. 87,000 t CO₂eq.

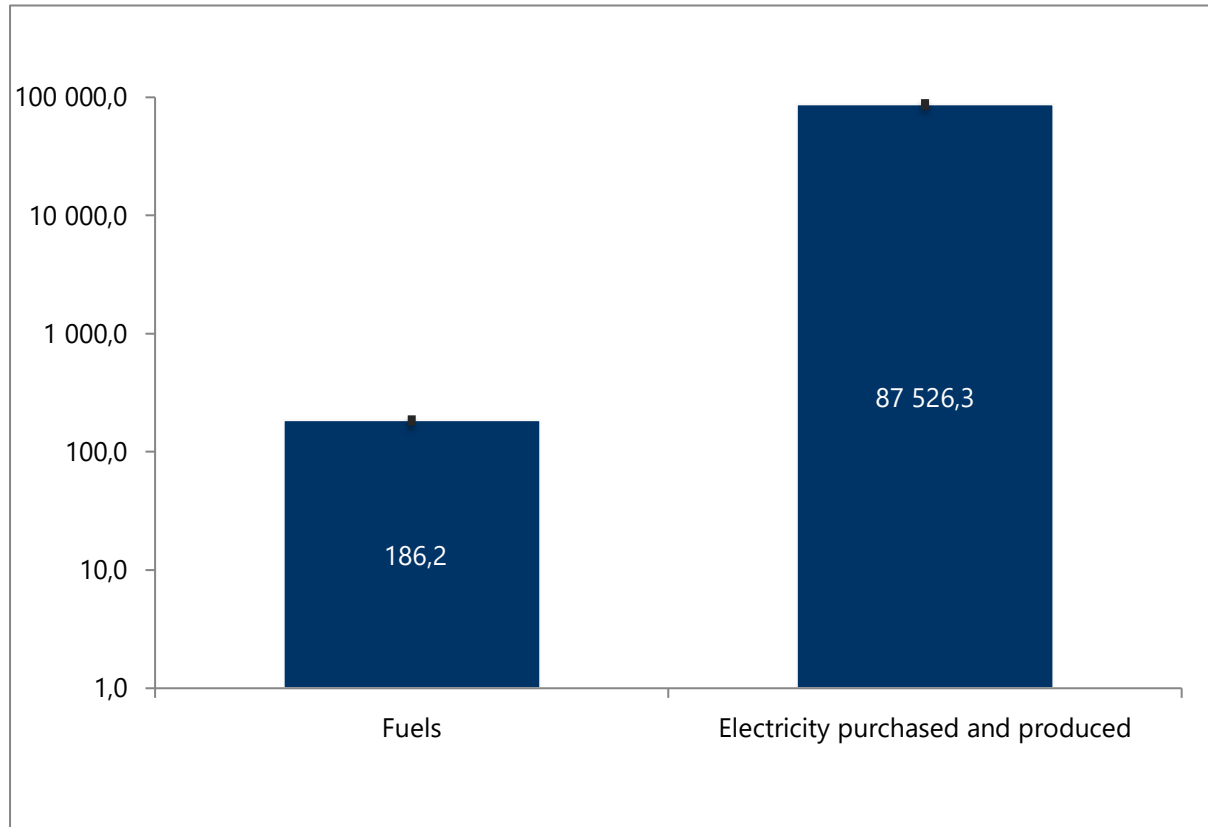


Figure 0-6 Energy: GHG emissions and uncertainties by source, in tCO₂e

Absorptions from tree plantation program

Scope 2 emissions for the operation phase stem from tree plantation. The expected annual emissions from tree plantation for the operational phase shall be -81 tCO₂e. Indeed, a tree plantation program will only have a limited positive impact in terms of absorptions if it comes in replacement of crops.

Emissions from wastewater facility

The Scope 3 emissions would account for emissions from the waste generation in operational activities (see table 6-5).

Table 0-5 Expected Emissions from waste during Operation Activities

Direct Waste	Emissions (t CO ₂ eq)	Share (%)
Wastewater	2	100%
Total emissions	2	100%

Summary of GHG Emissions

Table 6-6 summarizes the projected GHG emissions during construction and operation phases of the Project. During construction phase Scope 2 emissions are projected highest. During the operational phase Scope 1 emissions account for the highest.

Table 0-6 Summary of all Emissions for Construction and Operations Phase for Scope 1, 2 & 3

Item	Total Emissions [t CO ₂ e]
Scope 1	~ 11,149
Scope 2	~ 2,843
Scope 3	~ 790
Total Construction Emissions	~ 14,500
Item	Total Emissions [t CO ₂ e]
Scope 1	80,350
Scope 2	186
Scope 3	7,178
Total Operations Emissions (per year)	~87,714

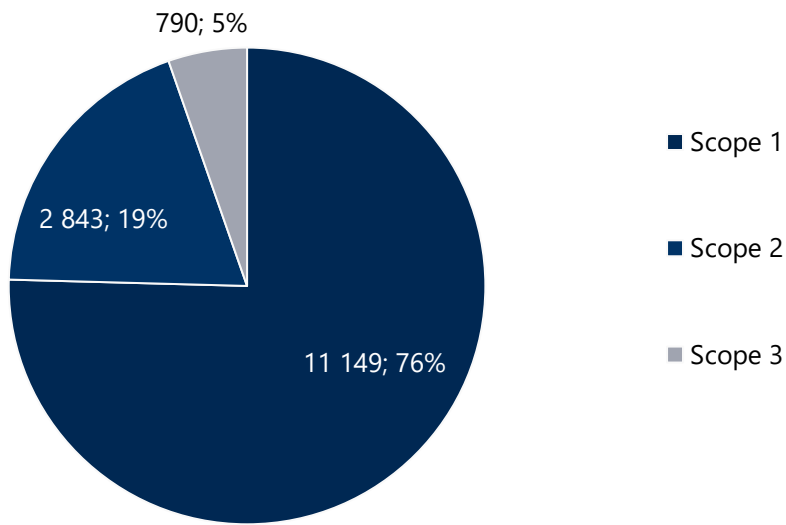


Figure 0-1 % share of GHG emissions per scope in construction phase

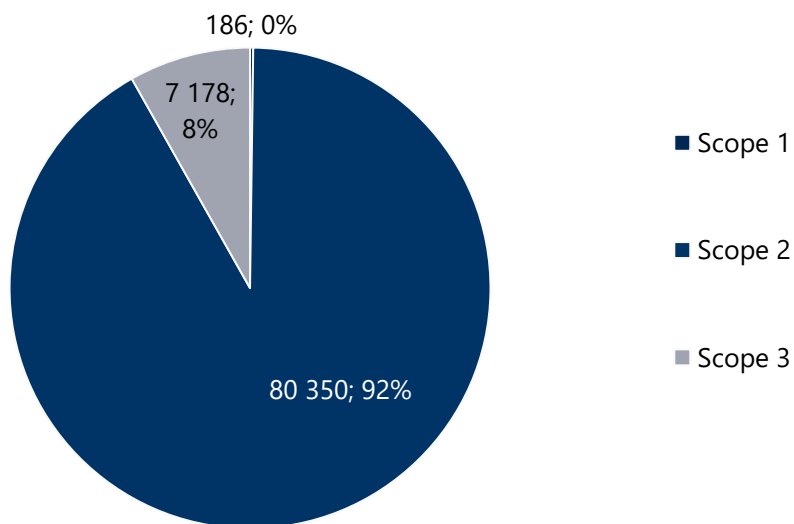


Figure 0-8 Share of GHG emissions per scope in operations phase, in % and in tCO₂e

IMPACT ASSESSMENT

Stage Specific GHG Impact Evaluation

In the following Table 7-1 the results of the GHG inventory are assessed according to their Magnitude, Likelihood and Significance. The impact assessment shows that the

- Project-related direct emissions during construction (Scope 1), are considered **Negligible**.
- Project-related indirect emissions during construction (Scope 2), are considered **Minor**.
- Project-related indirect emissions during construction (Scope 3), are considered **Negligible**.
- Project-related direct emissions during operation (Scope 1), are considered **Major**.
- The waste generation (Scope 3) during operation of the Project is deemed as **Negligible**.

Table 0-1 Impact Assessment using GHG Inventory Data

		GHG emissions	Magnitude	Likelihood	Resulting Significance
Construction	Fuel and electricity consumption	3,300 t CO ₂ e	Negligible	Likely	Negligible
	Change in land use	11,110 t CO ₂ e	Small	Likely	Minor
	Waste Generation	60 t CO ₂ e	Negligible	Likely	Negligible
Operation	Electricity consumption	78,638 t CO ₂ e	Medium	Likely	Major
	Fuel consumption	186 t CO ₂ e			
	Waste Generation	1 t CO ₂ e	Negligible	Likely	Negligible



APPENDIX J LIST OF AVIFAUNA SPECIES RECORDED



OBJECT ID	Primary_language	Secondary_language	Tertiary_language	English_IOC	ID	Date	Time	Latitude	Longitude
1	Long-crested Eagle	Langkuifarend	Lophaetus occipitalis	Long-crested Eagle	138	2023-08-14	12:15:41	-2,28412	30,210187
2	Pied Crow	Witborskraai	Corvus albus	Pied Crow	522	2023-08-14	12:15:48	-2,28412	30,210192
3	White Stork	Witooievaar	Ciconia ciconia	White Stork	80	2023-08-14	12:15:58	-2,28412	30,210192
4	Tawny-flanked Prinia	Bruinsylangstertjie	Prinia subflava	Tawny-flanked Prinia	649	2023-08-14 0	12:16:53	-2,28412	30,210193
5	Arnot's Chat	Bontpiek	Myrmecocichla arnotti	Arnot's Chat	574	2023-08-14	12:23:23	-2,28412	30,210239
6	Blue-naped Mousebird	Blue-naped Mousebird	Urocolius macrourus	Blue-naped Mousebird	1590	2023-08-14	12:46:38	-2,28062	30,218807
7	Village Weaver	Bontrugwewer	Ploceus cucullatus	Village Weaver	797	2023-08-14	12:46:38	-2,28062	30,218807
8	Pin-tailed Whydah	Koningrooibekkie	Vidua macroura	Pin-tailed Whydah	846	2023-08-14	13:04:06	-2,28163	30,219206
9	Augur Buzzard	Witborsjakkalsvoël	Buteo augur	Augur Buzzard	153	2023-08-14	13:14:09	-2,28328	30,219663
10	Gabar Goshawk	Witkruissperwer	Micronisus gabar	Gabar Goshawk	162	2023-08-14	13:33:42	-2,28392	30,217249
11	Variable Sunbird	Geelpenssuikerbekkie	Cinnyris venustus	Variable Sunbird	762	2023-08-14	14:02:29	-2,28061	30,218735
12	Green-backed Camaroptera	Groenrugkwêkwêvoël	Camaroptera brachyura	Green-backed Camaroptera	627	2023-08-15	10:34:19	-2,27225	30,2405
13	Augur Buzzard	Witborsjakkalsvoël	Buteo augur	Augur Buzzard	153	2023-08-15	10:37:56	-2,27203	30,240406



ERM

OBJECT ID	Primary_language	Secondary_language	Tertiary_language	English_IOC	ID	Date	Time	Latitude	Longitude
14	Emerald-spotted Wood Dove	Groenvlekduifie	Turtur chalcopilos	Emerald-spotted Wood Dove	321	2023-08-15	10:59:57	-2,27084	30,240574
15	Black-headed Gonolek	Black-headed Gonolek	Laniarius erythrogaster	Black-headed Gonolek	2428	2023-08-15	11:00:02	-2,27084	30,240574
16	African Fish Eagle	Visarend	Haliaeetus vocifer	African Fish Eagle	149	2023-08-15	11:08:48	-2,27164	30,240696
17	Unidentified	Ongeidentifiseerd	Unidentified	Unidentified	0	2023-08-15	11:31:38	-2,27315	30,238516
18	Ring-necked Dove	Gewone Tortelduif	Streptopelia capicola	Ring-necked Dove	316	2023-08-15	11:41:56	-2,28102	30,219929
19	Marico Sunbird	Maricosuikerbekkie	Cinnyris mariquensis	Marico Sunbird	755	2023-08-15	11:45:00	-2,27485	30,238964
20	Miombo Wren-Warbler	Miombo Wren-Warbler	Calamonastes undosus	Miombo Wren-Warbler	3092	2023-08-15	12:06:00	-2,27497	30,240336
21	Yellow-breasted Apalis	Geelborskleinjantjie	Apalis flavida	Yellow-breasted Apalis	625	2023-08-15	12:13:09	-2,27486	30,240322
22	Fork-tailed Drongo	Mikstertbyvanger	Dicrurus adsimilis	Fork-tailed Drongo	517	2023-08-15	12:24:33	-2,27659	30,239724
23	Blue-headed Coucal	Blue-headed Coucal	Centropus monachus	Blue-headed Coucal	1628	2023-08-15	12:38:47	-2,28016	30,238988
24	Collared Sunbird	Kortbeksuikerbekkie	Hedydipna collaris	Collared Sunbird	771	2023-08-15	12:48:17	-2,28261	30,238536
25	Unidentified	Ongeidentifiseerd	Unidentified	Unidentified	0	2023-08-15	13:30:36	-2,28761	30,245339
26	Black-lored Babbler	Black-lored Babbler	Turdoides sharpei	Black-lored Babbler	3458	2023-08-15	13:41:36	-2,28738	30,247328



ERM

OBJECT ID	Primary_language	Secondary_language	Tertiary_language	English_IOC	ID	Date	Time	Latitude	Longitude
27	Red-billed Firefinch	Roobekvuurvinkie	Lagonosticta senegala	Red-billed Firefinch	837	2023-08-15	13:51:28	-2,2864	30,248739
28	Red-cheeked Cordon-bleu	Red-cheeked Cordon-bleu	Uraeginthus bengalus	Red-cheeked Cordon-bleu	3974	2023-08-15	14:51:05	-2,27997	30,248301
29	Green-winged Pytilia	Gewone Melba	Pytilia melba	Green-winged Pytilia	830	2023-08-15	15:01:36	-2,2765	30,247514
30	Grey-backed Fiscal	Grey-backed Fiscal	Lanius excubitoroides	Grey-backed Fiscal	2284	2023-08-15	15:03:06	-2,27618	30,247392
31	Northern Grey-headed Sparrow	Witkeelmossie	Passer griseus	Northern Grey-headed Sparrow	3852	2023-08-15	15:09:37	-2,27513	30,245508
32	Purple-banded Sunbird	Purperbandsuikerbekkie	Cinnyris bifasciatus	Purple-banded Sunbird	756	2023-08-15	15:09:37	-2,27513	30,245508
33	Klaas's Cuckoo	Meitjie	Chrysococcyx klaas	Klaas's Cuckoo	351	2023-08-15	15:27:31	-2,27494	30,240361
34	Lesser Striped Swallow	Kleinstreepswael	Cecropis abyssinica	Lesser Striped Swallow	503	2023-08-16	10:23:00	-2,28453	30,210068
35	African Palm Swift	Palmwindswael	Cypsiurus parvus	African Palm Swift	387	2023-08-16	10:26:22	-2,28447	30,210057
36	Wire-tailed Swallow	Draadstertswael	Hirundo smithii	Wire-tailed Swallow	496	2023-08-16	10:27:22	-2,2845	30,210146
37	African Fish Eagle	Visarend	Haliaeetus vocifer	African Fish Eagle	149	2023-08-16	10:31:45	-2,28453	30,210052
38	Augur Buzzard	Witborsjakkalsvoël	Buteo augur	Augur Buzzard	153	2023-08-16	10:48:57	-2,28456	30,210097
39	Green-winged Pytilia	Gewone Melba	Pytilia melba	Green-winged Pytilia	830	2023-08-16	11:02:12	-2,28081	30,210551



ERM

OBJECT ID	Primary_language	Secondary_language	Tertiary_language	English_IOC	ID	Date	Time	Latitude	Longitude
40	Common Bulbul	Common Bulbul	Pycnonotus barbatus	Common Bulbul	11491	2023-08-16	11:02:22	-2,28062	30,21054
41	Fork-tailed Drongo	Mikstertbyvanger	Dicrurus adsimilis	Fork-tailed Drongo	517	2023-08-16	11:12:13	-2,27986	30,211019
42	Yellow Canary	Geelkanarie	Crithagra flaviventris	Yellow Canary	866	2023-08-16	11:16:48	-2,2798	30,211042
43	Bronze Mannikin	Gewone Fret	Lonchura cucullata	Bronze Mannikin	823	2023-08-16	11:18:06	-2,27982	30,211
44	Blue-naped Mousebird	Blue-naped Mousebird	Urocolius macrourus	Blue-naped Mousebird	1590	2023-08-16	11:18:59	-2,27968	30,211197
45	Grey-backed Fiscal	Grey-backed Fiscal	Lanius excubitoroides	Grey-backed Fiscal	2284	2023-08-16	11:22:02	-2,27966	30,211428
46	Black Cuckooshrike	Swartkatakoeroe	Campephaga flava	Black Cuckooshrike	513	2023-08-16	11:34:54	-2,27956	30,210996
47	Black-faced Waxbill	Swartwangsysie	Brunhilda erythronotos	Black-faced Waxbill	841	2023-08-16	12:07:12	-2,27983	30,213165
48	Black Saw-wing	Swartsaagvlerkswael	Psalidoprocne pristoptera	Black Saw-wing	511	2023-08-16	12:08:18	-2,27976	30,213342
49	Violet-backed Starling	Witborsspreu	Cinnyricinclus leucogaster	Violet-backed Starling	736	2023-08-16	12:16:20	-2,27967	30,21481
50	White-headed Saw-wing	Witkopsaagvlerkswael	Psalidoprocne albiceps	White-headed Saw-wing	964	2023-08-16	12:20:44	-2,27943	30,215315
51	Unidentified	Ongeidentifiseerd	Unidentified	Unidentified	0	2023-08-16	13:04:13	-2,28003	30,216796
52	Unidentified	Ongeidentifiseerd	Unidentified	Unidentified	0	2023-08-16	13:04:27	-2,28011	30,216742
53	Western Citril	Western Citril	Crithagra frontalis	Western Citril	4082	2023-08-16	13:12:42	-2,28027	30,217663



ERM

OBJECT ID	Primary_language	Secondary_language	Tertiary_language	English_IOC	ID	Date	Time	Latitude	Longitude
54	Augur Buzzard	Witborsjakkalsvoël	Buteo augur	Augur Buzzard	153	2023-08-16	13:20:03	-2,27987	30,218042
55	Unidentified	Ongeidentifiseerd	Unidentified	Unidentified	0	2023-08-16	14:28:54	-2,2807	30,218939
56	Unidentified	Ongeidentifiseerd	Unidentified	Unidentified	0	2023-08-16	14:38:13	-2,28106	30,22034
57	Unidentified	Ongeidentifiseerd	Unidentified	Unidentified	0	2023-08-16	14:42:34	-2,28123	30,220693
58	Yellow-fronted Canary	Geeloogkanarie	Crithagra mozambica	Yellow-fronted Canary	859	2023-08-16	14:44:23	-2,28163	30,221339
59	Bare-faced Go-away-bird	Bare-faced Go-away-bird	Crinifer personatus	Bare-faced Go-away-bird	1700	2023-08-16	14:57:49	-2,28205	30,222569
60	Greater Honeyguide	Grootheuningwyser	Indicator indicator	Greater Honeyguide	440	2023-08-16	15:06:55	-2,28193	30,222275
61	Rüppell's Starling	Rüppell's Starling	Lamprotornis purpuroptera	Rüppell's Starling	2794	2023-08-16	15:16:47	-2,28036	30,221468
62	Miombo Wren-Warbler	Miombo Wren-Warbler	Calamonastes undosus	Miombo Wren-Warbler	3092	2023-08-16	16:18:52	-2,28108	30,219508
63	African Thrush	African Thrush	Turdus pelios	African Thrush	1168	2023-08-16	16:20:46	-2,28109	30,21908
64	African Pied Wagtail	Bontkwikkie	Motacilla aguimp	African Pied Wagtail	685	2023-08-16	17:14:12	-2,2704	30,217195
65	Angolan Swallow	Angolaswael	Hirundo angolensis	Angolan Swallow	494	2023-08-16	17:47:08	-2,27044	30,217269
66	White-browed Robin-Chat	Heuglinjanfrederik	Cossypha heuglini	White-browed Robin-Chat	580	2023-08-17	10:33:09	-2,27167	30,229283
67	Grey-backed Fiscal	Grey-backed Fiscal	Lanius excubitoroides	Grey-backed Fiscal	2284	2023-08-17	10:36:49	-2,27219	30,229171



ERM

OBJECT ID	Primary_language	Secondary_language	Tertiary_language	English_IOC	ID	Date	Time	Latitude	Longitude
68	Yellow-billed Kite	Geelbekwou	Milvus aegyptius	Yellow-billed Kite	129	2023-08-17	10:57:50	-2,27492	30,227673
69	Crowned Lapwing	Kroonkiewiet	Vanellus coronatus	Crowned Lapwing	242	2023-08-17	11:09:26	-2,27555	30,227272
70	Fork-tailed Drongo	Mikstertbyvanger	Dicrurus adsimilis	Fork-tailed Drongo	517	2023-08-17	11:16:17	-2,27637	30,226485
71	Unidentified	Ongeïdentifiseerd	Unidentified	Unidentified	0	2023-08-17	11:23:08	-2,27717	30,226198
72	Speckled Mousebird	Gevlekte Muisvoël	Colius striatus	Speckled Mousebird	390	2023-08-17	11:25:16	-2,27742	30,225985
73	Pied Crow	Witborskraai	Corvus albus	Pied Crow	522	2023-08-17	11:27:12	-2,27763	30,225771
74	Common Bulbul	Common Bulbul	Pycnonotus barbatus	Common Bulbul	1149 1	2023-08-17	11:27:21	-2,27763	30,225769
75	Laughing Dove	Rooiborsduifie	Spilopelia senegalensis	Laughing Dove	317	2023-08-17	11:35:54	-2,27855	30,225674
76	Bronze Mannikin	Gewone Fret	Lonchura cucullata	Bronze Mannikin	823	2023-08-17	11:58:01	-2,2808	30,223885
77	Red-headed Weaver	Rooikopwewer	Anaplectes rubriceps	Red-headed Weaver	793	2023-08-17	12:01:08	-2,28126	30,22369
78	Black-lored Babbler	Black-lored Babbler	Turdoides sharpei	Black-lored Babbler	3458	2023-08-17	12:02:05	-2,2814	30,223663
79	Pin-tailed Whydah	Koningrooibekkie	Vidua macroura	Pin-tailed Whydah	846	2023-08-17	12:02:16	-2,28144	30,223639
80	Plain-backed Pipit	Donkerkoester	Anthus leucophrys	Plain-backed Pipit	694	2023-08-17	12:25:28	-2,28354	30,223745



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OBJECT ID	Primary_language	Secondary_language	Tertiary_language	English_IOC	ID	Date	Time	Latitude	Longitude
81	Common Bulbul	Common Bulbul	Pycnonotus barbatus	Common Bulbul	11491	2023-08-17	12:40:03	-2,2826	30,223519
82	Laughing Dove	Rooiborsduifie	Spilopelia senegalensis	Laughing Dove	317	2023-08-17	12:40:21	-2,28261	30,223557
83	African Thrush	African Thrush	Turdus pelios	African Thrush	1168	2023-08-17	12:41:22	-2,28276	30,223926
84	Green-winged Pytilia	Gewone Melba	Pytilia melba	Green-winged Pytilia	830	2023-08-17	12:41:28	-2,28276	30,223943
85	Emerald-spotted Wood Dove	Groenvlekduifie	Turtur chalcospilos	Emerald-spotted Wood Dove	321	2023-08-17	12:43:50	-2,2829	30,224683
86	African Harrier-Hawk	Kaalwangvalk	Polyboroides typus	African Harrier-Hawk	171	2023-08-17	12:55:50	-2,28385	30,226647
87	Unidentified	Ongeïdentifiseerd	Unidentified	Unidentified	0	2023-08-19 0:	16:05:34	-2,27483	30,238871
88	Red-billed Quelea	Rooibekkwalea	Quelea quelea	Red-billed Quelea	805	2023-08-19	16:29:47	-2,27494	30,239512



APPENDIX K

CULTURAL HERITAGE BASELINE
GAZETTEER

AB_Unique Identifier	Type	Source	Description	Sensitivity	Northing	Easting
AB_CH_001	Historic cattle watering trough associated with the palace of King Rwabugiri	Ntagwabira field survey, December 2023	Akavure: A small pool thought by the local community to have been used as a watering trough for King Rwabugiri's cattle.	High	-2.308642	30.204645
AB_CH_002	Indigenous medicinal plant	Ntagwabira field survey, December 2023	Umibirizi (an indigenous medicinal plant)	Low	-2.280728	30.218985
AB_CH_003	Indigenous medicinal plant	Ntagwabira field survey, December 2023	Plot of umukoni (an indigenous medicinal plant)	Low	-2.280730	30.220112 ¹
AB_CH_004	Sacred tree	Ntagwabira field survey, December 2023	Umuko: a plant used for traditional medicine. It is considered a sacred tree.	Medium	-2.280484	30.219178
AB_CH_005	Indigenous tree zone	Ntagwabira field survey, December 2023	Indigenous tree zone.	Low	-2.274527	30.199145
AB_CH_006	Trees associated with the palace of King Rwabugiri	Ntagwabira field survey, December 2023	Traditional location for palace of King Rwabugiri, marked by two ibigabito by'imivumu (figus trees).	Medium	-2.29403	30.205914

¹ Centre points for AB_CH_003

AB_CH_007	Historic agro-pastoral landscape	ERM, Remote sensing	Traditional pastoral and agricultural practices in the region.	Low	-2.293575	30.219801 ²
AB_CH_008	Possible location for the palace of King Rwabugiri	Ntagwabira field survey, December 2023	Suggested location for the palace of King Rwabugiri	Medium	-2.295787	30.205109 ³
AB-CH_009	Deposits of archaeological potential within alluvial and lacustrine sediments.	ERM, desk-based research including satellite images/Khemet Ltd (2023) Soil Investigation Report.	Academic research across the broader region suggests that remains of archaeological and palaeoenvironmental significance may be found within the superficial geology (silts and clays) that underly the Site and nearby areas. These silts and clays are likely to be of alluvial and possibly lacustrine origin, associated to Lake Garhawa and Kilimbi and the drainage systems that feed them.	Low	-2.286765	30.225014 ⁴

² Centre point for AB_CH_007 within the Site

³ Centre point for AB_CH_008

⁴ Centre point for AB_CH_009 within the Site



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