RESILIENT URBAN SIERRA LEONE PROJECT

NEIGHBOURHOOD UPGRADE OF MOYIBA, COCONUT FARM AND ROKUPA

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

FINAL ESIA REPORT

March 2026

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List of Abbreviations and Acronyms

AoI	Area of Influence
CBO	Community Based Organization
CUP	Community Upgrade Plan
CDC	Community Development Committee
SC	Supervision Consultant
DLP	Defect Liability Period
DRM	Disaster Risk Management
EHS	Environmental, Health and Safety
EIR	Environmental impact Report
EPA -SL	Environment Protection Agency (Sierra Leone)
EPAA	Environmental Protection Agency Act
E&S	Environmental and Social
ESIA	Environmental and Social Impact Assessment
ESS	Environmental and Social Standards
ESF	Environmental and Social Framework
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
FCC	Freetown City Council
FDD	Fiscal Decentralization Division
FGD	Focused Group Discussion
FERP	Freetown Emergency Recovery Project
FSU	Family Support Unit
GAP	Gender Action Plan
GBV	Gender Based Violence
GRC	Grievance Redress Committee
GHG	Green House Gas
GIS	Geographic Information System
GoSL	Government of Sierra Leone
GPS	Global Positioning System
GM	Grievance Mechanism
GRM	Grievance Redress Mechanism

HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immune Deficiency
I&AP	Interested and Affected Person
INWMSP	Integrated National Waste Management Strategic Plan
IUCN	International Union of Conservation of Nature
LRP	Livelihood Restoration Plan
MDGs	Millennium Development Goals
MTNDP	Medium-Term National Development Plan
MRC	Monument and Relics Commission
MTPHC	Mid-term Population and Housing Census
MoF	Ministry of Finance
MWR	Ministry of Water Resources
NEP	National Environmental Policy
NGO	Non-Governmental Organizations
NLP	National Land Policy
NU	Neighbourhoods Upgrade
NWRMA	National Water Resources Management Agency
OHSMP	Occupational Health Safety Management Plan
PAPs	Project Affected Persons
PDO	Project Development Objectives
PMU	Project Management Unit
PAP	Resettlement Action Plan
PPE	Personal Protective Equipment
QA/QC	Quality Assurance/Quality Control
RP	Resettlement Plan
RUSLP	Resilient Urban Sierra Leone Project
SALWACO	Sierra Leone Water Company
SEP	Stakeholders Engagement Plan
SEAH	Sexual Exploitation, Abuse and Sexual Harassment
SLDHS	Sierra Leone Demographic Heath Survey
SLIRUMP	Sierra Leone Integrated Resilient Urban Mobility Project
SLMET	Sierra Leone Meteorological Agency
SLRA	Sierra Leone Roads Authority
SPM	Suspended Particulate Matter
WB	World Bank
WBG	World Bank Group
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization

EXECUTIVE SUMMARY

ES 1: Introduction and Background

The Government of Sierra Leone (GoSL), under its Medium-Term National Development Plan (MTNDP), is committed to building institutional capacity to respond to natural disasters and strengthen the resilience of urban communities, sustain decentralization, and improve service delivery. Sierra Leone's high vulnerability to natural catastrophes adds mounting pressure to its already strained urban infrastructure and limited fiscal space. Within this context, the Government received funds as support from the World Bank's to improve urban management and disaster resilience in Sierra Leone by funding the Resilient Urban Sierra Leone Project (RUSLP) that will be implemented in the Western Area and select secondary cities of Sierra Leone.

The 'Resilient Urban Sierra Leone Project' (RUSLP) is designed to comprehensively address the multisectoral urban development challenges and disaster risk management and service delivery, with the aim for livable, safe, financially sustainable, and productive urban centers. The proposed intervention aims to reduce the vulnerability to flooding and other hazards in unplanned settlements through participatory neighborhood upgrading. A catchment-based and phased approach is being undertaken for the integrated flood risk reduction of drainage catchment in the selected communities.

Project Location and Selection Criteria

The three (3) communities which were selected to upgrade include Coconut Farm and Moyiba in the upper catchment (C4) and Rokupa in the lower catchment (C5) they were elected based on the under-listed criteria:

- settlement size and population density
- spatial vulnerability to disasters
- contribution to a drainage catchment area improvement
- income levels
- lack of access to basic infrastructure and services
- demonstration of interventions (i.e. to show tangible improvements at low cost for future replication or scaling up and to present upgrading in different typologies)
- social capital of community; and
- avoiding demolition and resettlement.

Objective of Study

The objective of this ESIA is to assess the environmental and social risks and impacts of the proposed interventions in Moyiba, Coconut Farm and Portee – Rokupa communities, recommend mitigation measures to address the negative impacts and enhance positive impacts throughout the project life cycle.

Rationale for the Study

The ESIA relates to subcomponent 2a of the project that will support the comprehensive upgrading and flood risk mitigation in underserved neighborhoods which include Coconut Farm, Moyiba, and

Rokupa communities. In accordance with the guidelines of the Sierra Leone Environment Protection Agency (EPA) and the provisions of the EPA Act 2008/2010/2022, Part IV Environmental Impact Assessments, an ESIA is a requirement towards obtaining an EIA License for any investment that is enlisted in Section 24 (First Schedule), before commencement of any project that may impact negatively on the environment and communities. The Environment and Social Standard (ESS) 1 of the World Bank Environment and Social Framework requires the Borrower to carry out an environmental and social assessment (ESIA) of the project to assess the environmental and social risks and impacts of the project throughout the project life cycle.

The Proponent

The Government of Sierra Leone through the Ministry of Finance (MoF) serves as the proponent whilst the Freetown City Council (FCC) serves as the beneficiary of the Project. The project is being implemented by an established Project Management Unit (PMU) which is being supervised by the Fiscal Decentralization Division (FDD) of the Ministry of Finance.

ES 2: Legal and Institutional Framework

The project will comply with the applicable National laws, policies, regulatory frameworks. The legislation elaborated in Chapter 2 are derived from GoSL laws and regulations applicable to the project as well as international conventions and other legal instruments that Sierra Leone is signatory to. The project will be implemented in line with the relevant World Bank's (WB) Environmental and Social Standards (ESS) in the Environmental and Social Framework (ESF).

ES 3: Project Description

As presented in Chapter 3, the Project under Component 2, is focused on "Resilient Municipal Investment and Urban Greening" and involves infrastructure interventions facilitating: Neighbourhood Upgrading and Greening; The main investment areas are as follows:

Lot 1: Construction of Urban Roads, Drainage Structures, Earth Retaining Structure (including stone pitching of loose slopes), Footbridges, Walkways and Steps, Lighting Infrastructure in Moyiba, Coconut Farm and Rokupa/Portee Communities, Freetown.

Table ES 1: Summary of the activities in lot 1 per community

Description of Investment	Unit	Community			Total
		Moyiba	Coconut Farm	Rokupa/Portee	
Road	m	2610	600	600	310
Drainage	m	4211	2207	1740	8158
Retaining Structure	m	140	18	80	238
Footbridges	m	36	-	16	52
Steps	m	165	530	110	805
Walkways	m	155	610	400	1165
Street Lights	No	180	100	75	355

Lot 2 Construction of Hybrid-powered Borehole with Transmission, Lines/Water Kiosks, Water Table Wells with Handpumps, Supply and Installation of Plastic Water Storage Tanks with Platform, Development of Spring box, Public Pour Flush and VIP Toilets, , in Moyiba, Coconut Farm and Rokupa/Portee, Freetown.

Table ES 2: Summary of the activities in lot 2 per community

Description of Investment	**Community**			**Total**
	Moyiba	Coconut Farm	Rokupa/ Portee	
Hybrid-powered deep borehole and transmission line/water kiosk (No)	-	-	4	4
Hybrid-powered borehole with water kiosk (No)	9	4	3	16
New Water Table (WT) Wells with handpump (No)	9	7	2	18
10,000 L plastic storage tanks and platform (No)	3	3	-	6

Pour Flush with handwash facility	4	6	4	14

ES 4: Environmental and Social Baseline

Biophysical Environment

- **Rainfall**

Sierra Leone has two distinct seasons, (rainy and dry). The rainy season spans from June to November and the dry season is from December to May. Rainfall is heaviest during the period of August to October . The least amount of rainfall occurs in January (7 mm average). Annual rainfall ranges between 3,000 to 5,000 mm at the coastal areas 000 to 2,500 mm in the eastern regions. Rainfall decreases as the dry season progresses, until in February where very little rain falls

- **Temperature**

The seasonal temperature and precipitation cycle for each season are similar across the regions in Sierra Leone with noticeable variations in the distribution of monthly precipitation. The temperatures are consistently high throughout the country, roughly averaging from 24.9 – 28.7 °C

- **Wind Speed and Relative Humidity**

The dominant wind direction is reversed with the dry and dusty 'Harmattan' winds which blow from the Sahara Desert. Thunderstorms occur in the transition periods between the two seasons, accompanied by short periods of strong winds and heavy rain. The month of July recorded the highest relative humidity (86.8%) and lowest wind speed (2.14 m/s) while the month of January has the lowest relative humidity (76.1%) and the highest wind speed (3.51 m/s).

- **Air Quality**

The parameters monitored during the study include Nitrogen dioxide (NO2), Sulphur dioxide (SO2), Carbon Monoxide (CO), Particulate Matter with an aerodynamic diameter of less than 10 micrometres (PM10), and Particulate Matter with an aerodynamic diameter less than 2.5 micrometres (PM2.5). The measured of PM10 (12.0– 26.30 µg/m^3) found to be within the WHO guidelines of 50 µg/m^3 at Moyiba while the PM2.5 concentration value of 30µg/m^3 found to be above the WHO guidelines of 15 µg/m^3 in Coconut Farm. At Portee – Rokupa, the PM 10 concentration of 50.4 µg/m^3 was only detected at sampling point

The existing sources of air pollutants in the communities include: Movement of vehicles on unpaved road, Household fuel combustion (charcoal and wood), Fugitive dust sources (windblown dust from bare ground as well as dust being transported by winds) and Stone crushing.

Tables 4.3, 4.5 and 4.55 present the daily average ambient air quality concentrations monitored within the three communities in comparison to the World Health Organization (WHO) and the World Bank Group (WBG) EHS Guidelines.

- **Noise**

Noise assessment was carried out at the communities of Moyiba, Coconut Farm and Rokupa using a TekcoPlus Datalogging Sound Pressure Level Meter from May 28 – June 4, 2023. The sample locations coordinates are found in tables 4.6, 4.31 and 4.56 of the report. At Moyiba, the noise level measured were above WHO/WBG EHS guidelines at most locations in communities ranged from 52.5 – 98.2 dB (A) at Moyiba, 68.5 – 79.2 dB (A) in Coconut Farm and in –Rokupa/Portee ranges from 47.6 – 69.1 dB (A). The high noise level (Table 4.6) recorded is attributable to the level of human activity in the study area.

- **Soils**

The Freetown soil series consists of very deep, poorly drained organic soils formed in more than 130 centimetres of highly decomposed organic materials in the hilly topography and are susceptible to erosion and landslides. Soil sampling was carried out within different soil habitats encountered at each of the three communities from May 24 – June 5, 2023. The coordinates of the sampling

location for each community are presented in Tables 4.7, 4.32 and 4.57. Tables 4.7, 4.32 4.57 present the grain size analysis of soils collected in Moyiba, Coconut Farm and Rokupa/Portee communities respectively. The grain size analysis of the soil within the communities indicates that the topsoil (0-20cm) and subsoil (20-50cm) are predominantly clay (73.5% - 76.4%) with mean alkaline pH of 7.54. While Pb is below detection limit the chemical properties is generally low which suggests the communities are not polluted with industrial waste disposal.

- **Surface Water**

Surface water samples were collected at different locations upstream and downstream of streams encountered and groundwater samples were collected from hand-dug wells within the communities. The coordinates of the sample collected are presented in Table 4.7.1, 4.42.1 and 4.71.1. The monitoring locations were established based on their relative proximity to the households and their usage by residents of the communities. The chemical properties of the surface water sample within the project area were compared with the WHO standards. The water bodies attribute slight alkalinity with pH range of 6.7 - 7.5 which could be attributed to decomposition of organic matters. Alkaline pH causes nutritional imbalance in the water. High conductivity values ranged from 110 – 580µScm-1 in the water body may be due to the presence of ionized materials flushed into the water bodies. Tables 4.7.1, 4.32.1 and 4.70.1 give location coordinates where samples of surface water were collected and the laboratory results found on annex 13.

- **Groundwater Quality**

The water is slightly acidic with a pH value range of 4.60 - 5.25 for samples from the project areas. The values of dissolved oxygen recorded in the groundwater from the three communities ranged from 9.80 – 40.30 mg/l. The groundwater table in the three communities are generally low, thus the variation in the pH of the groundwater may be attributed to seepage from the soil surface of acid iron containing materials into the groundwater during runoff. A possible health effect could be gastrointestinal infection. Tables 4.7.1, 4.32.1 and 4.70.1 give location coordinates where samples of groundwater were collected and the laboratory results found on annex 13.

- **Geology**

Sierra Leone is underlain by rocks of Precambrian age (Archaean and Proterozoic) complex (Lapworth, et al., 2015). A major belt of late Precambrian (Upper Proterozoic) to Lower Palaeozoic age metasedimentary rocks, with some (meta) volcanic rocks, occurs in the western part of the country). These are often capped by a weathered zone of unconsolidated material, where the Precambrian basement rocks have been weathered in-situ to sand, gravel and clay.

- **Biodiversity (Flora and Fauna)**

At each sampling point, the floral diversity and population density of key economic species composition were obtained using 50 m transects and 10 m quadrats as much as practicable within the assessed project footprint AoI across the 3 communities. The rapid and uncontrolled expansion of the communities led to the loss of vegetation and wildlife habitat for houses, buildings and road access (Moyiba Area Action Plan 2023). At the forested area towards the Fourah Bay College land, adjacent the communities of Moyiba and Coconut Farm, the trees and vegetation encountered are documented in the Table 4.1. As presented Table 4.2, some of the economic tree observed in the area include mango (*Mangifera indica*); pawpaw (*Carica papaya*), and guava (*Psidium guajava*).

- **Surface Hydrology**

In **Moyiba**, the surface water body (Grandville Brooks) that runs through the community is an all-season river flow. The water body varied in depths of 0.1m at the edge to 1.3m at the middle The water body is slightly alkaline with pH concentration of 7.73 which could be attributed to decomposition of organic matters. Alkaline pH causes nutritional imbalance in the water. At **Coconut Farm**, the water body varied in depths of 0.1m at the edge to 0.7m at the middle. The water body is slightly acidic with a mean pH 6.83, which could be attributed to atmospheric decomposition and soil

leaching. The high conductivity mean-value (575.67 µScm-1) above the WHO standard 420.00 µScm-1 which could possibly be attributed to the presence of ionized materials flushed into the water body. At **Rokupa,** the mean pH value of the water body indicates that the water body is slightly alkaline (6.93) which could be attributed to atmospheric decomposition. The mean conductivity value (412.00 µScm-1) is within the WHO limit. The conductivity value may be due to the presence of ionized materials flushed into the water body. The metals (Ca and Mg) constitute the exchangeable cations. The mean concentration of calcium is 68.67 mg/l while the mean concentration of magnesium in the water body ranged 0.20 mg/l). The presence of coliform bacteria in the water body indicates pollution by faeces.

- **Topography**

Moyiba is situated in a steep, hilly area on the eastern side of Freetown, approximately 5 kilometres from the city centre. Moyiba landscape is predominantly hilly with small pockets of flat land at the top of the community. The physical attributes can be divided into three - hilltops, hillsides and mountains with elevations rising from 20 to 50 meters above sea level. The topography is dominated by the Mamba Ridge (east) and Mount Aureole (west), rising sharply to approximately 550 metres above sea level and the Granville Brooke, which runs north-south through the community. **Coconut Farm** is a small community situated in a steep, hilly area on the eastern side of Freetown, approximately 5 kilometres from the city centre. The landscape's physical characteristics can be divided into a steep hillside, steep hilltop, and flat undulating land with an elevation between 20 to 50 meters above sea level. Towards the hillside, huge rocks and stones are found, considered hanging rocks and stones. **Portee-Rokupa** are two neighbouring interconnected coastal communities located in a small bay in the eastern part of the Freetown peninsula. The neighbourhoods slope gently from a high of about +40m above sea level to meet the coastline.

- **Drainage**

According to the hydrological and hydraulic design report, the existing drainage systems capacities were examined within the Coconut Farm, Portee/Rokupa and Moyiba communities to understand and ultimately optimize the stormwater drain carrying capacities and hence reduce potential human and material damage arising from rainfall events in these selected communities. The topographical features of Moyiba, Rokupa, and Coconut communities in Sierra Leone are integral factors influencing drainage patterns, flood risks, and urban development. The topography of these areas is characterized by steep slopes which promote rapid runoff and necessitate efficient drainage solutions despite the absence of large drainage sizes. Factors such as sedimentation, vegetation growth, and inadequate maintenance practices have affected the overall functionality of the drainage systems. The main issues from the drainage layout include Nature of Drainage Networks, Disconnected Drainage Networks and Variability in Drainage Widths.

- **Climate change scenarios**

Sierra Leone is experiencing significant climate change, including rising temperatures, more frequent extreme hot days, and more intense precipitation events. The impact is already being felt with climate-related natural disasters posing a threat to lives and livelihoods, human health, and food security; heavy rains in September 2024 resulted in severe flooding, displacement, crop loss, and contributed to collapsed buildings. Valuable ecosystems in the country will be severely impacted by climate change. Increased storm surges, flash floods, and high winds, accompanied by pollution, landslides, coastal erosion, deforestation, biodiversity loss, and invasive species, will further stress fragile ecosystems

Socio-economic Baseline

- **Population and Demography**

A population of 28,373 people, representing about 6,964 households in the 3 communities of Moyiba (17,379), Coconut Farm (3,182) and Portee-Rokupa (7,794) were randomly sampled. A total of 1402 questionnaires were administered in the three communities (Moyiba 509, Coconut Farm 240 and Portee// Rokupa 655) comprising 60.5% males and 30.5% female. Most of the population in the

three communities belong to the Temne ethnic group who originated from the Futa Jallon region of Guinea and migrated south to settle in the Sierra Leone area, with the predominant religious affiliation as Islam, followed by Christianity, practiced by 84.7% in Rokupa/Portee, 74.7% in Moyiba and about 89.2% in Coconut Farm. The average household size is Seven (7). Respondents interviewed during the survey were within ages 19–75years. Overall, there are more male respondents (54.9%) than female (45.1%) in the 3 surveyed community. The Gender distribution for Freetown is 292,411 male (48%) and 316.763 females (52%).

- **Educational Level**

Educational levels in the three project area communities are generally low with over one-fourth of respondents (27.8% in Rokupa/Portee, 28.1% in Moyiba and 31.7% in Coconut Farm) indicating they never had any form of formal educational training. However, 13.3% in Portee-Rokupa, 16.3% in Coconut farm and 20.2% in Moyiba reported that they had attained tertiary level education.

- **Occupation**

A variety of livelihood activities are undertaken in the three communities. However, trading is the major livelihood activity undertaken across the three communities. While fishing and its related activities is a major livelihood activity in Rokupa/Portee (13.1%), quarrying is done in Moyiba and coconut farm communities (8.8% and 2.5% respectively). Commercial bike riding is also a major livelihood activity in Moyiba.

- **Income and Expenditure**

Generally, income levels are low and varies across the three communities as with Occupation. While about 14.9% in Rokupa-Portee earn monthly income between SLL 401-NLe 600, 24.6% in Coconut Farm earn as low as SLL 200 and 21% in Moyiba earn between SLL 200-Nle400. Very few households (8.4%, 3.2% and 5%) in Rokupa-Portee, Moyiba and Coconut Farm respectively earn between SLL 2001 to SLL 3000 monthly. Only one Household head (0.4%) in Coconut Farm claimed to earn above 3000 monthly. Comparing these with the Minimum wage (SLL 800) in Sierra Leone, about 49.2% in Rokupa/Portee, 64% in Moyiba and 63% in Coconut Farm earn the minimum wage or below.

- **Water Supply**

Households in the project area depend on different sources of water for both domestic and drinking purposes. Majority (67%) of households in Rokupa-Portee rely on pipe borne water and 23% from wells, a few rely on other sources such as Stream/spring. At Moyiba, one-fourth of respondents rely on pipe borne water, the remaining substitute it with open wells and stream/spring. Respondents in Coconut farm depend on pipe borne water and water from hand pump wells (56%) and other sources. Participants in FGD Meetings revealed that pipe borne water supply in the three communities is erratic causing inconveniences and hardships particularly in the dry season, residents' resort to the use of water from other sources most of which are unhygienic wells, streams/spring etc. The women and children spend up to 2 to 4 hours a day in search of both domestic and drinking.

- **Sanitation**

Access to toilet facilities in the three communities indicates that majority (55.6%) of households in Rokupa/Portee rely on one shared and unsafe overhanging pit latrine that empties into the nearby sea or use the seaside, about 71.3% of households in Moyiba and 55.8% of households at Coconut Farm have access to traditional pit latrines. Only 10.6% of households in Moyiba, 21.7% of households in Coconut Farm and 20.9 in Portee –Rokupa use flush as toilet facility

- **Waste Management**

There are no designated controlled or uncontrolled dump sites established by local or national government within the communities, hence, waste is disposed illegally into drainage channels which ultimately end up in the water bodies around the communities while some residents closer to these water bodies dispose of directly into them.

- **Access Road**

Within the project area, as with most rural communities, infrastructural development in the area is poor. The road network in the study communities was observed to be poor and untarred, while footpaths link together the houses in some parts of the communities. Access and internal mobility in Moyiba are reduced due to the lack of maintenance of the unpaved roads and lack or walkways and connections over Granville Brooke.

At Coconut Farm, there are community access roads which were built by the community people through self-help. One of the roads leads from Blackhall Road into Ashobi Corner, another one leads to the center of Coconut farm. Other roads include Tokyo by “Pear stick” and Middle Town. The current width in most sections of the roads do not allow the minimum two carriage passage of vehicles without waiting for each other and are without proper drainage.

Portee – Rokupa main Bai Bureh Road runs north to south through the two communities, and is paved and in good condition, however crossing for people is dangerous due to the inexistence of crossing indications or amenities. The roads inside the community are unpaved and in poor condition.

- **Transportation**

Okada (Motor bikes) was observed as the most popular mode of transportation used by the population mainly due to challenging road network as confirmed during Consultations and FGD Meetings. The challenges of road conditions were exacerbated by the lack of drainages thus causing flash flooding during heavy rains resulting in the contamination of the environment and related health consequences.

- **Schools**

Education services within the neighborhoods are hindered by inadequate educational infrastructure and poor quality and a higher teacher pupil ratio. The area's existing primary and secondary schools are in a dilapidated state and lack the basic facilities like proper toilets, water supply and furniture. At Moyiba, there are 24 schools which include 16 primary, 4 secondary. Coconut farm has 7 private and 1 public primary school, 1 public Junior and 1 private Senior Secondary School, Portee-Rokupa has 4 primary schools (3 in Rokupa, 1 in Portee), 3 Junior Secondary School (2 in Rokupa, 1 in Portee), and 3 Senior secondary schools (2 in Rokupa, 1 in Portee).

- **Public Health**

Public Health facility in the three communities indicates that they are either grossly inadequate or absent. There is a newly constructed health facility in Rokupa community that was yet to commence operations at the time of the survey, Moyiba community has a community health centre but not well equipped and understaffed. Response from Moyiba residents during the stakeholder consultation indicates that majority of the residents sought medical attention from the community health centre located in the community while respondents in Rokupa-Portee and Coconut Farm sought medical attention from the hospitals located away from the community. At Rokupa, in addition to the newly constructed community health centre there is a Government Referral Hospital commonly called the Satellite Hospital which is situated along the Freetown-Waterloo highway. Survey report indicates that Malaria is the most prevalent disease followed by cold cough and flu and Typhoid.

- **Communities Concerns**

The communities expect the project to improve existing infrastructure and provide employment for local residents of the area. The major concerns from the project are land acquisition and resettlement concerns, blockage of access, labour influx, noise disturbance from construction equipment, occupational and community health and safety.

ES 5: Analyses of Alternatives

The alternatives considered include:

Option 1: Current Situation ("No Action" Option)

The no project alternative would imply that the status quo remains in the settlements: poor road conditions, poor drainage, mudslides susceptibility, poor water and sanitation conditions, and inappropriate waste disposal leading to environmental pollution, uncontrolled runoff, flooding and damage to properties. The health-related risks will persist and environmental degradation in the settlements will continue.

Option 2: Alternative Investment /Site

This alternative may not be available to the project proponent since the residents of the communities who are the primary project beneficiaries have the discretion to prioritize the infrastructure investments. Furthermore, all the investments qualifying for funding under RUSLP are all designed to improve living conditions in the communities. The option of alternative sites for investments within the communities was not feasible for this project because proposed subprojects have community-wide intervention footprint.

Option 3: Alternative Design and Technology Option

This option is a critical consideration to ensure the successful development of the project. The objective is to ensure the most cost-effective feasible investments and environmentally friendly designs, and technology are prioritized for construction. The technology to be applied should meet minimum local and internationally established standards. The factors that should informed the process of developing sustainable upgrade project (SUP) is expected to include the environmental and social characteristics of the sites; cost of the designs and technology to be applied; durability, sustainability and the changing scenarios/future projections. The proponent should adhere to the best and common industry practices applicable to urban infrastructure.

For Bai Bureh road drainage expansion works, the study compared open trapezoidal channels against Reinforced Concrete rectangular covered drainage channels . While open channels offer lower costs, they were dismissed due to high risks of waste dumping, safety hazards, and a larger land footprint. The cover drains were selected for their superior hydraulic capacity in restricted corridors and reduced maintenance requirements.

the design optimizes gravity flow while managing steep gradients, ranging from a 3.78% slope through sensitive church property to an 8.74% slope at the outfall. To ensure structural integrity, the plan incorporates targeted stone pitching at high-gradient sections to prevent soil scour and erosion.

Option 4: Current Project Option

This option means the proposal to invest in the prioritized infrastructure sub activities in the 3 communities is pursued. This is the most feasible and priority option according to the residents in the communities and neighborhoods upgrade priority of the government to ensure minimum livability standard in the communities. It will address their immediate infrastructure needs and meets all criteria for funding under RUSLIP. The current project option/alternative seem plausible from environmental, economic and social standpoint therefore is elected over the other alternatives.

- **Design & Technology Alternatives:**
- **Alignment and Slope Optimization:**

ES 6: Stakeholder consultation

All issues raised by each community during consultation meetings and Focused Group Discussions (FGDs) in May/June 2023/July 2024 were properly recorded and either resolved or recommendation made for their resolution to the appropriate authorities. The issues log was interrogated, and similar issues are grouped together into summary tables as presented in Table 5.1 and Table 5.2. There

were no substantive differences raised during the local authorities' meetings and FGDs or between the different KIIs.

Overall, the community members in most of the target participants where discussions were held had high expectations that their quality of life would improve and that the road/drainage construction which will contribute significantly to overcoming flood in the communities and other subprojects would provide more economic transformation and improve livability within the communities.

The main anticipated risks raised by community members and key informants related to:

- Loss of / damage to houses and livelihood
- Increased risk of unwanted social outcomes (e.g. teenage pregnancy, and school absenteeism/ dropouts) during construction for youths seeking quick and gratification
- Construction disturbance from noise, dust, etc. and traffic safety risks, especially at sensitive receptors such as schools and mosque/churches close to the active construction areas.
- Interference with water supply sources.

ES 7: Summary of Potential Adverse Environmental and Social Impacts and Mitigation Measures

Based on the assessment of baseline conditions and the scope of construction activities, a range of potential environmental and social risks and impacts have been identified, particularly during the construction phase. The potential environmental and social risks and impacts (including health and safety issues) associated with the proposed neighborhood interventions in Moyiba, Coconut Farm and Portee – Rokupa communities were assessed and impact significance determined. In determining the significance of impacts, the factors considered include the nature, size and scale of impacts, magnitude of impacts (which is a function of the combination of the impact characteristics: extent, duration, scale, and frequency); value/sensitivity/fragility and importance of relevant environmental and social receptors; legal/regulatory requirements; and public perceptions (based on stakeholders' consultation). The summarized key potential risks and impact identified for each phase and the recommended mitigation measures are presented in table ES 3below:

Table ES 3: Summary of Potential Adverse Environmental and Social Impacts and Mitigation Measures

Environmental and Social Issues	Anticipated Risk/Impact	Mitigation Measures
Design and Specifications	Inadequate geophysics surveys and siting of boreholes and failed reticulation leading to failed water supply Inadequate culvert designs may lead to flooding of houses that are situated close to drainages Poor design of toilets including improper septic tank design may pose negative impacts.	▪ Use approved standards and designs. ▪ Improve and approve design against WBG EHS guidelines for facility design, ▪ Ensure competent contractors and skilled workers are engaged ▪ Carefully design of toilet facilities with site specific consideration by Design Consultant ▪ Design of culvert structures should consider the hydrological and hydraulic surveys results ▪
	Girls, ladies and women are susceptible harassment and attacks using public toilets due to damaged locks or poor design	Design measures should consider universal access philosophy, safety and security of girls, ladies and women (ability to lock the toilet doors from inside, strong door frames, well-lit areas etc.)
	Poor design of Pour Flush toilets	▪ Design a system (either aerobic or anaerobic) that will thrive based on the environmental conditions of the sites ▪ Select materials that are resistant to the local climatic conditions Ensure correct estimated users of the facility
Air Quality	Increase in dust generation and spread of dust	▪ Regular damping of unpaved roads or exposed soils/ground to control dust/particulate matter particularly during the dry season. ▪ Limit active construction activities to not more than a total of 500 meters at a time on a 2.0 km road length section to minimize dust. ▪ Locate material stockpile areas as far as practicable away from sensitive receptors.
	Increase in emission of air pollutants from vehicles, plants and equipment, machinery	▪ Ensure vehicles/machines are switched off when not in use. ▪ Ensure only vehicles required to undertake work are operated on-site. ▪ Ensure all construction vehicles, plants and machinery are well maintained and in full operating condition
Waste Management	Oil and other potential contaminants are not properly collected, managed and/or disposed	▪ Proper storage, transport and disposal of hazardous waste (oily waste, used batteries, fuel drums) in the designated landfill sites by the national authorities
	Demolition and Construction waste and solid waste generated are not properly managed or disposed Waste resulting from packaging materials	▪ Operate a waste management strategy based on principles of reduction, recovery, recycle and reuse ▪ Ensure use of PPE by staff when handling all forms of waste ▪ Recyclable waste (including oil and some construction waste) collected separately and disposed of correctly and/or approved facility as per the EPA requirements ▪ Dispose of solid waste in the most environmentally sound manner possible in the designated landfill sites by the national authorities.
Noise and Vibration	Public nuisance caused by construction/operation activities	▪ Minimize site-generated noise to the greatest possible extent especially around schools, health care centers etc

		▪ All equipment should be maintained as per the manufacturers' recommendations and operated as per original specifications. ▪ Install noise reduction devices such as silencers and mufflers as appropriate to mobile plants and equipment. ▪ Limit the active construction site to not more than 500 meters per 2.0 km length ▪ Limit construction activities to daylight hours. Schedule noisy construction activities during specific times in the day especially near the sensitive receptors. ▪ Identify and avoid subjecting the adjacent highly sensitive receptors to vibrations ▪ Ensure that residents and road users are given advance notice on timing and scale of civil works, as well as details of the GRM in the event of complaints.
Flooding on Granville Brooke Due to Increased Water Flow from Moyiba and Coconut Farm	– High-velocity runoff may cause downstream erosion and scour along Blackhall Road to Bai Bureh Road and into Granville Brook – Granville Brook is already highly eroded, posing significant environmental and social risks	**Construction Phase (Immediate Actions):** • De-silting and dredging of Granville Brook to restore channel capacity • Upgrade undersized culverts to reinforced concrete box culverts • Stabilize stream banks using rip-rap and gabions • Install temporary upstream sediment traps/check dams **Permanent Engineering Measures:** • Concrete lining/channelization of drainage channels to improve flow efficiency • Construction of reinforced retaining walls to protect adjacent properties • Development of upstream flood attenuation/detention ponds **Integrated Waste–Drainage Management:** • Install self-cleaning trash racks at culvert inlets • Construct bund walls around the dumpsite to prevent waste encroachment into drainage channels **Watershed-Level Measures:** • Reforestation of upstream catchments to reduce runoff intensity • Promote permeable surfaces to reduce surface runoff volume ▪ **See Annex 24: Granville Brook Flood Control Recommendation**
Loss of trees and biodiversity	Potential impact on few economic trees could be triggered through poor construction preparation practices for the retaining wall to be constructed adjacent to the Iman Sadiq School in Moyiba and on the culvert embankment at Granville Brooke Culvert.	• Re-plant the indigenous vegetation as much as practical once work is completed by the original species. • Spare the trees that must not necessarily be removed. ▪ The landscaping plan should seek to avoid the use of non-native and potentially invasive species
Land Degradation	Blockages of drains and waterways due to construction activities	▪ Proper stockpiling of construction materials, spoils (on flat areas and away from drainage routes
	Erosion and sedimentation caused by construction works	▪ Silt fences grassed buffer strips and bioengineering measures to be installed to reduce water velocity. ▪ Avoid long exposure of opened excavated/cut areas
Social	Lack of Stakeholders Engagement	▪ Conduct stakeholder engagement in line with the project Stakeholders Engagement

Issues		Plan (SEP).
	Limited participation and involvement of women, youth, people with disabilities (PWD) and other vulnerable people	▪ Apply the requirements of project Gender Action Plan (GAP) ▪ Conduct gender sensitive engagements
	Involuntary resettlement, relocation or households or associated impacts	▪ Screening of sub-project using the WB E&S Screening Form and ensure that the sub-project does not result in significant involuntary resettlement or associated impacts. ▪ Reduction of project scope or footprint to reduce resettlement impacts
	Lack of employment opportunities for residents due to the influx of migrant workers	▪ Ensure that the contractor hires local workers (especially unskilled workers) from the host community ▪ Ensure fair and competitive employment process and 30% of the employees will be women
	The exclusion of women, youths and other vulnerable people from project activities	▪ Gender and GBV Action Plan developed and implemented ▪ Compliance with the GRM
	Exclusion of vulnerable people from the use of WASH facilities due to cost recovery drive (pay-for-use)	▪ Freetown City Council should capture the maintenance of the WASH facilities in their annual budget
	Ownership and management of WASH facilities	▪ Landowners of facilities constructed/rehabilitated within their properties (compensated or not) may claim ownership of these facilities and may determine who should use these facilities in their own terms
Accessibility & Inclusion	Reduced accessibility for disabled users	▪ Ensure accessible toilet cubicles with ramps, handrails, and wide door access. ▪ Footbridges should comply with accessibility standards (gentle ramps, handrails, proper curb cuts).
Cultural Heritage	Work activities executed close to Archaeological and/or Cultural Heritage sites	▪ Undertaking screening of sub-project. ▪ Engage the Monument and Relics Commission to identify existing cultural heritage, monuments and artifacts within the communities ▪ Implement work activities in areas that are away from known cultural heritage sites. ▪ Prepare and adopt a Chance-Find Procedure (CFP) in case unknown artifacts are discovered during works
Public safety/ Occupational Health, safety and security	Community Health and safety of road users and community	▪ Training provided for construction workers, adequate signage and warnings to road users to be in place. ▪ Adequate information provided to the host community about the safety measures and emergency protocols ▪ Provide proper signages and cordon off work areas and excavated pits lined with reflective tapes and road sections that are vulnerable ▪ Ensure that workplaces, machinery, equipment and processes are safe without risks to health
	Occupational Health and Safety	▪ implement the health and safety plan, and will include but not limited to Install reflective signages on all sites (culvert/hydraulic structures/ approach roads, blind spots and along road routes, provide speed breakers, especially on sloppy terrains,

		Install pedestrian bridges (where applicable) Install warning lights around the construction sites, especially in high-risk zones, Install safety instructions at the entrances (laydown yard/offices etc). ▪ Prepare and adhere to OHS Policy and procedures ▪ Provide construction workers with personal protective equipment ▪ Emergency prevention and preparedness and response arrangements to emergency situations
	Risk of increased SEA/SH and GBV particularly due to the influx of workers	▪ Implementation of GBV/SEA/SH Prevention and Response Action Plan ▪ Code of Conduct to include SEA/SH and GBV prevention ▪ PMU will request that contractors, suppliers and partners adhere to zero tolerance for SEAH and GBV and commit to taking adequate action if faced with SEAH allegations ▪ Contractual arrangements can be terminated if breaches confirmed
	Given the level of GBV tendencies within the communities, there is a risk that labour influx might exacerbate GBV concerns	▪ Gender issues to be included in the ESIA/ESMP ▪ Implementation of GAP ▪ Code of Conduct to include SEAH and GBV prevention ▪ Develop and implement SEA/SH responsive GRM ▪ PMU will request that contractors, suppliers and partners adhere to zero tolerance for SEAH and GBV and commit to taking adequate action if faced with SEAH allegations.
Occupational Health, and safety of workers	Drilling of boreholes and electrical installations will expose workers and the public to potential emission risks and accidents	▪ Provide personal protective equipment workers, install signages and cordon off work areas
Risk of landslides due to unstable landscapes during clearing, construction, and especially in the rainy season	Rocks and loose materials from areas at higher areas could roll from erodible surfaces, loose soil, and vulnerable zones.	▪ Avoid the use of very heavy machines during clearing works and limit the scope of clearing works on unstable and sloping areas ▪ Design retaining structures to withstand heavy rainfall and prevent landslides. This includes using reinforced materials and ensuring proper drainage behind the structures ▪ Keep land clearance to a minimum and avoid clearing areas of highly erodible soils and steep slopes prone to erosion. ▪ Implement slope stabilization techniques to prevent erosion and further triggering of landslides ▪ Temporary drainage systems should be installed to prevent landslides during construction, such as cutting slopes. Permanent drainage systems for surface water management and slope stabilization should be installed, with adequate monitoring and maintenance ▪ Develop and implement emergency response plans to address potential landslide events. This includes establishing early warning systems and ensuring that communities are prepared to respond to landslide risks
Risk of flooding and runoff impacts on	Construction especially during the rainy season will exacerbate the risk of flooding due to unstable and exposed areas and disruption of the natural	▪ Ensure to control waterflow downstream and avoid alterations of existing flow channels and unnecessary water diversions ▪ Schedule construction activities during the dry season to minimize the risk of flooding

downstream population and communities	drainage pattern, thus affecting communities in low lying areas and downstream impacts in flood risk zones where drainages are heavily blocked and silted.	and runoff impacts. This reduces the likelihood of construction sites being inundated during heavy rainfall ▪ Implement effective drainage systems to manage stormwater and prevent flooding. This includes constructing diversion drains, interceptor ditches, and sediment ponds to capture and manage runoff ▪ Use erosion control measures such as silt fences, sediment retention basins, and vegetation planting to stabilize soil and prevent sedimentation in water bodies ▪ Implement the planting of trees and vegetation to increase ground permeability and reduce runoff. This can help in absorbing excess rainwater and reducing the speed of stormwater flow ▪ Develop and implement emergency response plans to address potential flooding events. ▪ Regularly clean the Granville Brooke stream channel where it flows along the dumpsite site
Hydrological disruption on drainage systems	Construction especially during the rainy season due to poor solid waste management, and topographic vulnerability could lead to changes in natural water flow and increased run off which can lead to flooding and waterlogging especially in downstream communities	▪ Rehabilitate and expand existing open drainage systems to handle peak flows ▪ Rehabilitate culverts to accommodate stormwater volumes and ensure drains are properly interconnected ▪ Improve solid waste collection and disposal systems to prevent drain blockages. ▪ Establish local flood monitoring and communication systems ▪ Reduce obstruction of natural drainage paths and exposure of structures to floods ▪ Install covered drains in high-density areas ▪ Provide structures that will improve slope stabilization and erosion control to minimize soil loss and sedimentation into drains ▪ Ensure erosion control at outlets. ▪ Install temporary water storage structures to reduce stormwater runoff discharge.
Water Diversion impacts during excavation, installation of structures	Disruption of natural water flow, particularly during the rainy season causing flooding of nearby settlements and communities. Sedimentation downstream affecting water quality and aquatic habitats in sloppy terrains Contamination of water sources	▪ Proper water diversion before the demolition of culverts and side drains should be implemented to prevent flooding, erosion, and land degradation in low-lying areas ▪ Schedule diversion works during dry season; use sandbags or temporary culverts for controlled water flow ▪ Stabilize temporary channels ▪ Monitor water quality downstream.
Potential for Tidal Backflow in Rokupa	During construction of roads and WASH facilities, this phenomenon can cause significant environmental risks and impacts if not addressed in design and implementation. High tides cause seawater to flow backward into inland drainage systems (culverts, storm drains), reducing their capacity to discharge stormwater. Construction areas can become flooded, and increase the likelihood of standing water around excavations, foundations, or open latrine pits. Tidal inflows and outflows through unprotected or	▪ Elevate outfall points above high tide line ▪ Monitor groundwater salinity and sanitation systems ▪ Flap gates as provided in the designs/BOQ ▪ Stabilize embankments with geotextiles or riprap ▪ Construct proper headwalls at culverts and drainage outlets

	under-constructed channels create scouring at outfalls, culvert inlets/outlets, and road embankments. Tidal backflow can push saline water into soil and shallow aquifers contaminating groundwater sources.	
Vulnerability to climate change	Impact of climate change exacerbating flood and landslide hazards	▪ Design and Implement catchment-scale flooding and drainage interventions ▪ Include climate-resilient and innovative water and sanitation infrastructure that are sustainable durable, flexible, cost efficient, energy efficient and easy to operate and maintain.
Risks of water pollution from soil erosion	Risks of water pollution from soil erosion during construction and extreme rainfall event in Moyiba, Coconut Farm and Portee Rokupa, Freetown during the construction	▪ Design and construct adequate drainage systems to manage stormwater runoff effectively. ▪ Plan construction activities during the dry season to minimize the risk of erosion and runoff. If construction must occur during the rainy season, ensure that all excavated areas are stabilized before the onset of heavy rains ▪ Use re-vegetation techniques to stabilize exposed soil surfaces. Planting grass or other vegetation promptly can help reduce erosion ▪ Install silt fences, and other control structures to capture sediment before it enters water bodies. These structures help reduce sedimentation and protect water quality ▪ Store construction materials away from water bodies and drainage channels to prevent erosion and runoff ▪ Implement the waste management plan to handle construction waste properly. Avoid disposing of hazardous materials near water sources
Failed Borehole	Drilling of dry boreholes	▪ Conduct geohydrological assessment to determine groundwater availability
Poor designs and Specification of pour flush toilets	Girls, ladies and women are susceptible harassment and attacks using public toilets due to damaged locks or poor design	▪ Design measures should consider universal access philosophy, safety and security of girls, ladies and women (ability to lock the toilet doors from inside, strong door frames, well-lit areas etc.) ▪ Pour flush toilets should be constructed with proper drainage systems to prevent overflow and contamination of nearby water sources. ▪ Ensure that septic tanks are sealed and located at a safe distance from water sources to prevent seepage. Outflows should drain to soak ways or be connected to working drains. ▪ Implement routine maintenance and cleaning services for toilets to prevent blockages and overflow.
		▪
Water Quality	Quality of the water from the borehole, hand dug well and spring boxes	▪ Avoid constructing boreholes in low-lying areas prone to stormwater or surface runoff ▪ Ensure proper drainage around boreholes to prevent stagnant water pools, which can breed disease vectors. Regular maintenance and monitoring of water quality are essential ▪ Maintain a safe distance between boreholes and potential contamination sources like latrines. ▪ Water quality analysis shall be carried out after drilling exercise to establish if the water is suitable for drinking and/or other domestic use i.e., the WHO guideline

		standards which is the applicable standard in Sierra Leone for drinking water ▪ The quality of the water from the hand dug well and springs shall be subjected to quality tests after construction, protection, and/or installation of a hand pump or discharge outlet pipe ▪ Install filtration and disinfection system in compliance with the WHO water quality standards
Traffic and Road Safety	Increased traffic on public roads Use of public roads by project machinery increases the rate of accidents	▪ implement the site-specific traffic management plan ▪ Provide notification about the construction activities to affected communities ▪ Provide adequate alternative arrangements to minimize impacts on motorists and pedestrians ▪ Maintain close liaison with government traffic control agencies. ▪ Undertake regular driving safety awareness campaigns to ensure safe driving.
Exposure to health issues	Poor construction practices	▪ Use dust suppressants to mitigate the dust levels ▪ Use proper hoarding and flash tapes to demarcate dangerous areas such as pits etc. ▪ Recruit local labour to avoid the possible outbreak of communicable diseases resulting from labour influx
Public Utility (water, electricity, telecommunications)	Public infrastructure damage and disruptions of services during excavation	▪ Engagement with the public utilities companies to identify possible locations of their facilities and relocate them out of the working areas
Labour and working conditions	Poor working conditions and workers' health, work related incidents and injuries	▪ Prepare and implement the OHSMP ▪ Train all staff in emergency preparedness and response. ▪ Keep a First Aid Kit on site and ensure that drinking water is provided. ▪ Personal Protection Equipment (PPEs) is provided to workers
Resource efficiency and pollution prevention	Sourcing of local construction materials	▪ Set up management systems and contingency plans to respond to incidents and accidents with proper documentation in the C-ESMP. ▪ Ensure proper management of hazardous and non-hazardous wastes and materials. ▪ Optimize energy usage, to the extent technically and financially feasible. ▪ Measures to eliminate, substitute, ▪ Adopt measures to reduce construction material use bases on good industrial practice as found in the General EHSGs, and in the Industry Sector Guidelines

ES 8: Environmental and Social Management Plan

The ESMP will ensure proactive response to the anticipated adverse environmental and social risks and impacts to reduce their effects and ensure compliance with statutory requirements and the World Bank ESF and Sierra Loene E&S policies. Implementing the ESMP (Table 8.1) will enable the project to:

- Manage the identified project significant adverse environmental and social risks and impacts due to project interventions,
- Implement, supervise and monitor, the environmental and social mitigation measures by the responsible parties
- Build capacity and training required to support the implementation and mitigation measures
- Provide cost estimates showing phasing and coordination with overall project implementation plans and
- Improve environmental and social performance of the Project throughout its life cycle.

The Contractor shall be primarily responsible for ensuring the implementation of mitigation measures proposed in the ESMP and CESMP, which shall be part of the contract documents. Hence, the provision of environmental and social mitigation cost as a separate item in Bill of Quantities (BOQs) should be made mandatory in contract documents.

Environmental and Social Monitoring

The implementation of the ESMP shall involve the Contractor, Supervision Consultant, PMU relevant government agencies and stakeholders whilst the implementation of the CESMP primarily rest on the contractors. The successful implementation of the ESMP will depend on the commitment and capacity of the Project Management Unit (PMU), Contractors, Supervising Consultants, FCC and the relevant government agencies and the Community Development Committees (CDC) to implement the project effectively. The Contractor and PMU/supervising engineer should be adequately staffed with skilled and permanent E&S personnel per the contract and prepare periodic E&S reports to the Borrower. The roles and responsibilities of those that will be involved in the implementation and monitoring of this ESMP are described in Chapter 8.

Cost Estimates for ESMP Implementation

The tentative budget for the project includes the environmental and social mitigation cost, management costs, cost of E&S monitoring and capacity building. It is estimated that a total amount of***) Six Hundred and Eighty-Eight Thousand Two Hundred and Twenty-Two United States Dollars and Fifty Cents (USD 688,222.50)*** will be required to implement activities identified in the ESIA/ESMP throughout the project. All administrative costs for implementing the ESMP shall be budgeted for as part of the PMU costing including resources (finance and equipment) to carry out field visits and supervisions.

The table ES 4 below presents the indicative cost estimates for implementing the ESIA /ESMP.

Table ES 4: Cost Estimates for ESIA/ESMP Implementation

#	Activity	Description	Cost (US$)
1	Mitigation measures	Roads, Drainages and Retaining Structures, Bridges and Solar Lighting Interventions	308,250.00
		WASH Interventions	61,450
		Sub Total	**369,700**
2	Monitoring measures	Roads, Drainages and Retaining Structures, Bridges and Solar Lighting Interventions	106,250.00
		WASH Interventions	30,000

		Sub Total	**136,250.00**
3	Training and capacity building	Training of relevant stakeholders on Roads, Drainages and Retaining Structures, Bridges and Solar Lighting Interventions	94,500.00
4	Training and capacity building	Training of relevant stakeholders on WASH Interventions	45,000
4	Disclosure of the ESIA	Advertisement in National dailies	10,000.00
		Sub Total	**149,500.00**
		Totals	**655,450**
5	Contingency	5% of All Sub-Totals	32,772.50
		GRAND TOTAL	**688,222.50**

Project Implementation Schedule

The neighborhood upgrading civil works contracts shall cover a period of twenty-four (24) calendar months (excluding the defects liability period of 12 months).

Project Management Responsibilities

The borrower's overall responsibilities are to: assess, manage, monitor the potential E&S risks and impacts at each stage of the project. The borrower must ensure that all contractors operate in a manner consistent with the ESS of the ESF, including project specific ESCP and ESMF requirements. The borrower must include relevant E&S obligations and legal remedies in contracts and require that relevant E&S obligations are included by contractors in their contracts.

The implementation of the ESMP shall be a contractual obligation between the Contractor and the PMU/FCC. The Contractor shall engage full-time technical staff capable of carrying out the monitoring activities as proposed in the ESMP and CESMP as contractual obligations under the contract agreement. The overall Safeguards responsibility for the project shall rest with the PMU E&S Team. The PMU E&S Team shall carry out monitoring activities related to the project during the construction phase by applying checklists and notifying the Contractor of any violations of the ESMP by issuing Site Instructions, checking the progress reports, and advising the Project and contractors regarding any violations which require further action and maintain a record of events and surveys for reference.

Gender Based Violence (GBV) Complaints Handling

The scale and complexity of the neighborhoods upgrade (major civil works) will require a huge labor force with associated goods and services supply that cannot be fully met by locally. Therefore, this will require the recruitment of an additional workforce and suppliers outside of these communities, which may increase the risks of Gender Based Violence and Harassment (GBV). Labor influx risk is a key element to be considered when assessing GBV risk; in particular, SEA and SH. Global best practice recognizes that it is essential to respond appropriately to a survivor's complaint by respecting the survivor's choices. Gender and GBV complaints will be handled by a specialized NGO recruited by the PMU to provide support services, there is a special section of the project GM, which is dedicated to logging, recording, giving feedback and supporting survivors.

Grievance Mechanism (GM) Implementation

Since the inception of the project, several community engagements have been carried out with various stakeholders with a view to informing them about the project and its objectives as well as holding discussions on the prevailing needs of their communities. The existing project GM is designed to address grievances and receive feedback from Project Affected and Interested Persons (PAPs/PIPs). The mechanism for grievance redress has provisions for uptake points at the communities, but affected or interested persons can also lodge their grievances directly to the PMU or through the various channels (SMS, WhatsApp, Free Voice Call and the electronic platform). The

project has also established Grievance Committees (GRCs) at Site Level, Council Level, Project Level and National Level. These committees have the responsibility to resolve disputes arising resulting from the upgrade activities at the earliest possible time. The project has also established Community Development Committees (CDC) in each neighborhood to enhance representation of the community in overseeing the development of the project. The CDC serves as a communication channel for project activities, ensuring that all communities are regularly informed of progress on the project and consulted on various aspects of the project.

The underlisted process should be implemented in pre-construction and the execution of the construction works:

- Land ownership and resettlement issues must be addressed in line with the recommendations of the Resettlement Plan (RP) prior to the commencement of construction activities.
- All complaints about construction work during the construction of the project should be adequately managed and addressed.
- The GM should establish complaints register that records details of all complaints received, the action taken in response, where necessary, and any corrective actions or procedural changes implemented to prevent recurrence should be maintained.
- The register should be regularly audited to ensure a timely response to complaints.
- The complainant should be informed of the outcome of all investigations and actions taken.
- The complaint should then be investigated and corrective action required should be investigated.
- In case of dissatisfaction, the appellant should have the option to appeal.
- If the appellant is not satisfied with the outcome of the appeal, they can seek legal action

The elements of the local project specific GM conducted or assessed during the consultation includes:

- Efforts to be made to resolve issues at community level/project level
- Appeal mechanism to the Project GRM level should be defined
- Capacity building support for GM implementation be executed.
- Information sessions for local communities and contractor staff to use grievance service.
- Multiple uptake channels for grievance registration will be in place. For example, grievance registration form (please see annex 12 “sample grievance registration form).
- Project site/community level grievance logbook to log grievances.
- Registration of all grievances in the central GM database of excel sheet to enable tracking and review.

ES 9 Conclusion

Generally, the ESIA has indicated that the proposed intervention is desirable. The proposed project intervention shall be carried out successfully with minimal environmental and social effects if all proposed mitigation measures are implemented and the E&S monitoring requirements are complied with.

The ESIA identified environmental and social risks and impacts across the different project phases can be summarized as follows:

- Water requirements during the construction phase will be significant with impact on the current water supply shortage within the three communities. Considering the low water supply and high demand in the project area, it is therefore advised that the Contractors seek alternative water source such as trucking from different from existing sources outside the project area.
- The cumulative environmental and social risks and impacts, during the construction of roads and WASH facilities in Moyiba, Coconut Farm, and Portee-Rokupa are associated with the simultaneous effects of project related activities during civil works. The 3 communities are densely populated, vulnerable to flooding and landslides due to informal settlements, poor drainage, and exposure to flooding and sanitation risks. The risks and impacts from concurrent civil works of roads and WASH facilities and their interactions with the existing vulnerabilities could lead to erosion in slopes and sediment runoff during earthworks, flooding and obstruction of the natural drainage channels, contamination of surface water due to increased turbidity from construction waste, degradation of the local ecosystem, noise, dust and air pollution from increased movement of machinery and heavy equipment, accumulated waste and improper disposal, overwhelmed existing drainage systems. Proper sequencing of construction activities and ensuring that mitigation measures in the ESIA are implemented.
- The air quality of the wider AoI is within international permissible limits (Tables 4.3, 4.5 and 4.55 in chapter 4). The construction activities for the neighborhood upgrade will increase air emissions primarily due to site clearance, demolition of existing structures, vehicular traffic, and use of diesel propelled engines during construction. However, the construction of the different subprojects is not expected to take place at the same time and the cumulative air emissions impact is rated moderate.
- Noise impacts will be limited to the construction, maintenance, and demobilization phases. It is anticipated that the construction activities for all the subprojects will not take place at the same time. Construction works will be carried out within residential and commercial areas, and the receptor sensitivity is assessed to be moderate
- Public safety/ Occupational Health, safety, traffic and security

  Subproject activities will involve the use of machinery, the excavation of pits and the movement of vehicles, these will pose risks on community and occupational health and safety and increase in traffic. However, strategies such as cordon off work areas, the use of PPEs and phasing of work activities will be implemented to mitigate such risks and corresponding impacts
- Potential for Landslides due to unstable landscapes: Due to the landscape, environmental and infrastructural factors in the 3 communities, especially in Portee-Rokupa located along the coast, the potential for landslides, flooding and run off impact are high especially during the rainy season and the communities are vulnerable due to the informal settlements and poor drainage systems. The proposed infrastructure upgrades should consider the key mitigation measures in the ESIA. Work activities on steep and unstable slopes may result to mudslides, however, the avoidance of unnecessary clearing and excavation and the use of humans instead of machines to work on slopes and the planting of grasses and stone pitching will improve on slope stability
- Diversion and haulage of spoil and other materials will contribute to local flooding and increase runoff, however, the use of sound engineering techniques such as diverting water to existing drainage channels and clearing and properly disposal and covering of spoil will reduce surface runoff and mitigate flooding

- Some subproject sites require grading and levelling, and this could increase the amount of soil being eroded. Furthermore, waste generated at the sites during some subprojects' life cycle could lead to increased contamination of the soil if not managed properly, especially the sanitation facilities. Therefore, the resource sensitivity in the area is assessed to be medium, taking into consideration the cumulative effect of all the investment activities proposed for development in the project area.
- Hygiene and Sanitation: A hygiene awareness program should be implemented to address open defecation and waste management issues. Investments in sanitation infrastructure are also recommended.

In addition, as identified during the scoping phase, the investment activities will moderately affect structures and livelihoods of community members that will be properly captured in the stand-alone Resettlement Plan (RP). It is advised that the resettlement impacts of the project should be well managed with good planning, RP implementation, and grievance management measures. Likewise, there should be fair compensation, appropriate livelihood restoration measures and mitigation of project impact and risk.

Overall, during the construction phase, the Project, and its key investment components such as the Access way and Roads, Street lighting, Retaining Structures, Retaining Structures, Drainage, Water Supply; and Sanitation facilities are likely to have substantial impacts on the baseline environmental and social media. The recommended mitigation measures in this ESIA should be effectively implemented to minimize the adverse risks and impacts on the environment and people. The impacts during the operation phase are likely to be minor to negligible. The social impacts from the project will be related to changes in land use and community health and safety but beneficial in terms of local employment and overall development and livability in the neighborhoods.

ES 10 Recommendation

The ESIA/ESMP describes mitigation measures for impacts specific to project activities and discusses an implementation mechanism. The implementation of ESMP and Management plans documented in the annex and those to be developed by the Contractors (Contractor Environmental and Social Management Plan (CESMP) will guide compliance with the local and national regulatory framework in addition to the World Bank Environmental and Social Framework requirements. The following recommendations are provided to ensure that the project is implemented in a sustainable manner include:

- Disclose the ESIA and ensure public briefings are carried out to ensure the community residents understand the investment package and its effects
- Design optimization process should be ensured throughout construction works to improve project delivery outcomes and sustainability
- Ensure robust engagement with affected people and interested parties about the findings of the ESIA
- Implement all recommended mitigation and offsetting measures
- Conduct consultations during project planning and implementation should involve diverse stakeholders as possible, as per project requirements at the time, adopt as the situation require, and in a timely manner in line with the project Stakeholder Engagement Framework (SEF).
- Optimize and operationalize the established grievances management structures for equitable access

- Institute measures for Operation and Maintenance of infrastructure early in the project design, and implementation to ensure proper management and sustainable use intervention infrastructure.
- Involve beneficiary communities in the implementation of the recommendations of the mitigation monitoring plan
- Restore essential social services, public utilities and infrastructure affected by the project interventions
- Water Management: Measures should be taken to control contamination risks at sites with existing pipes and water tanks, such as installing leakage detection/prevention systems and pumps to improve water flow uphill.
- Construction Considerations: Schools, health centres, places of worship and other public institutions near construction sites must be carefully managed to prevent disruption during activities and ensure community health and safety. Additionally, surrounding structures should be monitored for any potential risks due to slope instability in line with the ESIA and RP.

INTRODUCTION AND OVERVIEW

01

Chapter One : Introduction

1.1 Project Overview

In recent years, Sierra Leone has suffered several natural disasters including the Ebola outbreak of 2014/2015 and the mudslide in Freetown in August 2017. The almost yearly flooding in several parts of the country results in tragic loss of lives and destruction of properties. The Government of Sierra Leone (GoSL), in its Medium-Term National Development Plan (MTNDP), is committed to building institutional capacity to respond to natural disasters and strengthen the resilience of urban communities, sustain decentralization, and improve service delivery.

In response to the Government's commitment, the World Bank is supporting the effort to improve disaster risk management, urban resilience, and service delivery by funding the Resilient Urban Sierra Leone Project (RUSLP) that will be implemented in Western Area and select secondary cities of Sierra Leone.

The RUSLP will support activities that aim to build social and physical resilience through sustainable livelihoods and upgrading vulnerable neighbourhoods; fiscal resilience through increased capacity for revenue mobilization and strengthening disaster risk management (DRM); improve service delivery for waste management; and promote urban planning and compliance to building regulations in the selected cities. The project is linked to at least three Clusters of the MTNDP (3 - Infrastructure and economic competitiveness, 4 - Governance and accountability for results and 7 – Addressing vulnerabilities and building resilience). It is also aligned with the Freetown City Council's (FCC) strategy to "Transform Freetown".

Subcomponent 2a of the RUSLP – Neighborhood Upgrade and Urban Greening: aim to upgrade three (3) neighborhoods in Freetown. The three (3) communities that have been identified include Coconut Farm and Moyiba in the upper catchment denoted C4 and Rokupa in the lower catchment denoted C5, based on the under-listed selection criteria outlined as follows:

- settlement size and population density
- spatial vulnerability to disasters
- contribution to a drainage catchment area improvement
- income levels
- lack of access to basic infrastructure and services
- demonstration of interventions (i.e. to show tangible improvements at low cost for future replication or scaling up and to present upgrading in different typologies)
- social capital of community; and
- avoiding demolition and resettlement.

The comprehensive neighborhood upgrading will provide access to basic services and infrastructure, reduce flood/landslide/fire risks, and further bring economic and social benefits. The proposed RUSLP interventions being designed and implemented in a participatory manner, leveraging existing programs and services include drainage upgrading (tertiary and secondary/primary drainage), retaining walls, walkways, streetlights, access roads, footbridges, water supply, sanitation, and community facilities, which will bring climate change adaptation co-benefits.

These communities represent some of the most vulnerable (environmentally and socially) and underserved urban settlements in Freetown, characterized by chronic flooding, severe erosion, inadequate drainage infrastructure, and high exposure to public health risks arising from poor sanitation and waste management systems. The ESIA identifies significant hydrological and

environmental pressures within these areas, including downstream flooding risks linked to the Granville Brook catchment and widespread drainage obstruction due to solid waste accumulation on drainage channels and waterways. In addition, the high population density, prevalence of low-income households, and limited access to basic services amplify social vulnerability and justify targeted intervention. Upgrading these communities offers substantial socio-economic and environmental benefits, including improved mobility, reduced disaster risk, enhanced access to water and sanitation, and strengthened local livelihoods. Furthermore, the selected locations are strategically important for urban connectivity and present technically feasible corridors for drainage and road rehabilitation, enabling efficient project implementation. Overall, the prioritization of these communities reflects a deliberate effort to maximize development impact, enhance urban resilience, and address critical infrastructure deficits in line with national development objectives and World Bank urban resilience priorities.

1.2 Study Objective

The objective of this ESIA study is to identify and evaluate the environmental and social risks and impacts of the proposed activities (roads and WASH) in Moyiba, Coconut Farm and Portee – Rokupa communities and recommend mitigation measures to address the negative risks and impacts and enhance positive impacts. Specifically, this ESIA study foresees the potential environmental, social and economic positive and adverse effects of the proposed project design before the project is implemented. The study has therefore addressed the social, economic, and environmental issues associated with the proposed project and provided relevant mitigation plans to prevent or minimize adverse impacts. While this ESIA identifies broad environmental and social risks, all impacts specifically related to Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement are managed through a standalone Resettlement Plan (RP) with a Livelihood Restoration Program (RP-LRP) that is developed in addition to this ESIA. The RP includes the legal framework for compensation, eligibility criteria for informal settlers, and the detailed budget for asset replacement. The RP provides detailed procedures for acquisition, compensation, and livelihood restoration. *All land-related impacts are addressed in detail within the RP, prepared as a sister document to this ESIA.*

1.3 Scope of Work

The scope of this work is to carry out a comprehensive Environmental and Social Impact Assessment (ESIA), outlined in the approved Terms of Reference (ToR) captured in Annex 1.

1.4 Justification for the Study

In accordance with the guidelines of the Sierra Leone Environment Protection Agency (EPA) and the provisions of the EPA Act 2008/2010/2022, Part IV Environmental Impact Assessments, ESIA is a requirement as part of the process towards obtaining an EIA License in Sierra Leone. The investment activity will first be screened to establish if a full blown ESIA is required or otherwise, if an ESIA is required, then scoping studies will be undertaken to earmark the activities that should be focused on during the impact assessment. The ESIA study establishes the Baseline Condition of the project area and identify potential impacts that will cover pre-construction, construction and operational phases of the proposed project. It presents feasible measures to mitigate anticipated adverse impacts with adequate management and monitoring plan.

In addition, the implementation of the upgrade investment activities is also guided by World Bank Environmental and Social Framework and relevant Environmental Health and Safety Guidelines that are relevant to it implementation, for assessment of environmental and social risks and impacts associated with projects supported by the Bank through Investment Project Financing. The Bank believes that the application of these policies, by focusing on the identification and management of environmental and social risks, will support Borrowers in their goal to reduce poverty and increase prosperity in a sustainable manner for the benefit of the environment and their citizens.

1.5 Implementation Arrangements

The Government of Sierra Leone through the Ministry of Finance (MoF) served as the proponent whilst the Freetown City Council (FCC) served as the beneficiary of the Project. The project is implemented by an established Project Management Unit which is supervised by the Fiscal Decentralization Division of the MoF.

1.5.1 Freetown City Council

The Local Government Act of 2004 amended in 2016/2022 established local councils in the country to fast-track decentralization processes and interventions. The Act empowers local councils as the highest political authority in their locality and shall have legislative and executive powers to be exercised in accordance with this Act or any other enactment. The various councils shall be responsible, generally for promoting the development of their localities and the welfare of the people in the localities with the resources at their disposal and with such resources and capacity as they can mobilize within their administrative area (owned source revenue) and from the central government and its agencies, national and international organizations, and the private sector.

By this statutory instrument, the Freetown City Council (FCC), as the municipal government of the city of Freetown, has legal authority to ensure that the city has access to affordable clean water, clean environment, city upgrade especially slum and unimproved areas, waste management, city greening, social standard enhancement, revenue mobilization, partnership promotion for development, support to the poor and vulnerable people, sanitation and hygiene promotion etc. At the political governance level, FCC is headed by the mayor who is deputized by a deputy mayor and a local parliament of councilors. The mayor, deputy and the councilors are often elected for a period of five years. At the administrative angle, FCC is headed by the Chief Administrator, deputized by a Deputy Chief Administrator and supported by other administrative staff.

As part of the 2018 - 2023 vision of FCC "*Transform Freetown*" The council identified priority sectors for this agenda grouped into four key clusters: Resilience, Human Development, Healthy Cities and Urban Mobility. The council has a global ambition of City Greening, and it belongs to the 40 cities involved in City Greening Project through Tree Planting. The priority areas include environmental management, urban planning/housing, revenue mobilization, education, skills development, job creation, disability support initiative, health, water and sanitation.

1.5.2 Project Management Unit – MoF Fiscal Decentralization Division

The Project Management Unit (PMU) established by the Ministry of Finance's (MoF) Fiscal Decentralization Division (FDD), is responsible for managing the day-to-day activities of the project. The Fiscal Decentralization Division (FDD) being the supervisory directorate is well placed to manage multi-city projects owing to its mandate for coordinating local councils and their fiscal management in addition to its experience in managing World Bank-financed operations. The PMU is responsible for project management, including social and environmental safeguards, monitoring and evaluation, overall project communications, grievance resolution, In addition, the PMU recruited a specialized NGO to design and support the operationalization and implementation of a GBV action plan, the NGO has also developed a GM for GBV/SEA/SH grievances which has been merged with the project GM. The NGO is contracted to provide service until the end of the project period. The PMU will work in coordination with and supported by the City Project Implementation Teams (CPITs) and/or Lead Technical Agencies. In addition, the PMU recruited a specialized NGO to design and support the operationalization and implementation of a GBV action plan, the NGO has also developed a GM for GBV/SEA/SH grievances which has been merged with the project GM. The NGO is contracted to provide service until the end of the project period. The PMU will work in coordination with and supported by the City Project Implementation Teams (CPITs) and/or Lead Technical Agencies.

Policy, Legal and Regulatory Framework

02

Chapter Two : Policy, Legal and Regulatory Framework

The focus of this section is to summarize the regulatory framework relevant/applicable to the Neighborhood Upgrade (NU) implementation. The studies will compare national regulation with the requirements of the World Bank ESF, where there are any identified gaps between the Sierra Leone legal framework and the World Bank Environmental and Social Standards, an indication of how these will be addressed is specified.

2.1 National Policies

National Environmental Policy 1994

The National Environmental Policy (NEP) enacted in 1994 is the key policy instrument for harmonizing the development between human and natural aspects and ensuring that the development is sustainable and does not have any environmentally negative effects. The Policy seeks to achieve sustainable development through the implementation of sound environmental management principles, and it also promotes efforts which will prevent or eliminate damage to the environment and biosphere while stimulating a quality environment that can adequately provide for the health and well-being of the citizenry.

The NEP takes into consideration sectoral goals and policies aimed at enhancing sustainability in environmental management. Sectorial policies highlighted within the NEP include Land Tenure, Land Use and Soil Conservation; Water Resources Management; Forestry and Wildlife; Biodiversity and Cultural Heritage; Air Quality and Noise; Sanitation and Waste Management; Toxic and Hazardous Substances; Coastal and Marine Resources; Occupational Health and Safety; Energy Production and Use; Settlements, Recreational Space and Greenbelts; Public Participation; Quality of Life; Gender Issues and the Environment; Institutional and Government Arrangements; Legal Arrangement.

It is applicable to achieve sustainable development through the implementation of sound environmental management principles in project design and implementation.

National Lands Policy, 2015/Land Tenure and Ownership

The National Lands Policy (NLP) lay down the principles that define how land shall be equitably and sustainably managed and used in the country. It gives direction to and defines the roles and responsibilities of various government and customary authorities, and other non-state actors, in land management. The NLP proposes to improve upon and strengthen the existing land administration systems and land laws, particularly by recognizing and working with the differentiated land tenure categories in the Western Area and the Provinces and enhancing the capacities of relevant institutions on mobilizing sufficient national and international resources to ensure the implementation of the National Land Policy.

For sustainable land use, the NLP stipulates that land outside of protected forests, wildlife and wetlands is available for other uses such as agriculture and mining provided all the environmental conditions are met. Furthermore, the policy states that provided adequate compensation will be made in a reasonable time, the government may acquire land wherever and whenever appropriate, among other things.

- Secure and control areas of urban expansion
- Facilitate urban renewal and redevelopment programmes.
- Implement any rural or urban improvement programme.
- Provide social infrastructure.

- Supply promptly serviced or un-serviced lands at prices, which can secure socially and economically acceptable patterns of economic development.
- Provide for national defence, national security, national health and conflict resolution, and
- Protect areas of historical, cultural or ecological interest
- Land administration in Sierra Leone is governed by a dual system of law, dispersed in about twenty statutes and regulations.
- In the Western Area of Sierra Leone, land tenure is governed by Property Statutes. The land is either State (publicly) owned or privately owned. The right of the state to public land is inalienable and indefeasible. Rights of occupation over public land may be granted under warrant. The state has the power, conferred by the Unoccupied Lands Act, Cap 117, to take possession of unoccupied land
- In the provinces, customary Law co-exists with the statute. The recognition of the force of customary law in the provinces is established by section 76 (1) of the Courts Act 1965.

Through customary law, ownership of land is vested in the chiefdoms and communities; and can never be owned freehold. Land always belongs to the communities under the different forms of tenure under customary law. This principle is established by the Chiefdom Councils Act as well as by Section 28 (d) of the Local Government Act 2004. As the current project will engage in the reversion of some land use from urban/residential to natural and wildlife, the stipulations of this policy will be applicable and shall have to be considered.

The construction of the WASH facilities may involve acquisition of land. If considered, the construction of the toilets and execution of new water schemes (boreholes, hand dug wells, towers and reticulation) in the intervention area may involve land acquisition to a certain extent. There exist some communal land ownership complexities, but the government has administrative and legal engagement process for acquiring land for national projects with proper procedures for acquiring and paying for such lands.

Forestry Policy, 2010

The Forestry Policy support relevant provisions of the Constitution which permits restrictions on activities within forests which is reasonably required in the interests of conservation of the natural resources, the respect for international law and treaty, obligations, as well as the seeking of settlement of international disputes by negotiation, conciliation, arbitration or adjudication. The Policy also supports strategies outlined in the Framework for Effective Management of Natural Resources.

Sierra Leoneans are becoming increasingly aware of the inextricable relationship between their survival and way of life on the one hand, and biodiversity and the environment on the other. It is necessary to conserve species, genes, habitats, and ecosystems; ensure the wise use of biological resources; and ensure access to benefit sharing of genetic resources. Biodiversity, ecosystem, and wildlife-related risks may apply to all projects with a physical footprint, depending on the nature of the activity and its method of execution.

National Biodiversity Strategy and Action Plan (NBSAP) 2017–2026

The revised NBSAP (2017–2026) for Sierra Leone has been developed based on national needs and priorities for the implementation of the CBD objectives and Aichi Targets.

Key lessons learned from the development of the NBSAP 2004–2010 were fed into the review and development of the NBSAP 2017–2026. Additional priority thematic areas were identified and addressed, such as intellectual property rights and climate change, collaboration between stakeholders, the problem of overlapping mandates, and conflict of interest among government

agencies. The updated NBSAP has five strategic objectives consistent with the five strategic goals of the CBD, followed by a total of 23 strategic outputs.

Sierra Leoneans are becoming increasingly aware of the inextricable relationship between their survival and way of life on the one hand, and biodiversity and the environment on the other. It is necessary to conserve species, genes, habitats, and ecosystems; ensure the wise use of biological resources; and ensure access to benefit sharing of genetic resources. Biodiversity, ecosystem, and wildlife-related risks may apply to all projects with a physical footprint, depending on the nature of the activity and its method of execution. Degraded land and brownfield locations may have species biodiversity that is protected under ESS6.

Disaster Management Policy, 2006

The Disaster Management Preparedness Plan is a comprehensive approach that enhances increased political commitment to disaster risk management, thereby encouraging government agencies to take the lead and be supported by non-governmental organisations. It also promotes public awareness and the incorporation of disaster risk management into development planning. The policy highlights the sources of funding and the reduction of bureaucracies in accessing such funds for effective disaster co-ordination. The Policy document emphasizes the following:

- Ensure the integration of disaster risk management into sustainable development programmes and policies to ensure a holistic approach to disaster management.
- Ensure priority and requisite institutional capacities for disaster risk reduction at all levels.
- Enhance the use of knowledge, education, training, innovation and information sharing to build safe and resilient societies.
- Improve the identification, assessment, monitoring and early warning of risks.
- Improve the effectiveness of response through stronger disaster preparedness.

This policy applies to any project, development, or business activity undertaken by either the government or private sector entities that results in, or is likely to result in, the physical or economic displacement of people. The policy establishes objectives, guiding principles, and strategies for the undertaken involuntary resettlement.

In the policy, involuntary resettlement is expected to be considered as the last resort, conceived, planned, and implemented in a manner that minimizes the adverse impacts on PAPs and improve or at least maintains the standard of PAPs pre-impact through informed consultation of all stakeholders including vulnerable PAPs. The policy, which indicates that compensation must be at full replacement value, takes the position that compensation should be completed before physical movement and/or land take. The RPF for this project provides ample guidance of how such issues will be addressed. This will include the preparation of site-specific RPs or Livelihood Restoration Plans proportionate to the to the potential risks and impacts of the project. Project funds are expected to be used for compensation payment. The differences between the World Bank policies of resettlement and national policies have reduced considerably with the recent adoption of a new National Development Induced Resettlement Act 2023. This is alluded to in the section of this report that addresses gaps in legislation.

Sierra Leone's WASH Policy and Institutions

The WASH policy of the Government of Sierra Leone is guided by the National Water and Sanitation Policy (2010), the Wash Sector Performance Report 2017, and support provided for the new institutional arrangement for the water sector across four organizations, namely GVWC, National Water Resources Management Agency (NWRMA), Sierra Leone Water Company (SALWACO) and Sierra Leone Electricity & Water Regulatory Commission (EWRC).

The National Water and Sanitation Policy, 2010

The National Water, Sanitation, and Hygiene (WASH) Policy provides a comprehensive framework for promoting optimal, sustainable, and fair development and use of water resources in Sierra Leone. The core strategic objectives are:

- Water Resources Management including equal access and effective use
- Rural and Urban Water Supply and Sewage systems that improve sanitation coverage. promotes participation, capacity, and accountability
- Improve health and ease poverty through improved access to safe water, community participation, investment and other activities
- Hygiene and Sanitation–to improve the health of communities and ensure that most of the population (66%) has access to sanitation services.
- Institutional, Legal and Regulatory Framework to ensure sustainable water resources management.

National Climate Change Policy (NCCP)

The National and climate change Policy guides Sierra Leone's efforts to address climate change. Its five main goals are to: i) integrate climate change into national planning; ii) strengthen institutional and governance frameworks for climate change adaptation and low carbon growth; iii) reduce greenhouse gas emissions; iv) increase knowledge and understanding of climate change; and v) build the adaptive capacity of vulnerable communities.

National Policy on Gender Mainstreaming, 2000

The overall goal of the policy is to mainstream gender concerns in the national development process to improve the social, legal, political, economic, and cultural condition of the population, particularly marginalized groups. Its aim is to provide for policy makers and other actors in the development field, reference guidelines for identifying and addressing gender concerns, particularly when taking policy decisions to redress imbalances which arise from existing inequalities; to promote access to and control over economically significant resources and benefits, or to ensure the participation of both women and men in all stages of development.

GBV Referral Protocol of 2019

The GBV Protocol is a technical guidance document that aims to ensure that all survivors/victims of GBV receive a prompt and comprehensive response from service providers that meet their needs from the first point of contact onwards. The proposed project will comply with the guidance of the Protocol

2.2 Legislation

The Constitution of Sierra Leone

Section 15 of the Constitution states that: "... every person in Sierra Leone is entitled to the fundamental human rights and freedoms of the individual." This includes protection from deprivation of property without compensation. Section 21(1) further stipulates that no property of any description shall be compulsorily taken possession of, and no interest in or right over property of any description shall be compulsorily acquired, except where land is required by the GoSL in the public interest.

The relevant sections of the constitution apply to all RUSLP subcomponents and subprojects proposed for investment.

The Sierra Leone Meteorological Agency Act, 2017

The Sierra Leone Meteorological Agency was established by the Sierra Leone Meteorological Agency Act 2017 to serve as the sole authority for the provision of meteorological and climatological services throughout the country. The responsibility of the agency, among others, includes advising the government on all aspects of meteorology, climatology, climate change and other climate-related issues; keeping in an appropriate and safe archive all meteorological, climatological, climate change data and information for use in future planning, research and implementation of projects as may be necessary; provide meteorological information, advice and warnings for agriculture, civil and military aviation, surface and marine transport, operational hydrology and management of energy and water resources in order to mitigate the effects of natural disasters such as floods, storms, and drought and disease outbreak.

It is applicable for meteorological issues for emergency early warning and design safety and environmental engineering, early warning systems, and so on. Crucial data and information are gathered in areas such as climate change during design for subproject safety and environmental engineering consideration and occupational and community health and safety flood emergency preparedness early warning during construction stage.

The Sierra Leone Local Content Agency Act, 2016

The Act establishes the Sierra Leone Local Content Agency to provide for the development of Sierra Leone Local Content in a range of sectors of the economy such as industrial, manufacturing, mining, petroleum, marine resources, agriculture, transportation, maritime, aviation, hotel and tourism, procurement of goods and services; public works, construction and energy sectors; to promote the ownership and control of productive sectors in the economy by citizens of Sierra Leone. The prime objective of the Agency is to promote Sierra Leone's local content development by effectively and efficiently managing the administration and regulation of Sierra Leone's local content development in Sierra Leone. The act is applicable for labor issues to prevent unfair/discriminatory recruitment practices by consultants, contractors, and subcontractors may attempt to subvert the national labor laws.

Local Government Act, 2004/2016/2022

The Local Government Act 2004 amended in 2022 deals with the establishment and operation of local councils around the country to enable meaningful decentralization and devolution of Government functions. It stipulates that a local council shall be the highest political authority in the locality and shall have legislative and executive powers to be exercised in accordance with this Act or any other enactment. It shall be responsible, generally for promoting the development of the locality and the welfare of the people in the locality.

The act applies to all subcomponents. LCs will be playing a significant role in the development and implementation of the project. Their environmental officers will be involved in monitoring and supervision.

Environment Protection Agency Act, 2008/2010/2022

The Environmental Protection Agency (EPA) Act 2008 amended in 2022 is the government of Sierra Leone’s overarching legislation that deals with the protection of the environment. The Environment Protection Agency was established with a Board of Directors set up as its governing body. Subject to this Act, the control and supervision of the Agency is the responsibility of the Board, whose administrative functions as stipulated by the EPA, 2008 include the following:

- Promoting effective planning and the management of the environment.
- Coordinating and monitoring the implementation of national environmental policies relating to Sierra Leone.

- Providing policy guidance and advice to ensure the efficient implementation of the functions of the Agency so as to enhance its overall performance.
- Facilitating co-operation and collaboration among Government Ministries, local authorities and other governmental agencies, in all areas relating to environmental protection.
- Coordinating environmentally related activities as well as serving as the focal point of national and international environmental matters, relating to Sierra Leone.

The act is applicable to all subcomponents under RUSLP. There is a need to be aware of EPA requirements for licensing and so on. The project is expected to satisfy requirements of the Environment Protection Agency Sierra Leone (EPA-SL) for the issuance of an EIA license.

Customary Land Rights Act 2022

Land administration in Sierra Leone is governed by a dual system of law, dispersed in about twenty statutes and regulations. In the Western Area of Sierra Leone, land tenure is governed by Property Statutes. The land is either State (publicly) owned or privately owned. The right of the state to public land is inalienable and indefeasible. Rights of occupation over public land may be granted under warrant. The state has the power, conferred by the Unoccupied Lands Act, Cap 117, to take possession of unoccupied land. In the provinces, customary law co-exists with statutes. The recognition of the force of customary law in the provinces is established by section 76 (1) of the Courts Act 1965. Through customary law, ownership of land is vested in the chiefdoms and communities; and can never be owned freehold. Land always belongs to the communities under the different forms of tenure under customary law. This principle is established by the Chiefdom Councils Act as well as by Section 28 (d) of the Local Government Act 2004.

Wildlife Conservation Act 1972, Amendment in 2022

The Wildlife Conservation Act (1972) provides for the protection of wildlife and conservation management, including the establishment and operation of National Parks Games Reserves and other forms of Natural Reserves. The Act takes a conservative approach to wildlife management and does not make any provisions for involving local communities in management responsibilities or for sharing benefits of income generated from wildlife management (e.g. tourism or hunting fees). Specific provisions dealing with the protection, management and conservation of these areas and the limitations therein are highlighted in Part II of the Act and include the following:

- Prohibition of all forms of hunting, capture and other activities leading to the injury of wild animals.
- Destruction of any plant form by any means including fire; Fishing within these protected areas.
- Erection of structures, construction of dams, forestry, agriculture, mining or prospecting activities.
- Introduction of species from outside of the boundaries of the reserve.

The Wildlife Conservation Act of 1972 was amended in 2022 to include the prohibition of hunting of elephants in all forests. The Wildlife Regulations of 12022 however makes provision for the acquisition of licences or permits for hunting in such designated areas and for other purposes as may be prescribed. Project activities will not be carried out in a protected area the wildlife conservation act ay not apply.

Sierra Leoneans are becoming increasingly aware of the inextricable relationship between their survival and way of life on the one hand, and biodiversity and the environment on the other. It is necessary to conserve species, genes, habitats, and ecosystems; ensure the wise use of biological resources; and ensure access to benefit sharing of genetic resources. Biodiversity, ecosystem, and

wildlife-related risks may apply to all projects with a physical footprint, depending on the nature of the activity and its method of execution. Degraded land and brownfield locations may have species biodiversity that is protected under ESS6.

National Water Resources Management Agency Act No. 5 of 2017

The National Water Resources Management Agency was established by an act of parliament in 2017, to protect, manage, and regulate surface and ground resources in Sierra Leone with an overall vision of becoming one of the leading water resources management Agencies in West Africa. This Act declares property in in and control of all water resources to be invested in the Government and people of Sierra Leone. In 2010, National Water Sanitation Policy carried out studies, and one major finding was Sierra Leone is blessed with abundant water resources, but little has been done to manage it. This Act includes the following:

- Equitably allocates water resources among various competing needs. It also requires stakeholders' involvement in the process.
- The control of pollution and improvement of water quality in the country's water bodies. This involves regular water quality tests and integrating land use activities into water management control programs.
- Water allocation, water resources investment decision making to enact scenarios to better understand the impact of climate in future.
- To undertake climate change actions in terms of mitigation and adaptation to minimizing the effects of global warming and climate change.
- Sustainable management of water resources, safeguarding domestic supplies, and general enforcement of water resources law.

The act is applicable due to the water related resource efficiency triggered by the project considering the volume of water that will be consumed by RUSLP subprojects.

The National Water and Sanitation Policy, 2010/2021

The National Water, Sanitation, and Hygiene (WASH) Policy provides a comprehensive framework for promoting optimal, sustainable, and fair development and use of water resources in Sierra Leone. The core strategic objectives are:

- Water Resources Management including equal access and effective use
- Rural and Urban Water Supply and Sewage systems that improve sanitation coverage. promotes participation, capacity, and accountability
- Improve health and ease poverty through improved access to safe water, community participation, investment and other activities
- Hygiene and Sanitation–to improve the health of communities and ensure that most of the population (66%) has access to sanitation services.

Institutional, Legal and Regulatory Framework to ensure sustainable water resources management.

National Protected Area Authority and Conservation Trust Fund Act 2012

This Act establishes the National Protected Area Authority, which shall have perpetual succession and capable of acquiring, holding, and disposing of any property. The Act provide for the establishment of Trust Fund, to promote biodiversity conservation, wildlife management, research to provide for the sale of ecosystem services in the National Protected Areas and to provide for other related matters. The Act details the organization and following duties of the authority:

- Act 12.2 states that the Authority shall have responsibility to develop policies and strategies for adapting the National Protected Area system to affect climate change. The Authority is also in charge of formulating and implementing awareness activities for forest management and sustainable land use.
- Act 19 establishes a fund to be called the Conservative Trust Fund.
- Act 22 states that the fund shall notably be financed by revenue generated from carbon trading.

Sierra Leone Roads Authority (Amendment) Act 2010

The Sierra Leone Road Authority (Amendment) Act, 2010 was aimed to develop a national policy on the maintenance, rehabilitation, improvement and management of the core road network and to provide for other related activities. This Act was also amended again in 2016, to highlight the concept of safety in the exercise of the functions of Road Safety Corps as well growth and development of business in Sierra Leone. Subject to these acts, 2010 Road Safety Amendment Act includes the following:

- Propose vehicle weight and dimension limits for the protection of roads, bridges, ferries, and ensure their enforcement in collaboration with relevant bodies
- The Authority shall adopt suitable policies in respect of the condition of service of staff, which shall be compatible with the standards of practice.
- The financial year of the Authority shall be the same as the financial year of the Government
- The Authority shall be financed by the funds consisting of monies appropriated by Parliament for the purpose of the Authority.

Traffic problems are caused by restrictions on road access because of construction activities. This may be the case for the urban upgrading project. The act is applicable for the maintenance of road safety during the construction works.

Sierra Leone Roads Safety Authority (Amendment) Act 2010

The Sierra Leone Roads Safety Authority (Amendment) Act 2010 governs road safety, vehicle standards, driver conduct, and traffic regulation within Sierra Leone.

In accordance with this Act, the Project will:

- Ensure that all vehicles used for construction and operation are duly registered, licensed, and certified as roadworthy.
- Engage only qualified and licensed drivers and enforce strict adherence to traffic regulations.
- Develop and implement a Traffic Management Plan (TMP) to mitigate risks associated with increased vehicular movement.
- Collaborate with the Sierra Leone Roads Safety Authority and relevant enforcement agencies to ensure compliance with national road safety standards.
- Implement community road safety awareness programs, particularly in project-affected areas.

These measures are intended to minimize traffic-related risks to workers, local communities, and other road users.

Guma Valley Water Company Act, 2017

The act highlights the framework to establish a Company to produce, distribute and conserve water within the limits of supply and other areas as may be determined by the Commission. The responsibility of the established Company is to:

- exercise responsibility for the control, development and management of Guma works and water supply services within the limits of supply
- develop and expand on existing waterworks as it may be considered necessary to meet the needs of consumers within the limits of supply
- manage and maintain the waterworks in good working order.
- ensure that water is supplied to customers in accordance with quality standards as prescribed by law or by the Sierra Leone Standards Bureau
- conduct research relating to water supply, sanitation, and connected subjects
- develop engineering surveys and plans
- encourage private sector participation in the provision of safe water supply, including production and distribution of water as well as billing and collection of revenue
- construct, reconstruct, rehabilitate, repair and maintain waterworks, buildings and other infrastructure of the Company
- lay main and service pipes in any street or other public place within the limits of supply
- provide training and research facilities for its employees

Access to potable water is a challenge in the 3 project communities. The Act is applicable to the provision of portable water which may be considered for investment under the shortlisted investments for these neighborhoods.

National Disaster Management Agency Act 2020

The act established an agency to manage disasters and similar emergencies throughout Sierra Leone and to develop the capacity of communities to respond effectively to disasters and emergencies. The responsibility of the agency is to implement

- Implement Government policy on disaster prevention, disaster risk reduction and climate risk management; and (ii) national, regional, district and chiefdom disaster management plans
- prepare, co-ordinate, monitor, evaluate and update disaster management plans
- identify, manage and monitor hazards and natural disasters
- disseminate information and conduct public education on –
  - human activities most likely to cause disasters in Sierra Leone
  - the hazards and natural disasters likely to affect any region, district or chiefdom in Sierra Leone
- advise Government on matters relating to disaster and emergency prevention rules and regulations and their correlative sanctions
- collate and preserve data on disasters in Sierra Leone
- stockpile, manage, co-ordinate and supervise the distribution of disaster relief items
- collate and preserve data on disasters in Sierra Leone
- stockpile, manage, co-ordinate and supervise the distribution of disaster relief items.

Monument and Relics Act, 1962

The Monuments and Relics Commission was established in 1948 following the passing by Parliament of the Monuments and Relics Ordinance in 1946. The mandate of the commission is to provide for "the preservation of ancient, historical and natural monuments, relics and other objects of archaeological, ethnographical, historical or other scientific interest." In 1962, this ordinance was upgraded into an act. The commission has the responsibility of ensuring the preservation, protection, and promotion of Sierra Leone's cultural heritage assets.

Several restrictions may be placed on projects because of cultural considerations. ESS8 recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present, and future. Cultural heritage, in its many manifestations, is important as a source of valuable scientific and historical information, as an economic and social asset for development, and as an integral part of people's cultural identity and practice. Chance finds may occur during construction. A chance find is any unanticipated discovery or recognition of cultural heritage. If they occur, they will be reported to the Monuments and Relics Commission.

National Water Resources Management Agency Act No. 5 of 2017

The National Water Resources Management Agency was established by an act of parliament in 2017, to protect, manage, and regulate surface and ground resources in Sierra Leone with an overall vision of becoming one of the leading water resources management Agencies in West Africa. This Act declares property in in and control of all water resources to be invested in the Government and people of Sierra Leone. In 2010, National Water Sanitation Policy carried out studies, and one major finding was Sierra Leone is blessed with abundant water resources, but little has been done to manage it. This Act includes the following:

- Equitably allocates water resources among various competing needs. It also requires stakeholders' involvement in the process.
- The control of pollution and improvement of water quality in the country's water bodies. This involves regular water quality tests and integrating land use activities into water management control programs.
- Water allocation, water resources investment decision making to enact scenarios to better understand the impact of climate in future.
- To undertake climate change actions in terms of mitigation and adaptation to minimizing the effects of global warming and climate change.
- Sustainable management of water resources, safeguarding domestic supplies, and general enforcement of water resources law.

The act is applicable due to the water related resource efficiency applicable to the project considering the volume of water that will be consumed by RUSLP subprojects.

Sierra Leone Electricity & Water Regulatory Commission Act 2011 (EWRC)

The Electricity Water Resources Commission is the legal and institutional framework for the provision of electricity and water services and other related matters. It handles 'setting /approval' of tariffs for licensed electricity and water service providers. The regulation establishes a provision for monitoring and evaluation activities, and an oversight of organizational performance to ensure accountability, transparency and growth. Several factors can influence the tariff of Water and or electricity as outlined in the Legislation.

Laws related to GBV and Sexual Exploitation and Abuse

At a national level, several legislative and policy frameworks have been established to provide a supportive and conducive environment to stem and reduce incidents of SGBV and punish perpetrators. The passage of the three Gender Acts (the Domestic Violence Act (2007), the

Devolution of Estates Act (2007) and the Registration of Customary Marriage and Divorce Act (2007) in 2007 provided concrete legal pronouncements on the rights of women and children which could be drawn on to prevent SGBV and seek redress in the event of occurrence. The Gender acts indicated a sea change in attitudes towards gender equity and gender equality and were a core part of the post-reconstruction agenda to create a new social order.

The Domestic Violence Act 'situates domestic violence as a criminal act in and of itself and uses a broad definition of domestic abuse which includes physical and sexual abuses, economic abuses, verbal, emotion and psychological abuse' (Swaine, 2012: 8) perpetrated against an individual in a domestic setting. The Registration of Customary Marriage Act raises the legal marriageable age and requires customary marriages to be registered under Customary, Muslim, Christian and civil laws. The Devolution of Estates Act aims to address issues of women's inheritance rights by allowing men and women to inherit equally and abolishing customary practices whereby widows were often required to marry a member of their deceased husband's family. Child rights were also passed in 2007. Despite the plethora of laws and apparent institutional commitment to address SGBV, the committee remains limited in its ability to effectively coordinate activities, largely due to a lack of funding. It is also detached from key government networks, including district coordinating bodies and ministries responsible for addressing SGBV (MSWCA, 2012).

In 2012, these Gender Acts were complemented by the Sexual Offences Act, which criminalizes rape (with marriage explicitly denied as a defence), indecent assault and harassment and imposes a maximum 15-year sentence for cases of rape. It also entitles victims of sexual offences to free medical treatment, as well as a free medical report (necessary for prosecution). This was designed to protect women and girls from rape and abuse from people in authority; ban rape in marriage provided greater powers to Family Support Unit (FSU) to investigate and prosecute cases of sexual abuse. The mandate is to receive cases of SGBV, help victims, investigate crimes and prepare a prosecution case, as well as increase public awareness. NGOs and service providers have also contributed efforts in stemming the problem by raising awareness on the issues, advocating increased access to services for victims – or in some cases providing those services- and promoting attitudinal change about women's status, women's rights and gender power relations within the society. These policy and legislative changes are clearly important in criminalizing VAW, building greater respect for women's rights, and demonstrating how seriously the government takes issues of women's security, owing in no small part to ongoing advocacy by women's organizations and activists (UN Women, 2011).

The risk of STDs, HIV/AIDS, COVID-19, and teenage pregnancy in the proposed project communities could increase with the interaction of construction workers with community youths. GBV related laws is applicable for the prevention of probable labour influx induced incidence of GBV and SEA/SH by project Site Workers (skilled/unskilled) in the intervention area.

Prevention and Control of HIV/AIDs Act, 2007

It was enacted to provide a legal framework for the prevention, management and control of HIV and AIDS, for the treatment, counselling, support and care of persons infected with, affected by or at risk of HIV and AIDS infection. It urges the government to assume responsibility for educating and providing information to all citizens on HIV and AIDS, safe practices and procedures, testing, screening and access to healthcare facilities within the country. It prescribes safe practices and procedures to enhance the prevention of transmission and prohibits compulsory testing. The law also prohibits discriminatory policies in the workplace and schools, restriction of movement based on HIV status, and denial of burial rites.

The act is applicable for the prevention of probable labour influx induced incidence of HIV and AIDS infection and other infectious diseases among project Site Workers (skilled/unskilled) the community members.

Child Right Act 2007

The Child Right Act of 2007 provides for the promotion of the rights of the child compatible with the Convention on the rights of the Child, adopted by the General Assembly of the United Nations on 20th November 1989, its optional protocol of 8th September 2000, and the African Charter on the right and welfare of the child, and other related matters. The Act includes a section on the right of children to grow up with parents, among others:

- Right to life, and maximum survival and development.
- Right to grow up with parents.
- Child panel in civil matters
- Resolution of disputes
- Right to parental property
- Appeals from child welfare committee.

There is the tendency for Contractors and Subcontractors to engage children and youth 18 years and below, exposing them to hazards associated with civil works. The act is applicable for the protection of children around the project work area.

Persons with Disability Act, 2011

Sierra Leone Persons with Disability Act No 3, 2011 seeks to prohibit discrimination against persons with disabilities, to achieve equalization of opportunities, establish the National Commission for Persons with Disabilities and to provide for other related matters. In Sierra Leone, three are about 450,000 disabled people, although this number maybe an under representation. Common disability issues include blindness, deafness, war wounded including amputees. Since persons with disabilities in Sierra Leone continue to face rampant discrimination, the Act No3, 2011 provides some aspects of plans to minimize the situation:

- Visibility of disability in the Medium-Term National Development Plan 2019-2023.
- Recruitment of persons with disability to serve in various sectors in Sierra Leone.
- The involvement of UNDP, WHO and other non-traditional partners in addressing issues with disability.
- Offences and penalties for crime against disables.
- Financial provisions, relief and incentives.
- The act is applicable to ensure all projects under RUSLP are user friendly to people with disabilities.

The National Electricity Act (2011)

This act divides the National Power Authority into two entities: the Electricity Generation and Transmission Company and the Electricity Distribution and Supply Authority (EDSA).

The main functions of management of EDSA include, among others, the supply, distribution, and retail sale of electricity for the entire country and promotion and encouragement of the economic and efficient use of electricity, especially for domestic, commercial, agricultural, industrial, and manufacturing purposes. The act applies to electricity provision for several subcomponents of RUSLP.

2.3 International Conventions to which Sierra Leone is Party

Sierra Leone is a party to many international agreements, conventions, and protocols that seek to protect the environment and ensure sustainable development. Table 2.1 presents a summary of these international commitments and agreements:

Table 2.1: International Conventions and Agreements to which Sierra Leone is Party

International Commitments and/Agreements	Republic of Sierra Leone
The UN Framework Convention on Climate Change (New York, 1992)	Yes +
The Kyoto Protocol is a protocol aimed at fighting global warming. The Protocol was initially adopted on 11 December 1997 in Kyoto, Japan and entered into force on 16 February 2005.	Yes +
Ramsar Convention for the Internationally Important Wetlands Especially as Waterfowl Habitats (1971)	Yes+
The Basel Convention on the Control of Transboundary Movements of Hazardous Waste and Their Disposal (Basel, 22 March 1989)	Yes+
Convention on the Environmental Impact Assessment in a Transboundary Context (EPS, Finland, 1991)	Yes+
Stockholm Convention on Persistent Organic Pollutants (22 May 2001; has not come into force yet)	Yes+
Convention on Biological Diversity (Rio de Janeiro, 1992)	Yes+
Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki, 1992)	Yes+
Convention on International Trade in Endangered Species of Wild Flora and Fauna (Washington, 1973)	Yes+
Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (1998)	Yes+
Rio Declaration on Environment and Development (UN Conference, 1992)	Yes+
Revised African Convention on the Conservation of Nature and Natural Resources (Maputo 2003)	Yes+

2.4 World Bank's Environmental and Social Framework (ESF)

The World Bank ESF sets out the Bank's commitment to sustainable development, through a Bank Policy and a set of Environmental and Social Standards (ESS) that are designed to support Borrowers' projects, with the aim of ending extreme poverty and promoting shared prosperity.

The ESF comprises:

- A Vision for Sustainable Development, which sets out the Bank's aspirations regarding environmental and social sustainability.
- The World Bank Environmental and Social Policy for Investment Project Financing, which sets out the mandatory requirements that apply to the Bank; and
- The Environmental and Social Standards, together with their Annexes, set out the mandatory requirements that apply to the Borrower and projects.

Under listed are the WB ESSs relevant to the project:

- ESS1: Assessment and Management of Environmental and Social Risks and Impacts
- ESS2: Labor and Working Conditions
- ESS3: Resource Efficiency and Pollution Prevention and Management

- ESS4: Community Health and Safety
- ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement
- ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.
- ESS 8 Cultural Heritage
- ESS10: Stakeholder Engagement and Information Disclosure.

In accordance with Land Acquisition, Restrictions on Land Use and Involuntary Resettlement (ESS5), the project prioritizes the mitigation of physical and economic displacement. Detailed compliance with this standard including eligibility criteria,) asset valuation and compensation for PAPs is documented in the standalone Resettlement Plan prepared in addition to this ESIA for the neighborhood upgrade. The RP operationalizes ESS5 requirements through compensation, livelihood restoration, and monitoring. *ESS5 obligations are implemented through the RP, which serves as the operational framework for resettlement and compensation.*

Relevant Environmental and Social Framework Good Practice Notes (GPNs)[1]

The Environment & Social Framework for IPF Operations: Good Practice Notes (GPNs) relevant to this project include:

- Road Safety
- Water Use
- Addressing Sexual Exploitation and Abuse and Sexual Harassment in IPF involving Major Civil Works
- Assessing and Managing the Risks of Adverse Impacts on Communities from Project-Related Labor Influx
- Gender
- Non-Discrimination and Disability
- Assessing and Managing the Risks and Impacts of the Use of Security Personnel

2.4.1 The World Bank Group Environmental Health and Safety (EHS) Guidelines.

The WBG EHS Guidelines constitutes technical reference resources that include general and sector specific examples of international good sector practices. It includes the information on applicable environmental, health and safety issues for all industrial sectors. WBG uses the EHS Guidelines as a technical source of information during project appraisal. The WB Group's Environmental, Health and Safety (EHS) Guidelines would be applied to the project. The implementing agency will pay particular attention to the following General EHS Guidelines:

- EHS 1.5 – Hazardous Materials Management
- EHS 2.3 – Physical Hazards
- EHS 2.7 – Personal Protective Equipment (PPE)
- EHS 3.5 – Transportation of Hazardous Materials; and
- EHS 4.2 – Occupational Health and Safety

[1] https://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-framework-resources#guidancenotes

Table 2.2 presents comparison between the WB ESSs and the national legislation

Table 2.2: Comparison between the WB ESSs and the National Legislation

ESS Requirements	EPA Act and other national legislation requirements on ESIA	Gaps and alignments	Addressing the GAP
ESS1: Assessment and Management of Environmental and Social Risks and Impacts. ESS1 requires proponent to assess the environmental impact of the project activities and develop Environmental and Social Commitment Plan, setup and strengthen monitoring, reporting and design an inclusive stakeholder engagement and information disclosure plans.	The acquisition of an Environmental and Social Impact Assessment (ESIA) license is a requisite under EPA Act of 2008 as amended in 2010 and 2022. It stipulates that a proponent must secure Environmental and Social Impact Assessment (ESIA) license before implementing any three categories of project in Sierra Leone. These include Category 1 projects which are mandated conduct ESIA, category 2 projects may or may not conduct ESIA except if the committee deems it as a requirement for ESIA or if such project is located in sensitive ecological zones, deals with large scale land transfer, construction work etc. Category 3 projects are not by any means required to conduct ESIA but will only prepare Environmental Management Plan (EMP) or prepare Strategic environmental Assessment report. The EPA Service Charter provide guideline on the processes involved.	There slight variation in that ESS1 requires stakeholder engagement and information disclosure plans. This will be included in the EMP. In essence, where there are gaps relating to standards and guidelines, those relating to ESS1 will be adopted. EPA's EIA process allows for adopting higher standards.	The EPA Act broadly and adequately caters to identifying and managing E&S risks. Though, EPA's EIA process allows for adopting higher standards, where there are gaps relating to standards and guidelines, ESS1 guidelines will be adopted.
ESS2: Labour and Working Conditions. ESS2 emphasizes on creating jobs and income but placed premium on jobs that does not discriminate. It focuses also on the prevention of forced labour, child labour, and minimum age requirements and encourage worker's organizations, grievance redress mechanism, occupational and health risks, promote sound worker-management relationships.	Sierra Leone's current labour laws are obsolete as far as colonial days. In June, 2022, government validated six bills - Employment bill, Regulations of Wages and Industrial Relations bill, Occupational and Health bill, Workers' Compensation bill, Overseas Employment/Migrations bills and Work Permits. Three of these bills were approved and became laws (Employment Act, 2022, Overseas Employment/Migration Act 20222 and Workers' Permit Act, 2022.	Most of the ESS2 requirements are aligned with the three laws that have been approved. The only gap noted is embedded in the three bills Regulations of Wages and Industrial Relations bill, Occupational and Health bill, Workers' Compensation bill which have not been approved. When these are approved, they will close these gaps such as unfair wages, absence of industrial law, no law on occupational health and compensation. The government will ensure that the remaining three bills are approved by the current Parliament.	Although some of the Sierra Leone labor laws are old and outdated, labor management procedure (LMP) has been developed for the project in line with requirements of ESS2. These will be acceptable to the GoSL as the country also subscribes in principle to ILO and UN instruments including relevant international Human Rights laws. Contractors will also be required to adopt applicable aspects of ESS2 guidelines through stipulated requirements specified in the C-ESMPs and Contractor Labor Management Plans.
ESS3: Resource Efficiency and Pollution Prevention and	The EPA Act of 2008 as amended in 2010 and 2022 demands the efficient and	There is no gap between the World Bank ESS3 and the EPA Act especially Part VI on	Relevant World Bank EHS guidelines and other GIIPs will be adopted. These will be

ESS Requirements	EPA Act and other national legislation requirements on ESIA	Gaps and alignments	Addressing the GAP
Management The World Bank ESS3 emphasizes on the use of resources to achieve a common aspiration and prevent the generating of pollutants that will damage the environment and living things.	effective use of resources to ensure that the prevention of pollution and GHG emission, promote the use of adaptation and mitigation technologies., promote practices that are more accessible and achievable and identifies the requirements for resource efficient use and prevention of pollutants. The Act further stipulates the need to promote sustainable use of resources, including energy, water, and raw materials, avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing generation of hazardous and nonhazardous waste, minimize and manage the risks and impacts associated with pesticide use	ESIA and part VII on pollution prevention and management.	specified in ESMPs, and contractors will be required to adopt provisions in their site-specific environmental plans.
ESS4: Community Health and Safety ESS4 opposes the use of materials, equipment etc. that may increase community health and or leads to safety risks or increase the impact.	The National Health Sector Strategic Plan 2020 which is aligned with National Health and Sanitation Policy, Public Health ordinance Act of 1960 amended several times The National Health Sector Strategic Plan has the goal of ensuring that all people in Sierra Leone have equitable access to quality and affordable health and sanitation services whether public or private at all times without any undue financial hardship by 2030.The Plan also targets improving air pollution, noise, hazardous substances, safer transportation systems, community health and safety in all places of work.	The act does not consider the assessment of events and measures to deal with occurrences and emergencies. For projects for which impacts on communities are anticipated, the preparation of a Community Health and Safety Plan will be required as an essential component of the ESMP.	Preparation of a Community Health and Safety Plan will be required as an essential component of C-ESMP. Contractors will also be required to adopt requirements stated for COVID-19 and other health-related issues. Through the ESMP documented in this ESIA and site-specific C-ESMPs, steps will be taken to anticipate and avoid adverse impacts on the health and safety of the affected community during implementation from both routine and non-routine circumstances. Safeguarding of personnel and property will be carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the affected communities.

ESS Requirements	EPA Act and other national legislation requirements on ESIA	Gaps and alignments	Addressing the GAP
ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement ESS5 opposes restriction on land use or acquiring land for any project that may have impact on the community leading to physical or economic displacement or in some instances results to resettlement either permanently or temporarily. Involuntary resettlement should be avoided wherever possible, or minimized, exploring all alternatives; if not, compensation at full replacement cost to the lost assets.	The 2015 National Land Policy (NLP) provides condition for land acquisition, ownership, transfer, amount required for land lease and purchase etc. It went further to disclose the two inherited land tenure systems - dual land tenure (freehold in Freetown and leasehold in the protectorate now the provinces). Similarly, the National Land Policy Act and the Customary Land Rights (CLR) Act, 2022 also strengthen land governance in Sierra Leone. Also include information on the Induced Resettlement Policy	The act dot does not have a clear regulation or guideline for the preparation of the land acquisition and resettlement action plan. Also, not clear how the security of tenure should be treated in the context of involuntary resettlement. A Resettlement Framework (RF) based on World Bank guidelines formulated for the project will be adopted. Compensation will be based on replacement costs and the entitlement outlined in the RF. The proponent will assess all assets, properties and or structures or facilities that will be affected by the construction and prepare compensation arrangement and plan. The slight variation is found in the 1991 Constitution The 1991 Constitution of where the state can use 'Eminent Domain' to acquire land from any individual or group for development purposes.	Resettlement is considered involuntary when affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that result in displacement. A Resettlement Plan will be prepared in line with the RPF based on World Bank guidelines Compensation will be based on replacement costs. Involuntary resettlement will refer to both physical displacement (relocation or loss of shelter) and economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood) as a result of project-related land acquisition and/or restrictions on land use and will cover those who do not have formal claim to the land that they use or live on.
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources ESS6 targets the protection and conservation of biodiversity and sustainably manage living natural resources. It recognizes the importance of maintaining core ecological functions of habitats. It also focuses on risks/impact assessment, biodiversity conservation of, natural/modified habitats, legally protected species, areas with high biodiversity value, etc	The Forestry Act of 1988. The Forestry Policy of 2010, the Wildlife Act the National Protected Area Authority Act of 2012 and the National Biodiversity Conservation Strategy are anchored and focused greatly on biodiversity conservation including flora and fauna, protection of natural/modified habitats as well as legally protected species.	There is no gap between ESS6 and the Sierra Leone Forestry Act, the Wildlife Act, and the Biodiversity Conservation Strategy. ESS6 targets the protection and conservation of biodiversity and sustainably managing living natural resources. Based upon preliminary observation of these communities, it was observed that these areas which were once forested with a lot of biodiversity are now replaced by settlement. To ensure, biodiversity conservation, proponent will put measures in place to address the above through assessment and better land use planning and urban greening through community tree nursery management and tree planting initiative	Even though laws related to biodiversity conservation and sustainable management of living natural resources are diffused into several pieces of legislation, there are overlapping mandates for some of the governing institutions. Biodiversity will be protected and conserved and sustainable management of living natural resources promoted through the adoption of practices that integrate conservation needs and development priorities. This will be carried out by implementing applicable mitigation measures documented in the ESMP.
ESS8: Cultural Heritage ESS8 recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present, and	The Local Government Act of 2004 and the Tourism Development Act of 1990 as amended in 2010 as the Tourism and Cultural Affairs Act has eleven Cultural legislations and conventions that address specific areas of concern particularly the	The acts do not address cultural heritage as an integral part of sustainable development and promotion of equitable sharing of benefits. The three project communities have no recognized cultural heritage site of strategic significance. In a situation where	As set out as part of mitigation measures, the development of Chance-Find Procedure shall for part of contractual requirement. Stipulations in ESS8 will be strictly adhered to. All contracts will include a chance find procedure.

ESS Requirements	EPA Act and other national legislation requirements on ESIA	Gaps and alignments	Addressing the GAP
future noting that people all over the world identify themselves with cultural heritage as a reflection and expression of their constantly evolving values, beliefs, knowledge, and traditions.	preservation, protection and promotion of Sierra Leone's cultural heritage. These cultural legislations take into cognizance national and international regulations. Replace LGA with the Monuments and Relics Act	insignificant cultural heritage site for traditional values, the proponent will implement ESS8 to identify measures designed to protect cultural heritage and provisions for Stakeholder Engagement and Information Disclosure. If archaeological remains are found, the Chance Find Procedure will be applied as follows: 1) upon discovery of such findings, the staff must investigate: 2) stop the work, 3) report to the foreman and team lead; 4) stakeholders and local authorities should be informed; 5) the area should be immediately delineated 6) detail assessment with pictorial evidence should be included in the Incident Report 7) Report should be submitted to the appropriate government authorities 8) consultant should wait for two weeks before any action either to continue or not 9) After two weeks the government should respond to either continue or discontinue the work 10) After the two expires without any response from the government, the consultant should then continue with the work. 11) if work is stopped an alternative site should be identified; and 12) construction should then continue at the new site	
Stakeholder Engagement and Information disclosure ESS10 requires that borrowers identify all stakeholders of a project, including those who stand to benefit or are at risk of facing negative impacts as a result of the project, with particular attention to vulnerable and disadvantaged groups. It requires borrowers to publicly disclose information about project risks and benefits in a language and manner understandable and accessible to	EPA Act, 2008. There is no national policy as such on public disclosure. However, the EPA Act, 2008 (sections 27(1) and (2)) states that the agency shall circulate an EIA to various bodies and also open it for public inspection and comments in the National Gazette and newspapers for a specified period.	Although stakeholder consultation laws are hazy and national laws are not very clear and appeals processes not very suitable for use by poor community groupings, the comprehensive SEP formulated for this project will be strictly adhered. This plan includes a comprehensive GRM and covers all stages of the project cycle	The comprehensive SEP formulated for this project will be strictly adhered to. The plan includes a comprehensive GM and covers all stages of the project cycle.

ESS Requirements	EPA Act and other national legislation requirements on ESIA	Gaps and alignments	Addressing the GAP
project stakeholders. It instructs borrowers to develop a plan (laid out and made public in the SEP) to ensure that all stakeholders are informed and consulted on project risks and impacts throughout the project life cycle and to establish an independent, accessible grievance mechanism and process for stakeholders to submit project-related complaints.			

2.5 Institutional Framework

Ministry of Finance

The Ministry of Finance is the organ of government responsible for financial management of government revenue and other finances. MOF is responsible for preparing economic policies for public financial management. This organ advises the President on economic issues. It is headed by the Minister of Finance and appointed by the president and approved by Parliament. This ministry formulates and implements sound economic policies and public financial management, ensure efficient allocation of public resources to promote stable economic growth and development in the context of a stable macroeconomic environment. Through the Minister of Finance, the MOF represents the GoSL to the World Bank on high-level strategic matters relating to the project according to the Financing Agreement and Project Appraisal Document. The specific roles and responsibilities of the MOF include

- Providing the overall administrative authority of the project under the leadership of the Financial Secretary,
- Providing financial management and procurement functions through the Project Fiduciary Management Unit which serves as the Principal Accounting Officer of the project,
- Requesting and receiving funds from the World Bank for the RUSLP implementation.

The Ministry of Health and Sanitation

The Ministry of Health and Sanitation is the only entity mandated by law to provide medical services and facilities to the public on behalf of the government. The ministry is also responsible for the promotion of good hygiene and sanitation practices in all the communities in the country. The ministry has peripheral health centers and units in all the 198 chiefdoms in the country. It is responsible for surveillance, monitoring and management of national and transboundary diseases. This ministry has absolute stake in the management, monitoring and surveillance of hygiene and sanitation in the entire country.

Ministry of Water Resources

This ministry is mandated legally to lead and support the development of policies and programmes guiding the provision of safe, clean and affordable drinking water on sustainable basis to the entire population of Sierra Leone. The ministry works through established agencies, private sectors actors and agencies.

National Water Resource Management Agency (NWRMA)

The objective for which the NRWMA was established are to

- regulate, utilize, protect, develop, conserve, control and generally manage water resources throughout Sierra Leone
- propose comprehensive plans and strategies for utilization, conservation, development and improvement of water resources; grant water rights and collect raw water charges
- initiate, control and coordinate activities concerned with the development and utilization of water resources including the supervision and regulation of the Water Basin Management Boards; and the Water Catchment Area Management Committees (GoSL, 2017)

NRWMA is mandated to ensure that the water resources of the country are controlled in a sustainable manner. The agency's interface coordination is required for the effective execution of water scheme project under RUSLP intervention investment consideration in the communities.

Ministry of Lands, Housing and Country Planning (MLHCP)

This ministry develops appropriate policies and programmes for lands and housing, and carry out activities under the following major headings, land tenure, state lands, surveys, mapping and triangulation, enforcement of planning and building control, demolition of unauthorized structures, collaboration with relevant Government Ministries and with national and international organizations and Institutions. The ministry shall be required to provide project alignment and planning guidance for all RUSLP subcomponent projects.

Ministry of Labour and Social Security (MLSS)

The Ministry develops and implements policies and programmes on employment creation, workplace harmony, safety and health at work and an all-inclusive social security system. To effectively contribute to the socio-economic development of Sierra Leone by developing and implementing policies, legislation aimed at promoting social security and social protection, preventing accidents and diseases at workplaces, promoting sound labour and employment relations, enhancing vocational guidance and counselling of job seekers, promoting the dignity of employers and employees, and enhancing the collection and maintenance of vital labour statistics on the formal and informal sectors of the economy for human resource development, employment promotion, policy formulation and development (DEVEX, 2021). The ministry is relevant to all RUSLP subcomponent to promote sound labour and employment relations and prioritization of relevant project.

Ministry of Environment and Climate Change

The Ministry of Environment in Sierra Leone is responsible for overseeing and coordinating matters related to environmental protection and management in the country. Its primary role is to provide policy direction, guidance, and support to promote sustainable development practices that safeguard the environment and natural resources. The Ministry has several functions and responsibilities, including formulating and implementing policies, projects, and programs on the environment, overseeing and coordinating the activities of government agencies and other departments on environmental matters, and enforcing regulations and standards related to environmental protection. The ministry has statutory responsibility for environmental protection in ensuring sustainable execution of all projects proposed for execution under RUSLP subcomponent and to ensure climate resilience consideration in project prioritization and execution.

Environment Protection Agency (EPA)

The National Environment Protection Act of 2008 established the Environment Protection Agency to facilitate coordination amongst Ministries, Agencies, Departments and local authorities in all areas relating to environmental protection. It also addresses the necessity to obtain an environmental impact assessment license for certain projects. It is the main government agency in charge of all issues concerning the environment and climate change. It has the mandate to coordinate, monitor and evaluate the implementation of national environmental policies, programmes and projects, including issuing of EIA licence as stipulated in the revised EPA Act of 2022. Some of its functions include issuance of Environmental Impact Assessment license, conduct research, monitoring environmental impacts of the activities of companies, ensure compliance with laid down environmental laws, investigation of environmental complaints from the public, develop environmental policies for the protection of human health and the environment, maintains data on environmental quality, raise awareness etc. The agency relevant for institutional coordination to monitor and evaluate the implementation of the ESIA.

The Forestry Department

The Forestry Act of 1988 was an amendment to the Forestry Ordinance of 1912 and 1942 that established the Forestry Division. The mandate of the Forestry Division now Forestry Department mandate is on promoting multiple-use management of forests for sustainable yields. Prior to the

enactment of the National Protected Area Authority and Conservation Trust Fund Act of 2012, the management and protection of forests, wildlife, wetland, protected areas, forest reserves, hunting reserves, national park were all under the Forestry Division.

Ministry of Local Government and Community Affairs (MLCA)

The Ministry of Local Government and Community Affairs is mandated to provide an effective link between national development priorities and local-level development initiatives and to uphold a democratic local government system reflecting a decentralized approach and facilitating the provision of efficient and effective delivery of quality services at the local level (MLCA, 2021). The supervisory coordination of the ministry is required to provide guidance for investment prioritization in collaboration with the FCC, CDC and other stakeholders.

Local Councils

The Local Councils are the highest political authority in the locality and have legislative and executive powers to be exercised in accordance with the Local Government Act 2004 (as amended in 2017) or any other enactment. The council is generally responsible for promoting development in it area of jurisdiction and the welfare of the people with the available resources and with such resources and capacity as it can mobilize from the central government and its agencies, national and international organizations, and the private sector (GoSL, 2004). The LC (FCC) is relevant for project prioritization and implementation oversight in collaboration with the PMU.

Guma Valley Water Company (GVWC)

GVWC is a company established to harness and supply portable drinking water to the urban and per-urban areas within Freetown. It aims to provide a sustainable supply of water for public and private purposes and to provide for other related matters. GVWC is moving towards a commercially orientated approach in fulfilling its functions for the control, development and management of their works and water supply services within the limits of supply. The GVWC Act establishes provisions for consultation with the Sierra Leone Electricity & Water Regulatory Commission (EWRC) to regulate and establish a fair tariff.

2. 6 Required Permits

Prior commencement of construction works, the underlisted permits shall be obtained by the contractors:

- Water infrastructure (boreholes, wells) – Permit from NWRMA of the Ministry of Water Resources.
- Buildings structures – Permit from Ministry of Lands and Housing.

Project Description

03

Chapter Three : Project Description

This section provides a brief description of the neighborhood upgrade project, the status of the proposed infrastructure upgrade as well as information on the beneficiary communities.

3.1 Project Component

The proposed neighborhood upgrade project falls under Component 2 of the Resilient Urban Upgrade Sierra Leone Project (RUSLP) as outlined below:

Component 2: Resilient Municipal Infrastructure Investment and Urban Greening with the following subcomponents: Subcomponent 2a is designed to support the comprehensive upgrading and landslide/flood risk mitigation in underserved neighbourhoods; these include Coconut Farm, Moyiba, and Portee - Rokupa communities. The implementation of the infrastructure development under this subcomponent would ensure that all the infrastructure investments improve mobility and access to basic services to excluded groups such as persons with disabilities, the elderly, children and women. The investment menu includes the construction of drains, access roads, walkways, footbridges, earth retaining structures, water supply and sanitation facilities and the installation of light-emitting diode (LED) street lighting.

A catchment-based approach would be applied for integrated flood risk reduction of drainage catchment areas of the selected communities. The selection of the three settlements was based on the following criteria: (a) settlement size and population density; (b) level of hazard risk; (c) contribution to a drainage catchment area improvement; (d) minimal demolition and resettlement; and (e) alignment with other government infrastructure programs.

Essentially, the project is designed to finance the feasibility studies, detailed designs, construction supervision including Defects Liability Period (DLP)., and the development of environmental and social instruments to support the preparation and implementation of the infrastructure upgrade investment. The infrastructure investments are designed to climate- and disaster-resilient standards.

3.1.1 Rationale of the Neighborhood Upgrading Investment

The objective of this investment is to provide access and mitigate the risk of flooding in these underserved neighborhoods (Coconut Farm, Moyiba, and Portee – Rokupa) and the provision of basic public services for its residents.

The proposed intervention investment includes the following:

- Providing and or rehabilitating primary and secondary roads to connect with the existing tertiary roads
- Providing water supply (wells, boreholes, refillable tanks etc.) and sanitation (toilets etc.) facilities

The resilient neighbourhood upgrading activities to be implemented include Construction and rehabilitation of drainage channels, roads, footbridges, slope protection, and earth retaining structures to bring climate change adaptation benefits which would help with-stand future flood and landslide risks, in addition the project will construct boreholes, hand dug wells, pour flush toilets. Additionally, subprojects will have climate change mitigation benefits, such as primary and secondary drainage within and immediately outside of the selected areas and the construction of roads and walkways to support pedestrian traffic, and solar street-lighting will be considered to reduce carbon footprint.

The land uptake required for the WASH facilities and the construction and expansion of side drainage channels has been surveyed and inventoried and the affected properties identified, assessed and included in the Resettlement Plan prepared for the neighborhood upgrade subproject.

The RP details household-level impacts, compensation, and resettlement measures. *Land requirements for WASH facilities and road widening are managed through the RP, which outlines compensation and livelihood restoration measures*

3.1.2 Approach to the Proposed Neighborhood Upgrading Project

The approach for the implementation of the neighborhood upgrade project is outlined below:

1. Focus on improving the livability of unplanned, underserved and low-income communities: The main objective of the Neighbourhoods Upgrade Project (NUP) is to improve the livability of low-income communities living in Rokupa, Coconut Farm and Moyiba unplanned" and "underserved" neighbourhoods in Freetown.
2. Comprehensive area-based strategy: The Urban upgrading is an integrated and comprehensive intervention with the final goal of improving the liveability of the local population. In this sense, the NUP combines a variety of objectives, strategies and actions with the aim to; improve the built environment, preserve the natural environment and strengthen local ecosystems, and promote economic development.
3. Short-term urban development framework priority actions: The proposed Short-term planning frameworks developed for the three communities consider the vision and desired city development objectives as per the key planning documents, in particular the Community Upgrade Plan (CUP). The short-term interventions have been strategically concentrated on urgent problems and activities identified in conjunction with the local community during different participatory exercises undertaken in preparatory phase of the project phases and based on agreed objectives to achieve liveability.
4. Participation of the local inhabitants in decision making in all stages of the project: The CUPs were developed jointly with the local communities since the initial stages of the project. Local communities have identified the priorities, the level of services that could be afforded within available funding, reviewed the proposals and prioritization, and defined how they want to contribute to its implementation and maintenance.
5. Minimum displacement and resettlement impacts: The approach is to ensure minimum impact on affected structures. A key principle of the intervention has been that all impacted households will be compensated at full replacement cost.

3.2 Status of Infrastructure in Project Area

This section presents the general existing conditions of the project area to justify the proposed investment intervention. The three (3) priority communities are prone to major hazards and risks (landslides, flooding, heat exhaustion etc.) with low socioeconomic indexes, the communities are confronted with several challenges which include electricity and water and severe problems with infrastructure (roads, drainage systems, sanitation and waste management, education and health facilities).

3.2.1 Moyiba Community

Moyiba is situated on latitude 8.47640, and longitude 13.20770 in a steep, hilly area on the east of Freetown, approximately 75 kilometres from the city centre. Moyiba lie within a natural river catchment denoted 'C4' after the Sierra Leone Multi-City Hazard Review and Risk Assessment[2]. The

[2] World Bank, 2018. Sierra Leone Multi-City Hazard Review and Risk Assessment: Final Report

topography of Moyiba dominated by the Mamba Ridge (east) and Mount Aureole (west), rising sharply to approximately 550 metres above sea level and the Granville Brooke, which runs north south through the community. There are two lesser north-south ridgelines cradling the Moyiba community, where the Granville Brooke flows downhill from near Gloucester, through the community and out to Cline Bay and the Sierra Leone River Estuary and beyond. Moyiba has considerable areas of residential land within hazard zones from landslides and flooding. As presented in Figure 3.1, the bulk of urban development in Moyiba is residential, stretching from Blackhall Road in the north, to the slopes of the southern ridgeline in the south. Land used for public open space is limited to the Borrow Pits, sports field (Figure 3.1).

Figure 3.1: Moyiba Unplanned Residential Development with Borrow Pit Sports Field

Roads and Access Ways

Internal mobility and access within Moyiba are severely constrained by a deteriorating, unpaved road network and a critical lack of pedestrian infrastructure. While the primary artery, Moyiba-Quarry Road, connects the community to Blackhall Road and the ridge-top quarries, it is frequently congested by heavy lorries transporting stone and sand. Secondary access points like Mamba Ridge Road and the loop road near the Community Health Centre (CHC) provide some connectivity, but these routes are often impassable for standard vehicles, requiring four-wheel drives or motorcycles to navigate the steep, informal terrain leading toward Leicester.

The community's connectivity is further hampered by the absence of safe walkways and functional footbridges over Granville Brooke. Existing infrastructure is insufficient to serve the needs of local businesses and residents, with the lack of street lighting and well-maintained paths creating significant safety risks. These hazards disproportionately affect vulnerable groups, including women, children, the elderly, and those with reduced mobility, highlighting an urgent need for improved pedestrian connections and road maintenance to better integrate Moyiba with the wider urban context of Freetown. The existing road network integrates the community with the wider urban context as presented in Figure 3.2.

(Volume 2 or 5) Freetown City Hazard and Risk Assessment

Figure 3.2: Current State of Roads in Moyiba

Drainage

Moyiba's drainage infrastructure is characterized by inadequacy and poor maintenance, leading to severe seasonal flooding typical of many Freetown communities. While the Granville Brooke serves as a natural drain, its capacity is compromised by the encroachment of structures along its fringes and its widespread use as a waste depository. Survey data reveals that only 50% of residents have access to any drainage, with a majority citing a lack of financial resources and institutional support as the primary barriers to maintenance, despite visual evidence that siltation and waste significantly reduce hydraulic effectiveness.

Observations from site visits confirm that existing drains (Figure 3.4) are often disconnected and in poor condition. Even the formal drainage channels along Moyiba-Quarry Road, funded by international partners like the European Union and UNOPS, suffer from insufficient capacity and a lack of sustained maintenance. To address these systemic failures, further evaluation—including detailed hydrology and hydraulic modelling (Figure 3.5) by CEMMATS—has been conducted to design a system capable of meeting the community's future drainage needs.

Figure 3.4: Drainage Representation in Moyiba

Figure 3.3: Formal Drainage Channel Crossing Borrow Pit Field (red) and line of Granville Brooke (yellow)

Source GoogleEarth

Figure 3.5: Drainage and Topography Survey Moyiba.

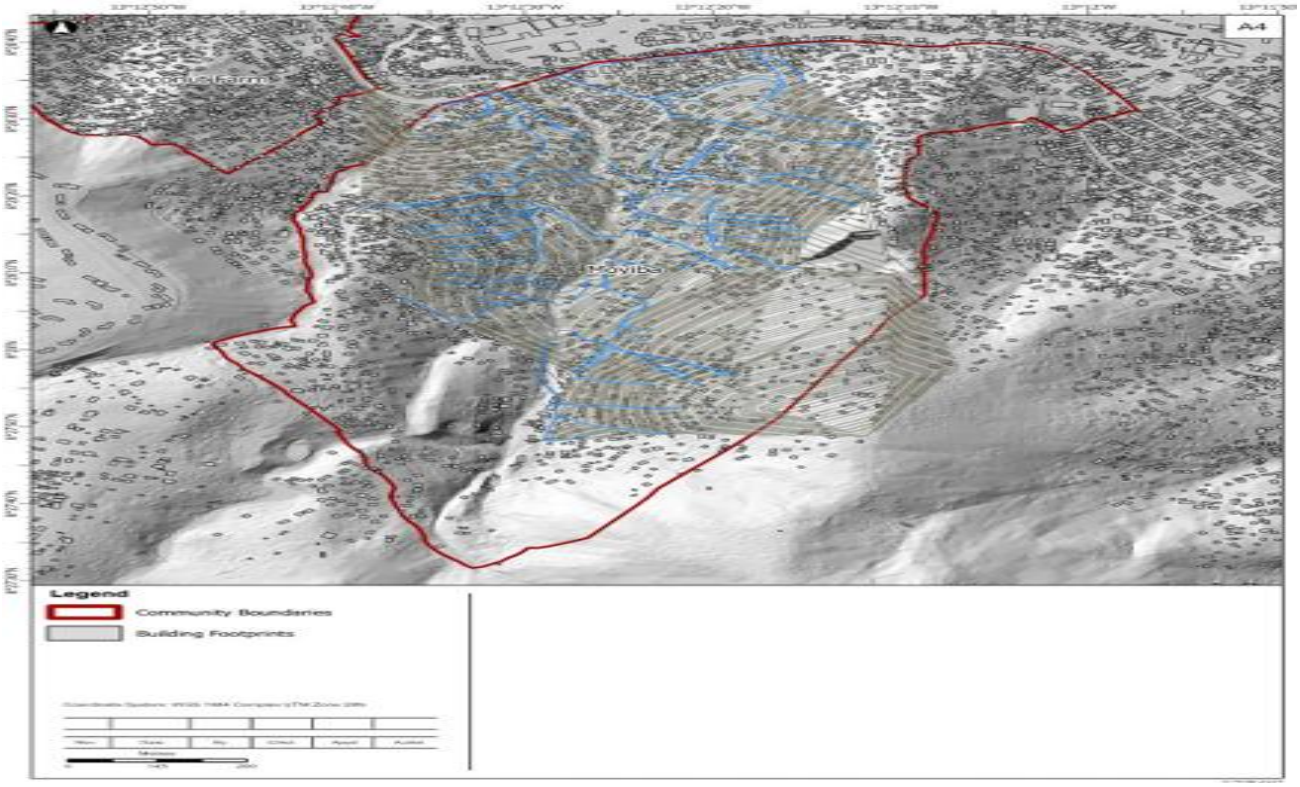
Blue lines show surveyed drainage channels. Source: Cemmat field survey 2023

Power Supply

The Electricity Distribution and Supply Authority (EDSA) are charged with the responsibly to transmit and distribute electricity in Sierra Leone. Moyiba community does not have an adequate electricity supply, electricity supply is rationed, the cables running from the main supply line to the houses are noticeably of low quality and it was claimed to often result in sparks which suggest a need for intervention to avoid fire risk. Electricity supply to the community is poor, intermittent, and the voltage is low even though most of the houses are connected to the main grid of the national electricity services providers. Most of the residents rely on rechargeable lamps for lighting and wood and charcoal for cooking while the affluent residents use generators and solar panels for lighting and gas cookers for cooking.

Street Lighting

There are no streetlights along the roads and public spaces within the community. Access to the community at night is very challenging due to the absence of streetlights coupled with potholes on the unpaved roads. The lack of streetlighting exposes residents' vulnerability and contributes to the increase in crime rate, road crashes and accidents involving pedestrians.



Water Supply

Moyiba faces a complex water crisis despite abundant natural resources, undermined by poor management, environmental degradation, and contamination. While the community relies on a diverse mix of sources—primarily boreholes (33%), packaged water (23%), and springs (17%) the quality and availability of water are threatened by uphill deforestation, land encroachment, and the lack of organized storage. A local dam managed by community leaders provides water through

public taps, but this supply is increasingly polluted by informal settlements, leading to a rise in waterborne illnesses like diarrhea and skin conditions. Furthermore, the rocky terrain makes the construction of private wells difficult and costly, and those that exist are often contaminated by nearby polluted streams.

The burden of this water scarcity falls disproportionately on women and children, who navigate through high-risk places at dawn or late at night to fetch water, often at the expense of children's education. Sanitation issues exacerbate the crisis, as local streams like the Moyiba and Granville Brooke have become unofficial dumping grounds for solid waste and fecal matter due to a lack of adequate toilet facilities. While underground springs offer a cleaner alternative for drinking water at a cost (Le 500 per 5-gallon container), the proliferation of uncoordinated private wells is depleting the shared spring reserves. This highlights an urgent need for integrated water resource management to address both the health risks and the socioeconomic barriers to clean water access. Figure 3.6 presents the water structures representation in Moyiba.

Figure 3.6: Water Structures Representation in Moyiba

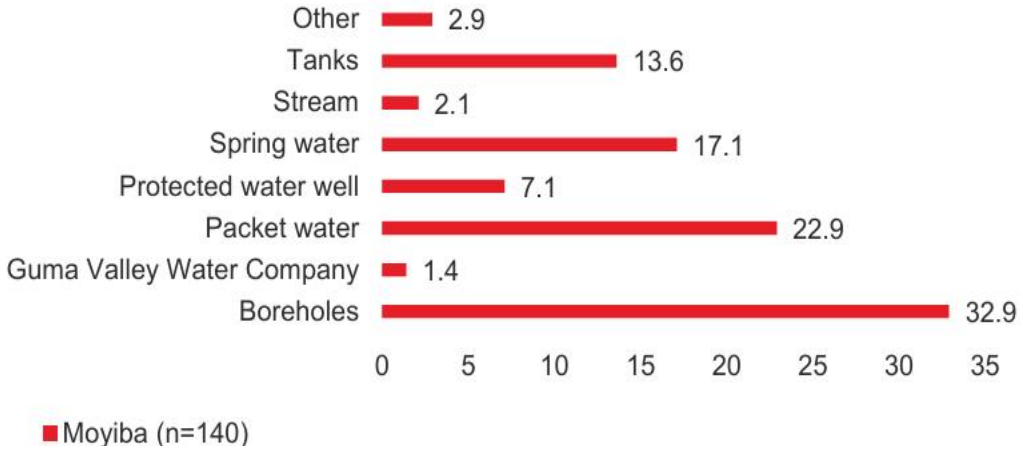


Figure 3.7 Source of Household Drinking Water (%)

Socioeconomic Survey Cemmats, 2024

Groundwater Potential in Moyiba

According to a groundwater assessment report by the National Water Resources Management Agency (NWRMA) of Sierra Leone (on the Hydrogeology of Sierra Leone), groundwater resources in the country are unevenly distributed in space and time and are often inadequate to meet water needs for both domestic and agricultural uses. As deduced from the reference data on aquifer, borehole productivity in most of the western region of Sierra Leone is categorised as low to moderate density, ranging from 0.5 to 1.5l/s, while estimated depth to groundwater is generally 7-25m, representing the phreatic or upper aquifer, while deep aquifers are located at depths below 50 m. The yield and physical water quality parameters of the borehole at the Imam Sadique School was studied in late January 2024. The result revealed an estimated flow of 40 l/min, and static water level of approximately 15 m.

Water Demand Estimates, Moyiba

A survey of water supply locations and water demand was undertaken by CEMMATS (FS consultants CUP in 2023), however, accurate water demand estimates were difficult to obtain because the community source their water from different supply locations due to the inconsistent and ephemeral supply. Further lines of evidence were sought for water demand estimates. A literature review revealed a survey of 398 households in Freetown and found that on average water consumption was about 93 litres per capita per day which Is similar across the wider Freetown area. Significant variation occurred across income groups and depending on water connection; per capita consumption varies from 73 to 112 (L/p/d) for households without pipe-water connections where showering, toilet flushing and hand wash basin use are absent, and from 91 to 133 (L/p/d) where showering, toilet flushing and hand wash basin tap use are common. See Figure 3.8 below. The National Water and Sanitation Policy (WASH) 2010 published by the Ministry of Water Resources recommends a per capita urban water supply of 60 l/c/d and rural water supply of 20 l/c/d, however, guided by the 2010 National WASH policy the client and the FS consultants discussed and agree on a per capita supply rate of 25 l/c/d of water for public supply points and water kiosks. Therefore, considering a population of 22,755 and a water demand of 25 litres per capita per day, the total water demand for the Moyiba community will be around 569,000 litres per day.

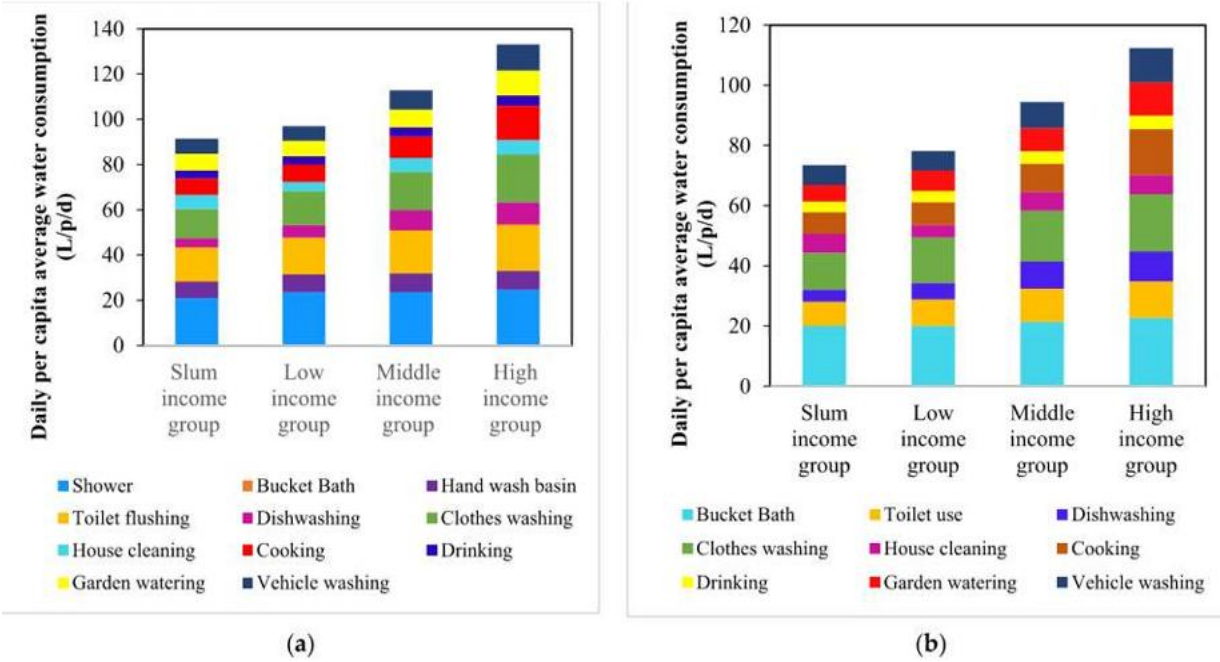


Figure 3.8: Impact of per capita monthly income on water end uses in Freetown

a) Impact of per capita monthly income on water end uses in Freetown for households with piped connections. b) Impact of per capita monthly on water end uses in Freetown for households without piped connection (Ibrahim et al 2021).

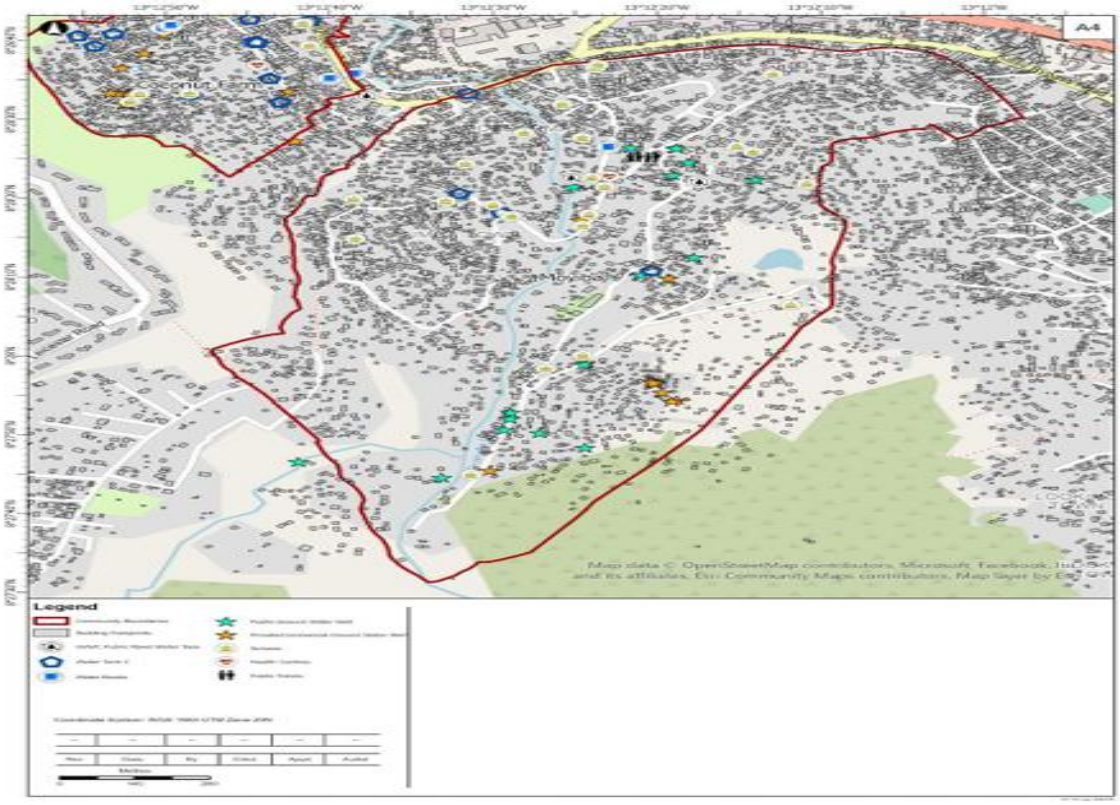


Figure 3.9: Exiting Water supply locations in Moyiba Community.
Source: CEMMATS field survey baseline data (2023).

Water Field Survey Data

There are 19 natural spring locations, generally the water quality is within the WHO standard, and most natural springs are reported to be free to access and flow all year around. There are two GVWC Water Taps located at Mamba Ridge, CSC and Sesay Lane, Mondaema respectively. The water quality from these sources is reported to be poor. The community has 5 water tanks, 1 water kiosk and 15 wells and 11 Private Commercial Ground Wells (Table 3.3). The baseline survey test results revealed that the quality of the water from the wells is from average to good depending on the location of the wells

Table 3.1: Portable Water Supply Sources at Moyiba

Water Source	Capacity (Lts.)	Delivery	Payments	Costs (5 Gallons)	Description	Persons Served (Est)
Piped from Guma Facility	5000	Three times a week	Yes	SLL 1	Moyiba (Limba town)	300
Piped from Guma Facility	1000	Three times a week	Yes	SLL 1	Ministry of water resources assisted tank	110
Piped from Guma Facility	5000	Three times a week	Yes	SLL 1	Guma valley water tank	111
Piped from Spring/Da m		Three times a week	No		Mamba Ridge, Moyiba community	200
Piped from Guma Facility	1000	Three times a week	Yes	SLL 1	Mamba Ridge community	500

Table 3.2: Portable Water Supply Sources, Ownership and Availability at Moyiba

Location/Catchment Area	Water Quality	Ownership	Water Availability	Payment Required	Amount (SLL)
Up Garden Area and immediate surrounding	Good	Private	Daily	No	1
Mamba Ridge, Up water, Phase1, Garden	Good	Private/community	Daily	No	1
Moyiba Garden, Soja Town,	Good	Private	Daily	No	1
Garden Area	Good	Private	Daily	Yes	1
For the school only	Good	Government	Daily	No	1
Up Garden, Quarry, Soja Town	Good	Community	Daily	No	1
Soja Town, Up Garden, Quarry	Good	Private	Daily	No	1
Mamba Ridge	Good	Private	Daily	Yes	1
Sesay Lane	poor	Community	Daily	No	1
Mamba Ridge Community	Average	Community	Daily	No	1
Mamba Ridge Community	Average	Community	Daily	Yes	1
Mamba Ridge Community	Average	Community	Daily	Yes	1

Mamba Ridge Community	Average	Community	Daily	Yes	1

Table 3.3: Private and Commercial Wells at Moyiba

Location/Catchment Area	Water Quality	Ownership	Water Availability	Payment Required	Amount (SLL)
Up Garden Area and immediate surrounding	Good	Private	Daily	No	1
Central	Good	Private	Daily	Yes	1
Central	Average	Private//community	Daily	No	1
Mamba Ridge	Good	Private	Daily	Yes	1
Gem Area	Good	Private	Daily	Yes	1
Central	Good	Community	Daily	Yes	1
Central	Good	Community	Daily	Yes	1
Face 2	Good	Private	Daily	Yes	1
Central	poor	Community	Daily	Yes	1
Barbaric	Good	Private	Daily	Yes	1
Barbaric	Average	Private	Daily	No	1

Sanitation

The socioeconomic survey, caried out in the community reported that most residents (96%) have a household toilet . There are very few flush toilets in the community (9.3%). This is said to be due to the rock formation and topography which generally make construction of sewers difficult. Many toilets in the community are pit latrines (81% in Moyiba). Survey outcomes suggested that these toilets do not work well and pollute drainage channels. There are two public toilet blocks in Moyiba (with four individual toilets each, two for men and two for women). The toilets are generally Ventilated Improved Pit-Latrine. These toilets are controlled by a committee, headed by the youth chairman. A fee of Le1 is paid for use of the toilet, but deprived and disabled people are exempted from paying. The system is imperfect and poorly controlled. People without access to toilets defecate in plastic bags which are thrown into the Granville Brooke stream, Open defecation is also common.

3.2.2 Coconut Farm Community

Coconut farm community is located on latitude 8.48112 and longitude 13.21245 in the Western Urban Area of Freetown, it is a small community situated in a steep, hilly area on the eastern side of Freetown, approximately 3 kilometers from the city Centre. Coconut Farm lies within a natural river catchment The majority of the houses in the community are built on steeply sloping ground that wraps around a spur of higher ground branching from Mount Aureole. In respect of this project the delimitation of Coconut Farm as designated by the World Bank and FCC teams, covers approximately 0.39km^2 and includes 1,105 buildings (latest Open Street Map data, May 2022 imagery). As presented in Figure 3.10, most of the housing in the community is on steeply sloping ground that wraps around a spur of higher ground branching from Mount Aureole.

Figure 3.10: Coconut Farm Football Pitch with the Community Southern Steep Terrain

Drainages

Like many other communities across Freetown, the drainage along the roads in Coconut Farm are inadequate and normally result in flooding during the wet season as they cannot properly channel the heavy flow of water from the hills. There is a canal which runs from the back of community centre and empties at the intersection with Blackhall Road through a very constricted culvert which designed to carry the water across the road through the Saint Martins Church to the outfall at Bai Bureh Road. The water then flows through a constricted drainage along Bai Bureh when empties at the culvert point on the Granville Brooke stream which flows into the sea. This is most obvious around the intersection with Blackhall Road as the downstream drain (south of Blackhall Road) is too narrow to continue the flow further downstream to the outfall location. This is exacerbated by the accumulation of waste and silt that blocks the drainage channels (Figure 3.11). It was observed that some drainage structures were recently upgraded in the community by a Concern Worldwide /UNOPS funded project and that some of the existing roads do have open, road-side drainage however these are in poor condition and too shallow and mostly clogged as reported in the community upgrade plan (CUP). Figure 3.12 drainage survey of coconut farm community. Yellow box is main drainage in the community and red star is where the drainage crosses Blackhall Road. Green and blue lines show existing drainage with the blue drainage being less formal.

Figure 3.11: Representation of Drainage Channel in Coconut Farm

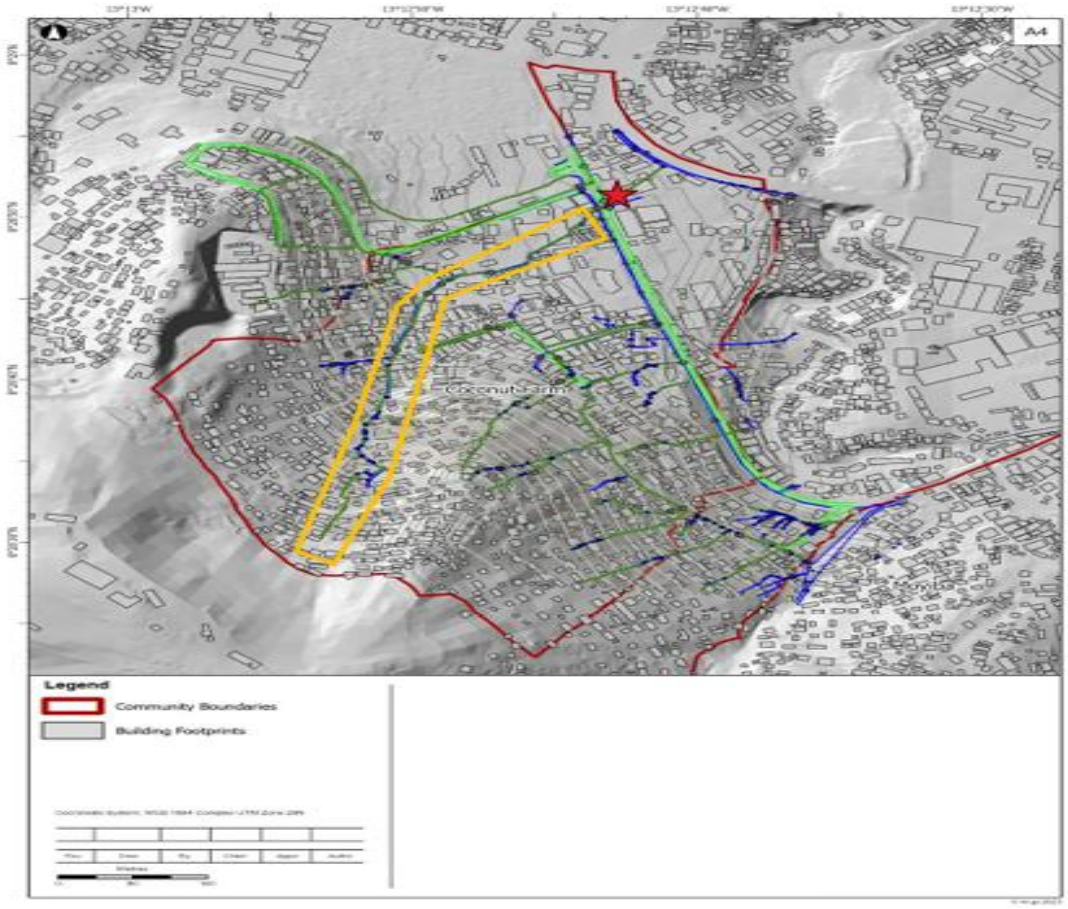


Figure 3.12: Drainage survey of Coconut Farm community

Yellow box is main drainage in the community and red star is where the drainage crosses Blackhall Road. Green and blue lines show existing drainage with the blue drainage being less formal. Source: CEMMATS field survey baseline data (2023)

Roads and Access Ways

The main access into Coconut Farm is via Access Benz Grage – Quarry Road (unpaved with a lot of gullies and outcrops), which branches off from Blackhall Road with accessibility constrained due to the deplorable state of the road conditions (Figure 3.13). There is another road leads through Ashobi Corner from Blackhall Road. Internal mobility and goods transport is mainly carried out through tricycles and motorbikes in the lower parts and the use of push carts through pathways and narrow roads in the slopes to reach higher parts. Most of the neighbours are pedestrians as the community lacks safe walkways or steps.

There are few concrete paved access roads which were built by the community people through self-help. Most of the roads, with exception of the Benz Garage and Ashobi Corner roads are not motorable and do not have proper drainage. The main sources of transportation are motor bikes and tricycles (Kekeh). Delivery vehicles only come to deposit goods, but no bus service (Poda Podas) ply the community routes. This causes the problem of movement by the people most of the time and it leads to high transportation cost as motor bikes charge Le.5-10 from the main road into Coconut Farm and Ashobi Corner. The drains are cleaned by the youths during public cleaning and previously on national cleaning days which are no longer in existence.

Figure 3.13: Current State of Coconut Farm Roads

Street Lighting

There is no streetlighting along the Access Roads and public spaces in the community. The lack of street lighting and the absence of paved roads lead to a challenge in accessing the community at night, in addition, residents are exposed predisposes the residents' vulnerability to the late-night activities the local gangs. crime, road crashes and accidents involving pedestrians.

Groundwater potential in Coconut Farm

According to the design reports, there was no access to formal data on aquifers specifically under Coconut Farm from previous studies or borehole drilling. It was reported that the only borehole identified in the community was done to a depth of about 55 to 60m. Data on the pumping test was not available, however, flow was estimated at 42 L/min.

Drinking and Domestic Water Supply

Coconut Farm faces significant water insecurity, with an estimated supply coverage of only 45% and a total absence of pipe-borne infrastructure in the upper reaches of the community. While GUMA Valley is the oversight authority, its service is intermittent and often restricted to nighttime hours—a schedule that poses significant safety risks to the young women and girls responsible for fetching water. Consequently, the community relies on a fragmented network of 10 public tanks, 12 commercial groundwater wells, four kiosks, and a single public well. This scarcity has created a predatory market where private well owners sell groundwater at inflated prices to those without alternative access.

The resilience of the water system is further weakened by poor road conditions and payment inconsistencies, which deter GUMA Valley from establishing a regular supply schedule. Efforts by external partners, such as Save the Children, have seen mixed success, while many residents are forced to supplement their needs with water from the "Bando Stream" for domestic use. With no rainwater harvesting schemes in place and public taps available only two or three times a week, the community remains highly dependent on expensive commercial sources and substandard surface water to meet its daily needs. Figure 3.14 presents results from survey on sources of water in Coconut Farm.

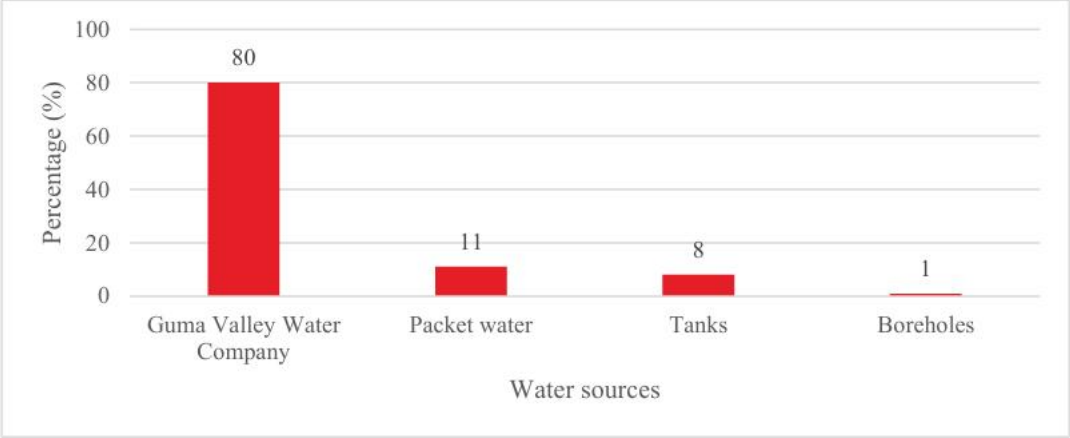


Figure 3.14: Results from Survey on Sources of Water in Coconut Farm

Water demand estimates in Coconut Farm

Estimating water demand for the Coconut Farm community proved challenging due to the community's reliance on multiple, inconsistent, and ephemeral water sources. To establish a reliable baseline, the project integrated local survey data with a literature review of Freetown households, which indicated that average consumption ranges significantly—from 73 L/p/d for those without piped connections to as high as 133 L/p/d for households with full plumbing.

While the 2010 National WASH Policy recommends an urban supply of 60 L/p/d, project stakeholders agreed upon a pragmatic design standard of 25 L/p/d for residents using public supply points and kiosks. Based on a population of 17,477, the total projected water demand for the Coconut Farm community is approximately 437,000 litres per day. Figure 3.15 presents the existing drinking water supply locations in coconut farm community from CEMMATS CUP baseline survey data (2023).

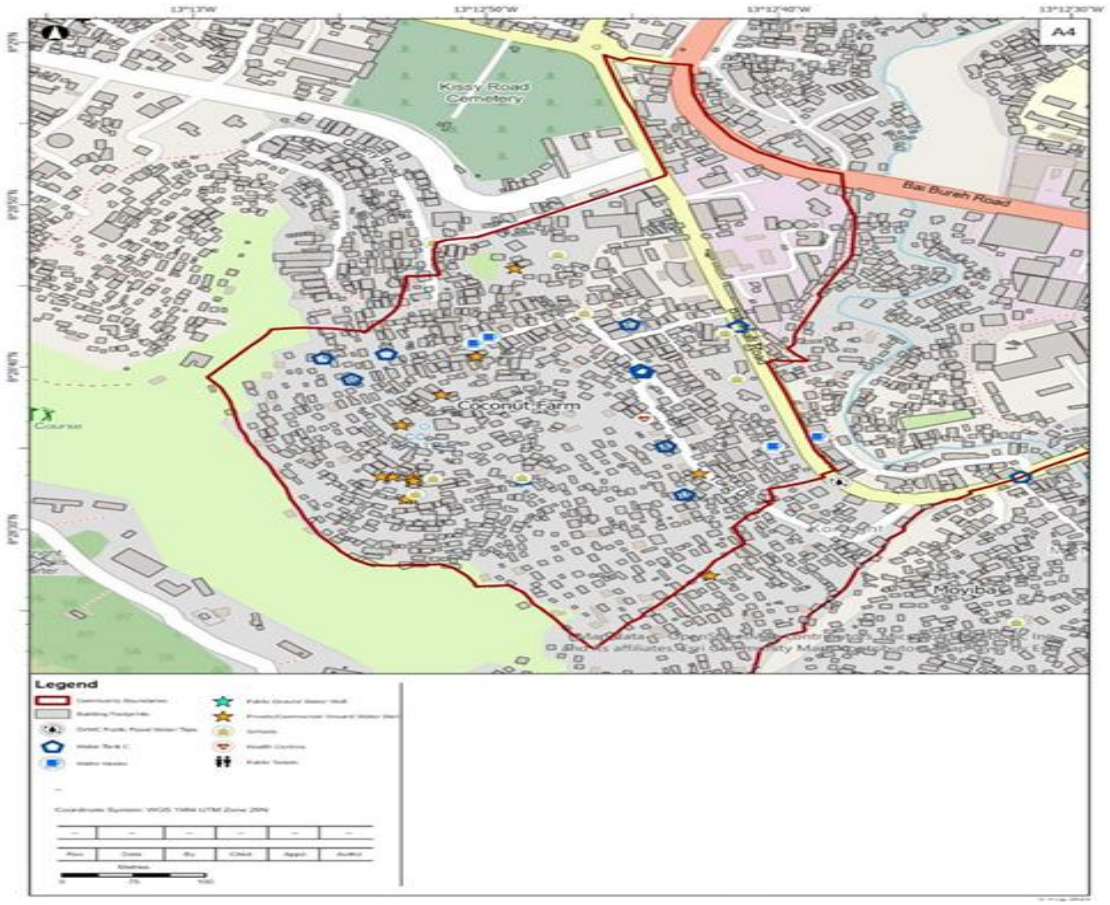


Figure 3.15: Existing Drinking Water Supply Locations in Coconut Farm Community
Source: CEMMATS CUP baseline survey data (2023).

Table 3.4: Portable Water Supply Sources at Coconut Farm

Water source	Capacity (Lts.)	Delivery	Payments	Costs (5 gallons)	Description	Persons served (Est)
Other	**10000**	**Four times a week**	**No**		**Blackhall road**	**40**
Piped from Guma Facility	Less than 5000	Three times a week	Yes	SLL 1	2,000 Liters water tank at upper Arshobie corner	59
Piped from Guma Facility	5000	Twice times a week	Yes	SLL 1	Plastic Water tank at upper Arshobie Corner	35
Piped from Guma Facility	5000	Once a week	Yes	SLL 1	Private house	111
Piped from Spring/Da m	5000	Four times a week	No		Miami Road	50
Piped from Guma Facility	Less tha 5000	Three times a week	Yes	SLL 1	Blackhall road	25
Piped from	5000	Daily	yes	1	Private	300

Guma Facility					House	
Piped from Guma Facility	Less than 5000	Once a week	Yes	SLL 1	Blackhall Road	500
Piped from Guma Facility	5000	Three times a week	Yes	SLL 1	10,000 liters water tank situated at ASHOBIE CORNER Blackhall Road	15

Sanitation

There are no dedicated public toilets in the community except for the school toilets which are reported to be used in the past by the public, however the school authorities have recently put a stop to the use of their facilities by the public. The socioeconomic survey, caried out in the community, reported that most people have a household toilet (98%). Most toilets in the community are pit latrines (67%), which are constructed on unstable slopes (visible cracks on walls), poorly constructed and maintained, and often pollute the natural drainage channels.

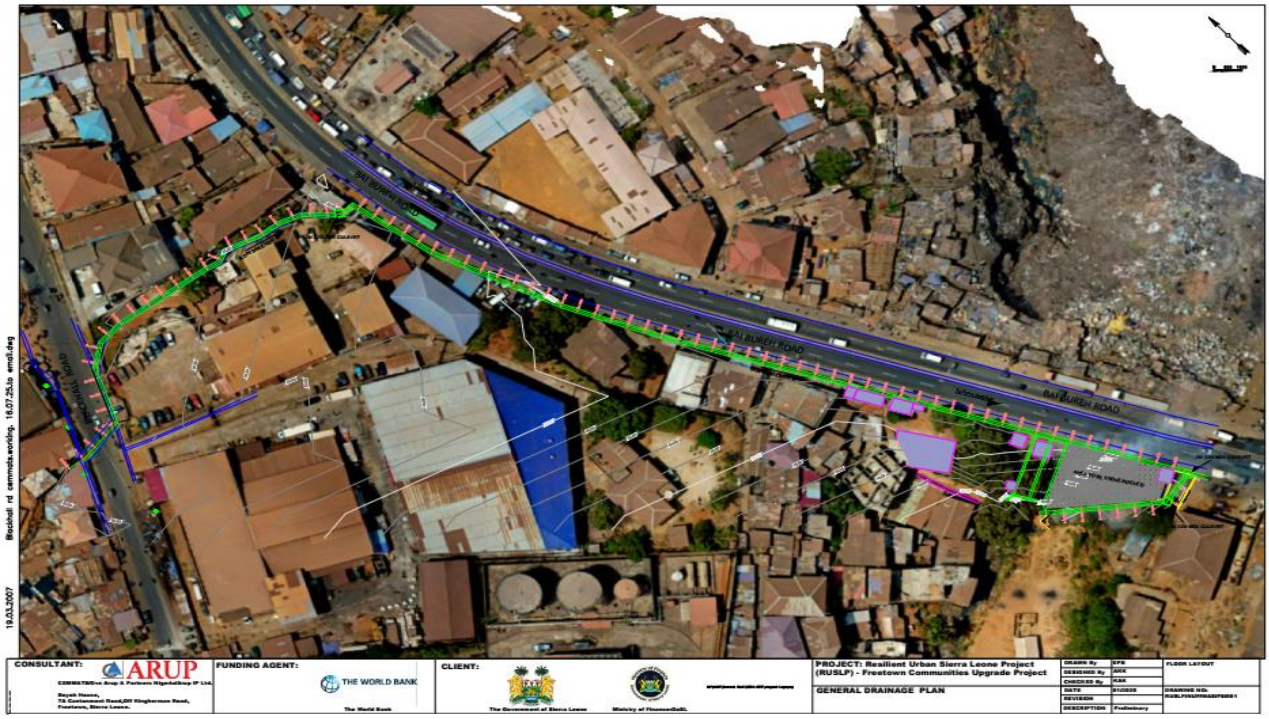
3.2.3 Bai Bureh Road and Blackhall Road Corridors

The project corridor on Bai Bureh Road, is a stretch starting from the outfall at the back of Saint Martin Church extending toward the Granville Brooke stream. The drainage structures are arranged longitudinally along the roadway with cross-drainage culverts at selected chainages.

The alignment passes through:

- Densely developed urban neighborhoods
- Road reserves and pedestrian footpaths
- Areas adjacent to church property and other institutional plots; and
- Sloping terrain requires erosion control and stabilization measures.

Bai Bureh Road and Blackhall Road corridors experience recurrent surface runoff, localized flooding, erosion of road shoulders, sediment deposition, and obstruction of existing drainage paths during heavy rainfall events. These conditions pose risks to road users, nearby residential and institutional properties, and downstream communities. The proposed project involves the construction and upgrading of the existing stormwater drainage systems and associated structures along Bai Bureh Road and adjoining sections of Blackhall Road to safely convey runoff, stabilize slopes, and protect adjacent developments. Table 3.16 presents the Bai Bureh Road corridor floor layout.



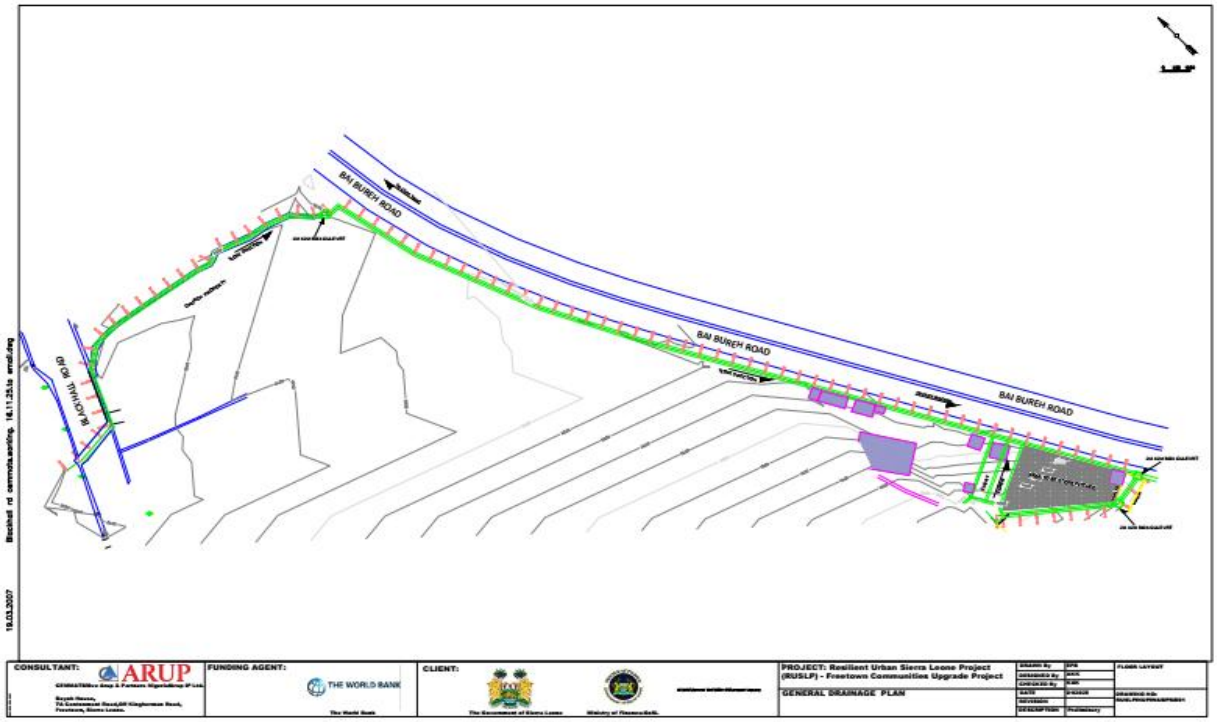


Figure 3.16: Bai Bureh Road Corridor Floor Layout

3.2.4 Portee and Rokupa Communities

Rokupa and Portee are located on latitude 8.46486 and longitude 13.17436 situated in a small bay surrounded by a cliff (Figure 3.17) in the eastern part of Freetown, 10 km from the city Centre. Lower Rokupa section, (where most of the investment work will be done) is characterized by small houses made of concrete blocks or mud blocks and sticks CI sheets, located close to each other. People refrained from gradually investing in their houses due to tenure insecurity, this is compounded by a lack of formal land titles even among landlords in the community. The two communities (Portee and Rokupa) communities are bisected by a large open drainage channel that acts as an "unofficial" physical boundary between the two them leading residents to strongly identify themselves with either Portee or Rokupa, depending on whether they are located to the north or to the south respectively.

Figure 3.17: Portee – Rokupa Community Neighbourhoods on a Gentle Slope

Retaining Structure and Shoreline Erosion Protection

The location of the Rokupa naturally predisposes the neighborhood to shoreline erosion impact ranging from rainstorms and constant tidal effects. To avoid the impact of probably increased incidence of storm surges and a general rise in sea level, a sound coastal management strategy that works with natural processes is required to successfully manage erosion of the wharf area. In addition, the adoption of a cyclic process of problem recognition, planning, implementation and monitoring is expected.

Roads and Access Ways

The main Bai Bureh Road runs north to south through the two communities, and is paved and in good condition, however crossing for people is dangerous due to the inexistence of crossing indications or amenities. The community access roads inside the community are unpaved and in poor condition. Access to the wharf can be dangerous due to the current conditions of the steps and ramp. The lack of steps, ramps and proper foot bridges This situation makes accessibility difficult, especially during the wet season. The roads inside the community are unpaved and rocky with unconnected drainage systems. Mobility is poor in the informal area, with limited access to vehicles. The main access in and out of the informal part of the community is via a path off Bai Bureh Road through Zara Lane which has a dead end close to the wharf area (Figure 3.18)

Figure 3.18: Rokupa Inaccessible Beachside and Wharf Road Steps

Currently, there is no direct vehicular access to the Rokupa Wharf area. The current access road to the wharf is constricted as it approaches the wharf and terminated at point about 300m from the Wharf. (Figure 3.19).

Figure 3.19: Current Status of roads in Portee –Rokupa Community

Drainage

The limited drainage systems in the Wharf area of the community are insufficient to manage the water flow effectively. In some instances, drains were observed to have been poorly routed beneath existing structures due to inadequate planning and design. Respondents to the community survey stated that only 44% have access to drainage in Portee Rokupa, and 58% responded that the lack of resources was a challenge to clear the drainages, followed by problems with waste disposal. The primary drainage system that runs across the main Bai Bureh Road through the Lower Rokupa onto the sea is poorly constructed, shallow and not equipped to handle the water flow from upstream, thus significantly increasing the risk of flooding during the wet season. Furthermore, the drain is obstructed by waste, which has been discarded both upstream and by community residents, as depicted in Figure 3.20. Unfortunately, the community currently lacks a solution for clearing the waste that enters their area, as there is no one available to cover the costs associated with its collection and disposal, as reported during stakeholder meetings. Further evaluation (hydrology and

hydraulic modelling) has been undertaken of the drainage at Portee Rokupa and is available under a separate report conducted by CEMMATS. This will enable sustainable drainage design to be undertaken accounting for future needs of the community.

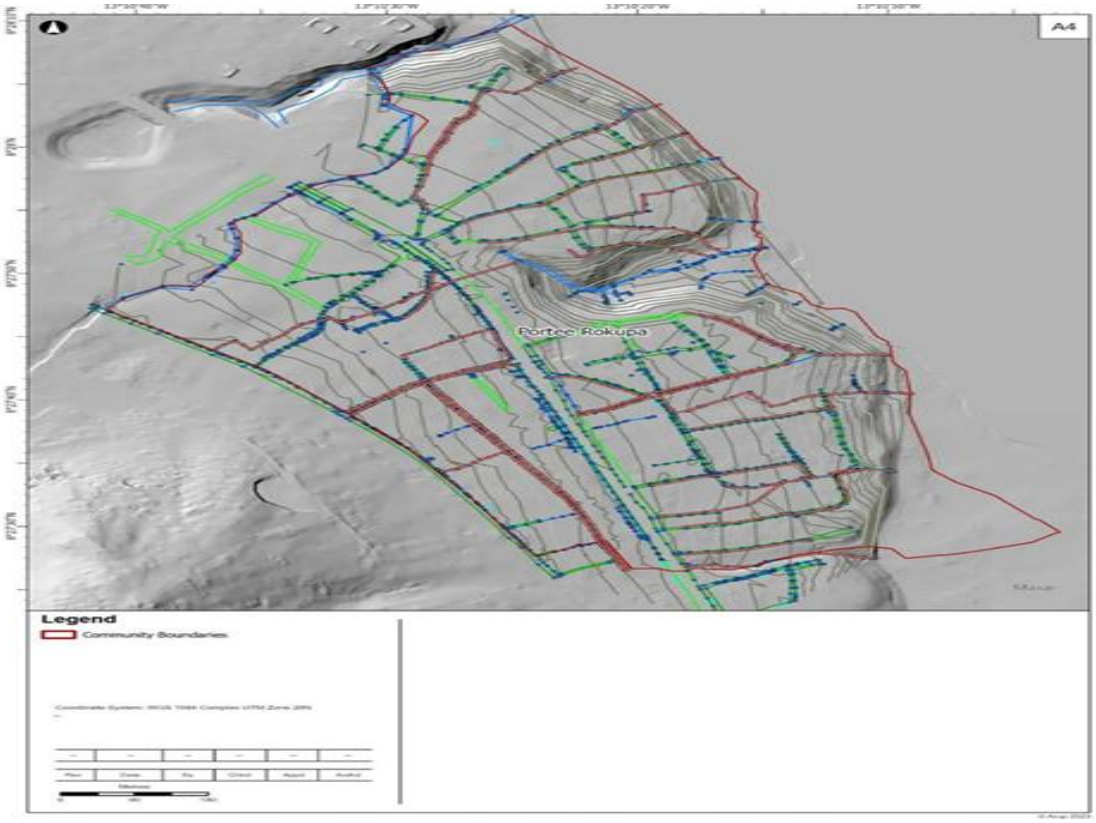


Figure 3.20: Existing Drainage and Topography Survey

Green and blue lines show existing drainage with the blue lines indicating less formal drainage. Source: CEMMATSs field survey of baseline data 2023

Figure 3.21: Current State of Drainage in Portee - Rokupa

Hydrological and Hydraulic Studies for Rokupa Community

Based on the flood modelling and hydrological and hydraulic design report and given Rokupa Community's proximity to the Atlantic Ocean and the importance of preserving marine ecosystems, it is imperative to implement a centralized stormwater collection and disposal system. Direct individual disposal of stormwater from each drainage into the ocean poses significant environmental risks, including pollution, habitat degradation, and erosion along coastal areas. To mitigate these risks and promote sustainable stormwater management practices, major canal along the Atlantic Ocean is recommended. The function is to collect stormwater from each individual drainage system within Rokupa Community. This will consolidate runoff from various sources, including roads, residential areas, and commercial developments, into a natural stream at the North-Eastern part of the community.

Additionally, to address the significant erosion and sediment transport challenges in the Rokupa community, a multi-faceted approach is essential. The following recommendations outline strategic interventions aimed at controlling stormwater flow, reducing sediment deposition in the bay, and protecting the shoreline from tidal effects. These measures are designed to provide both immediate and long-term benefits, ensuring the stability and resilience of the community against future erosion and flooding events

- **Construction of Weir Structures**

To mitigate the velocity of stormwater flow and reduce sediment transport, it is recommended to construct weir structures at strategic locations. Weirs function by creating a barrier across the flow path, causing water to pool behind the structure. This pooling effect decreases the water velocity, allowing sediments to settle out of the water column before it proceeds downstream. By strategically placing weirs in areas with high erosion rates, sediment transport can be significantly reduced, thereby decreasing the sediment load reaching the primary drains and ultimately the bay.

- **Control of Upstream Erosion**

Implementing attenuation and retention ponds at key locations within the Rokupa community can further control sediment transport. These ponds act as catchment areas for stormwater runoff, providing temporary storage that reduces peak flow rates. As water collects in these ponds, sediments have an opportunity to settle to the bottom, effectively removing them from the water before they continue to flow downstream. The use of attenuation ponds helps to slow down the flow, while retention ponds offer longer-term storage, both contributing to the reduction of upstream erosion and sediment movement.

- **Shoreline Protection**

Given the vulnerability of the Rokupa shoreline to tidal effects due to the area being low-lying, it is crucial to implement a robust shoreline protection strategy. Raising the floodplain slightly above the high tide level and constructing a shoreline barrier using riprap boulders has been recommended. Riprap boulders provide a stable and permeable barrier that dissipates wave energy, reducing the impact of tidal waves on the shoreline. This method not only prevents further encroachment into the sea but also helps reclaim land lost to erosion. By creating a physical boundary, the riprap boulders protect the community from tidal flooding and erosion, ensuring the long-term stability of the shoreline

Groundwater Potential in Portee-Rokupa

The state of knowledge on hydrogeology of groundwater resources in Portee-Rokupa is not explicitly known due to the unavailability of reliable data on boreholes present in the community. According to a groundwater assessment report by the Ministry of Water Resources of Sierra Leone, groundwater resources in the country are unevenly distributed in space and time and are often inadequate to

meet water needs for both domestic and agricultural uses. Key factors influencing development of groundwater supply sources are:

- Aquifer depth below ground level
- Available yield
- Borehole water quality

Sanitation Management

The poor sanitary condition of the community is alarming due to improper containment and disposal. The residents use hanging toilets built with sticks and sacks over the sea, which are mostly shared by residents, these toilets are poorly built nor managed properly by users. A few people who do not have toilets simply defecate along the wharf stretch or direct disposal into the sea using carrier bags and other related items. This is the case of some houses which do not have sufficient space to build toilets. The open defecation and poor sanitation management could trigger surface and groundwater pollution and the prevailing associated health impact on the residents of the community.

Drinking and Domestic Water

The lower part of the Rokupa community, closer to the coastline, does not have pipe borne water; water wells are salty, and some water tanks have not been replenished for long periods of time. The water supply for the Portee Rokupa community is from public piped water taps, water kiosks, water tank and private and public groundwater wells. Figure 3.22 shows the percentage of water supply sources for the Rokupa community. During site visits and stakeholder engagement activities (focused on informal housing), access to a safe water supply was reported as a challenge for the community. Therefore, the community either access water wells which are salty or go out of the community to buy water over long distances. The water supply in the area is all for domestic use and is not drinking. Most of the wells are either salty or contaminated. In which case, it is reported that residents who use the water for washing and cleaning do sometimes have skin reactions. The socioeconomic survey undertaken showed the main sources of water supply reported by the respondents as shown in Figure 3.22. Portee Rokupa residents obtain drinking water mainly from packed sources (91%), and a limited number from tanks (4.1%), Guma Valey (2.6%) and boreholes (2.1%).

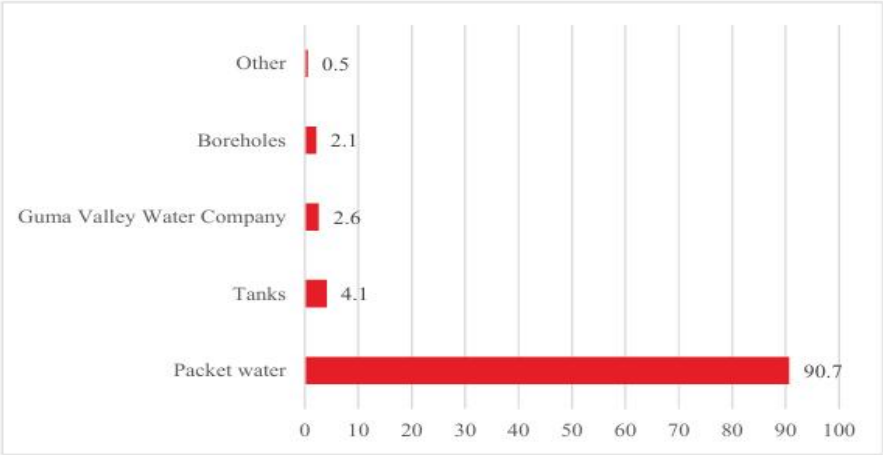


Figure 3.22 Source of Household Drinking Water (%) in Portee-Rokupa

Water Demand Estimates

A survey of water supply locations and water demand was undertaken but accurate water demand estimates were difficult to obtain because the community sourced their water from several different supply locations due to the inconsistent and ephemeral supply. Further lines of evidence were

sought for water demand estimates. A literature revealed a survey of 398 households in Freetown found that on average water consumption was about 93 litres per capita per day. Significant variation occurred across income groups and depending on water availability; per capita consumption varies from 73 to 112 (L/p/d) for households without pipe-water connections where showering, toilet flushing and hand wash basin tap use are common 24. See Figure 3,23, below. 21F The National Water and Sanitation Policy (WASH) 2010 published by the Ministry recommends a per capita urban water supply of 60 l/c/d and rural water supply of 20 l/c/d however, guided by the 2010 National WASH policy a supply of 25 l/c/d was agreed as acceptable by the Project Team (RUSLP) for people collecting water from public supply points and water kiosks. Therefore, considering a population of 44,735 and a water demand of 25 litres per capita per day, the total water demand for the Portee Rokupa community is around 1.1million litres per day.

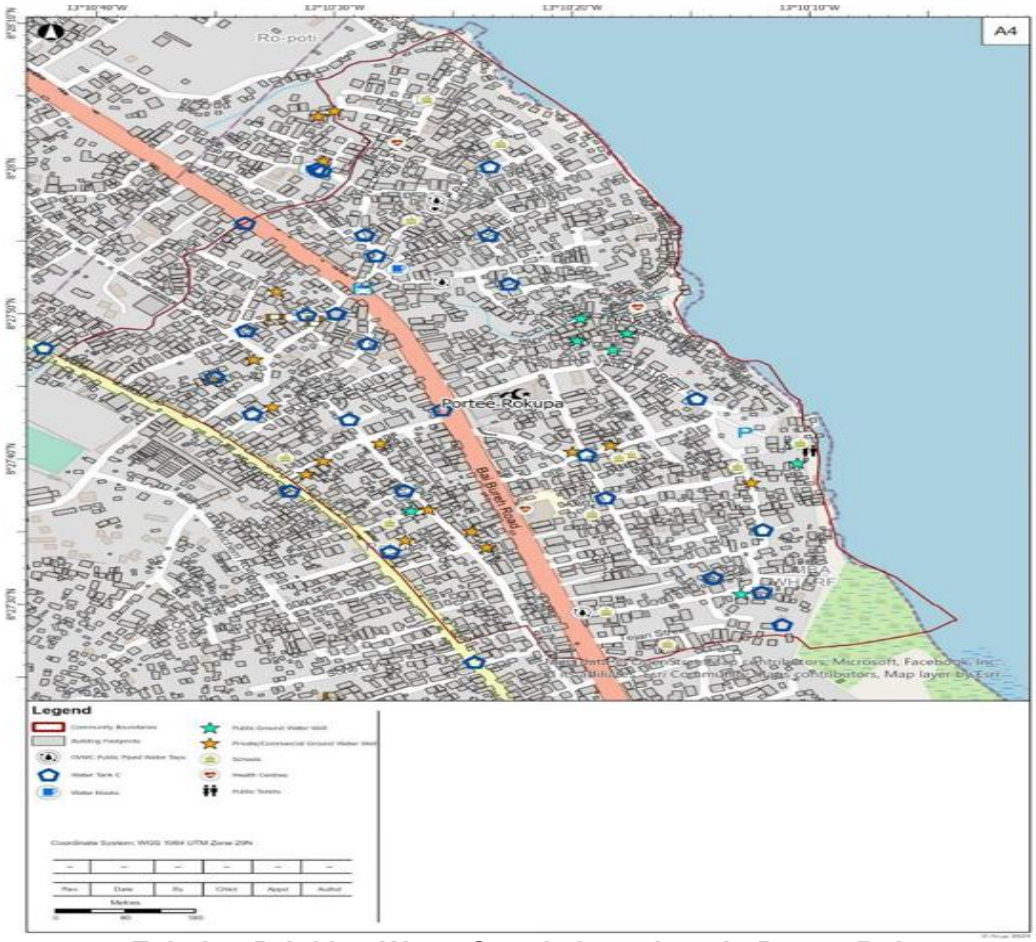


Figure 3.23: Existing Drinking Water Supply Locations in Portee Rokupa.

Source CEMMATS 2023 survey

Field survey data reveal that there are 20 water tanks, 17 commercial water wells and 8 public groundwater wells of variable water quality but that serve as source of water throughout the year. There are three GVWC Water Taps located at Zara Lane, Mission Road (2) and Wharf Road (2) respectively. The water quality from these sources varies as reported to be good upstream and poor downstream. Baseline survey reports estimate the quality of the water from the wells is from average to good. Figure 3.23 shows existing drinking water supply locations in Portee Rokupa.

Table 3.5: Portable Water Supply Sources at Rokupa

Water source	Capacity (Lts.)	Delivery	Payments	Costs (5 gallons)	Description	Persons served

				SLL		(Est)
Bowser	10000	other	Yes	1	Located between Alfonsin Lane and Zara Lane	70
Bowser	10000	Twice times a week	Yes	1	Located on a Rocket surface between two houses at Zara Lane	75
On site	10000	Daily	Yes	1	The tanks are deployed in a school compound mounted on columns	500
On site	10000	Daily	Yes	1	The tanks are located in a school compound	500
Bowser	10000	Once a week	Yes	1	Located at waff Road, close to the beach	100
Bowser	10000	Once a week	Yes	1	William Street	70
Bowser	10000	Daily	yes	1	Portee Market	70
On site	15000	Daily	Yes	1	private owned facility located in a compound	50
On site	15000	Other	Yes	1	Close to Market	500
Bowser	10000	Once a week	Yes	1	On street	200
Bowser	10000	Other	Yes	1	Damzin bridge porter	80
Bowser	10000	Other	Yes	1	Street	200
Bowser	10000	Daily	Yes	1	Street	200
Bowser	10000	Other	Yes	1	Located railway line Rokupa	80
Piped from Guma Facility	10000	Daily	Yes	1	Located on an inclined surface at old Bai Bureh Road Rokupa	20

While the water sources in the area are used for domestic purpose (washing and cleaning) as the wells are salty or contaminated, portable water for the Portee - Rokupa community is from public piped water taps, water kiosks, refillable water tanks and private and public groundwater wells (Figure 3.24). Residents attributed common skin reactions because of water from the community sources utilized for washing and cleaning. A water scheme intervention project is very crucial for the community.

Figure 3.24: Plastic Water Tank Outside School and a Dry Community Well in Rokupa

Solid Waste Collection

Currently, waste collection is poor within the informal area of the community due to the lack of motorable road access. Waste is currently being dumped into the water ways and flows downstream thereby blocking the drainage channels (Figure 3.25). Waste is also dump close to the sea as part of the land reclamation process. Even though the use of tricycle is the most widely utilised means of waste collection method across Freetown, the state of the roads does not support its operation in Portee-Rokupa, particularly in around the wharf area.

Figure 3.25: Waste Disposal in the Drainage Channels Flowing to the Sea

3.3 Proposed Infrastructure Investment Designs Standards and Technical Studies

3.3.1 Roads and Walkway Design Concept

The cross sections of the proposed roads are designed to comply with the geometric standards given in the Geometric Design Standard for National Roads of the Sierra Leone Roads Authority and the other international best practice, guidelines and standards such as the American Association of State Highway and Transportation Officials (AASHTO), British Standard Codes of Practice and Guide to structural design of bituminous surfaced roads in tropical countries, for a design speed of 30km/h, taking into consideration the design speed and the volume of traffic. The proposed roads are projected as a “Design Class M Road” with a design speed of 30km/h. Consequently, and following the specifications of the design manuals, a 2 x (3.0m lane width) single carriageway is proposed.

The cross-fall has been selected in accordance with the Geometric Design Standard for National Roads of the Sierra Leone Roads Authority, which states that cross slopes can be between 2-3%. Figure 3.12 presents a typical cross-section of the proposed road for sections with drain on one side (upper section), and sections with drain on both sides (lower section). The vertical and horizontal alignments follow the existing roads centre line to a great extent with improvements for safety where necessary such as traffic signs, road markings, dedicated pedestrian crossings, covered side drains at critical points and speed humps. The horizontal alignment of the proposed roads designed was defined by the type of terrain; hence in some areas such as very deep gorges due to erosion, the roads design was realigned to minimize the fill material and as such some horizontal curves have been designed at the minimum radius. The designed horizontal alignment for the project roads is a smooth flowing alignment which follows the existing road alignment as closely as possible. The final vertical alignment for the project roads is a smooth flowing alignment which follows the existing road alignment as closely as possible with minor adjustment to improve on road alignment, comfort and safety.

All major intersections within developed areas were reviewed, to improve their operations, through:

- Improvements to geometry and channelization, with consequent benefits for control of conflict points and improvements to driver visibility
- Consistency of turning operations at different intersections on project roads
- Pedestrian footways and crossing arrangements
- Improved road signs and marking.
- Standard details of major and minor intersections have been prepared for junctions.

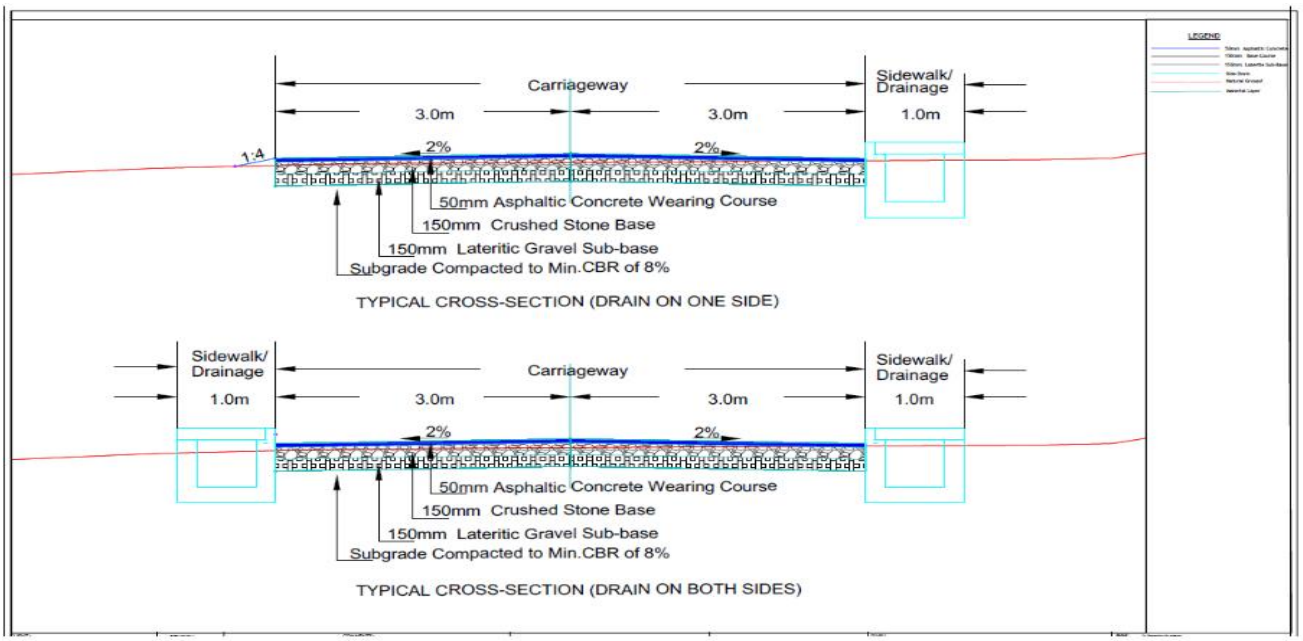


Figure 3.26: Typical Road Cross-Section with Drains

A typical layout of proposed roadway to be constructed for ease of mobility flow within the communities is presented in Figure 3.26. The design implementation will take into account the desirable locations for the underground utilities, and appurtenances to the underground installations, such as vents, drains, markers, manholes, and shutoffs, near the right-of-way line, behind the sidewalk, or side drain, so as not to interfere with the safety or maintenance of the roads. However,

existing development and limited right-of- way widths in some areas will preclude relocation of some or all utility facilities as desired outside the roadway.

3.3.2 Solar Street Lights - All-In-One Design

The proposed concept for street lighting in all the three neighborhoods is the use of the all-in-one solar units. The all-in-one design means that the Monocrystalline Solar Panel, Charge Controller, Lithium Battery, Motion sensor and LED Light are all housed in one unit, making it compact and easy to install. This design also reduces the risk of theft. Solar Street Lights shall comprise of 80W/18V High efficiency Monocrystalline solar panel; Charge controller auto switch – 10 amps; Over Voltage protect; Under Voltage protect; 30Ah/12V LifeP04 Lithium Battery; Motion sensor with 12 - 14 hours lighting per night (Smart lighting mode); P67, 60W Bright LED Modules complete with all mounting accessories. The panel shall be equipped with a dedicated self-cleaning unit which automatically cleans the solar panel three times a day. In the case of low sunlight (rainy days) the unit shall have at least 3 nights backup time. This unit shall be mounted on a 6 to 8 metres galvanized pipe as presented on Figure 3.27. The system life span shall be 10 years or more.

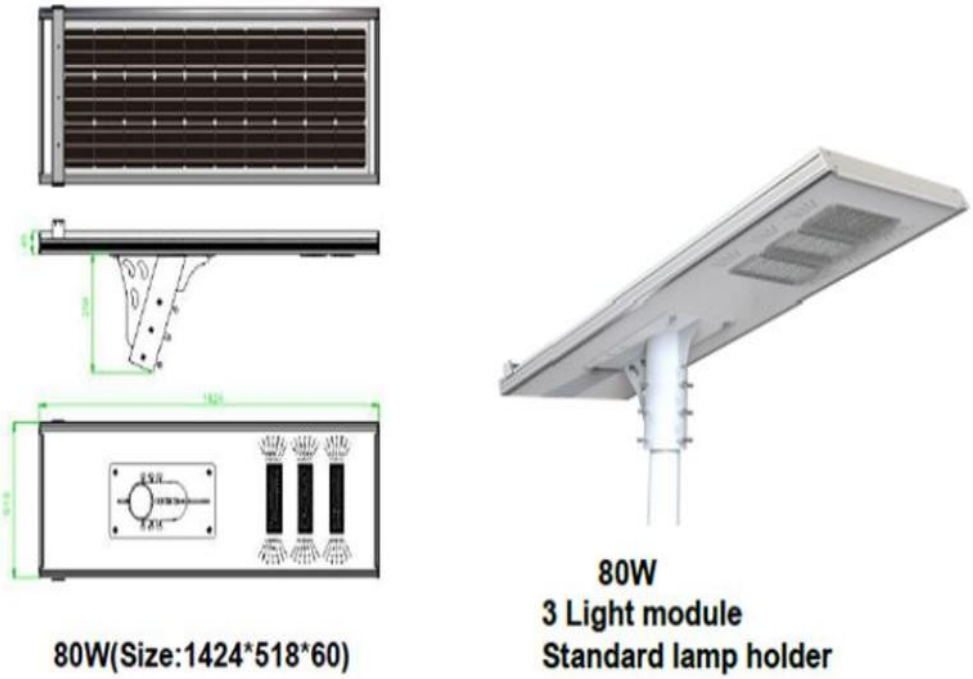


Figure 3.27: 10KW Solar PV System Conceptual Design

3.3.3 Drainage System

Drainage in built up areas is important because of rapid rates and large volumes of runoff and costly potential damage to adjacent property due to flooding. Surface flow from adjacent tributary areas will be intercepted by the roads, collected within the roadway by curbs, gutters, culverts and channels, and conveyed through exit/outfall drains to the natural drainage system. Careful attention needs for adequate drainage and protection of the roadway from floods in all phases of location and design reduces costs in both construction and maintenance. It is important that all drain and culvert exits are extended down to receiving wetlands or other water recipients to avoid erosion, flooding or any damage to the environment.

Design Standards and Climate Resilience

Drainage structures are designed to accommodate urban storm flows associated with intense rainfall events and climate-change-induced increases in runoff volumes. Hydraulic gradients, culvert sizes, and longitudinal slopes are specified to ensure adequate conveyance capacity and minimize backflow or overtopping risks along the corridor. Slope stabilization and stone pitching measures are incorporated to increase long-term resilience against erosion, landslides, and pavement undermining.

3.3.4 Hydrological and Hydraulic Studies

The hydrological studies conducted by ARUP involved the analysis of rainfall and flood models to understand rainfall patterns and flood peaks in the communities. The hydrological analysis also included frequency analysis of maximum daily and monthly rainfalls to estimate magnitudes for various return periods using three models: General Extreme Value with Probability Weighted Moments (GEV-PWM), First Extreme Value of greatest events with Maximum Likelihood Estimates (EV1-MLE), and First Extreme Value of greatest events with Probability Weighted Moments (EV1-PWM). Due to the short duration of the data collection, the GEV-PWM method was adopted as it gives the distribution curve of best fit.

The hydraulic design involved using the quantified discharge to assess the capacity of the existing drainage sections. If a section was found inadequate, iterations were conducted with larger sections or increased slope until a suitable size was identified. The hydraulic design also included flood hazard modelling for Moyiba community. This model assessed the riverbed's capacity for a 10-year return flood, revealing the extent of flooding and its impact on nearby houses, as well as the flow velocities affecting these structures.

Based on the flood modelling and hydrological and hydraulic design report, the existing drainage systems capacities were examined within the Coconut Farm, Portee/Rokupa and Moyiba communities to understand and ultimately optimize the stormwater carrying capacities and hence reduce potential human and material damage arising from rainfall events in these selected communities. The topographical features of Moyiba, Rokupa, and Coconut communities in Sierra Leone are integral factors influencing drainage patterns, flood risks, and urban development. The topography of these areas is characterized by steep slopes which promote rapid runoff and necessitate efficient drainage solutions despite the absence of large drainage sizes. Factors such as sedimentation, vegetation growth, and inadequate maintenance practices have affected the overall functionality of the drainage systems.

The width and depth characteristics of the sections vary all through their longitudinal length. Each drainage has its vulnerable segment that is segment liable to flooding as described in the hydrological and hydraulic design report. These segments are critical because at these vulnerable portions there is significantly abrupt change from steep slopes rather than a gentle slope.

The hydrologic and hydraulic modeling, analysis and design of the existing drainage network in all the communities as well as the proposed sections for adequate discharge of a 10-year return period was conducted. The analysis helped to identify vulnerable areas within the community under the existing drainage conditions, providing critical insights for further design considerations.

The main issues from the drainage layout include the nature of drainage networks, disconnected drainage networks and variability in drainage widths.

- **Nature of Drainage Networks:** In Coconut Farm, a predominant feature of the drainage infrastructure appears to be natural channels rather than conventional drainage systems. This observation suggests a reliance on natural watercourses for managing stormwater runoff, which may present challenges in effectively controlling flow and mitigating flood risks.
- **Disconnected Drainage Networks:** Across all three communities, including Coconut Farm and Rokupa, a notable observation is the fragmented nature of the drainage networks. The systems appear to operate as standalone components rather than interconnected networks,

each channel conveys water from uphill directly to the main road (Coconut Farm) or the stream (Moyiba) potentially limiting their effectiveness in efficiently conveying stormwater runoff.

- **Variability in Drainage Widths:** An additional observation relates to the variability in the widths of individual drainage channels along their longitudinal lengths. This inconsistency in width is evident across all three communities Moyiba Stormwater Network

The width and depth characteristics of the sections vary all through their longitudinal length. Each drainage has its vulnerable segment i.e segment liable to flooding as described in the hydrological and hydraulic design report. These segments are critical because at these vulnerable portions there is significantly abrupt change from steep slopes rather than a gentle slope. Figure 3.28 presents a typical cross drain design.

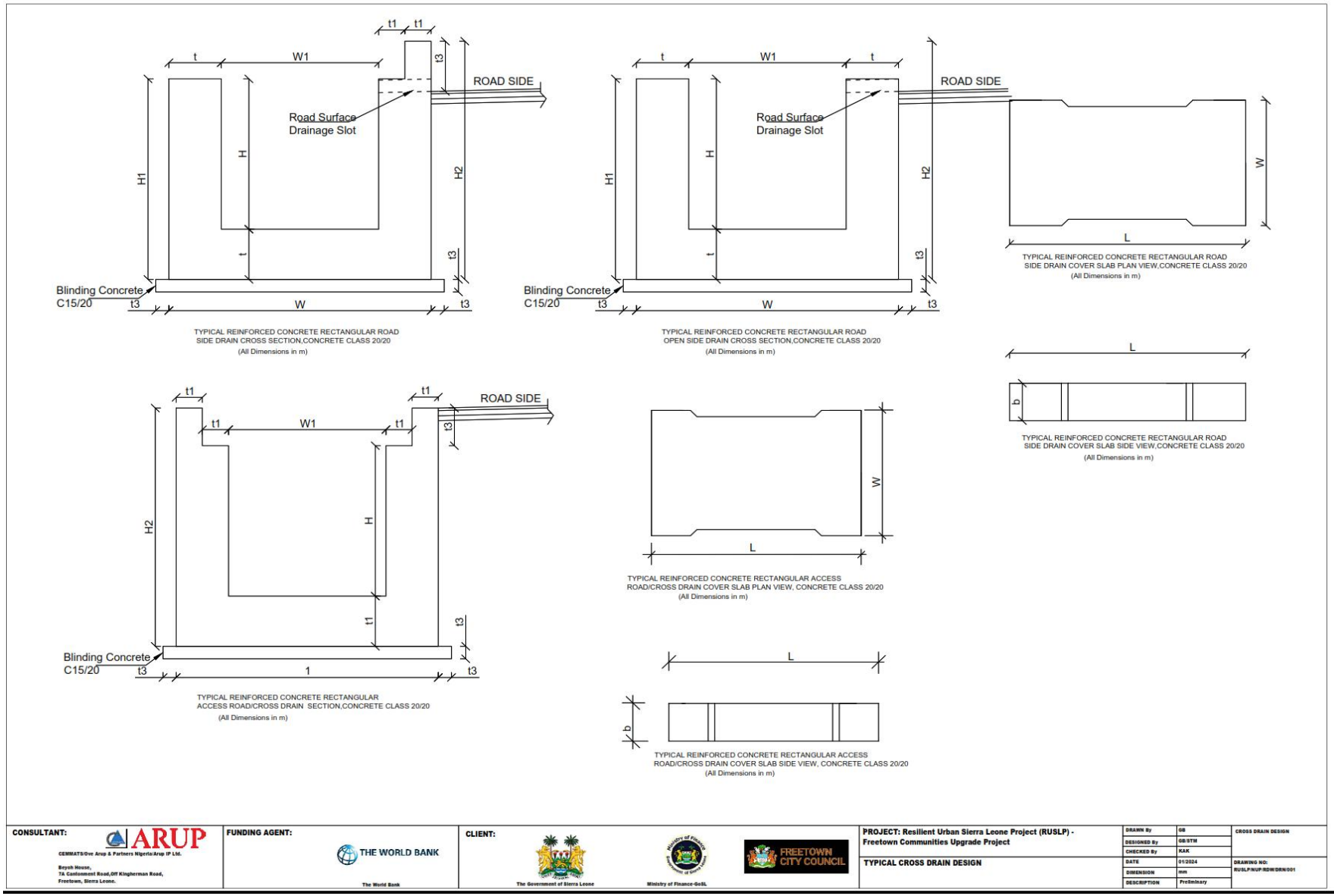


Figure 3.28: Typical Cross Drain Design

3.3.5 Geotechnical investigations

According to the design report by CEMMATS and Ove Arup & Partners, the geotechnical investigations along the alignments, foot bridges and retaining walls were conducted to classify the soils and materials along the routes. The outcome of the geotechnical investigations is duly employed together with climate and other specific features of the route alignment in arriving at safe and economic pavement, bridge and retaining wall designs. The investigations include:

- Road condition survey and evaluation of the existing road sections.
- Test pitting and sampling of existing road materials and sampling of alignment subgrade soils along the widening section for laboratory testing.
- Conducting in-situ dynamic cone penetration (DCP) test at 22 randomly selected locations for all the proposed structures.
- Conducting laboratory investigations on samples taken at random intervals along the road alignment, bridge, and retaining wall locations. A minimum of one sample was retrieved from each test pit from the full depth of the soil layer(s).

The results and analyses showed good subgrade for the roads.

3.3.6 Topographical Survey

According to the design report by CEMMATS and Ove Arup & Partners, a topographical survey was for Moyiba, Coconut farm and Portee-Rokupa communities to obtain accurate ground data over a sufficient area to accommodate accurate and cost-effective engineering design of the roads and the roadside storm water drainage channels. The topographic survey was done to provide data such as levels and cross-sections that were used for the ultimate design of the road alignments. The following activities were undertaken as part of the topographic surveys:

- Establishment of inter-visible benchmarks
- GPS observation of the control points
- Establishment of inter-visible benchmarks on the project roads
- Total Station survey of the benchmarks
- Direct levelling of GPS control points and benchmarks
- Data Collection
- Data Processing
- Development of topographic maps

The following road features were surveyed in adequate density to represent correctly the existing road on drawings:

- Benchmark coordinates and Levels
- Centreline coordinates and Levels
- Pavement edges (where possible)
- Shoulder edges (where possible)
- Drains, ditches, channels and culverts along and across the road
- Buildings, structures, walls, fences within the right-of-way
- Road junctions.

Based on the study, there were several private structures and properties, such as buildings and public utilities along the intervention roadways. These have been identified in the survey and appropriate action (relocation or realignment) will be required during construction.

3.3.7 Water Sources Selection and Supply Planning

The following criteria are set to meet the water supply target:

- Supply must supplement current estimated level of 40% to a minimum of 65% in the peak dry season
- Water quality must meet standard for basic domestic activities such as washing, cleaning, laundering, etc., or possible to meet drinking standards by locally affordable frugal treatment process
- Access to public water supply point must be within a radius of 200 m
- System must be easily maintained by the community
- Source and abstraction level must conform to local regulations which includes avoidance of protected areas, source to be minimum 30 m distance from source of contamination, and maximum allowable pumping rate

- **Boreholes**

The boreholes shall be designed with Water Kiosks containing three to five-point faucets on site. The distribution system shall be through direct collection or fetching at water supply points at the source location or very close to it. The collection points shall be easily accessible to members of the communities. Pending on the result of a hydrogeology and geophysical investigation to be executed during implementation, it is assumed at this stage that the borehole produces a minimum yield of 40 litres per minute in the peak dry period, thus allowing for service to at least 768 people per borehole point for a minimum of 8 hours daily total pumping hours. Figure 3.29 presents a typical tank tower and borehole drawing.

Refillable 10,000 L Plastic Storage Tanks

These shall be mounted on a raised concrete platform not more than 0.6 m from ground level, to be located at the downhill end of the community in common public areas. They will act as storage for GVWC water that is supplied to the East on a rationing basis. These tanks will serve as additional/ backup storage to provide some quantity of supply to complement the other sources downhill. They shall be fitted with three faucets to supply water supply to the school and nearby households onsite. The supply details is presented below:

- Tank capacity = 10 m^3
- No. of Tanks = 4
- Total Installed Capacity (assuming storage and supply system is applied) = 40 m^3

Population to be served (Applying 25 l/c/d) = 40,000/25 = 1,600 people

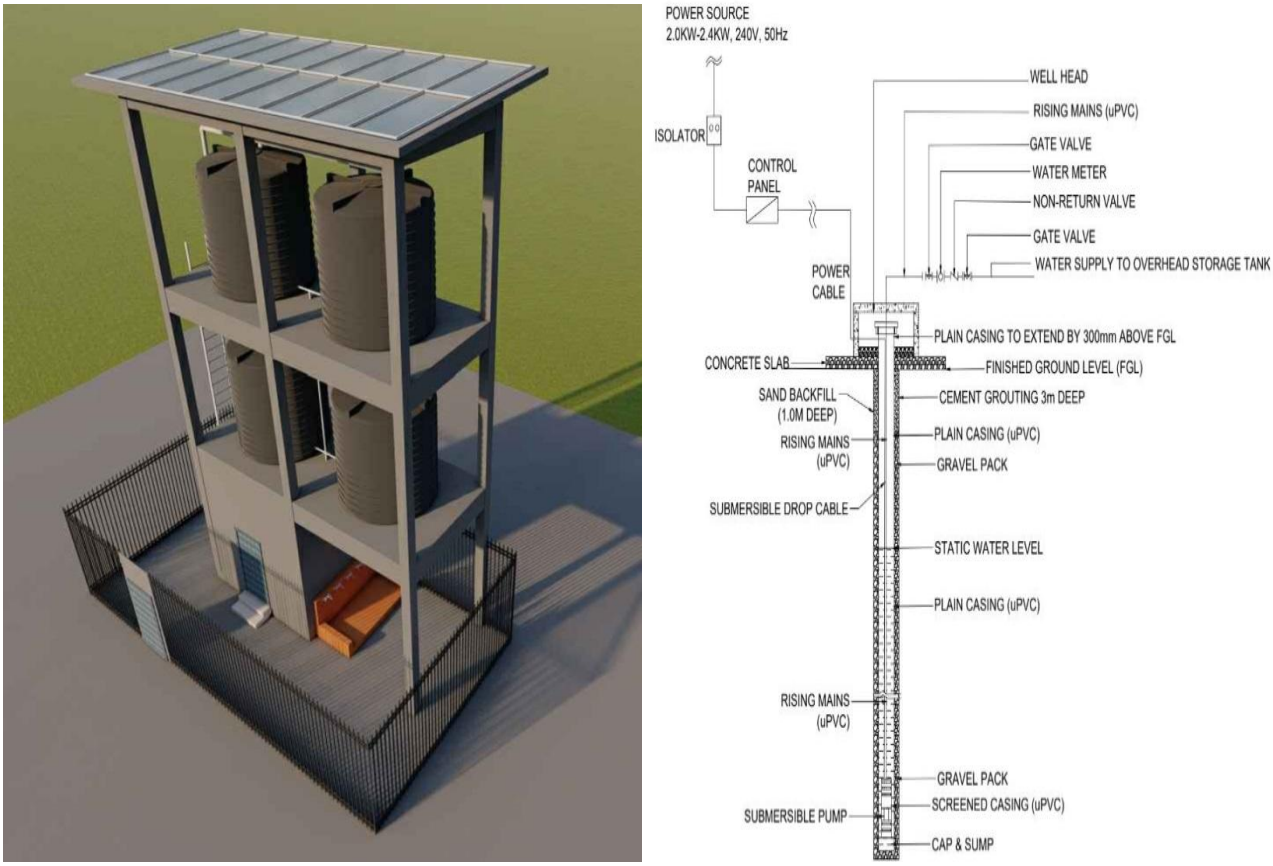


Figure 3.29: Typical Tank Tower and Borehole Drawing

GVWC (Pumping Transmission - 0.63 Km, and Gravity Supply - 1.08 Km)

PSPs will distribute water from the uphill pumping storage tank from GVWC. The gravity system shall allow for private water connections to be managed by GVWC in addition to the PSPs. The hydraulic design output of the pumping-gravity supply network and the anticipated borehole flow rate, pumping time etc., are presented below:

- Tank capacity = 215 m^3
- Per capita demand = 50 l/c/d
- Total Head Loss = 101 m
- Pump flow capacity = 80 m^3/d
- Pumping period = 4 hours
- Population to be served (Applying 50 l/c/d) = 215,000/50 = 4,300 people

3.3.8 Water Quality Analysis

- **Borehole**

Water quality analysis shall be carried out after drilling exercise to establish if the water is suitable for drinking and/or other domestic use, i.e., the WHO guideline standards which is the applicable standard in Sierra Leone for drinking water. In case the water does not meet WHO standards, then an appropriate treatment system shall be designed and installed before the borehole water is connected to the tank. Otherwise, the use of the water can be redesignated for other purposes other than drinking as may be possible. The design and installation of any necessary water treatment

system is to be executed by the contractor after the water quality test result is acquired, as part of the contract scope.

- **Hand Dug Well**

The quality of the water from the hand dug wells shall be subjected to quality tests after construction, protection, and/or installation of a hand pump or discharge outlet pipe. Pending on the results, a basic filtration and disinfection system may be designed and installed. Similar to the borehole contract, the hand dug wells contracts shall include water quality testing, and disinfection system design. The operational guide shall include routine (monthly) water quality tests. However, as it may be challenging to properly manage disinfection of wells due to surface flow patterns, we would not recommend the use of water from hand dug wells and springs in the community for drinking unless the result of routine water quality tests confirms natural compliance to the WHO water quality standards.

3.3.9 Sanitation Facilities

The design concept applies to an onsite sanitation system aiming at meeting the objectives of minimizing O&M cost and ensuring maximum access and usability. The type of sanitation facility is influenced by factors such as technical (including the informally planned nature of the settlements), environmental, economic, and social (user preference) and operationalization (evacuation of effluent when full). It is a challenge to balance the competing factors mentioned above in selecting the most feasible option. Four options were designed, for adaptability to the various factors, for application in specific site conditions, however only two (2) the Pour Flush and Communal VIP Toilets meet the requirements.

The public toilet blocks which shall house six cubicles are designed to include separate sections for men and women, with a cubicle on each side adapted to accommodate the physically challenged people. The facilities are designed to contain the following:

- A reception area and waiting space
- Individual toilet stalls with locking doors
- Handwashing station
- Proper signage and ventilation
- Adequate lighting

Each block is raised on a foundation and adequate steps and ramps provided to meet the site topography given that most sections of the community is hilly. While the plan layout is the same for all topography, the elevations vary with the topography. Figure 3.30 is an illustrative photo of the finished toilet pan and floor level connection, also showing a simple plastic water closet tank mounted on the wall for locations with potential water supply source as consideration for the male and female disabled compartments.

Figure 3.30: Typical Public Toilet View

3.4 Proposed Investment Activities in the three Neighbourhoods

The subprojects proposed for implementation is presented as extracted from the final community neighbourhood upgrading interim report of each community.

3.4.1 Proposed Projects investment activities in Moyiba

Access Ways and Roads

The proposed road/access way projects and associated structures to be rehabilitated and upgraded includes:

i. Section 1: 0.5 Km from Blackhall Road junction to the Community Health centre. Includes side drains, asphalt finish. Single carriageway, width - 6m

ii. Section 2: 1.3Km from the Health Centre to the upper/east end. Includes side drains, asphalt finish. Single carriageway, width - 6m,

iii. Section 3: 0.8Km from the Health Centre to the lower/west end. Includes side drains, asphalt finish. Single carriageway, width - 6m.

iv. 2 No. bridges at two different locations across the Granville Brooke Drainage channel (at UTM Zone 28p: 697366.00 m E, 937023.00 m N and 697286.00 m E, 936401.00 m N respectively). Span of 18m, width of 2.0m, with railings

v. Construct steps and walkway to the two Foot Bridges. No hand railings for the walkways. Steps/Walkway1 starts at UTM Zone 28p: 697440.00 m E, 937062.00 m N on the Moyiba road section 1 and ends at UTM Zone 28p:697359.00m E, 937010.00m N on an access road on the opposite side of Footbridge 1 across the Graville Brooke main drainage channel.

vi. Steps/Walkway2 starts at UTM Zone 28p: 697379.00 m E, 936411.00 m N on the Moyiba road section 2 and ends at UTM Zone 28p: 697225.00 m E, 936446.00 m N on an access road on the opposite side of Footbridge 2 across the Granville Brooke main drainage channel.

Figure 3.31 present the map of proposed road upgrade sections in Moyiba.

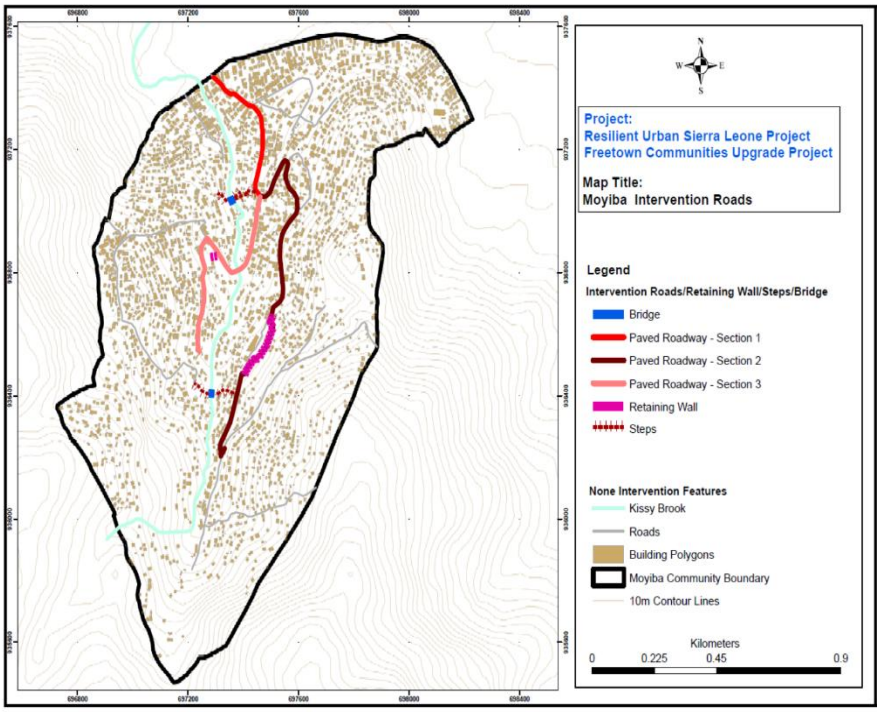


Figure 3.31: Map of Proposed Road Upgrade Sections in Moyiba

Lighting

This is a low-impact investment in energy-efficient street lighting with locally sourced materials and low-carbon construction designs to reduce GHG emissions. The objective is to provide street/security lights at strategic locations in the community especially along walkways, small water supply points, public toilets, health centre, and security threat zones within the community. The Health Centre shall be provided with backup power for emergency units/Equipment.

The scope shall include the following:

- Installation of 200 Street Lights at the following locations – Walkways, Water supply points, public toilets, health centre, and security threat zones.
- Installation of 10KWp Solar Module Array with battery storage system for emergency loads/equipment in the Health Centre.

Slope Protection

The scope shall include the following:

- 220 m^2 reinforced concrete stepped seating accommodation around the football pitch (borrow pit)
- 1,500 m^2 stone terraced retaining structure to protect the unstable cliff by the Islamic school. Estimated length of 100m, Av. height of 15m.
- 400 m^2 retaining walls on cliffs behind properties estimated average height of 5m, total length of 80 - 100m.

Drainage

This includes the rehabilitation and reconstruction of identified critical 470m length of existing secondary drainages within the community.

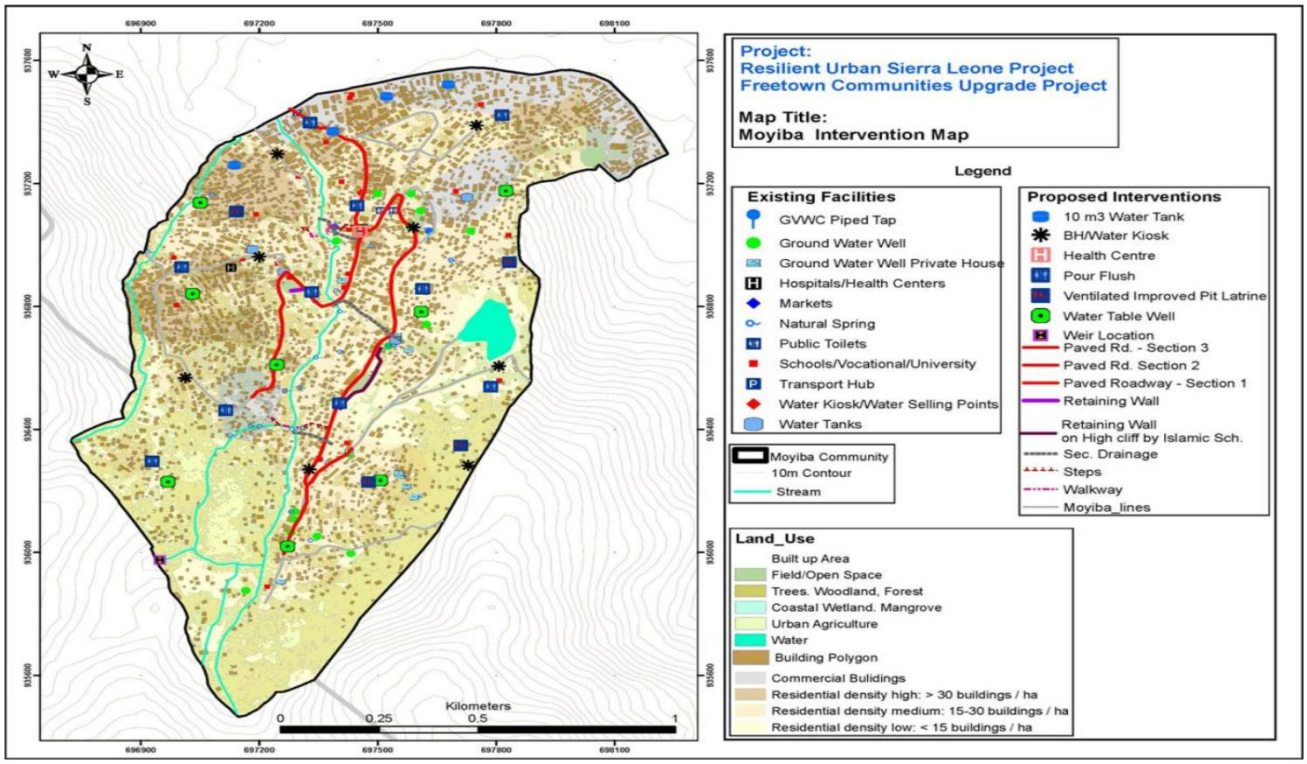
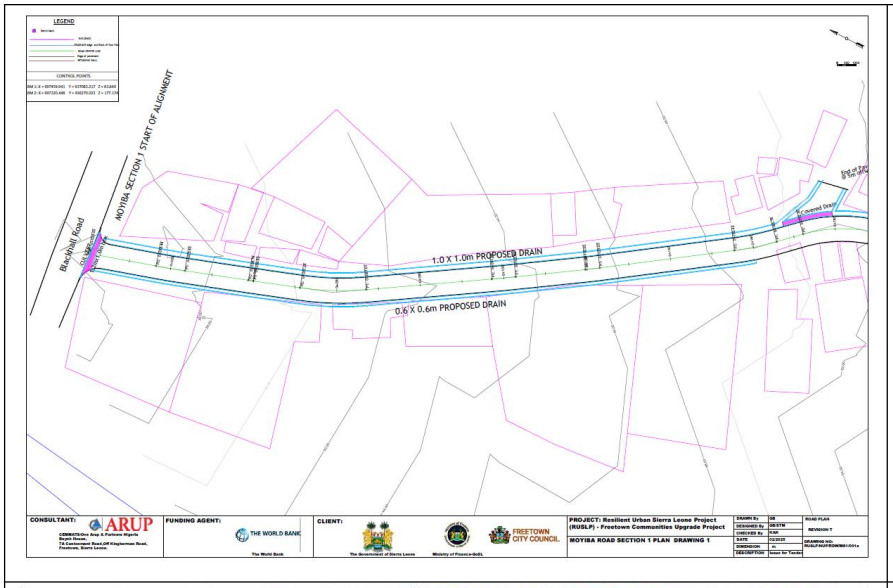
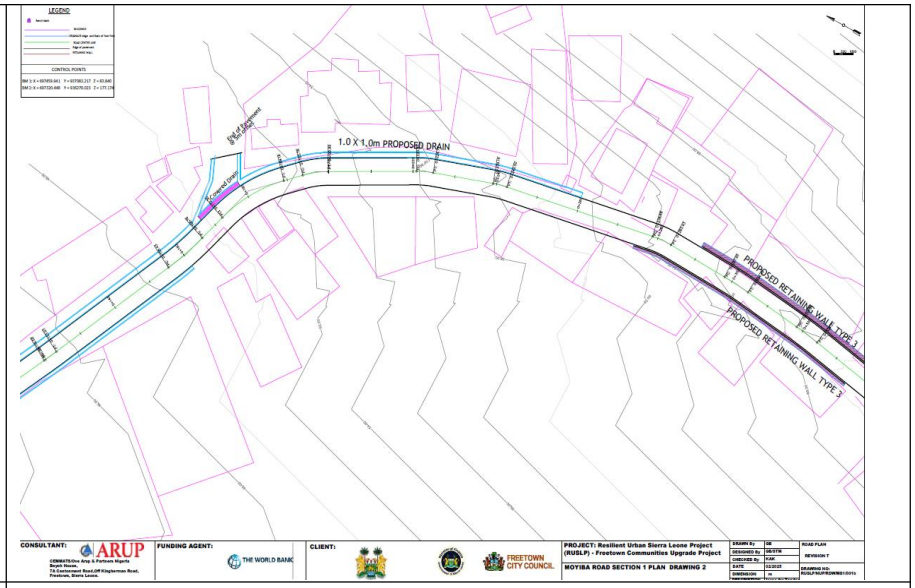
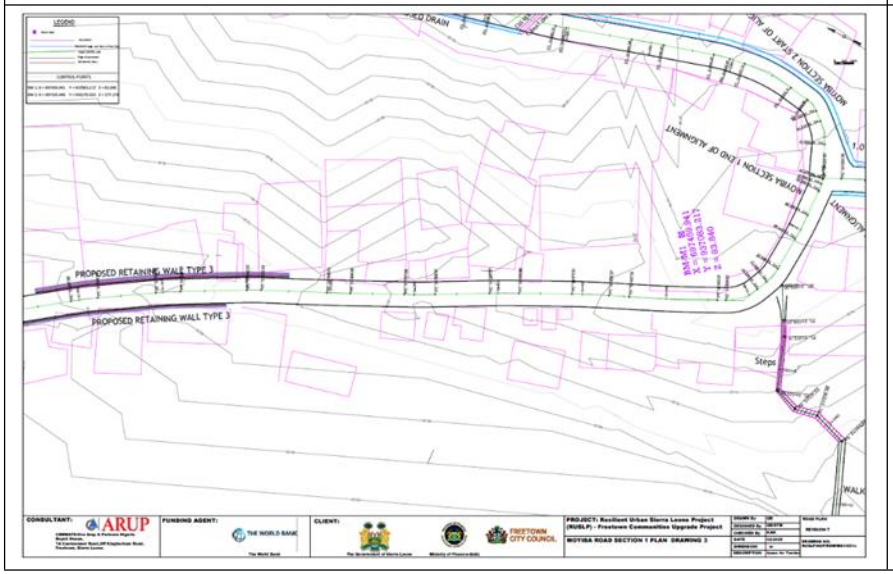


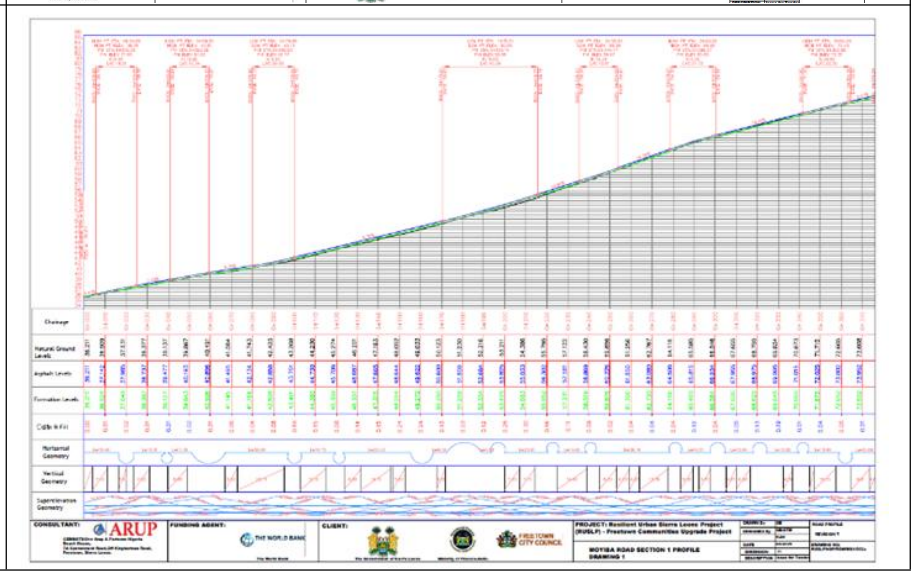
Figure 3.32: Moyiba Community Subprojects Intervention Map

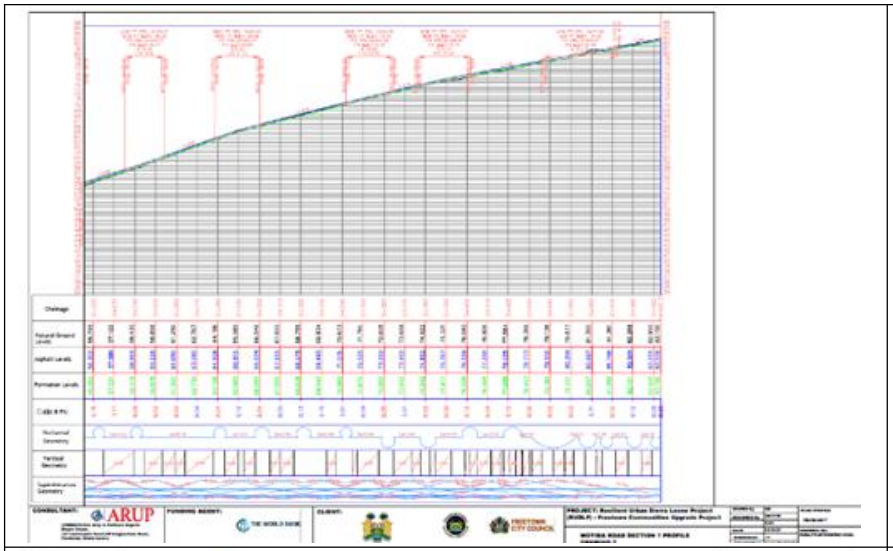
Figure 3.31, 3.32 and 3.33 presents the proposed road upgrade sections in Moyiba, intervention map of subprojects proposed for execution in Moyiba and the typical Lot 1 drawings in Moyiba respectively

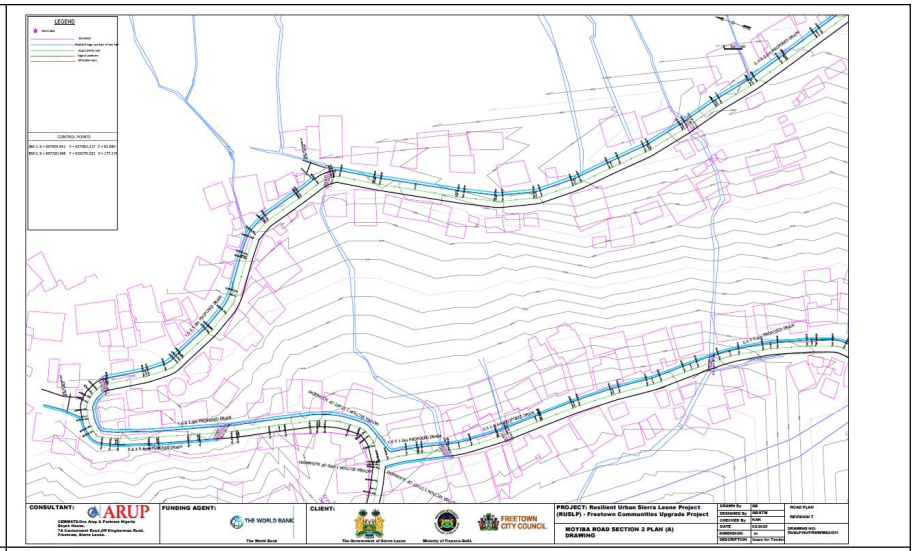

LEGEND
CONTROL POINTS
MOYIBA SECTION 1 START OF ALIGNMENT
Backfill / Road
1.0 X 1.0m PROPOSED DRAIN
0.6 X 0.6m PROPOSED DRAIN
Covered Drain
CONSULTANT:
ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project
MOYIBA ROAD SECTION 1 PLAN DRAWING 1


LEGEND
CONTROL POINTS
End of Alignment
1.0 X 1.0m PROPOSED DRAIN
Covered Drain
PROPOSED RETAINING WALL TYPE 3
CONSULTANT:
ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project
MOYIBA ROAD SECTION 1 PLAN DRAWING 2


LEGEND
CONTROL POINTS
MOYIBA SECTION 1 END OF ALIGNMENT
PROPOSED RETAINING WALL TYPE 3
PROPOSED RETAINING WALL TYPE 3
Steps
CONSULTANT:
ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project
MOYIBA ROAD SECTION 1 PLAN DRAWING 3


Chainage
Natural Ground Levels
Asphalt Levels
Formation Levels
Cable Ducts
Horizontal Geometry
Vertical Geometry
Superelevation Geometry
CONSULTANT:
ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project
MOYIBA ROAD SECTION 1 PROFILE DRAWING 1


ARUP
THE WORLD BANK
FREETOWN CITY COUNCIL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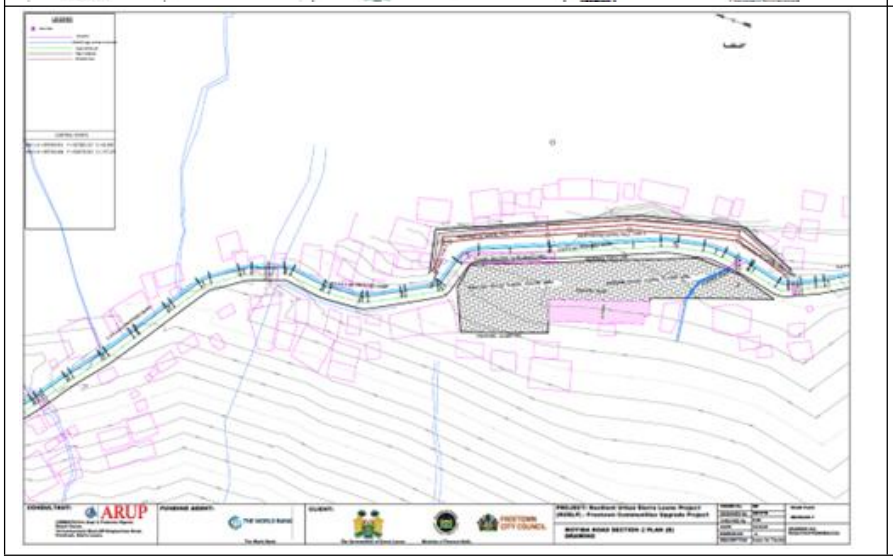
ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project
MOYIBA ROAD SECTION 2 PLAN (A)
DRAWING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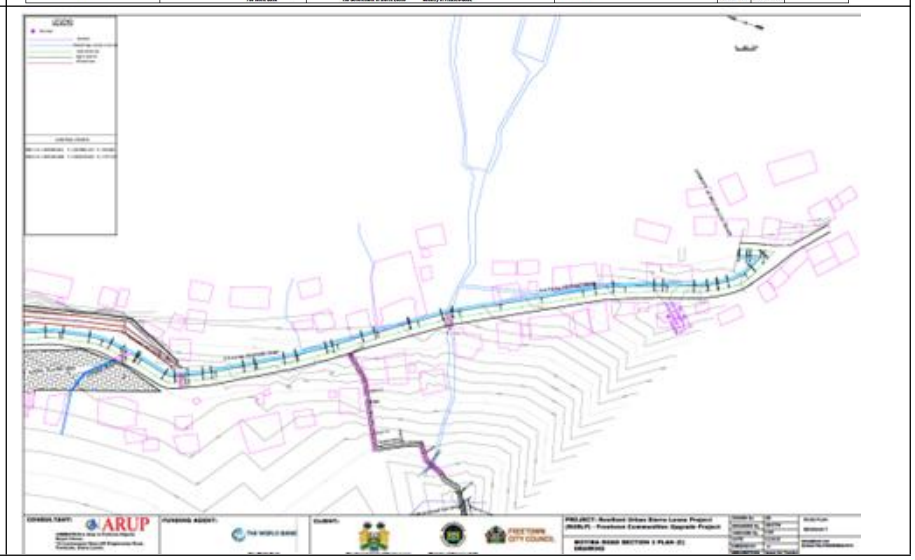
FREETOWN CITY COUNCIL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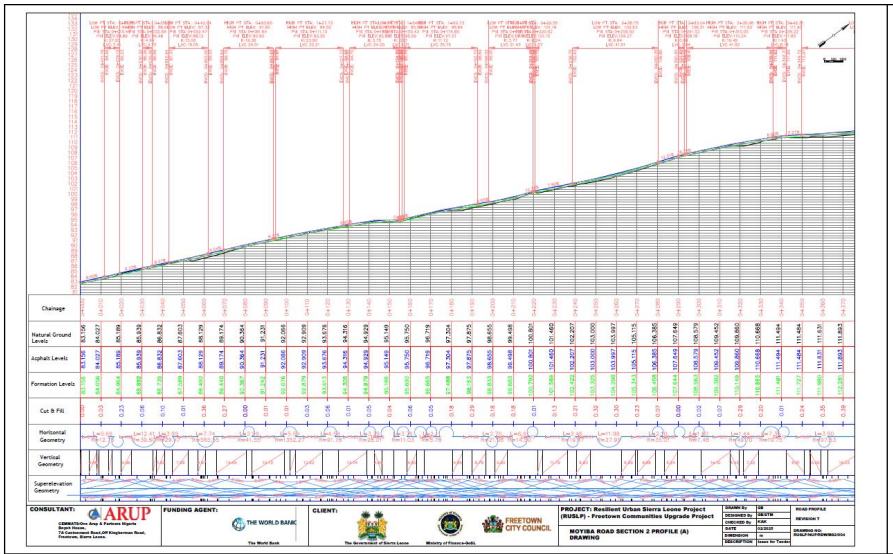
THE WORLD BANK
FREETOWN CITY COUNCIL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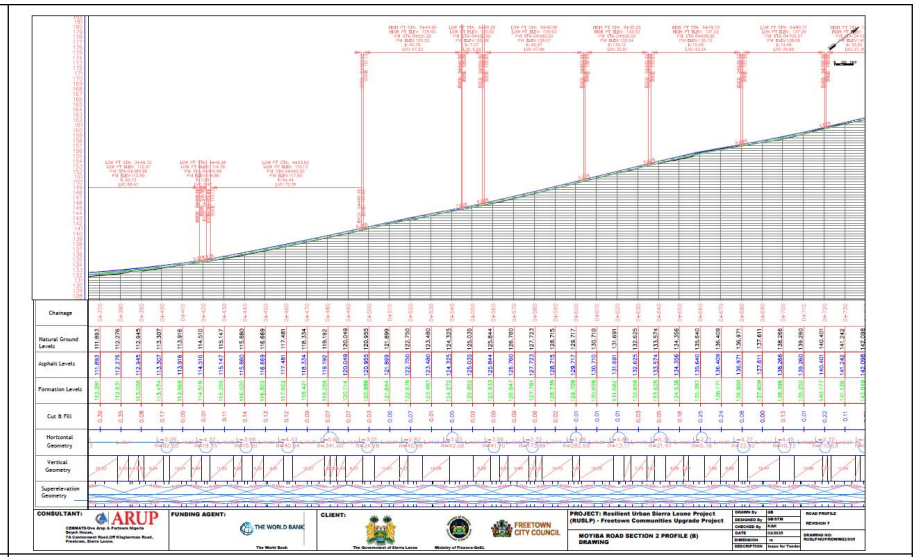
Asphalt Levels
Formation Levels
Cut & Fill
Horizontal Geometry
Vertical Geometry
Superelevation Geometry
CONSULTANT:
ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project
MOYIBA ROAD SECTION 2 PROFILE (A) DRAWING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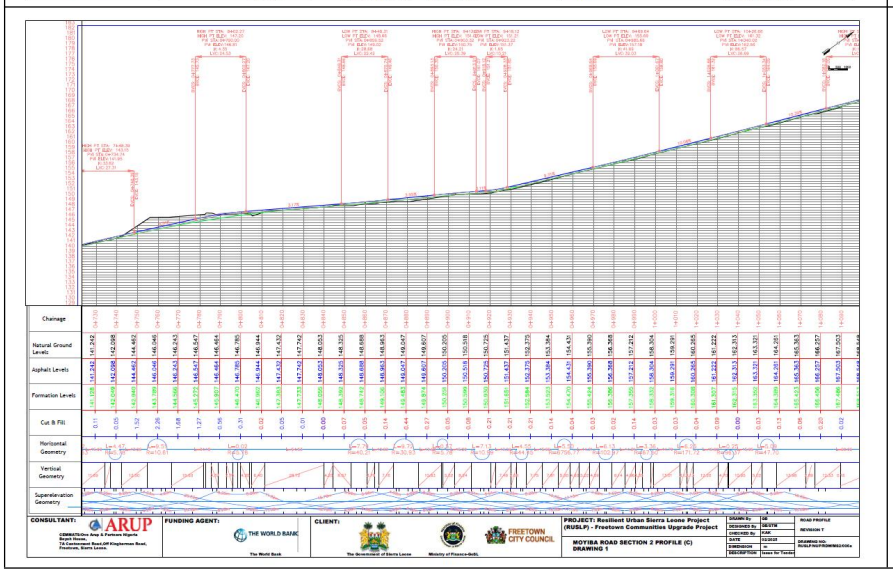
Asphalt Levels
Formation Levels
Cut & Fill
Horizontal Geometry
Vertical Geometry
Superelevation Geometry
CONSULTANT:
ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project
MOYIBA ROAD SECTION 2 PROFILE (B) DRAWING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Asphalt Levels
Formation Levels
Cut & Fill
Horizontal Geometry
Vertical Geometry
Superelevation Geometry
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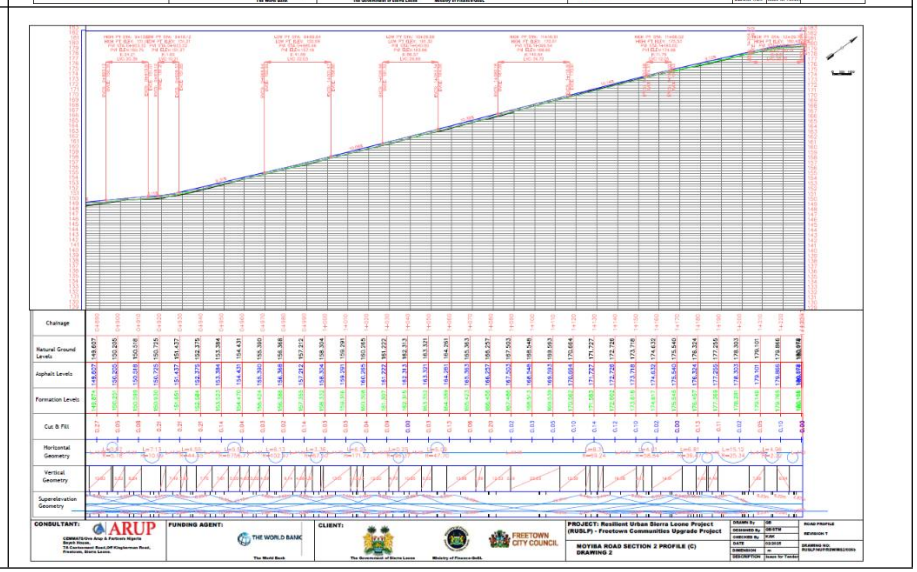
ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project
MOYIBA ROAD SECTION 2 PROFILE (C) DRAWING 1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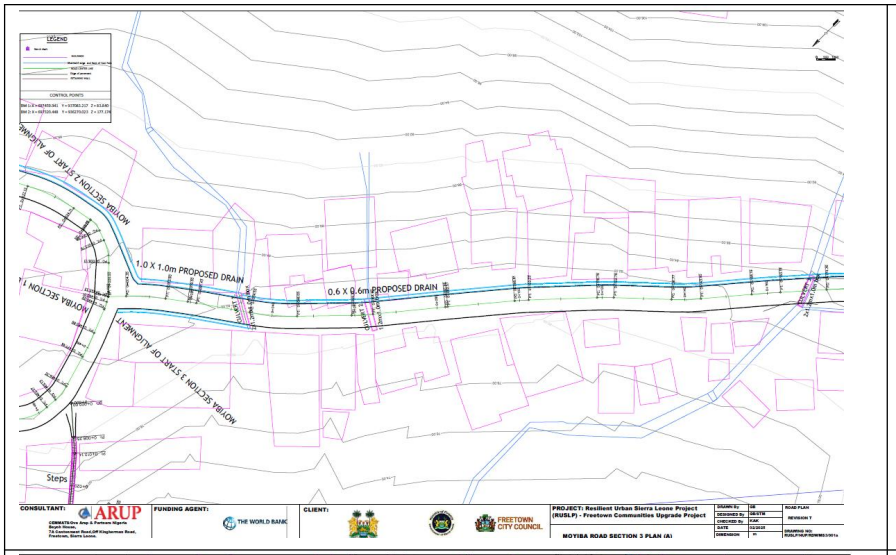
Asphalt Levels
Formation Levels
Cut & Fill
Horizontal Geometry
Vertical Geometry
Superelevation Geometry
CONSULTANT:
ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project
MOYIBA ROAD SECTION 2 PROFILE (C) DRAWING 2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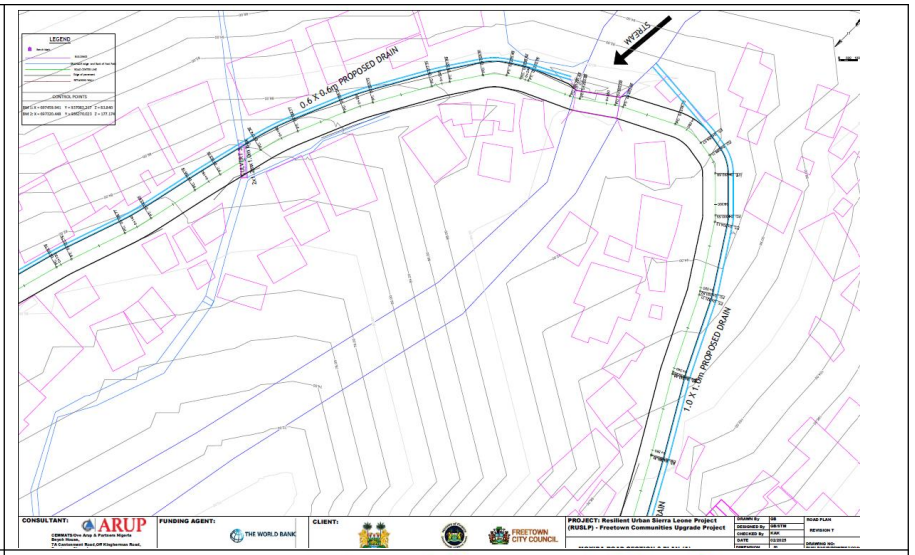
CONTROL POINTS
MOYIBA SECTION 2 START OF ALIGNMENT
1.0 X 1.0m PROPOSED DRAIN
0.6 X 0.6m PROPOSED DRAIN
MOYIBA SECTION 1 START OF ALIGNMENT
Steps
CONSULTANT:
ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project
MOYIBA ROAD SECTION 3 PLAN (A)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STREAM
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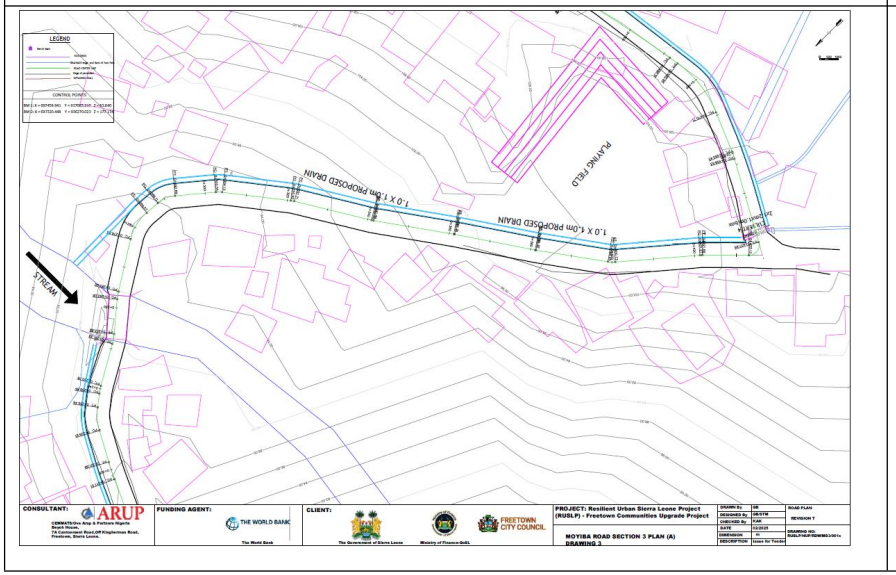
1.0 X 1.0m PROPOSED DRAIN
CONSULTANT:
ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project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CONTROL POINTS
STREAM
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ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
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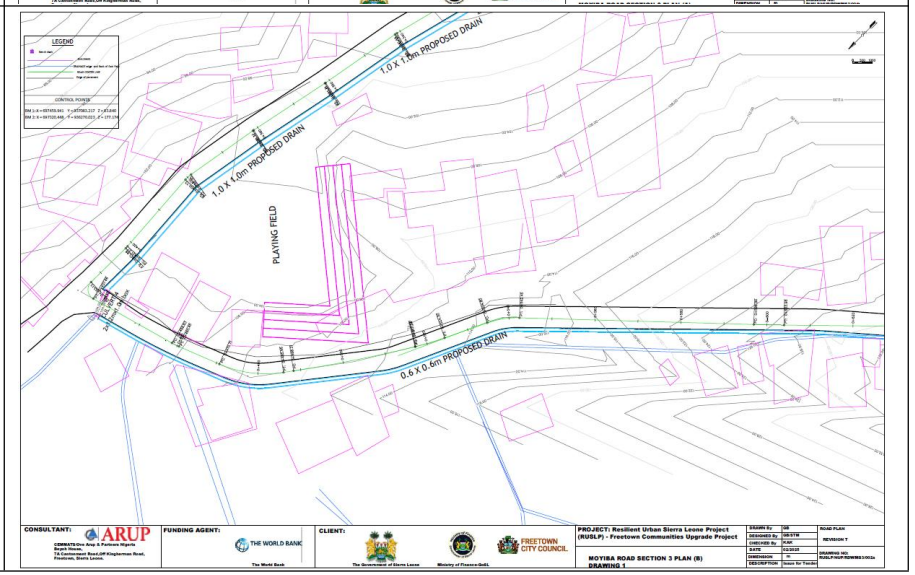
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project
MOYIBA ROAD SECTION 3 PLAN (A)
DRAWING 3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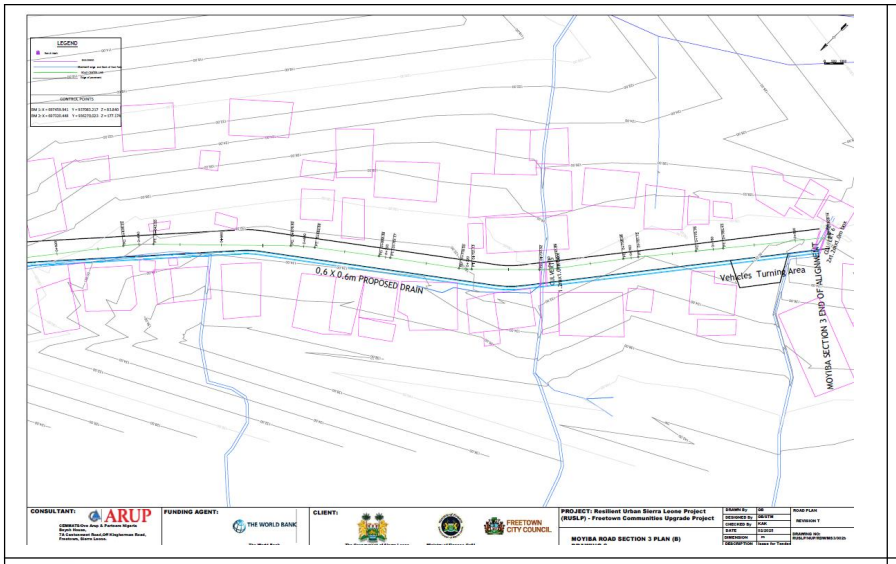
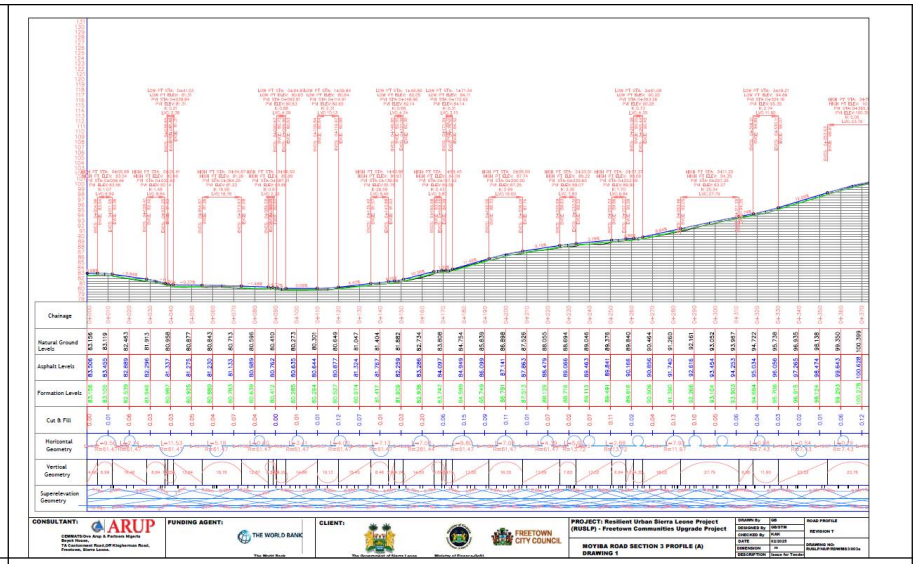
CONTROL POINTS
1.0 X 1.0m PROPOSED DRAIN
1.0 X 1.0m PROPOSED DRAIN
PLAYING FIELD
0.6 X 0.6m PROPOSED DRAIN
CONSULTANT:
ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project
MOYIBA ROAD SECTION 3 PLAN (B)
DRAWING 1


LEGEND
0.6 X 0.6m PROPOSED DRAIN
Vehicles Turning Area
MOYIBA SECTION 3 END OF ALIGNMENT
CONSULTANT:
ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project
MOYIBA ROAD SECTION 3 PLAN (B)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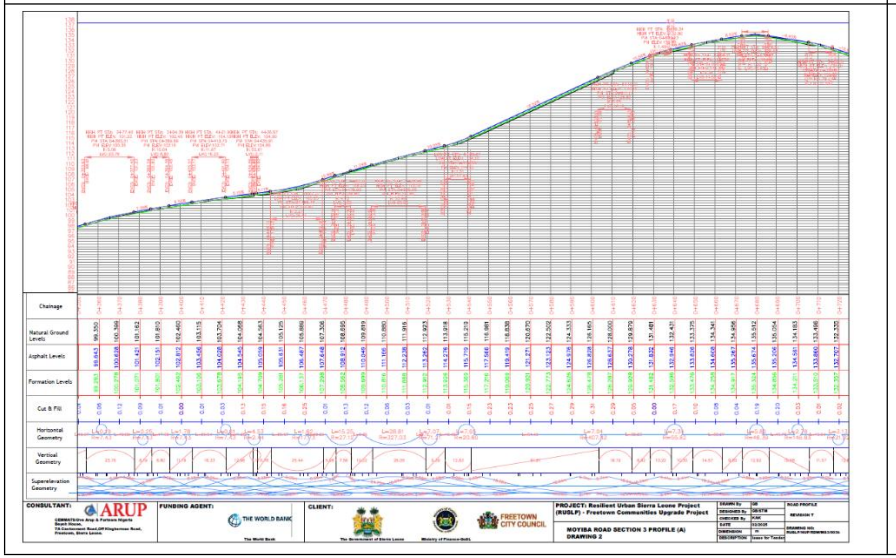
Asphalt Levels
Formation Levels
Cut & Fill
Horizontal Geometry
Vertical Geometry
Superelevation Geometry
CONSULTANT:
ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project
MOYIBA ROAD SECTION 3 PROFILE (A)
DRAWING 1


Chainage
Natural Ground Levels
Asphalt Levels
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Cut & Fill
Horizontal Geometry
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CONSULTANT:
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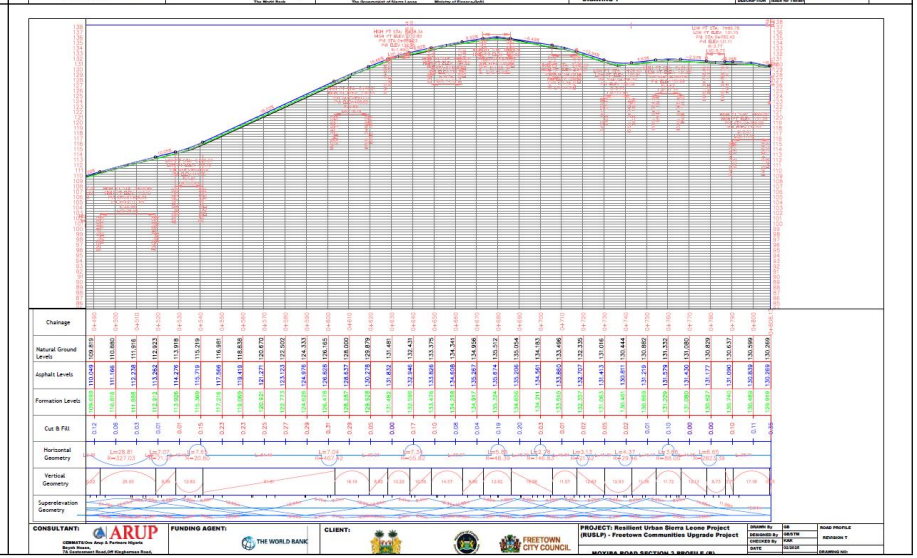
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project
MOYIBA ROAD SECTION 3 PROFILE (A)
DRAWING 2


Chainage
Natural Ground Levels
Asphalt Levels
Formation Levels
Cut & Fill
Horizontal Geometry
Vertical Geometry
Superelevation Geometry
CONSULTANT:
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FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project

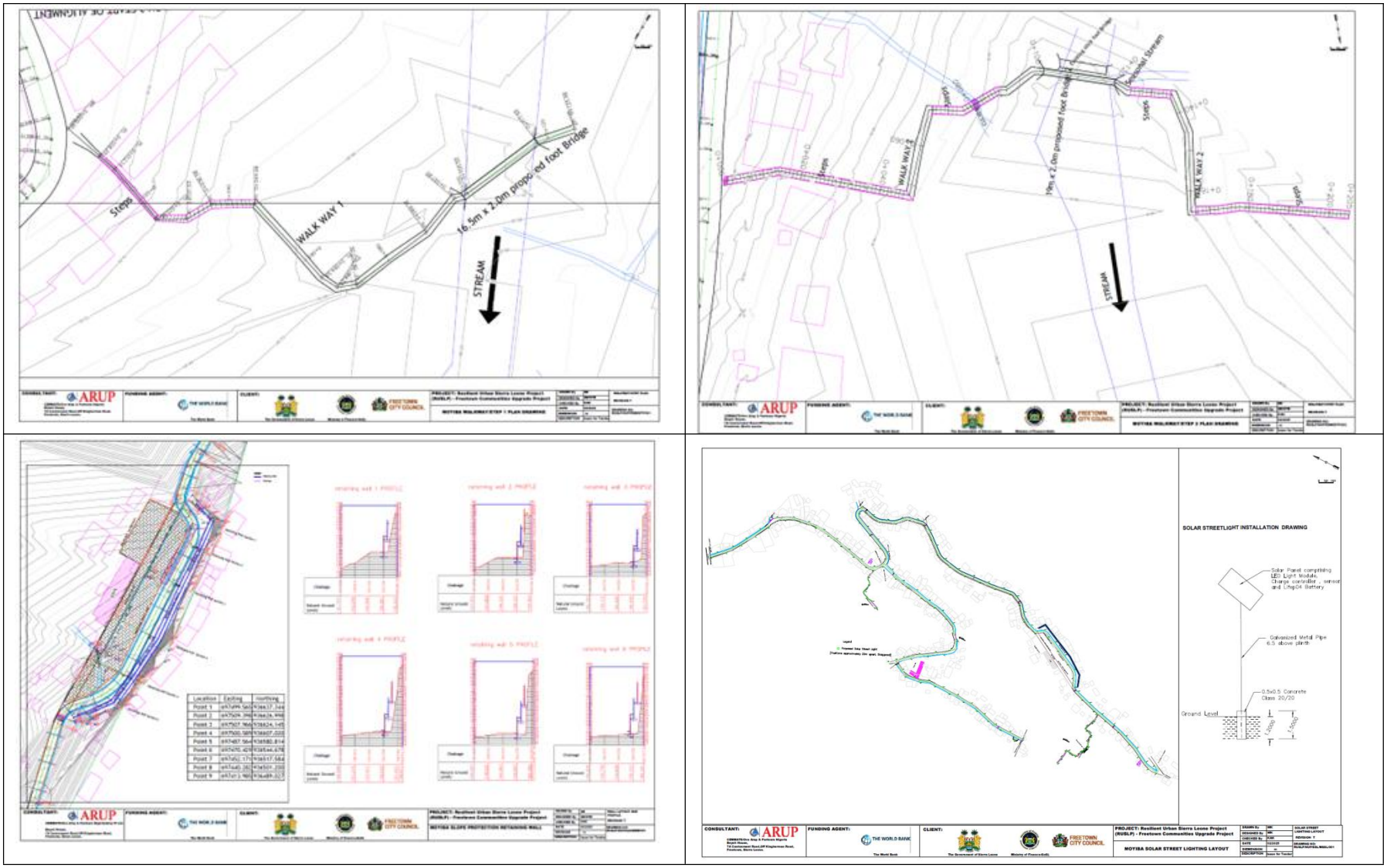


Figure 3.33: Typical Lot 1 drawings in Moyiba (Roads, Drainages, Retaining structures, Bridges and Solar Lighting Interventions)

Retaining Structures

Reinforced cantilever retaining walls were adopted for the various sections of the communities requiring slope protection. The retaining wall designs were subjected to checks for overturning, sliding and bearing capacity. Structural designs were also carried out to determine the rebar configuration of the various design elements. According to the engineering design report (2025), the retaining wall designs were subjected to checks for overturning, sliding and bearing capacity. Structural designs were also carried out to determine the rebar configuration of the various design elements. The retaining structures identified to be undertaken as one of the key interventions is located at an unstable cliff close to the Imam Sadiq Islamic School. Stone terraced retaining structure to protect the unstable cliff by the Islamic school. The estimated length of the structure is 100m with an average height of 12 m spanning the length (figure 3.34). The proposed retaining structure will consist of a terraced reinforced concrete cantilever retaining wall. 2No.walls of approximately 6m maximum height will be constructed as part of the intervention. These retaining structures will increase safety by reducing the risks of local landslides for erosion-prone sections of the community,

Tree planting can play a significant role in retaining structures and mitigating landslides in erosion-prone areas like Moyiba. Tree planting would produce positive outcomes regarding water retention and further reducing risks. It is crucial to select appropriate tree species that are well-suited to the local environment and can effectively stabilize the soil. The project is currently funding the Freetown City Council (FCC) to plant, grow and maintain 500,000 trees, shrubs and grass. The FCC will be responsible for revegetating the project areas during and after the implementation works.

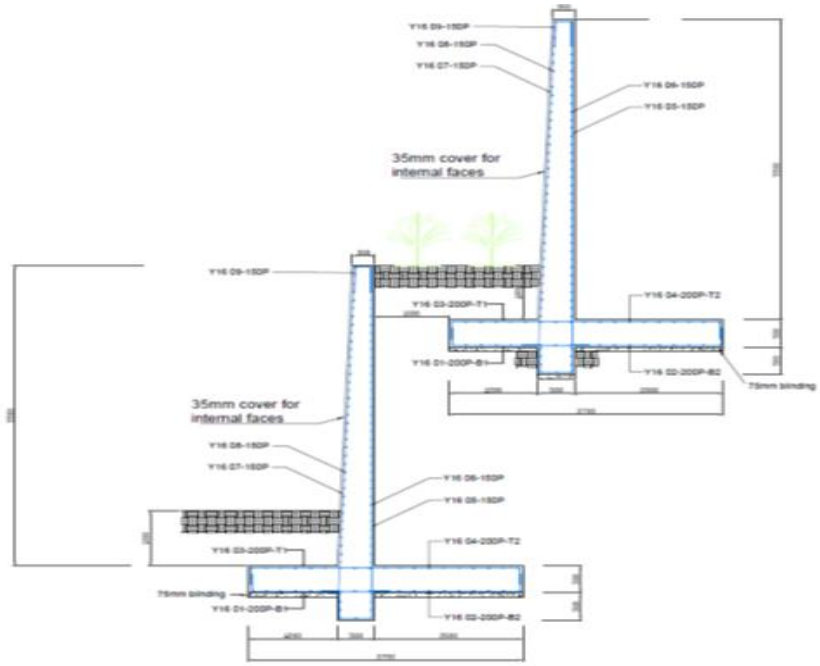


Figure 3.34: Retaining Wall Design 6m

Water and Sanitation Interventions

In Moyiba, the WASH interventions will include:

- Construction of nine (9) new hybrid-powered boreholes with water tower and overhead storage tanks, and water kiosks at source

- Construction of eight (8) new Water Table wells to supplement existing sources in the remote areas of the community
- Construction of four (4) Pour Flush toilets
- Installation of two (2) new 10,000 L plastic water storage tanks on the lower ends of the community, these will be connected to GVWC network, for distribution to nearby households during non-supply days from GVWC network

Figure 3.35 presents the map of proposed water supply interventions

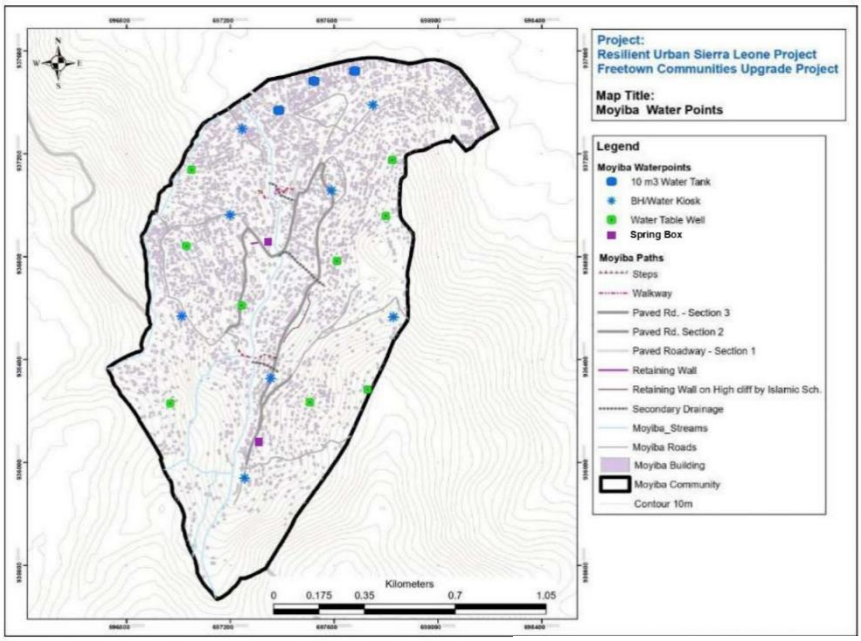


Figure 3.35: Map of Proposed Water Supply Interventions

Based on the detailed design report, the proposed interventions in Moyiba, when completed will:

- Triple the extension of the access roads, footbridges and walkways in good condition,
- Provide street lighting covering at least 50% of the community,
- Increase safety by reducing the risks of local landslides (by providing retaining structures) for erosion-prone sections of the community,
- Triple the provision of drainage from 20% to 60%
- Substantially increase the availability of drinking water to reach at least 75% of the population, and
- Ramp up the sanitation access through the provision of toilets, hand wash facilities, drainage grill, and improving solid waste collection to at least 60% of the community.

3.4.2 Proposed Projects in Coconut Farm

Access Ways and Roads

The proposed roads and associated structures to be rehabilitated / upgraded include:

- 0.6 Km long Single carriageway by Benz Garage, width - 6m. Includes side drains, asphalt finish. Single carriageway, width - 6m

- Construction of 1.5 m wide walkways- Steps/Walkway No. 1 starts at about UTM Zone 28p: 696570.00 m E, 937808.00 m N on the Benz Garage Road (section 1) and ends at about UTM Zone 28p:696543.00 m E, 937587.00 m N. Steps/Walkway No. 2 starts at UTM Zone 28p: 696470.00 m E, 937773.00 m N at Quarry community and ends at about UTM Zone 28p:696553.00 m E, 937444.00 m N at existing water abstraction location.
- Rehabilitate existing public steps connecting walkways 1 and 2 - width 1.5m with mass concrete stairs and steel railings.
- Construction of new steps connecting walkways 1 and 2, 1.5 m wide. reinforced concrete stairs - 1.5m wide, and steel railings.

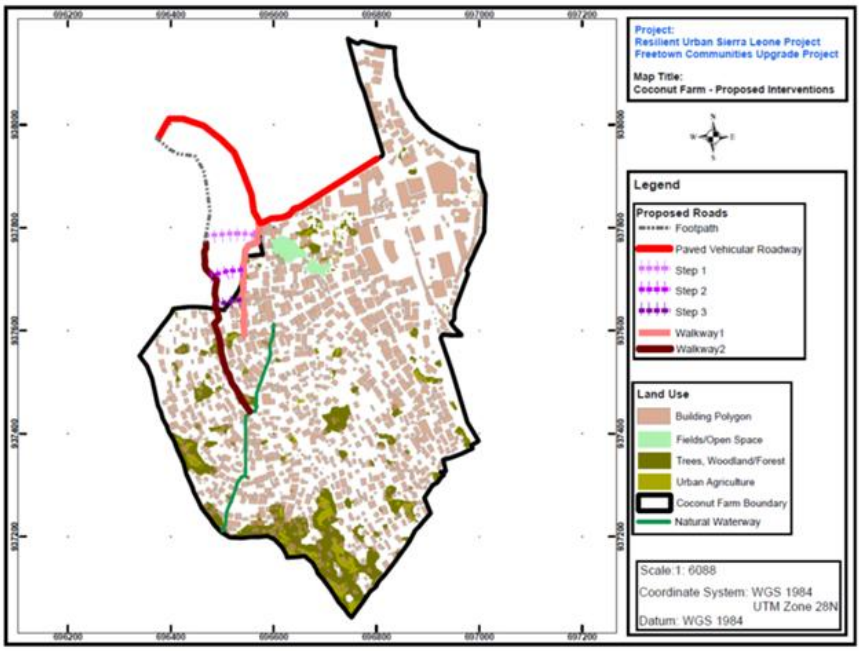


Figure 3.36: Map of Proposed Road Upgrade Sections in Coconut Farm

Water Supply

The scope of the proposed water supply intervention works includes:

1. Construction of three (3) hybrid-powered boreholes as source of fresh water supply, pumped to overhead tanks of total capacity 80 m3.
2. Construction of platforms and installation of 3No. 10,000L and connection from the GVWC main pipe on Blackhall Road to a storage tank uphill of Coconut Farm and a gravity distribution system
3. Construction of five (5) new Water Table Wells (WTW) at hard-to-reach locations
4. Rehabilitation of one (1) Water Table Well

Sanitation Facilities

The proposed toilet facilities include:

- Construction six (6) - Two units of Pour Flush toilet with pit latrine representing six cubicles per block - 3 male and 3 female (each with one disable-friendly cubicle) proposed to serve a total of 1,000 people.

- Three units of public pour flush toilet with one unit/block housing 6 cubicles each

The facilities are designed to contain the following:

- A reception area and waiting space
- Individual toilet stalls with locking doors
- Handwashing station
- Proper signage and ventilation
- Adequate lighting

Figure 3.36, 3.37, 3.38 and 3.39 presents maps and typical drawings of subprojects proposed for execution in Coconut Farm.

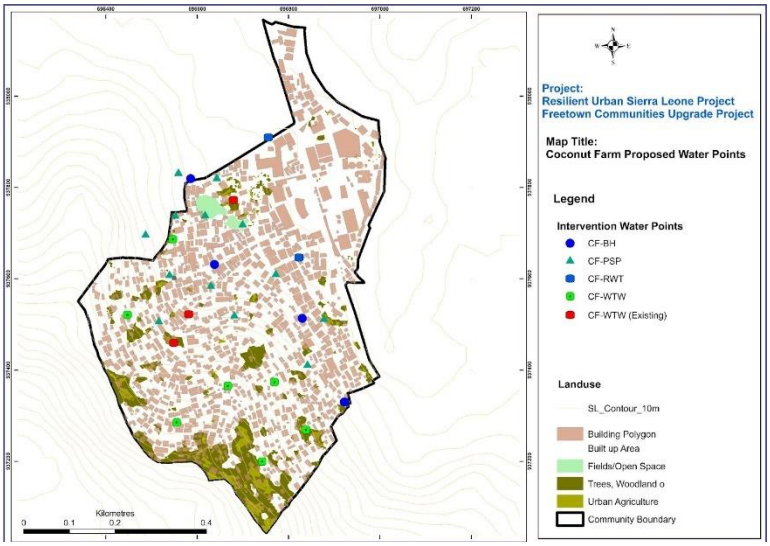


Figure 3.37: Map of Proposed Water Supply Interventions

Pumping-Gravity System, Boreholes, WTWs, Refillable Water Tank

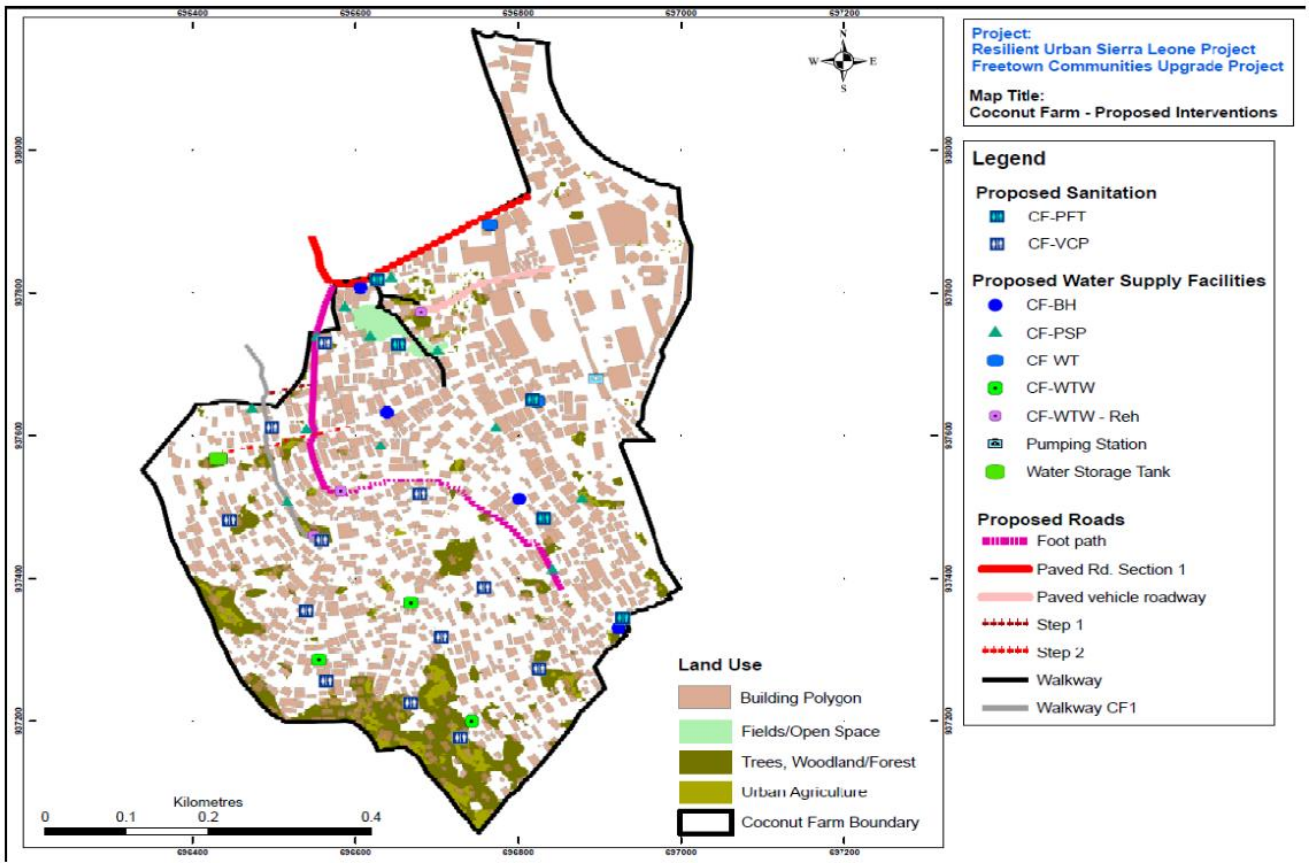
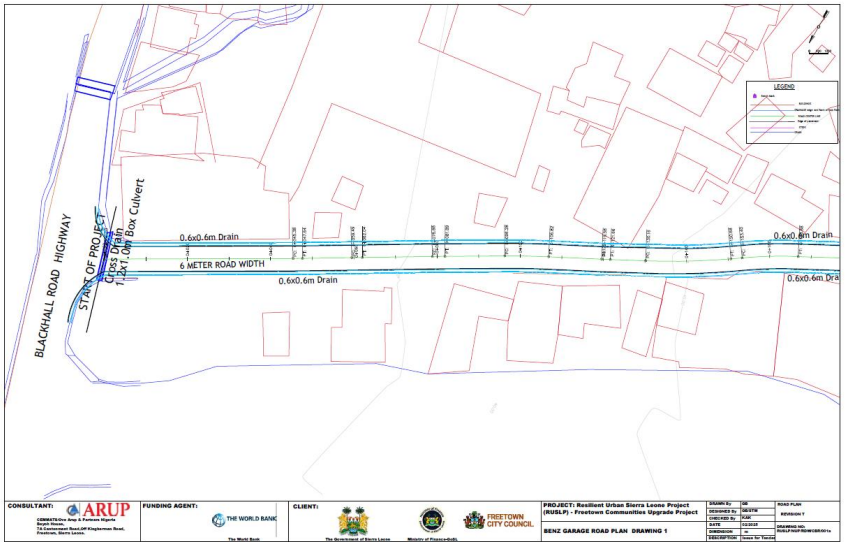
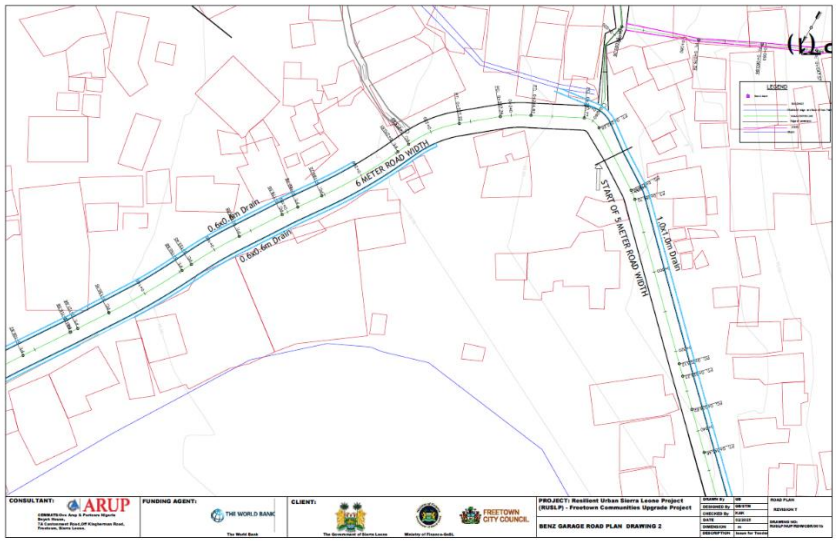
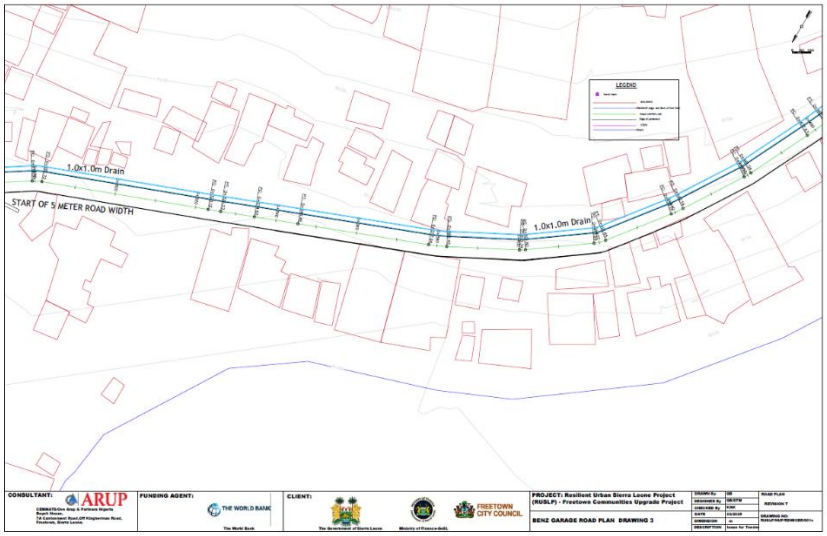
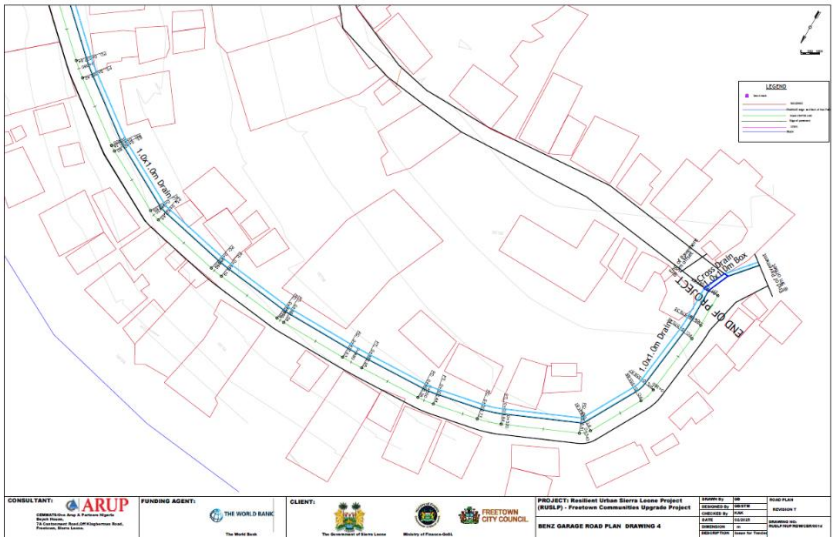


Figure 3.38: Coconut Farm Community Subprojects Intervention Map


BLACKHALL ROAD HIGHWAY
START OF PROJECT
Cross Drain
1.2x1.0m Box Culvert
0.6x0.6m Drain
6 METER ROAD WIDTH
0.6x0.6m Drain
0.6x0.6m Drain
0.6x0.6m Drai
LEGEND
CONSULTANT:
ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project
BENZ GARAGE ROAD PLAN DRAWING 1


0.6x0.6m Drain
6 METER ROAD WIDTH
0.6x0.6m Drain
START OF 5 METER ROAD WIDTH
1.0x1.0m Drain
LEGEND
CONSULTANT:
ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project
BENZ GARAGE ROAD PLAN DRAWING 2


1.0x1.0m Drain
START OF 5 METER ROAD WIDTH
1.0x1.0m Drain
LEGEND
CONSULTANT:
ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project
BENZ GARAGE ROAD PLAN DRAWING 3


1.0x1.0m Drain
END OF PROJECT
1.0x1.0m Drain
LEGEND
CONSULTANT:
ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PROJECT: Resilient Urban Sierra Leone Project (RUSLP) - Freetown Communities Upgrade Project
BENZ GARAGE ROAD PLAN DRAWING 4

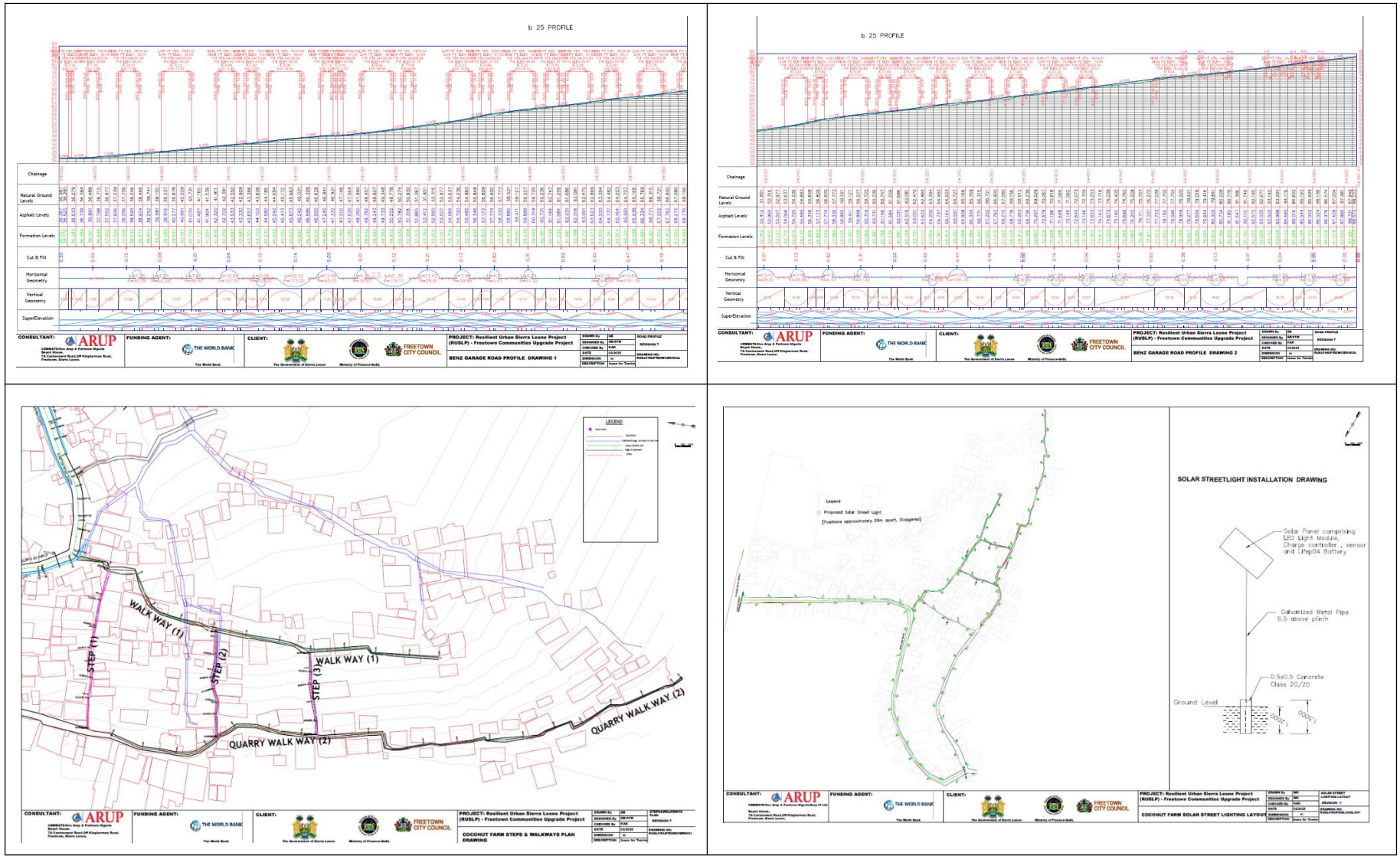


Figure 3.39: Typical Lot 1 drawings in Coconut Farm (Roads, Drainages, Retaining structures, Bridges and Solar Lighting Interventions)

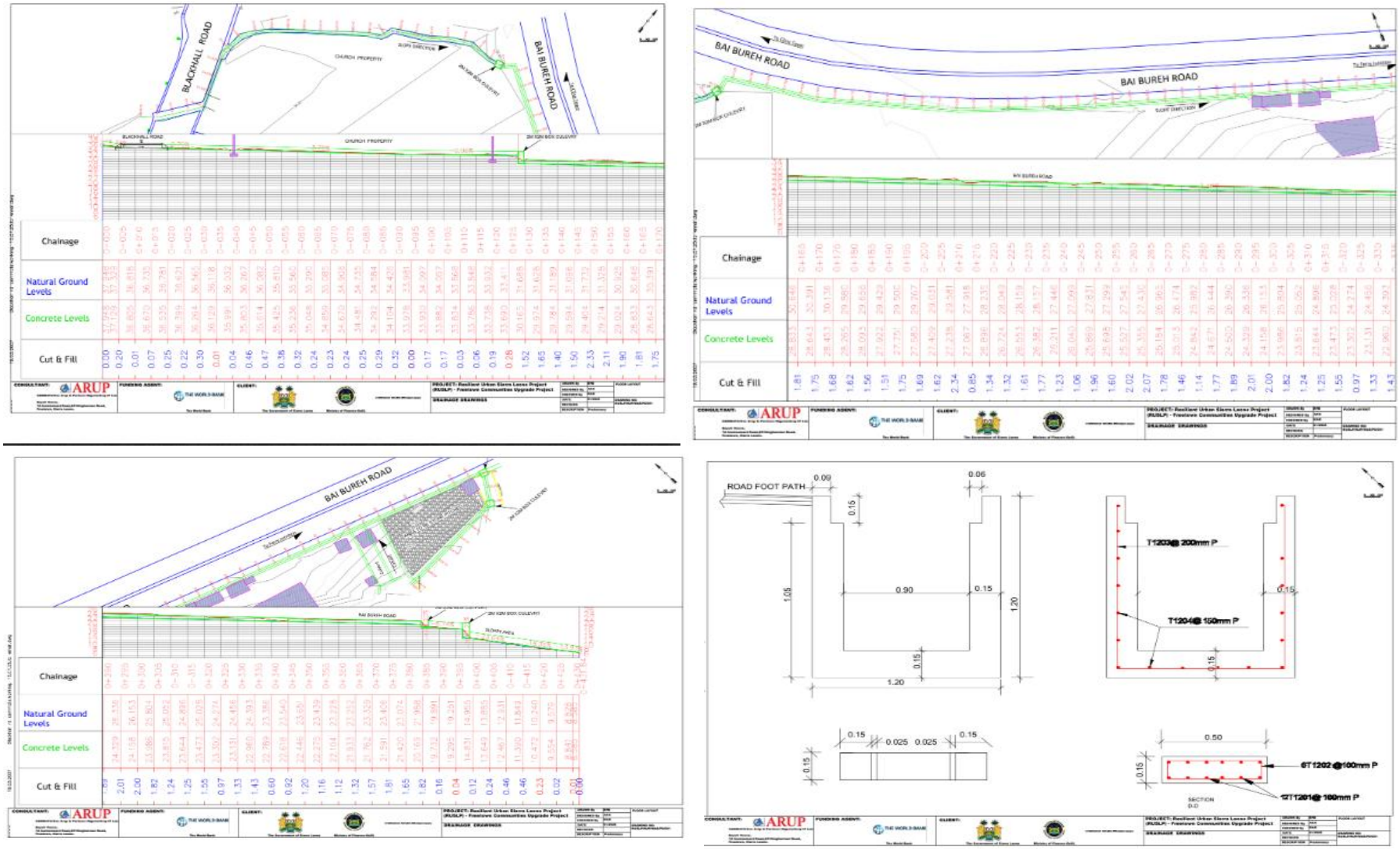


Figure 3.40: Typical Layout Drawings and Designs of the Drainage along Bai Bureh Road

Based on the detailed design report, the proposed interventions in Coconut Farm, when completed will:

- More than double the extension of the access roads in good condition,
- Provide street lighting covering at least 50% of the community,
- Reduce the risks from landslides due to improvements in drainage,
- Almost triple the provision of drainage from 25% to 60%
- Substantially increase the availability of drinking water to reach at least 75% of the population, and
- Ramp up the sanitation access through the provision of toilets and improving solid waste collection to at least 60% of the community.

3.4.3 Proposed Drainage Works at Bai Bureh Road and Graville Brooke Stream Outfall

The Granville Brook lies downstream of Moyiba, Coconut Farm, and Bai Bureh Road. Increased water flow from the improved drainage channels can significantly impact the Granville Brooke catchment, which may lead to flooding, especially during the rainy season. In addition, the drainage channel on Bai Bureh Road flows from Coconut Farm through the outfall of Saint Martin's Church to Granville Brooke: The Granville Brooke is highly eroded and poses high environmental risks. The existing culvert and drainage systems from Coconut Farm and Moyiba are clogged with solid waste thereby causing backflow flooding.

The proposed works include:

- Rehabilitation/re-construction of 600 meters long, 1.2m wide and 1.2m deep and 0.15m thick concrete primary drainage from the outfall from Saint Martin's Church to and along Bai Bureh Road to Granville Brooke stream. It includes 4No (2m wide x 2m deep) concrete box structures (sumps) located at 0+130, 0+385, 0+395 and 0+430, designed to control the flow of water along the drainage channel. In addition, scour checks (steps like structures) will be included in the steep section of the drainage (0+395 to 0+450) from the road to the stream to reduce velocity prior
- General Clearing of the drainage, spot demolition and re-construction of side walls with stone pitching or reinforced concrete and construction of outfall sumps
- Rehabilitation/re-construction compacted fill to slope grade at culvert embankment fill slopes of primary drainage outfall culvert at Granville Brooke as instructed by the Engineer
- Grouted stone pitching at culvert embankment slopes of primary drainage outfall culvert at Granville Brooke as instructed by the Engineer

Retaining and Slope Stabilization Structures

In steep or erosion-prone sections, the project includes:

- Reinforced concrete retaining walls for lateral support of embankments and road shoulders;
- Stone pitching and lined surfaces in designated areas to prevent scour and erosion; and
- Cut-and-fill earthworks to achieve safe longitudinal and transverse slopes along the alignment

Roadside and Pedestrian Interface Works

Associated civil works include:

- Reconstruction of road shoulders and pedestrian footpaths affected by excavation;
- Concrete aprons and headwalls at culvert inlets and outlets;
- Surface reinstatement of disturbed road pavement; and
- Provision of drainage covers or edge protection where required for pedestrian safety.

Ancillary Construction Activities

Temporary and support activities will include:

- Mobilization of construction equipment (excavators, concrete mixers, trucks);
- Temporary traffic diversions and signage;
- Material storage yards and stockpiles;
- Temporary drainage during construction;
- Waste handling areas; and
- Contractor camps or site offices where necessary.

3.4.4 Proposed Investment in Portee and Rokupa

Access Ways and Roads

The proposed roads and associated structures to be rehabilitated and upgraded are presented below:

1. Section 1: Alignment and pavement of vehicle roadway from Bai Bureh Road to Rokupa Wharf (Wharf Road 0.5km) - Roadway to wharf and proposed cold room to enhance ease of marketing and transportation of fish and other goods; including a single carriage vehicular bridge (UTM Zone 28p: 701303.00 m E, 936088.00 m N) to the health centre. Moderate to high relocation will be involved.
2. Section 2: Alignment and pavement of primary vehicle roadway Loop around Gaddafi Mosque through Zara Lane (0.72km) with two lanes and lined drainages on both ends. Minor relocation will be involved.
3. Construction of 1.2m wide steps down to the wharf.
4. Construction of 1.5m wide walkways from Road Section 2 to steps, and within wharf community. No hand railings for the walkways. Steps/Walkway1 starts at UTM Zone 28p: 701061.00 m E, 935913.00 m N on a slip road adjacent to road section 2 and ends at UTM Zone 28p:701296.00m E, 936037.00m N by the Rokupa -Portee wharf Community Mosque.
5. Steps/Walkway2 starts at UTM Zone 28p: 701270.00 m E, 935953.00 m N on road section 2 and ends at UTM Zone 28p: 701287.00 m E, 936061.00 m N by the Rokupa -Portee Wharf Community Hospital.
6. Rehabilitate/reconstruct 3 No. footbridges across primary drainage at the wharf.
    - UTM Zone 28p:701260.00 m E, 936060.00 m N (Reconstruct)
    - UTM Zone 28p: 701322.00 m E, 936100.00 m N (Rehabilitate)
    - UTM Zone 28p: 701359.00 m E, 936110.00 m N (Rehabilitate)

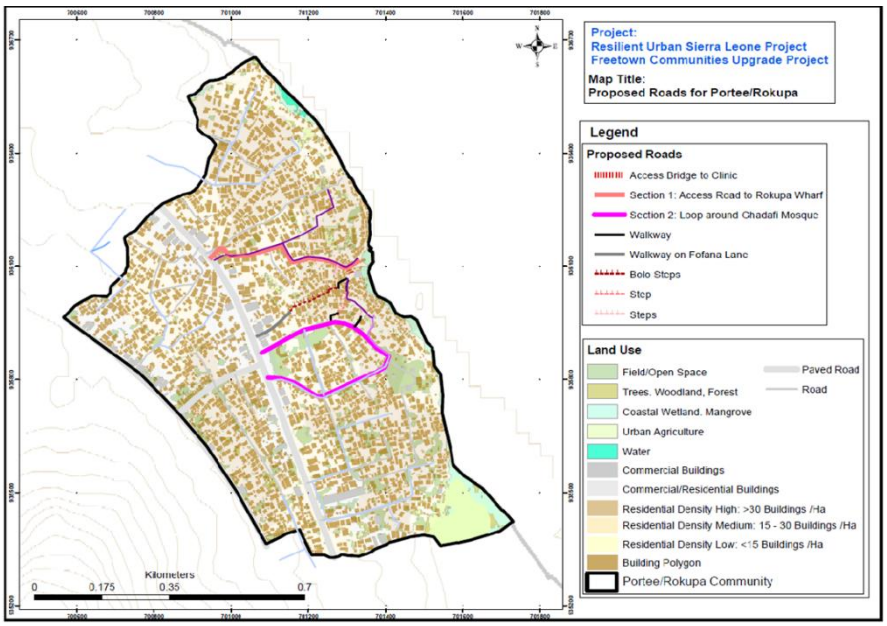


Figure 3.41: Map of Proposed Road Upgrade Sections in Portee – Rokupa

Drainage

The proposed drainage improvement works include:

- Rehabilitation of existing 30m primary drainage within the wharf community
- Replacement of the culvert crossing on Bai Bureh Road

Street Lighting

This is a low-impact investment in energy-efficient street lighting with locally sourced materials and low-carbon construction designs to reduce GHG emissions. The scope includes:

- Installation of 150 Street Lights at the following locations – Walkways, Water supply points, public toilets, health centre, and security threat zones.

Slope Protection

- Construction of 990m^2 retaining wall to protect the cliff on Rokupa end overlooking the wharf with a terraced reinforced concrete and stone pitched drain above.

Water Supply

The scope of the proposed water supply intervention works includes:

- Construction of three (3) hybrid-powered boreholes as source of fresh water supply to the slum areas and some strategic public points; pumped to overhead tanks of total capacity 280 m^3.
- Construction of four (4) Water Table Wells (WTW) to supplement the boreholes.
- Construction of four (4) Hybrid-powered deep boreholes and transmission line/water kiosk (No)
- Rehabilitation of three (3) Water Table Wells

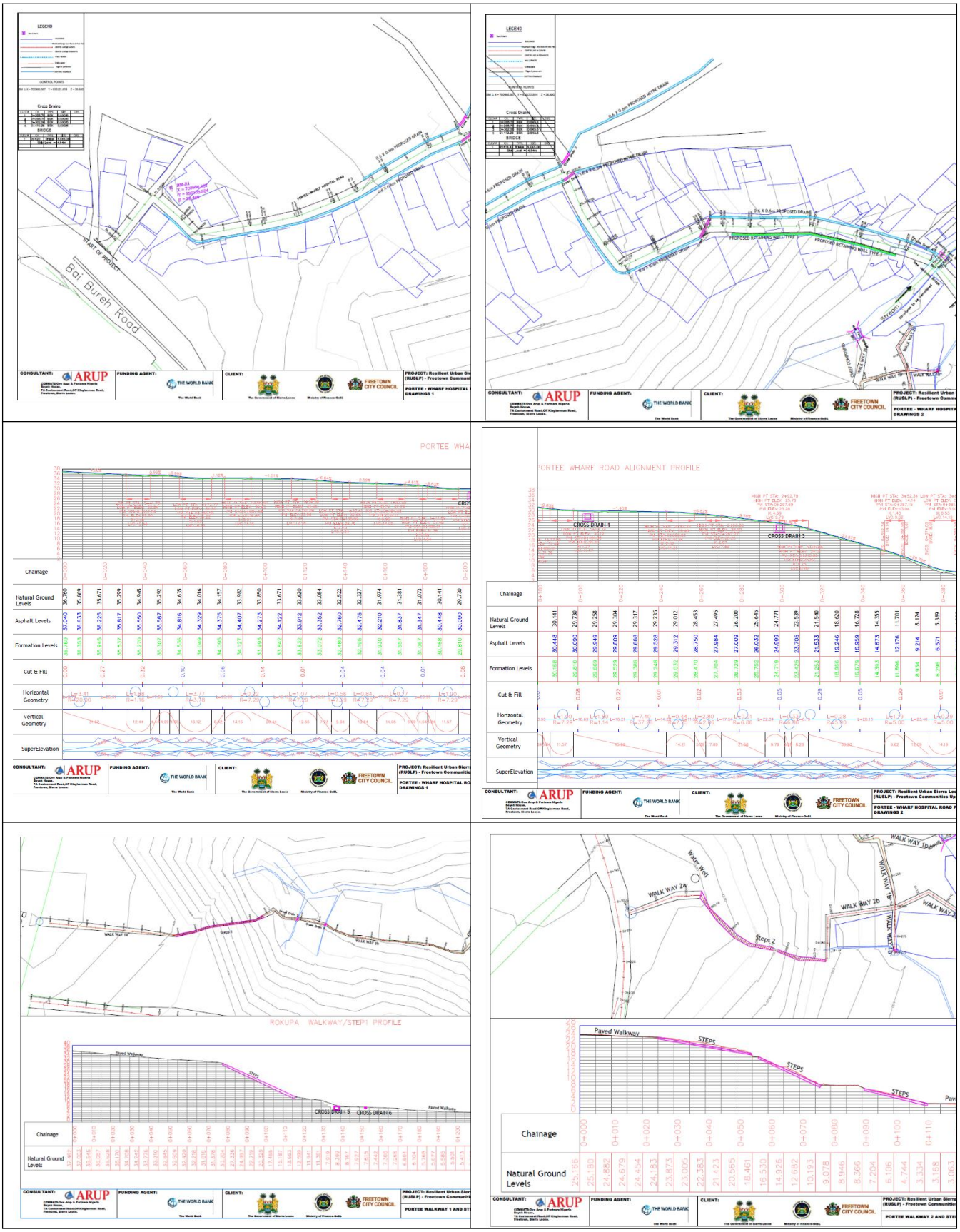
Sanitation Facilities

The proposed toilet facilities include:

- Four (4) units of pour flush toilet with one unit/block housing 6 cubicles each,
- A reception area and waiting space
- Individual toilet stalls with locking doors
- Handwashing station
- Proper signage and ventilation
- Adequate lighting

Figure 3.42, 3.43, and 3.43 presents the map of proposed road upgrade sections, intervention map of subprojects proposed for execution and typical drawings in Portee - Rokupa.

Figure 3.42: Portee – Rokupa Community Subprojects Intervention Map


LEGEND
Cross Drains
BRIDGE
START OF PROJECT
Bai Bureh Road
CONSULTANT:
ARUP
FUNDING AGENT:
THE WORLD BANK
CLIENT:
FREETOWN CITY COUNCIL
PORTEE - WHARF HOSPITAL DRAWINGS 1
PROPOSED RETAINING WALL TYPE 2
PROPOSED RETAINING WALL TYPE 3
Stream
PORTEE WHARF ROAD ALIGNMENT PROFILE
CROSS DRAIN 1
CROSS DRAIN 3
Chainage
Natural Ground Levels
Asphalt Levels
Formation Levels
Cut & Fill
Horizontal Geometry
Vertical Geometry
SuperElevation
PORTEE - WHARF HOSPITAL DRAWINGS 2
ROKUPA WALKWAY/STEP1 PROFILE
WALK WAY 1a
WALK WAY 1b
Step 1
Step 2
Water Well
WALK WAY 2a
WALK WAY 2b
Paved Walkway
STEPS
CROSS DRAIN 5
CROSS DRAIN 6
PORTEE WALKWAY 1 AND ST
PORTEE WALKWAY 2 AND STE

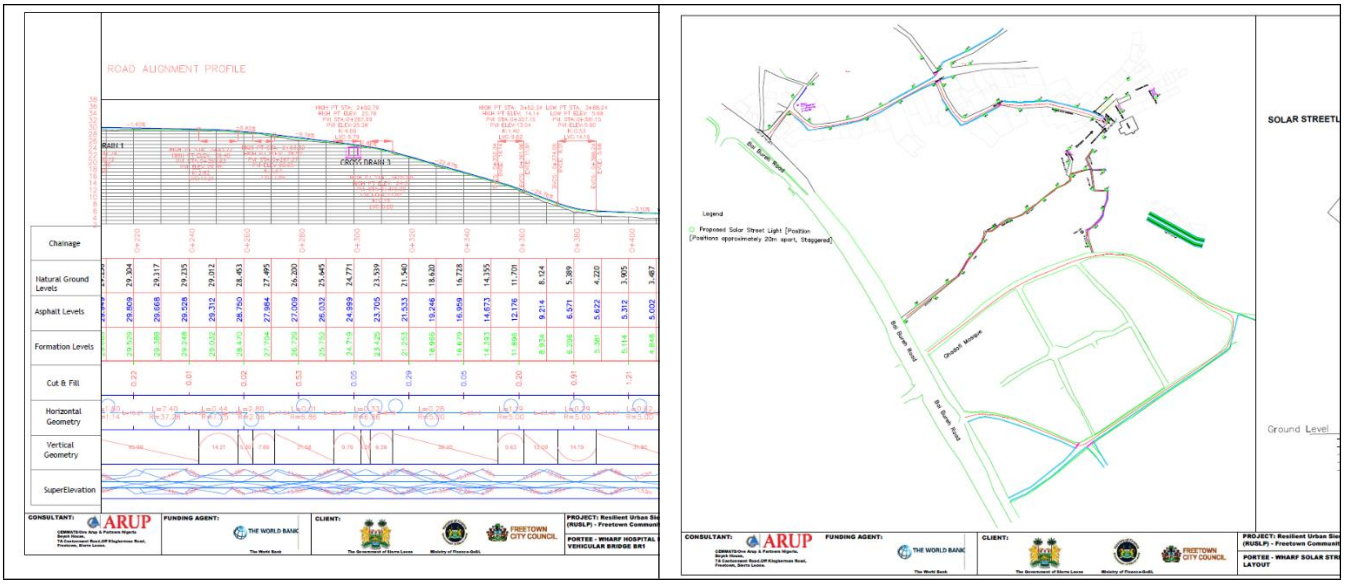


Figure 3.43: Typical Lot 1 drawings in Portee – Rokupa Community (Roads, Drainages, Retaining structures, Bridges and Solar Lighting Interventions)

Retaining Structures

Reinforced cantilever retaining walls were adopted for the various sections of the communities requiring slope protection. The retaining structures identified include the Cliff on Rokupa end overlooking the wharf (Figure 3.44). According to the engineering design report (2025), the retaining wall designs were subjected to checks for overturning, sliding and bearing capacity. Structural designs were also carried out to determine the rebar configuration of the various design elements.

The project is proposing a terraced reinforced concrete and stone pitched drain above. The proposed retaining structure will consist of a terraced reinforced concrete cantilever retaining wall. 2No. retaining walls of approximately 3m and 6m maximum height respectively along road alignment 1 and 2 and will be constructed as part of the intervention. The option of the terraced retaining wall was used due to the height of the section of ~9m. Allowances will also be provided in the design to provide some form of greenery/natural landscaping to the structure.

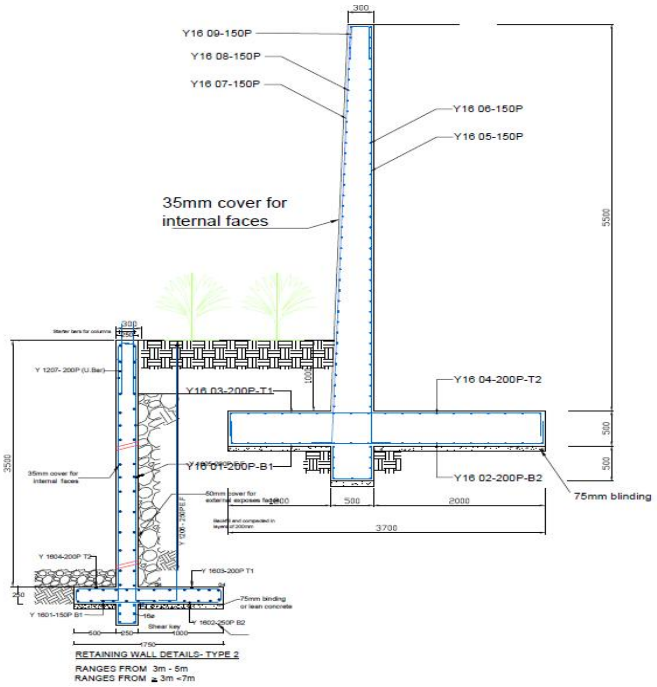


Figure 3.44: Retaining Wall Design

The proposed interventions in Portee – Rokupa Community, when completed will:

- Improve the road and walkway conditions for an estimated 30% of the population.
- Provide street lighting covering at least 50% of the community,
- Increase safety by reducing the risks from landslides,
- Expand the coverage of secondary drainage in good condition to 45% of the population.
- Increase the availability of drinking water by at least 15% of the population, and
- Expand the sanitation access through the provision of toilets, hand wash facilities, and improving solid waste collection to 60% of the community population.

3.4.5 Description of Project Implementation Phases and Activities

The project activity is scheduled to be completed in four phases comprising of design, construction, operation, and decommissioning phases. In these project phases, the main activities will include detailed design of the proposed interventions subprojects, construction, operation/maintenance of the subprojects and decommissioning. During the feasibility designs, several studies have been carried out including the geo-technical surveys, Scoping, RP and the ESIA to inform/ improve the design process. Construction of the proposed subprojects will involve various activities including site clearing, transport of construction materials, earth works, pavement, curbs, shoulders and lateral drainage work, construction of culverts, and materials stockpiles. and disposal sites.

Prior to the commencement of the construction works, the Contractor's Environmental and Social Management Plan (C-ESMP) (See annex 18 on the draft scope of Work for the preparation of the C-ESMP) will be prepared by the contractor and approved by the supervision consultants and the client. For any land acquisition, restriction on land use and involuntary resettlement to be caused by project activities, an RP will be implemented prior to commencing any physical work of the project. The project will ensure that the requisite permits and approvals are obtained following the EPA-SL regulations prior to construction, while an audit of existing facilities will be undertaken. To reduce the project environmental and social footprints and negative impacts, it is recommended that the contractors dump all waste in the government approved dumpsites, purchase aggregates from existing licensed quarry operators and acquire laterite from existing license borrow pits operated by other contractors. Once project activities come to an end, a systematic demobilization/decommission of civil works by implementing a comprehensive rehabilitation program.

3.5.1 Mobilization Phase Project Activities

This phase entails mobilization of the labour force, equipment and construction of offices as well as the acquisition of various permits as required by the GoSL law. The decision regarding the location of the works yards will be decided after the tendering process, and it will be the duty of the contractor, who shall consult with the PMU, FCC and local communities. The critical activities during this phase include:

1. **Land and Property Acquisition:** Land and property will be acquired to accommodate the project work (e.g. roads widening and creation of diversion roads, works yards and drains).

However, these issues are comprehensively addressed in the Resettlement Plan developed in addition to this ESIA report

2. **Transport of Material to Sites:** Construction materials sourced outside of the study area will be transported to the sites through existing roads and secondary roads.
3. **Establishment of Construction Works Yards:** The roads construction component of the project will require works yards for its workers and for storage of machinery and equipment, processing and storage of materials. Should the contractors decide prior to the establishment of the works yard, screening of the site will be conducted to determine suitability and probable need for a separate ESMP. The establishment of works yards will involve clearing the vegetation, fencing of yards and the construction of workshops, storerooms and vehicle parking areas. Works yards should be provided with water supply, sanitary facilities and electricity. Additional construction sites such as separate construction sites may be established for the larger concrete structures required, i.e. culverts. These sites might have a stockpiling area for sand, stone, reinforcing steel and cement as well as a batching plant to mix concrete.

Should there be the need to establish a works yard, the following parameters will be considered prior to establishment:

- The contractor will provide a plan detailing the layout of site facilities such as temporal pit latrines, portable toilets, and areas for stockpiling of materials, storage of hazardous materials and provision of containers.
- Stockpiles for concrete materials will comprise side-restrained triangular bin-type structures. Bund walls (oil-tank casing) will be constructed. High quality materials with low dust generating characteristics will be used.
- Fuel and gas will be stored in a secure area in a steel tank supplied and maintained by the fuel suppliers. Fuel storage will generally occur in workshop areas of site, which are generally fenced and paved. A mobile tanker will be used to refuel vehicles on- sites
- Workshops will be equipped with grease traps in the drainage collection system. Used oil will be collected in drums from these traps and disposed of in approved sites
- domestic waste will be collected in drums and removed to the nearest waste site for disposal
- Suitable washing facilities and sanitary arrangements at site offices, workshops and construction sites will be provided. Sanitary facilities for the site camps will comprise of temporal pit latrines or portable latrines
- Water for human consumption will be available at the site offices and at other convenient locations

3.5.2 Construction Phase

The construction works will involve various activities including site clearing, Clearing and Grubbing of Topsoil, deployment of heavy machinery, transport of construction materials, Excavation and earthwork like cutting and embankments, pavement, shoulders and lateral drainage works, construction of culverts and drains, Ancillary Road Works, Concrete work: Cast In-Situ Concrete and Formwork, Lighting. Below are critical activities under this phase:

1. **Borrow Pit:** Where available, existing borrow pits will be used if the geotechnical properties of materials are considered suitable to be used as backfill material based on project technical specifications. However, if existing borrow pit material is not suitable or does not have enough volume as required, new borrow sites may be established. Prior to the establishment of a new

borrow site, the site shall be screened, and subject to the conditions of regulatory approval of EPA - SL.

2. **Material Sourcing and Transportation:** The project will require various materials for the construction of the sub-projects. Those materials include a large quantity of stones, gravel, sand, water, cement, quarry stone aggregates and lateritic soil, bricks, wood, steel-reinforcements and plastics. Other materials and equipment that may be needed include paints, solvents, electronic gadgets, wire and ropes, diesel, petrol, oils and food items, vehicles, biological materials, gases, energy, soldering equipment and other minor inputs. Construction materials should be sourced from suppliers with requisite permits and licenses and tax complaints. They will preferably be sourced as near as possible to the project area to reduce negative impacts of transportation of the materials to the project site through reduced distance of travel by the materials transport vehicles.
3. **Storage of Construction Materials:** Construction materials will be stored on site. Bulky materials such as stones, sand and steel should be carefully stored at the contractor's yard and protected from elements of weather to avoid wastage due to weather conditions like wind and rain. Petroleum products will also be stored on site.
4. **Excavation, Foundation Works and Earthworks:** The project activities will involve excavation of the existing road foundation to compact ways for new development and excavation will also be done at material sites. Road construction will require earthworks involving earth cuttings using bulldozers and back actors to remove the softer material, and drilling. In addition, the earth work for the WASH facilities involves the drilling of boreholes, the excavation of water table wells and latrine pits
5. **Masonry, Concrete Work and Related Activities:** The project activities will involve a lot of masonry work and related activities including stone and crushing, mixing by use of both manual and mechanical means. These activities are known to be labour intensive and a source of air pollutants.
6. **Wastes and Storm Water Management:** Wastes that will be generated by the project include excavated earth materials, construction debris, a diversity of solid wastes and human excreta. Excavated earth materials and construction debris will be reused or recycled by the project as much as possible. The remaining will be used to fill local earthen roads potholes or disposed of in a very well designated site.

3.5.3 Operational Phase

During the operational phase the main project activities involve proper use and maintaining the roads, drainages, walkways/footbridges and streetlights and drain infrastructures including WASH facilities and provided for with routine maintenance staff and budget.

3.5.4 Decommissioning Phase

The main activities during this phase include:

1. **Demolition Works:** After the useful life of the roads and other infrastructures, they will be decommissioned. The project components including the roads, culverts, pavements and drainage systems could be demolished.
2. **Dismantling of Equipment and Fixtures:** All construction materials and equipment including electrical installations, furniture partitions and pipework among others will be dismantled and removed from the site on decommissioning of the works yards, the roads and other project components. Priority will be given to the reuse of these materials in other projects. This could be achieved through their resale to other contractors or donation of this equipment to schools, religious houses and charitable institutions, rehabilitation of feeder roads not covered etc.

3. **Site Restoration:** Once all the wastes resulting from demolition and dismantling works are removed from the sites, the sites will be restored through replenishment of the topsoil and re-vegetation using indigenous plant species or developed according to the development trend of the time.
4. **Construction Materials and Energy Used:** The main sources of energy that will be required for the decommissioning of the project will include electricity and fossil fuels (especially diesel). Electricity will be used for welding, metal cutting/grinding and provision of light. Diesel will run heavy trucks, machinery such as bulldozers and concrete mixers. The Proponent (possibly FCC) should make deliberate efforts to promote efficient use of materials and energy through proper planning to reduce economic and environmental costs of excavating new materials through close engagement of the contractors.
5. **Solid Waste Generated:** Large amounts of solid waste will be generated during decommissioning of the project. These will include construction material debris, metal cuttings, rejected materials, surplus spoil, excavated materials, paper bags, empty cartons, empty paint and solvent containers among others. The developer is advised to take steps to minimize the generation of such waste and to ensure proper disposal procedures or recycling of generated wastes.

Environmental and Social Baseline

04

Chapter Four : Environmental and Social Baseline

4.1 General

This chapter provides a description of the environmental and social setting for the area where the proposed subprojects under this intervention will be executed and includes those components of the environment potentially affected by the activities proposed project. The content has been prepared from available information, discussions with communities' representatives, relevant mapping, and information collected during the field investigations, and sampling along with laboratory analyses of the various environmental media collected from the field study.

4.2 Study Area and Location

The overall study area comprises different zones around the three communities of Moyiba (latitude 8.47640, longitude 13.20770), Coconut Farm (latitude 8.48112, longitude 13.21245) and Portee-Rokupa (latitude 8.46486, longitude 13.17436) selected for the neighbourhood upgrade intervention under RUSLP. The three communities are in the Western Urban Area of Freetown and are about 5 km -10 km from the Freetown city centre. Figure 4.1. and 4.2 shows the study area, locations and physiographic context.

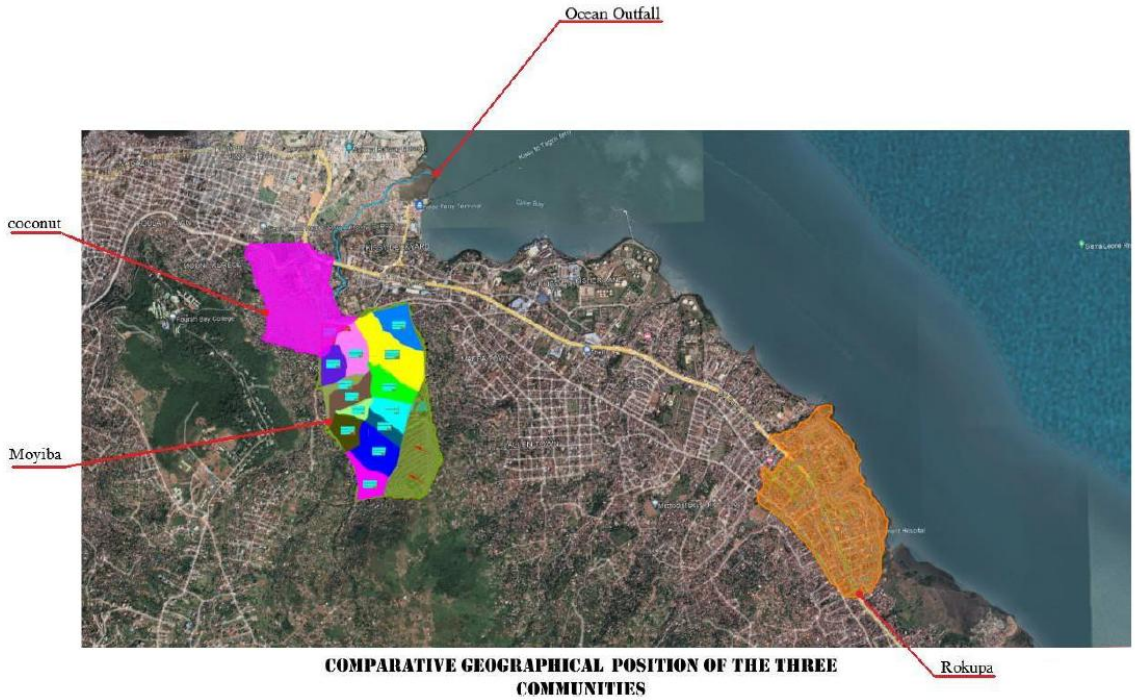


Figure 4.1: Map Showing Study Area And Locations (source: Arup, 2023)

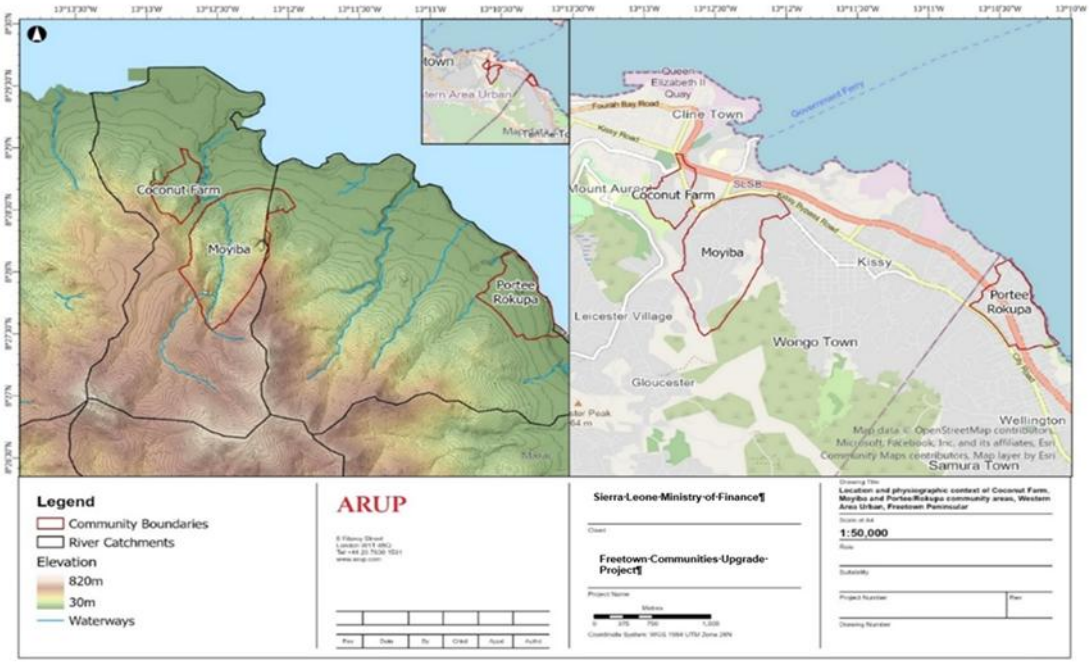


Figure 4.2: Location and Physiographic Context of Coconut Farm, Moyiba and Portee/Rokupa Community Areas

(source: Arup, 2023)

4.3 General Biophysical Environmental Baseline Condition

4.3.1 Climate and Meteorology

Sierra Leone has a tropical climate with distinct wet and dry seasons. The wet season starts in May and ends in November and is characterized by torrential rainfalls and high humidity. The dry season starts in December and ends in April, which includes harmattan, when cool, dry winds blow in off the Sahara Desert.

Rainfall

According to the Rainfall data provided by the Sierra Leone Meteorological Agency (SLMET)[3] that covers the period 2001-2023, the temporal variation over 22 years shown in the Figure 4.3 presents an almost constant rainfall pattern with values ranging between 2000 and 3000 mm/year with some fluctuations. The extreme recorded value, according to this graph, is registered in 2023. This extreme value could be explained by the extreme climatic conditions recorded in that year and essentially caused by climate change. Additionally, a significantly lower values of approximately 1500 mm/year were recorded in 2009, 2010, 2011 and 2016.

The acquired rainfall data also indicate that the months of July, August and September have significant precipitations. The peak of monthly rainfall over 22 years period works out to be almost 600 mm of rainfall in August as illustrated in figure below. This period is often characterized by the recharge of surface and groundwater reservoirs. Moreover, the lowest amounts of monthly precipitation occur in the months of December to April, as presented in Figure 4.4.

[3] Climatic data provided by SLMET in March 2024

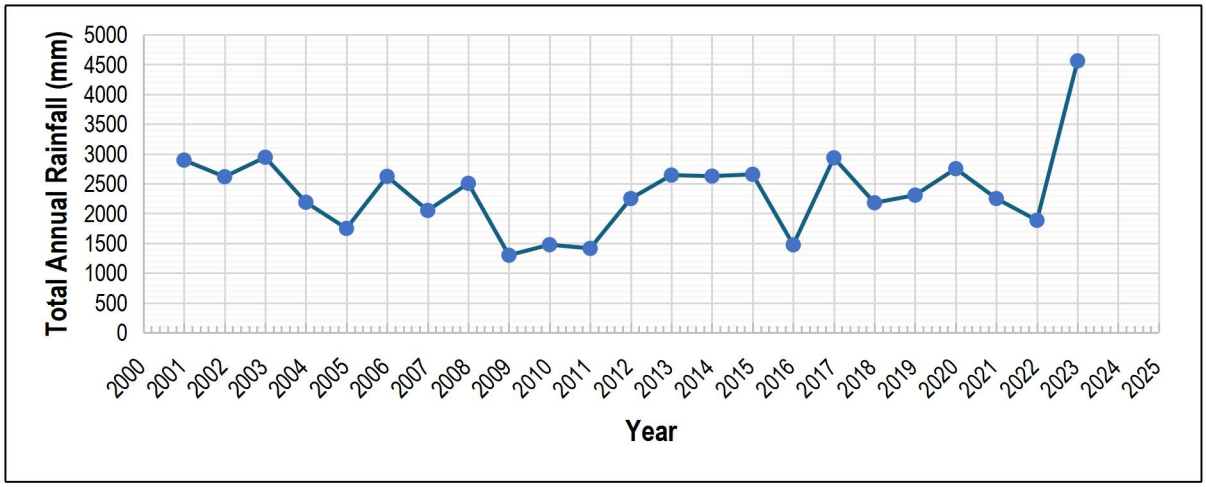


Figure 4.3: Variation of Total Rainfall in Freetown between 2001 and 2023

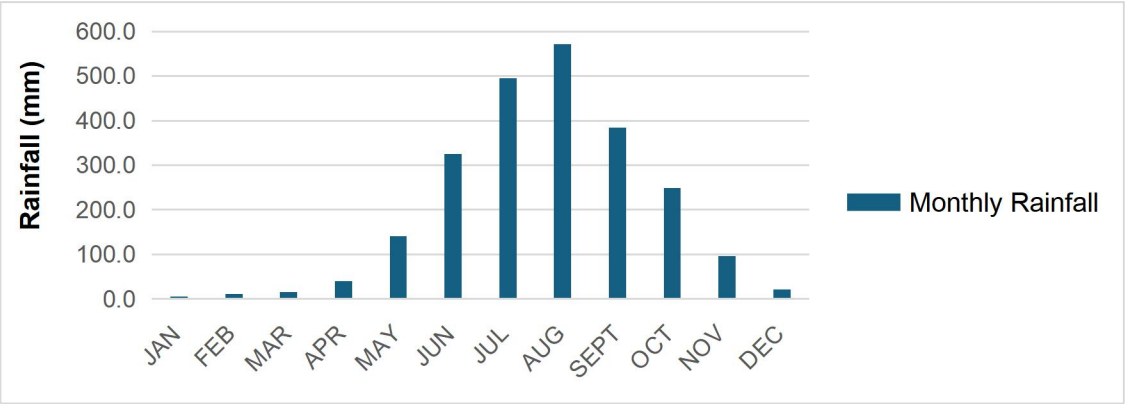


Figure 4.4: Average Monthly Rainfall of Freetown for 2001-2023

Temperature

As presented on Figure 4.5, the seasonal temperature and precipitation cycle for each season are similar across the regions in Sierra Leone with noticeable variations in the distribution of monthly precipitation. The temperatures are consistently high throughout the country, roughly averaging from 24.9–28.7 °C (McSweeney, et al., 2008; World Bank, 2020). Diurnal temperatures vary from 25°C to 34oC and could be as low as 16°C at night during the Harmattan. While the coldest month peaks in August, hottest months peaks in December.

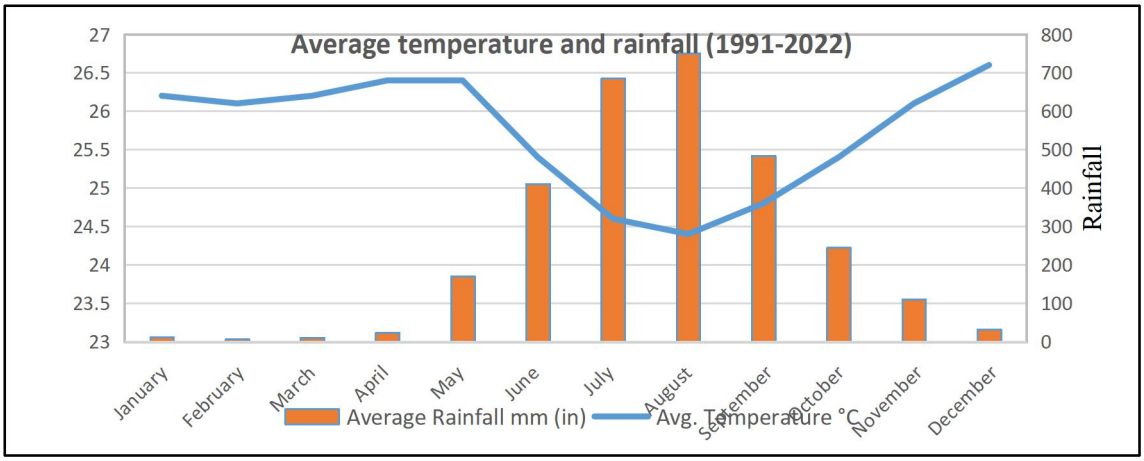


Figure 4.5: Average Temperature and Rainfall (1991-2022). Source, SLMet

Wind Speed and Relative Humidity

The dominant wind direction is reversed with the dry and dusty 'Harmattan' winds which blow from the Sahara Desert. Thunderstorms occur in the transition periods between the two seasons, accompanied by short periods of strong winds and heavy rain (SLMet, 2022). Humidity and wind speed are highly related. The high speed of wind decreases the level of humidity, and the low speed of the wind increases the level of humidity (https://sciencebriefss.com/chemistry/). From Table 4.1 and Figure 4.6, it is observed that the month of July recorded the highest relative humidity (86.8%) and lowest wind speed (2.14 m/s) while the month of January has the lowest relative humidity (76.1%) and the highest wind speed (3.51 m/s).

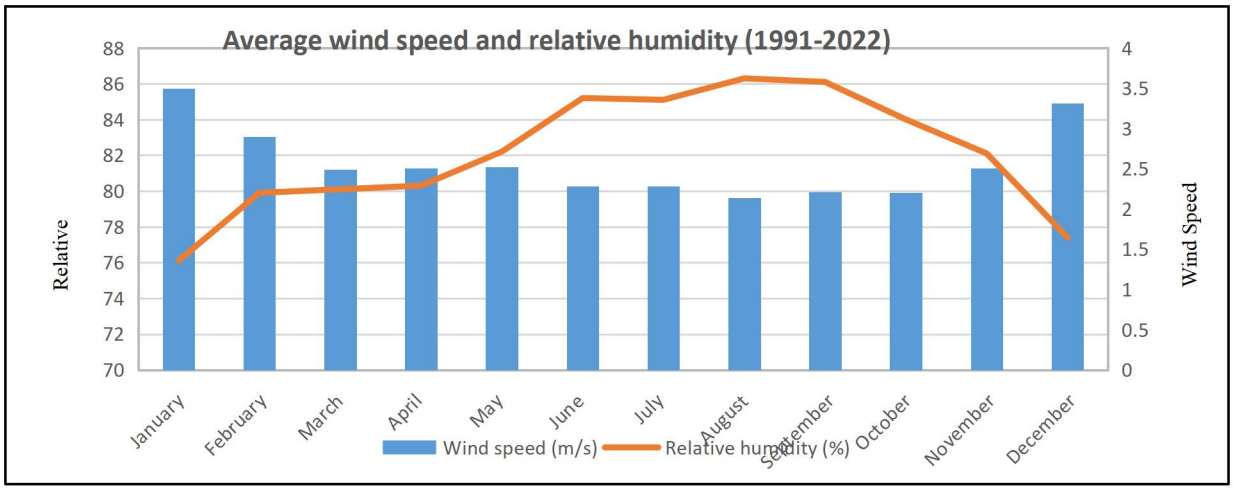


Figure 4.6: Average Wind Speed and Relative Humidity (1991-2022). Source, SLMet

Bioclimatic Characteristics

The vegetation within the Project communities consists of fragmented tropical rainforest species, including palms, hardwood trees, and various shrubs and grasses. While the broader Freetown coastal region is known for dense mangrove "gallery forests" and vital wetland ecosystems that support significant aquatic and bird life, these sensitive habitats are notably absent within the immediate Project boundaries.

The communities are primarily urban, characterized by dense settlements and infrastructure that have already significantly limited local biodiversity. Current ecological pressures stem from land clearance for roads and housing, which has led to habitat fragmentation. Looking forward, the introduction of non-native species and potential air and water pollution from development activities pose additional risks to the remaining native flora and fauna. Consequently, while the surrounding Atlantic coastal ecosystems are ecologically rich, the Project communities themselves represent a highly modified urban environment with restricted natural diversity.

4.3.2 Vulnerability to Climate Change

Freetown's unique geography—characterized by mountainous terrain, coastal exposure, and heavy monsoonal rains—creates a high-risk environment for natural disasters. The city's infrastructure is particularly vulnerable due to a combination of deferred maintenance and a lack of resilient design. Water and sanitation facilities, which often rely on gravity-fed systems at low elevations, are frequently inundated by flooding, sea-level rise, and storm surges, exacerbating the already limited access to clean water for a large portion of the population. Figure 4.7 the map of Freetown showing landslide susceptibility.

In communities like Moyiba and Portee Rokupa, these hazards are intensified by localized issues such as deforestation and blocked drainage, leading to chronic flooding and landslides. Figure 4.8 presents the map of Freetown showing quantitative flood hazard. Projections for 2050 under the

RCP 8.5 climate scenario indicate that increased rainfall and population growth will further heighten these risks.

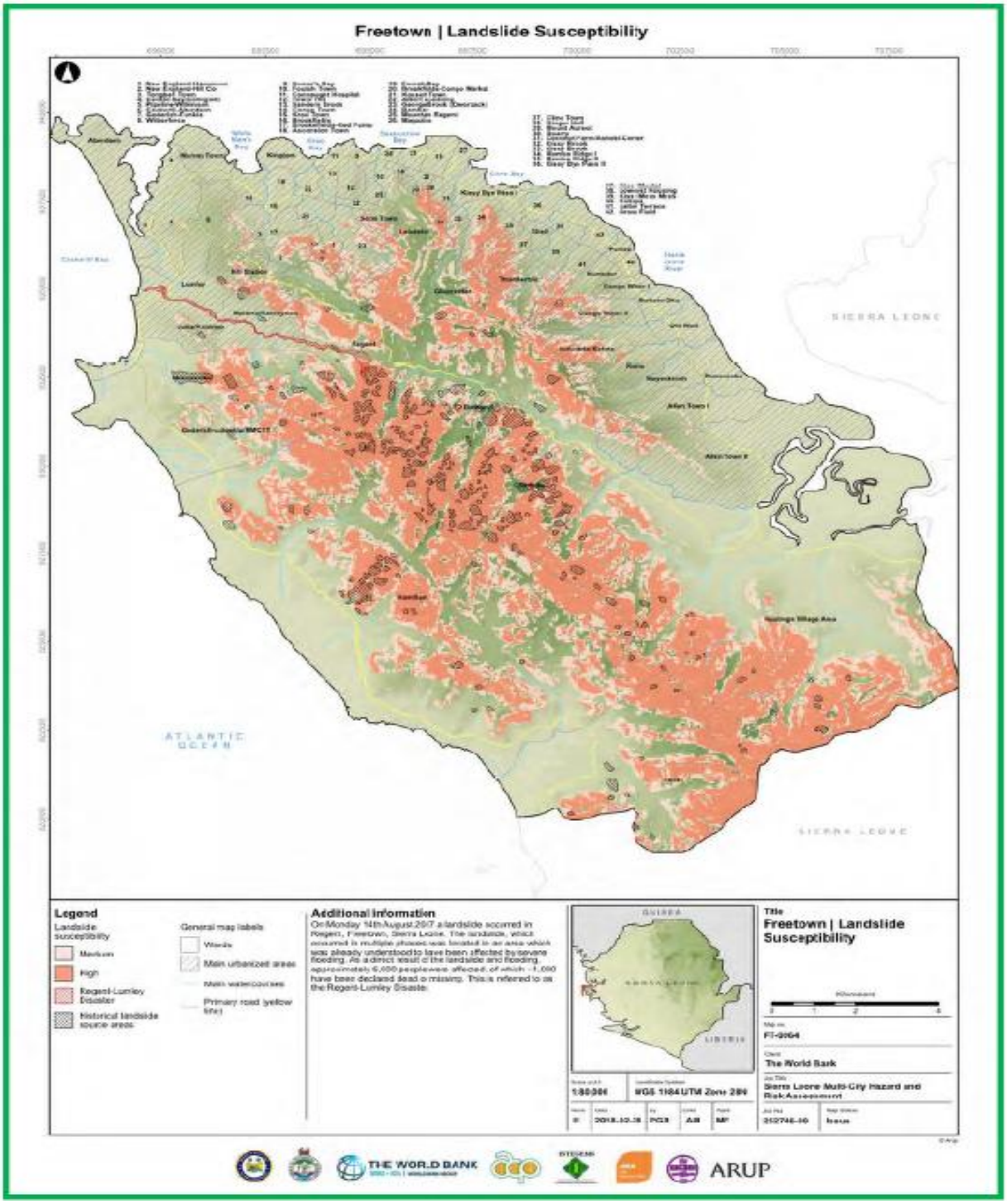


Figure 4.7: Map of Freetown Showing Landslide Susceptibility

Figure 4.9 presents the map of Freetown showing coastal erosion and sea level hazard. To mitigate these threats, the report emphasizes that only holistic, catchment-scale interventions and climate-sensitive infrastructure designs can provide long-term adaptation and protect residents from the increasing frequency of climate-driven disasters and disease vectors.

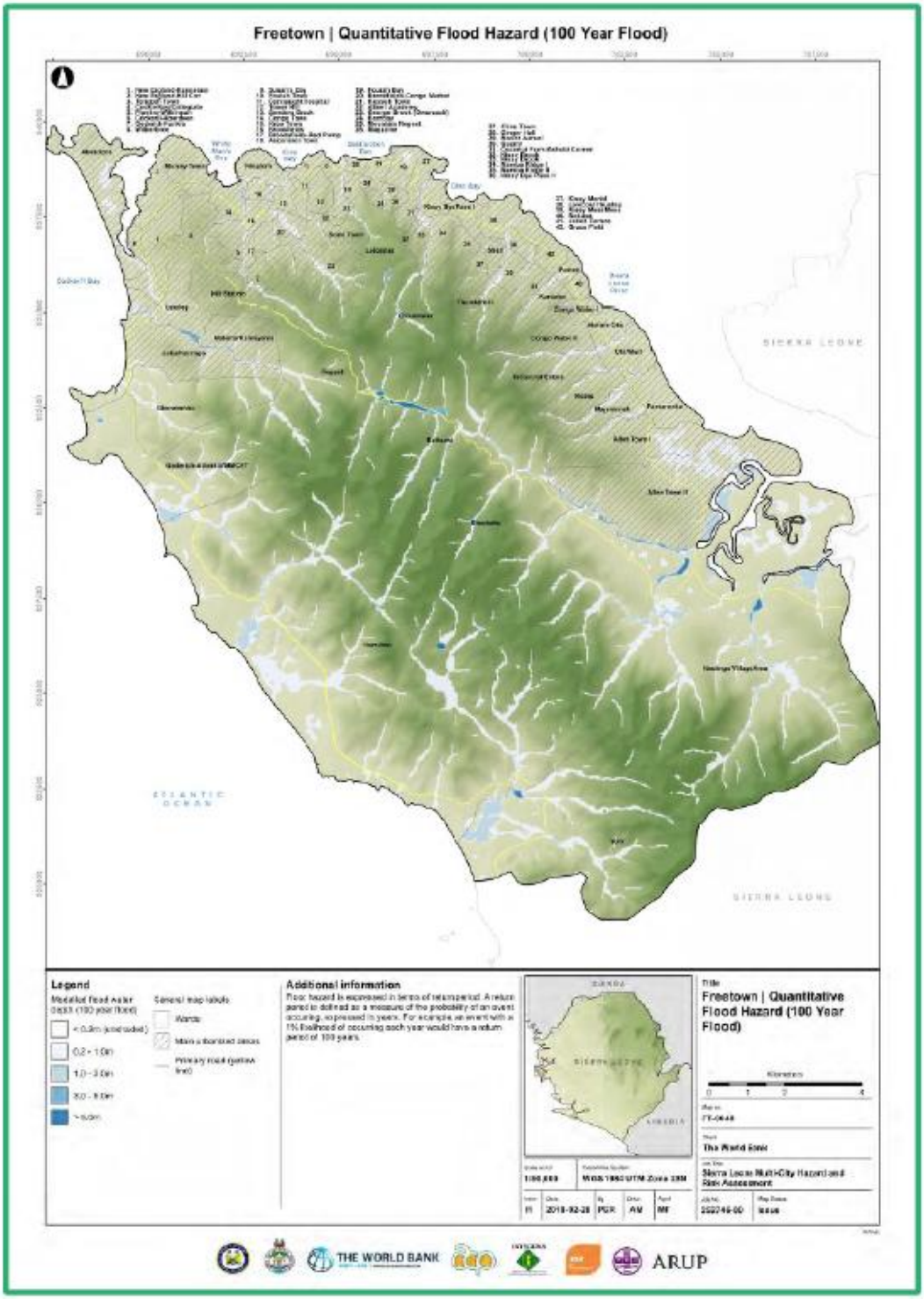


Figure 4.8: Map of Freetown Showing Quantitative Flood Hazard

Source: Sierra Leone Multi-City Hazard Review and Risk Assessment (Vol. 2 of 5) final report (World Bank, 2018).

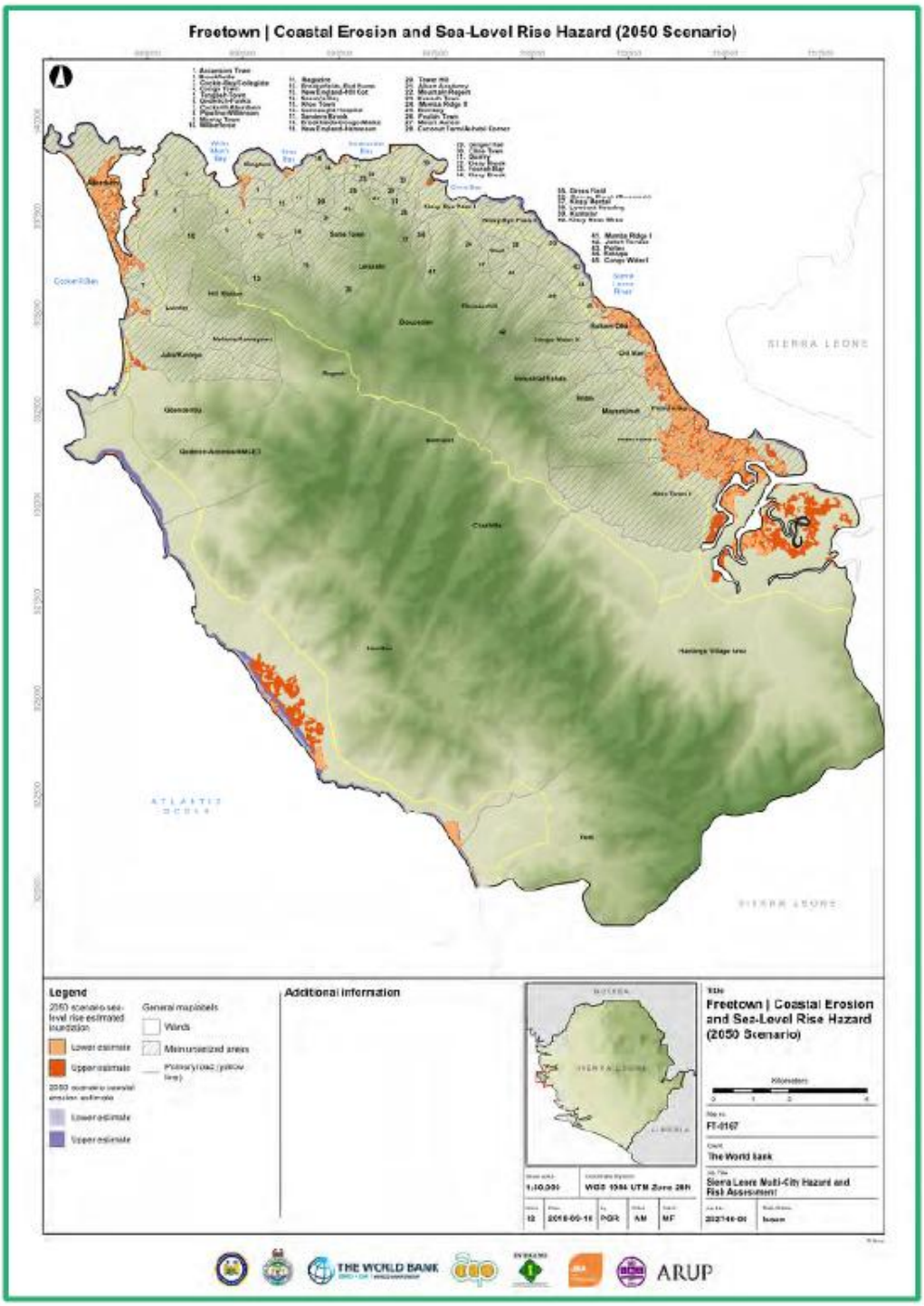


Figure 4.9: Map of Freetown Showing Coastal Erosion and Sea Level Hazard

Source: Sierra Leone Multi-City Hazard Review and Risk Assessment (Vol. 2 of 5) final report (World Bank, 2018),

4.3.4 Disaster Management

Sierra Leone is vulnerable to the increasing severity of droughts, floods and severe storms and their impacts on infrastructure. Urban and rural seasonal flooding, recurrent flash flooding, and coastal flooding are the most observed, leading to seasonal flooding of agricultural fields and low-lying areas, flooding along the coastal areas and flood waters overflowing into roads and into residents' homes. Vulnerable areas include Western Area, Eastern, Southern and Northern regions. More specifically, the most affected areas in the recent past include: Kroo Bay, Susan's Bay, Granville Brooke, Lumley area in Western Area, Port Loko and Kambia Districts, the Newton catchment area, Pujehun and Bo

areas, Kenema and Moyamba Districts, and coastal beaches of the Western Area Peninsula (Government of Sierra Leone 2018).

4.3.5 Geology

Sierra Leone is underlain by rocks of Precambrian age (Archaean and Proterozoic) complex (Lapworth, et al., 2015). A major belt of late Precambrian (Upper Proterozoic) to Lower Palaeozoic age metasedimentary rocks, with some (meta) volcanic rocks, occurs in the western part of the country (Camus & Cukor, 2012; Lapworth, et al., 2015). These are often capped by a weathered zone of unconsolidated material, where the Precambrian basement rocks have been weathered in-situ to sand, gravel and clay.

The Project communities are in the Freetown Complex geology of Sierra Leone. The Freetown Complex is a major intrusion characterized by a prominent layering of repeated sequence of troctolitic, gabbroic and anorthostic rocks. The differential resistance of these rocks to weathering and erosion has given rise to parallel ranges of mountains from which the country of Sierra Leone derived its name. The intrusion is part of a funnel-shaped body in which the 'funnel's' centre lies in the Atlantic westward of the peninsula (Briden, Henthorn, & Rex, 1977).

The Freetown Complex has layered structures that align with the floor of the intrusion. These layers can be divided into four main zones each showing a consistent progression from olivine-rich to plagioclase-rich rocks. These zones also exhibit distinct rhythmic layering, with layers spanning several hundred feet in thickness. Despite the complex's substantial thickness, and variations in mineral proportions, there is no progressive change in mineral composition. This unique feature sets the Freetown Complex apart from other large, closely studies layered intrusions (Kudo & Well, 1970). The transition from olivine-rich to plagioclase-rich rocks occurs in repetitive manner within the Complex, and it does show a progressive change in mineral composition, which is unusual compared to other similar intrusions.

4.3.6 Acoustic Environment

The acoustic environment of the Project Communities is a lively and diverse mix of sounds that reflects Freetown's culture, history and urban development. It is a dynamic soundscape that combines traditional elements with modern urban life. Much of the communities are residential where the acoustic environment is influenced by neighbourhood activities, household sounds, and community gatherings, cinemas and entertainment centres. The Blackhall Road, Bypass Road and Bai Bureh, all in the project area are bustling roads often filled with vehicular movements, vehicle horns, motorbike engine sounds and the chatter of pedestrians. The traffic noise could be prominent particularly during the rush hour. The roads into the communities and within the communities are not as busy as the major roads, so the noise is reduced.

The Project communities are home to people of different religious backgrounds. The calls to prayer from the mosque and church bell ringing are observed sounds within the Project communities. Nightlife scenes with bars and restaurants playing music and people socializing and dancing are evident along the main roads. The surrounding natural landscape of the Moyiba and Coconut Farm could influence the aquatic environment, while the proximity of the Rokupa/Portee community to the coast may also contribute to unique soundscape. The noise would vary based on the daytime and night-time regime.

4.3.7 Biodiversity (Flora and Fauna)

The rapid and uncontrolled expansion of the communities led to the loss of vegetation and wildlife habitat for houses, buildings and road access (Moyiba Area Action Plan 2023). At the forested area towards the Fourah Bay College land, adjacent the communities of Moyiba and Coconut Farm, the trees and vegetation encountered are documented in the Table 4.1. As presented Table 4.2, some of the economic tree observed in the area include mango (*Mangifera indica*); pawpaw (*Carica papaya*), and guava (*Psidium guajava*).

Table 4.1: Tree Species in the Communities (Moyiba, Coconut Farm, Rokupa)

Scientific name	Family	Local name (Krio)	Local name (mende)
Cocus nucifeira	Areaceae	coconut	Coconut
Elaeis guinensis	Palmae	palm teek	Tokpoi
Mangifera indica	Anacardiaceae	mango	Magoi
Carica papaya	Caricaceae	pawpaw	Fakai
Ficus sur	Moraceae		Ndahin
Azadirachta indica	Meliaceae	Neemtree	Neemtree
Artocarpus communis	Moraceae	Bread fruit	Bread fruit
Vernonia amygdalina	Asteraceae	Better leaf	Better leaf
Termaridus indica	Fabaceae	Tombi	Tombi
Moringa oleifera	Mringaceae	Drumstick tree	Drumstick tree
Ficus exasperata	Moraceae	Kamamei	Kamamei
Persia americana	Lauraceae		Peyei
Spondias mombin	Anacardiaceae	Gboni	Gboji
Terminalia catapa	Combretaceae	Puu nikie	Puu nikie
Peslobia tree	Paulowniceae	Chukchuk teek	Galiwuli
Gmelina arborea	Lamiaceae	Yemani	Yemani
Anisophyllea laurina	Anisophylleaceae	Kandi	Kaadi
Musa sapientum	Musaceae	Banana	sei
Lannea nigritana	Anacardiaceae		Gboji hinei
Ficus umbellata	Moraceae		Ngorhui

Figure 4.10: Biodiversity Field Assessment

Table 4.2: Tree Species in the Communities (Moyiba, Coconut Farm, Rokupa)

Scientific name	Family	Local name (Krio)	Local name (mende)
Cocus nucifeira	Areaceae	coconut	Coconut
Elaeis guinensis	Palmae	palm teek	Tokpoi
Mangifera indica	Anacardiaceae	mango	Magoi
Carica papaya	Caricaceae	pawpaw	Fakai
Ficus sur	Moraceae		Ndahin
Azadirachta indica	Meliaceae	Neemtree	Neemtree
Artocarpus communis	Moraceae	Bread fruit	Bread fruit
Vernonia amygdalina	Asteraceae	Better leaf	Better leaf
Termaridus indica	Fabaceae	Tombi	Tombi
Moringa oleifera	Mringaceae	Drumstick tree	Drumstick tree
Ficus exasperata	Moraceae	Kamamei	Kamamei
Persia americana	Lauraceae		Peyei
Spondias mombin	Anacardiaceae	Gboni	Gboji
Terminalia catapa	Combretaceae	Puu nikie	Puu nikie
Peslobia tree	Paulowniceae	Chukchuk teek	Galiwuli
Gmelina arborea	Lamiaceae	Yemani	Yemani
Anisophyllea laurina	Anisophylleaceae	Kandi	Kaadi
Musa sapientum	Musaceae	Banana	sei
Lannea nigritana	Anacardiaceae		Gboji hinei
Ficus umbellata	Moraceae		Ngorhui

Animals noticed with the proposed project footprint area are basically domestic animals as presented in Table 4.3.

Table 4.3: Animal Species Found in the Three Communities

Scientific Name	Family	Local Name (Krio)	Local Name (mende)	IUCN Threatened
Gallus gallus domesticus	Phasianidae	Chicken	Tei	No
Anis lupus familiaris	Canidae	Dogs	Glae	No
Felis catus	Felidae	Cat	Pussy	No
Anas sp.	Anatidae	Duck	Dorwue	No
Capra sp.	Bovidae	Goat	Jii	No
Ovis sp.	Bovidae	Sheep	Mbalei	No
Rattus sp.	Muridae	Rat		No
Lacertilia	Tropiduridae	Lizard		No
Sciuridae sp.	Sciuridae	Ground squirrel		No
Chiroptera	Order Chiroptera	Bat		No

While there are no records of IUCN/Red Book threatened mammal observed at the communities during the site survey and interviews with local residents. Table 4.4 present the Amphibians assessed.

Table 4.4: Fish Species

Scientific name	Family	Local name
Clarias gariepinus	Claridae	Catfish
Chrysophrys auratus	Sparidae	Snapper
Oreochromis niloticus	Cichlidae	Tilapia
Amphilius atesuensis	Amphiliidae	
Sierrathrissa leonensis	Clupeidae	
Tilapia guineensis	Cichlidae	
Tylochromis leonensis	Cichlidae	
Ocypode africana	Ocypodidae	crab

4.3.8 Protected Areas

During the site visit, the environmental team engaged the stakeholders to confirm the availability of protected areas and endangered species. Additionally, ground truthing and interview sessions were conducted during the fieldwork. The outcome of these activities informed the team that there are no endangered species or protected areas within the Project communities.

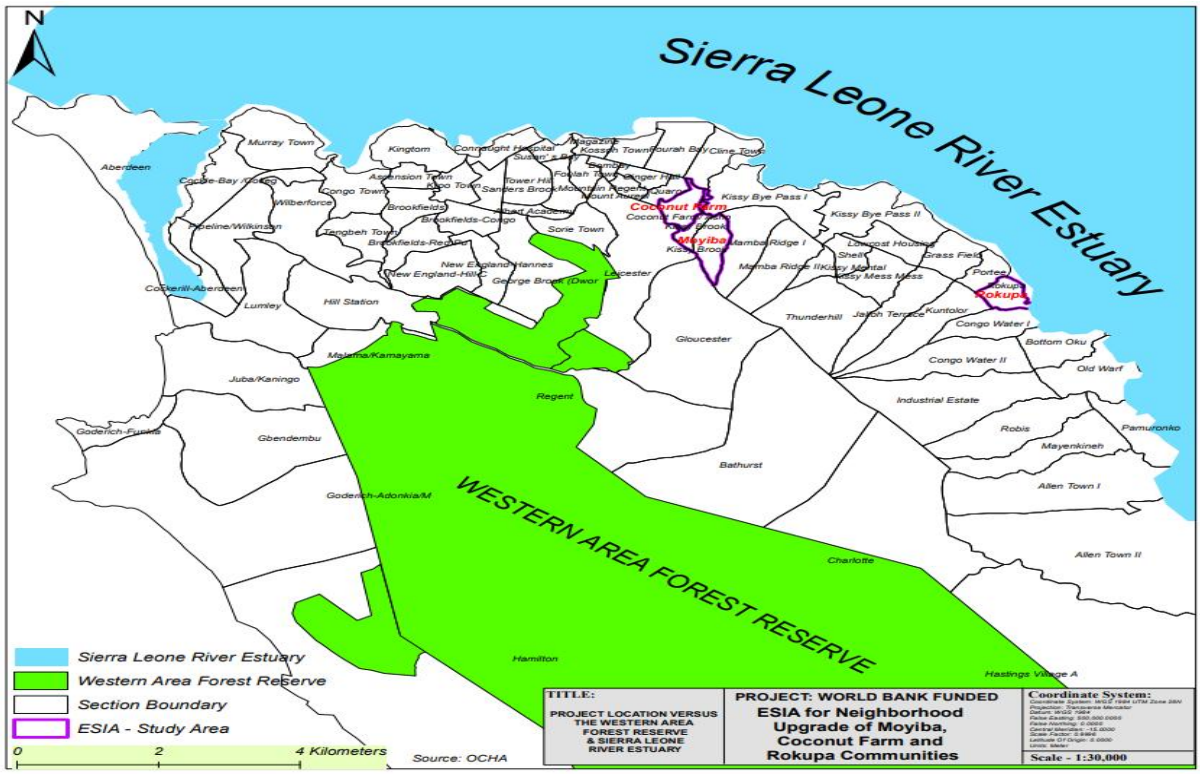


Figure 4.11: Proximity of Project Area to the Western Area Forest Reserve

4.4 Moyiba Environmental Baseline Condition

4.4.1 Topography

Moyiba's landscape is characterized by steep, mountainous terrain on the eastern edge of Freetown, with elevations rising sharply from 20 meters to approximately 550 meters above sea level at Mamba Ridge and Mount Aureole. The community is situated within a natural river catchment (Catchment C4), bisected by the Granville Brooke, and is highly susceptible to natural disasters. During the annual monsoonal rains, which peak in August, the combination of extreme precipitation and rugged topography frequently triggers flooding and landslides across the community's steep inclines.

The physical vulnerability of the area is exacerbated by high-risk residential development within landslide and flood hazard zones. Significant landslide susceptibility exists where gullies and channels form, evidenced by localized events featuring shear faces up to 20 meters in height. Furthermore, the on-site team identified that substandard construction practices have created dangerously steep hillsides adjacent to residential structures, further compromising the stability of a landscape already prone to geological and hydro-meteorological risks. Figure 4.12 presents the Moyiba Landslide Hazard and Susceptibility Terrain (Source Arup, 2023).

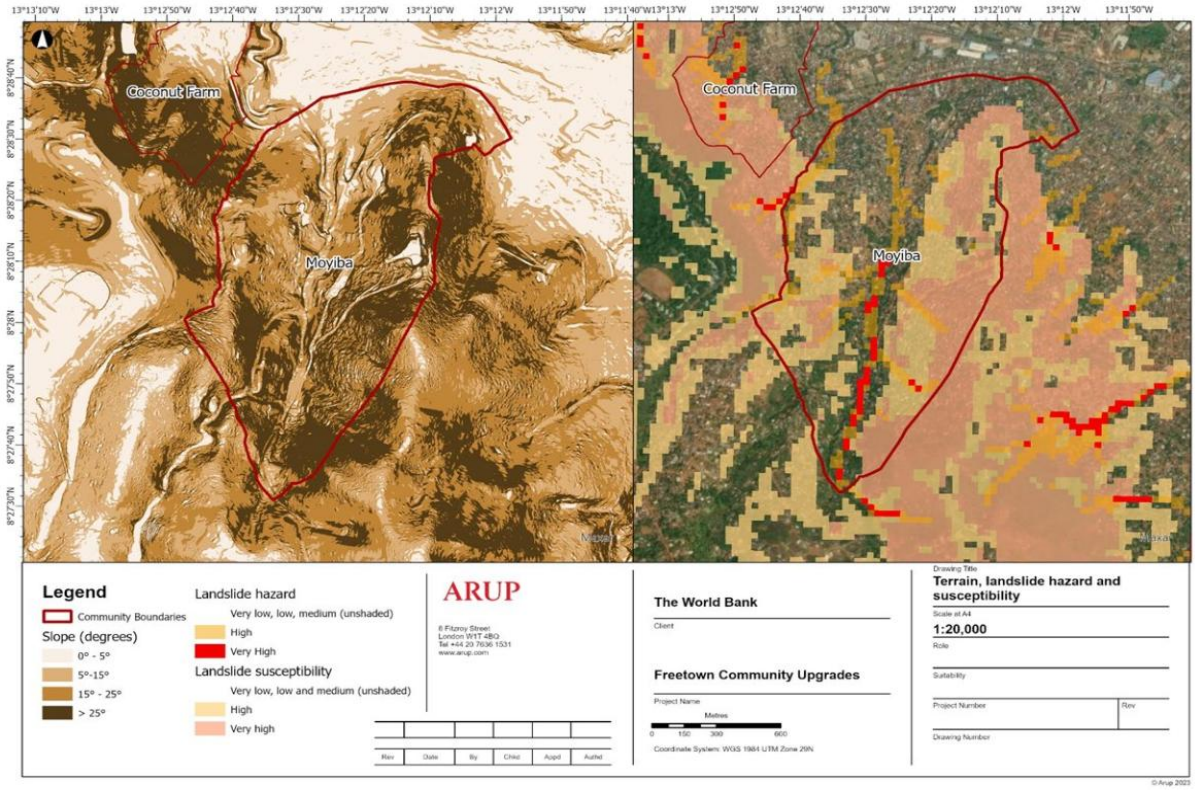


Figure 4.12: Moyiba Landslide Hazard and Susceptibility Terrain (Source Arup, 2023)

4.4.2 Hydrology and Flood Hazard

Moyiba lies within a natural river catchment denoted 'C4' (Sierra Leone Multi-City Hazard Review and Risk Assessment)[4] as presented in Figure 4.12 and 4.13. Two lesser north-south ridgelines cradle the community, where the Granville Brooke flows downhill from near Gloucester, through the community and out to Cline Bay and Sierra Leone River Estuary beyond. Due to the steep nature of the landscape, massive flooding is widespread in these areas, often resulting in environmental catastrophe. Also, Figure 4.9 presents the flood hazard for 1 in 100-year return period which follows the path of Granville Brooke. The flood return period represents a storm flood event.

Flooding is exacerbated in the community by inadequate and blocked drainage as well as deforestation which is also the most frequently occurring natural hazard in Moyiba. Due to the steep nature of the landscape, massive flooding is widespread in these areas, often resulting in environmental catastrophes. Only holistic, catchment-scale flooding and drainage interventions together with effective management of solid waste will ameliorate the flooding problems experienced annually by the community in Moyiba.

[4] World Bank, 2018. Sierra Leone Multi-City Hazard Review and Risk Assessment: Final Report (Volume 2 or 5) Freetown City Hazard and Risk Assessment

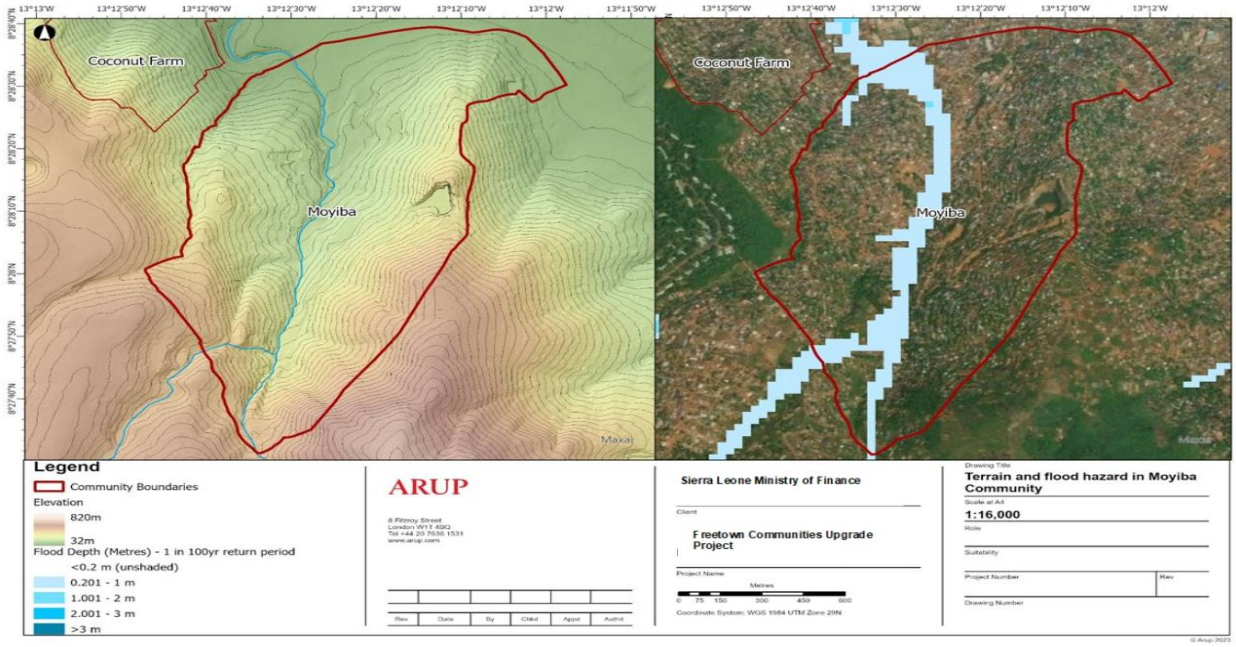


Figure 4.13: Moyiba Community Terrain and Flood Hazard (Source Arup, 2023)

4.4.3 Air Quality

Real-time air quality baseline study was carried out every 1-15 minutes over a 1 hour averaging time to describe the existing air quality condition of Moyiba. The parameters monitored during the study include Nitrogen dioxide (NO_2), Sulphur dioxide (SO_2), Carbon Monoxide (CO), Particulate Matter with an aerodynamic diameter of less than 10 micrometres (PM10), and Particulate Matter with an aerodynamic diameter of less than 2.5 micrometres (PM2.5). Figure 4.13 presents the air quality sampling location map across the three neighborhoods.

The existing sources of air pollutants in the community include:

- Movement of vehicles on unpaved road
- Household fuel combustion (charcoal and wood).
- Fugitive dust sources (windblown dust from bare ground as well as dust being transported by winds).
- Stone crushing

Table 4.5 presents the daily average ambient air quality concentrations monitored within the community in comparison to the World Health Organization (WHO) and the World Bank Group (WBG) EHS Guidelines.

Table 4.5: Moyiba Daily Average Ambient Air Quality Concentrations

			Air Quality parameters						
			PM_{10} (µg/m^3)	$PM_{2.5}$ (µg/m^3)	NO_2 (µ/g^3)	SO_2 (µ/g^3)	CO (µ/g^3)	Temp (o^C)	Relative Humidity
		WHO (µ/g^3)	50	15	25	40	4	NA	NA
Code	Easting	Northing	Moyiba						
MNM1	696777	936753	26.30	10.80	BDL	BDL	BDL	31.20	51.2
MNM2	697378	936166	12.0	10.3	BDL	BDL	BDL	32.10	54.1
MNM3	697527	936881	15.3	13.3	BDL	BDL	BDL	33.1	54.34
MNM4	698144	937341	21.6	20.0	BDL	BDL	BDL	34.1	54.34
MNM5	697296	937420	BDL	BDL	BDL	BDL	BDL	33.2	54.1

Source: Detailed Field Survey, July 2024

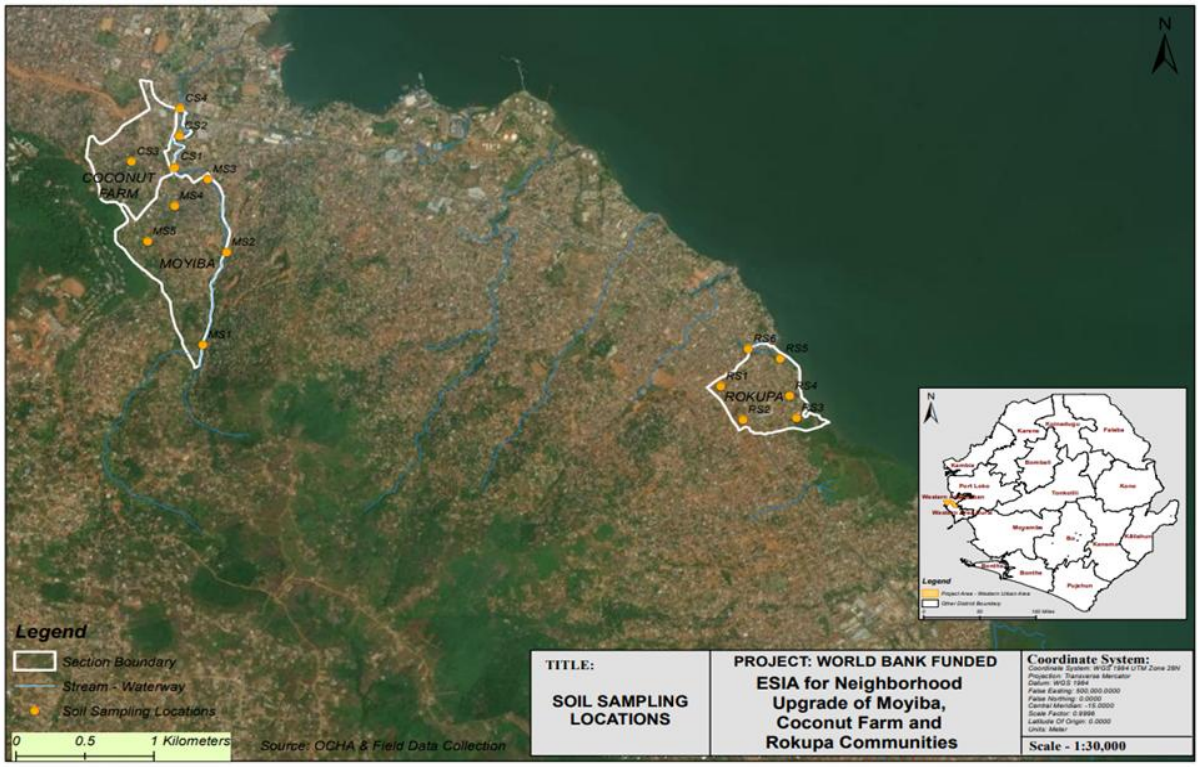


Figure 4.14: Air Quality Sampling Location Map across the three neighborhoods

Particulate Matter

Particulate matter has adverse effects on humans, such as respiratory illnesses (asthma, bronchitis) or cardiovascular diseases and is also considered to be carcinogenic. It can also affect vegetation by inhibiting the plant's photosynthetic properties and by coating the leaves thereby blocking the penetration of natural light and hindering plant growth.

The average PM10 at the five established sampling locations ranging between 12.0 µg/m^3 – 26.30 µg/m^3 were found to be within the WHO guidelines of 50 µg/m^3 as presented in Table 4. 5. This is probably due to the windblown dust from unpaved roads and other human activities (outdoor cooking during the periods of sampling.

Sulphur Dioxide

Sulphur dioxide (SO_2) is a colourless gas and is characterised as having a sharp, irritant odour. If inhaled, SO_2 has a damaging effect on the human respiratory system causing coughing and shortness of breath. Long term exposure to a large dose of SO_2 can result in chronic respiratory disease. The effect of SO_2 on vegetation includes the inhibition of photosynthetic properties and long-term exposure could result in death of some sensitive species. The values of SO_2 were below detection limit (BDL) throughout the duration of monitoring. The non-detection could be attributed to the absence of non-sulphur combustion engines or industrial facilities within the community.

Nitrogen Dioxide

Nitrogen dioxide belongs to the group of gases called nitrogen oxides (NOx). NO_2 is a naturally forming gas, characterised as having an irritating odour that primarily gets in the air from burning of fuel in vehicles, power plant and off-road equipment. Human health effect of exposure to nitrogen dioxide includes respiratory tract infection such as bronchioles, lung infections and tissue damages. The levels of NO_2 were below detection limit at all the sampling locations. This suggests that there were no vehicular or industrial activities that is generating NO_2.

Carbon Monoxide

The CO values were below detection limit throughout the duration of the monitoring.

4.4.4 Noise Level

Noise assessment was carried out at the communities of Moyiba, Coconut Farm and Rokupa using a TekcoPlus Datalogging Sound Pressure Level Meter from May 28 – June 4, 2023. The daytime (at least 8 hours) period sound level was carried continuously over the monitoring period at different locations. The coordinates of all noise sampling points were the same with the air quality sampling points. The values obtained were compared with the WBG EHSG and SLSB standards for daytime noise levels in residential areas. Table 4.6 present the Noise Level monitored in Moyiba in comparison the World Bank Group (WBG) EHS Guidelines. Noise source was mainly from vehicles, thunderstorm during rain and the breaking of stones with hammers during quarrying. The values which range from 52.5 – 98.2 dB (A) could be attributed to market activities, vehicular movements and the ongoing quarrying activities (breaking of granite for building) and use of generator at the time of monitoring. Figure 4.14 shows the Noise monitoring locations across the three neighborhoods.

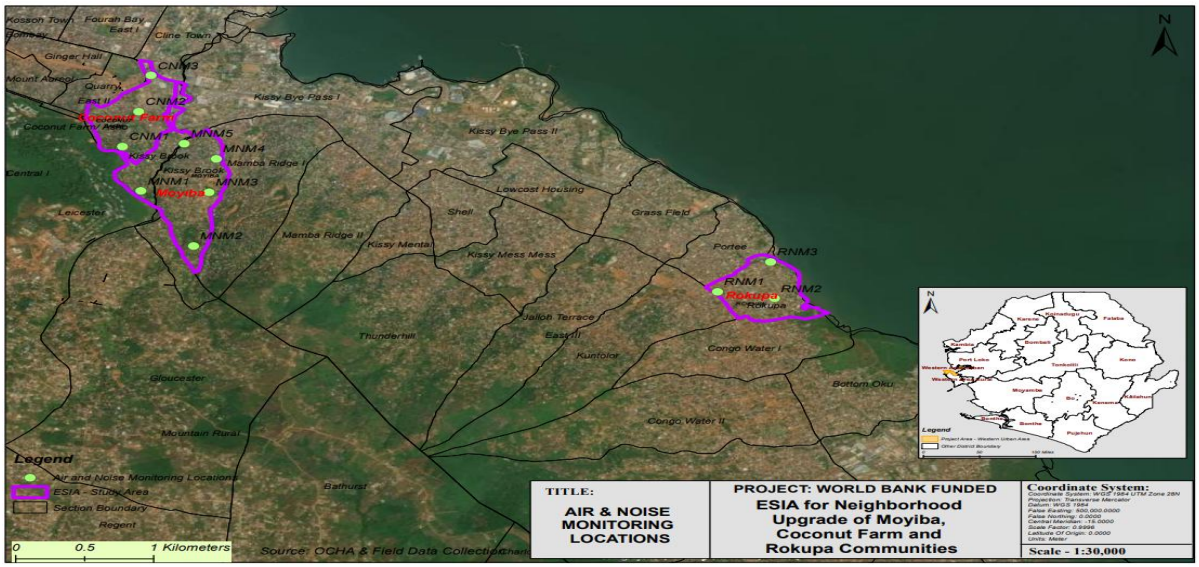


Figure 4.15: Noise Monitoring Locations Across the Three Neighborhoods

Table 4.6: Noise Level in Moyiba Community

WBG EHSG Guideline			
Noise Level – one Hour Leq, dB (A)			
Day (7:00 – 10:00 pm)			55
Night (10:00-7:00 pm)			45
Code	**Easting**	**Northing**	**Continuous Sound Level Leq, dB (A)**
MNM1	696777	936753	98.2
MNM2	697378	936166	53.5
MNM3	697527	936881	52.5
MNM4	698144	937341	73.3
MNM5	697296	937420	65.5

Source: Detailed Field Survey, July 2024

4.4.5 Soil Quality

Soil sampling was carried out within different soil habitats encountered at each of the three communities from May 24 – June 5, 2023. In-situ observations of changes in natural vegetation were made to determine the different soil forms. Composite soil samples were collected at soil depth from 0-20cm, 20-50 cm and thoroughly mixed to provide a laboratory test sample. The samples were packaged and sent to the Sierra Leone Agricultural Institute (SLARI) Laboratory for testing.

As presented in Table 4.7, the physio-chemical parameters of soil samples collected at Moyiba. Magnesium had the highest concentration with a mean of 8.5 mg/kg for the composite samples collected from each location. The values of heavy metals observed in the soil samples may be due to the nature of waste or washing away of the soil during erosion. The concentration level is negligible when compared to the Netherlands target level. Microorganisms isolated from the soil include *Streptococcus faecalis* which is an indicator of faecal pollution. Figure 4.15 presents the Soil Sample collection locations across the three neighbourhoods.

Table 4.7: Mean Chemical Properties (mg/l) of Soil Samples in the Communities

Location	pH	Na	Cu	Cr	Mg	Pb	Fe	Ca	Ph	Zn	P	As	F. Coli
		mg/kg											MPN/100m
Moyiba	7.54	0.56	1.02	0.15	8.5	BDL	0.13	4.94	0.5	BDL	1.17	0	101
Netherlands Standards	6.5 - 8.5		50.00	100.00		50.00				200.00			

Figure 4.16: Soil Sample Collection Locations Across the Three Neighbourhoods

4.4.6 Surface Water Quality

The water quality assessment was carried out at Moyiba, Coconut Farm and Rokupa from May 25 – June 4, 2023. Surface water samples were collected at different locations upstream and downstream of streams encountered and groundwater samples were collected from hand-dug wells within the communities. The coordinates of the sample collected are presented in Table 4.8. The monitoring locations were established based on their relative proximity to the households and their usage by residents of the communities. In-situ water quality monitoring was undertaken Hach portable field meters for Temperature, Dissolved Oxygen (DO), pH, Electrical Conductivity (EC), Total Dissolved Solids (TDS), Turbidity and Salinity. Visual observations of the water colour and activities within and around these water points were undertaken. Bacteriology samples collection kit was autoclaved at 121oC for 15 mins and then transported in sterile containers to the field. The Samples were collected ad transported to the laboratory for analysis.

The surface water body (Granville Brooke) that runs through the community is an all-season river flow. The water body varied in depths of 0.1m at the edge to 1.3m at the middle. The chemical properties of the surface water sample within the Moyiba community were assessed and compared with the WHO standard as presented in Table 4.9. The water body is slightly alkaline with pH concentration of 7.73 which could be attributed to decomposition of organic matters. Alkaline pH causes nutritional imbalance in the water. A mean conductivity concentration value of 112.00 μScm^{-1} was assessed in the water body which is normal for inland surface waters (Radojevic and Bashkin, 1999). The mean concentration of dissolved oxygen recorded in the water body (5.19 mg/l) is an

indication that the water body can support aquatic life. The metals (Ca and Mg) constitute the exchangeable cations. The values ranged from 4.5 – 6.4 mg/l for Ca and 0.01 0.02 mg/l for Mg. The presence of coliform bacteria in the water body indicated pollution by faeces. Figure 4.16 presents the Surface and Groundwater samples location across the three neighbourhoods.

Table 4.8: Surface and Groundwater Sample Collection Locations in Moyiba

Location	Easting	Northing
Surface Water		
MSW1	697223	936046
MSW2	697394	936789
MSW3	697259	937367
Groundwater		
MGW1	697116	936756
MGW2	697890	937399

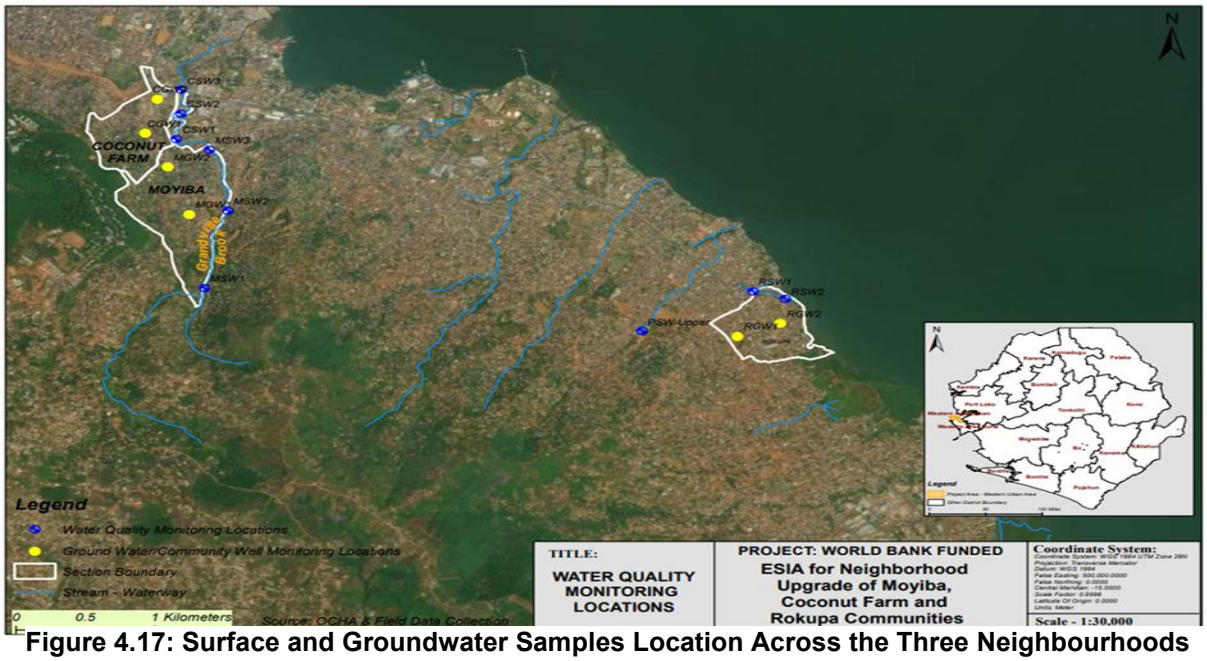


Figure 4.17: Surface and Groundwater Samples Location Across the Three Neighbourhoods

Table 4.9: Physio-chemical Properties of Surface Water in Moyiba

Parameters	Cond	T D S	pH	DO	Turb	Temp	Ch	Al	NH3	Ca
WHO Standard	<420mg/l	<248ppm	6.5-85	NA	<5.0NTU	No. value	0.03-0.5	<0.2mg/l	0	<250mg/l
Mean Value	112.00	56.00	7.37	5.19	64.33	28.07	0.00	0.01	0.01	5.47
Parameters	**Cu**	**Fe**	**Mn**	**Mg**	**NO^-_2**	**NO^-_3**	**K**	**PO43-**	**Si**	**SO_4^2-**
WHO Standard	<1.0mg/l	<0.3mg/l	<0.4mg/l	<200	<3.0mg/l	<10mg/l	<6.0mg/l	<20mg/l	<15mg/l	<400Mg/l
Mean Value	0.48	0.07	0.38	0.02	0.05	6.67	0.67	0.97	0.01	8.17
Parameters	**SO^{2-}_3**	**Cl^-**	**As**	**Cr**	**HCO_3**	**Zn**	**e-coli**	**F. coliform**		
WHO Standard	0	<250mg/l	<0.01mg/l	<0.05mg/l	-	<5.0 mg/l	Zero	Zero		
Mean Value	0.40	4.67	0.00	0.12	0.00	0.28	#DIV/0!	100.00		

Source: Detailed Field Survey, June 2023

4.4.7 Groundwater Water Quality

The pH values (5.25) of the groundwater at the community is below the WHO limit which tends to be acidic. The groundwater table in the community is generally low, thus the variation in the pH of the groundwater may be attributed to seepage from the soil surface of acid iron containing materials into the groundwater during runoff. A possible health effect could be gastrointestinal infection. The mean

turbidity concentration (7 NTU) was marginally higher than the WHO limit (5 NTU). The mean conductivity value (75.00 mg/l) is below the WHO limit. The heavy metal values are generally below the detection limit as presented in Table 4.10

Table 4.10: Mean Physio-chemical Properties of Groundwater in Moyiba

Parameters	Cond	T D S	pH	DO	Turb	Temp	Ch	Al	NH3	Ca
WHO Standard	<420mg/l	<248ppm	6.5-85	NA	<5.0NTU	No. value	0.03-0.5	<0.2mg/l	0	<250mg/l
Mean Value	75.00	25.05	5.25	32.7	7.00	28.2	0	0	0.005	4.45
Parameters	**Cu**	**Fe**	**Mn**	**Mg**	**NO^-_2**	**NO^-_3**	**K**	**PO43-**	**Si**	**SO_4^{2}-**
WHO Standard	<1.0mg/l	<0.3mg/l	<0.4mg/l	<200	<3.0mg/l	<10mg/l	<6.0mg/l	<20mg/l	<15mg/l	<400Mg/l
Mean Value	0.25	0.05	0.20	0.01	0.04	0.20	0.55	0.45	0.07	3.57
Parameters	**SO^{2-}_3**	**Cl^-**	**As**	**Cr**	**HCO_3**	**Zn**	**e-coli**	**F. coliform**		
WHO Standard	0	<250mg/l	<0.01mg/l	<0.05mg/l	-	<5.0 mg/l	Zero	Zero		
Mean Value	0.015	3.5	0	0.01	0	0	#DIV/0!	#DIV/0!		

Source: Detailed Field Survey, June 2023

4.5 Moyiba Socio-economic Baseline

Moyiba experienced rapid population growth driven by incoming migration seeking for livelihood opportunities and better living conditions around Freetown. Moyiba is located across the Granville Brooke (east and west) and Mamba Ridge 1 administrative areas. Politically it is located within Ward 419. For this study, the population of the community is estimated from an area of interest (AoI) delineated at approximately 1.67 km^2 and includes 2.911 buildings (Open Street Map Data Image, 2022).

4.5.1 Demographic Profile of Respondents

The socio-economic baseline for households within the statutory road setback in Moyiba, is further detailed in the Resettlement Plan report that is developed in addition to this ESIA. This includes a census of affected households and an analysis of tenure for those residing in informal or high-risk areas

Sample Population

The estimated population of the community confirmed with records from Statistics Sierra Leone is presented in Table 4.11. Also, the total sampled population and households in Moyiba are presented in the table. A sample size of 509 households was randomly surveyed from a population of 3,182 (Data provided by Statistics Sierra Leone) in Moyiba. According to the 2021 Population and Housing Census, the population per house is 8.8 persons and ranges from a low of 7.9 persons in the Southern region to a high of 9.4 persons in the Eastern region. On average, Sierra Leone has 1.6 households per house and ranges from a low of 1.4 in the Southern region to a high of 1.9 in the Western Area. The Population of Freetown is 609,174 and the national population is 7,548,702. Freetown accounts for 8.1 of the national population (2021 Mid-term Population and Housing Census).

Table 4.11: Moyiba Sampled Household and Population

Community	Pop.(A)	No Of Houses (B)=A/8.8	Ave No of Households C=B*1.6	Min. Sample Size 15% D=(15% *C)	Actual Sample Size
Moyiba	3182	362	579	87	509

Source: Socio Economic Household Survey, June 2023

Gender Distribution

Table 4.12 presents the gender distribution of respondents consulted during the survey. Males (305) constituted the bulk (59.9%) of the respondents, while females (204) constituted 40.1%. At the national level the gender distribution is 49.4 males and 59.9 females with a sex ratio of 96.8 males per 100 females. Table 4.28 presents the gender of household head in the project area.

Table 4.12: Gender of Respondents

Gender	Number	%
Male	305	59.9
Female	204	40.1
Total	**509**	**100**

Source: Socio Economic Household Survey, June 2023

Marital Status

From the project social survey of Moyiba area, majority (67%) of respondents were married, 15% were single, and 18% were either divorced or widowed. Figure 4.17 presents marital status of Moyiba respondents.

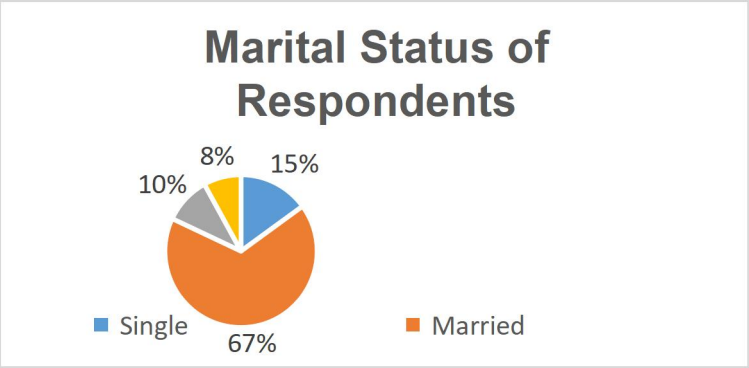


Figure 4.18: Marital Status of Moyiba Respondents

Status of Respondent

The questionnaires administered was targeted at household heads, where the household head was unavailable, the household was represented by the spouse or other representatives of the household including the son or daughter. Other representatives include the household head's mother or sibling. Over 47% of respondents were either household heads or their spouse, and 17.5% of respondents being sons or daughters of the household head. The remainder were brothers or sisters of the household head. The following table shows status of the respondent. Table 4.13 presents status of Moyiba respondents.

Table 4.13: Status of Moyiba Respondents

Respondents	Moyiba	%
Household Head	244	47.9
Spouse	78	15.3
Son/Daughter of HH	89	17.5
Brother/Sister	64	12.6
Mother/father of household head	22	4.3
Others	12	2.4
Total	**509**	**100**

Source: Socio Economic Household Survey, June 2023

Age Distribution

Respondents interviewed during the survey were within ages 19–75years. 15.5% were below 30 years, 21.2% were within 30–39 years, 26.1% were between 40 and 49 years, 24.8% were between 50 and 59 years, and 12.4% were above 60 years (Table 4.14).

Table 4.14: Age Distribution of Moyiba Respondents

Age	Number	%
19 - 29 years	79	15.5
30 - 39 years	108	21.2
40 - 49 years	133	26.1
50 - 59 years	126	24.8
60 - 69 years	52	10.2
70 and above	11	2.2
Total	**509**	**100**

Source: Socio Economic Household Survey, June 2023

Ethnicity of Respondents

A variety of ethnic groups were found resident in the community, the bulk are Temnes (103) at 48.7%. Other ethnic groups of significance are Limba, Mende and Madingo as presented in Table 4.16. Freetown is home to all the eighteen ethnic groups in Sierra Leone. The Temnes and Mendes form the largest in Freetown and Sierra Leone at large, each forming about one third of the country's population.

Table 4.15: Moyiba Respondents Ethnicity Distribution

Ethnicity	Number	%
Temne	248	48.7
Kono	6	1.2
Madingo	18	3.5
Limba	109	21.4
Fullah	21	4.1
Mende	71	13.9
Loko	25	4.9
Kissi	0	0
Creole	2	0.4
Sherbro	0	0
Others	7	1.4
Foreign	2	0.4
Total	**509**	**100**

Source: Socio Economic Household Survey, June 2023

Religious Background

As presented in Figure 4.18, although Sierra Leone is a secular state, the predominant religion affiliation in the community is Islam practiced by 74.7% (374) respondents in Moyiba. Christian account for 25.3% in the community practiced by 129 respondents. The relationships between the different religious groups have been peaceful. According to 2020 estimates by the Pew Research Center 78.5% of Sierra Leone's population are Muslims (mostly Sunni Muslims), 20.4% are Christians (mostly Protestants) and 1.1% belong to a traditional African religion or other beliefs. The Inter-Religious Council of Sierra Leone estimated that 77% of Sierra Leone's population are Muslims, 21% are Christians, and 2% are followers of traditional African religion.

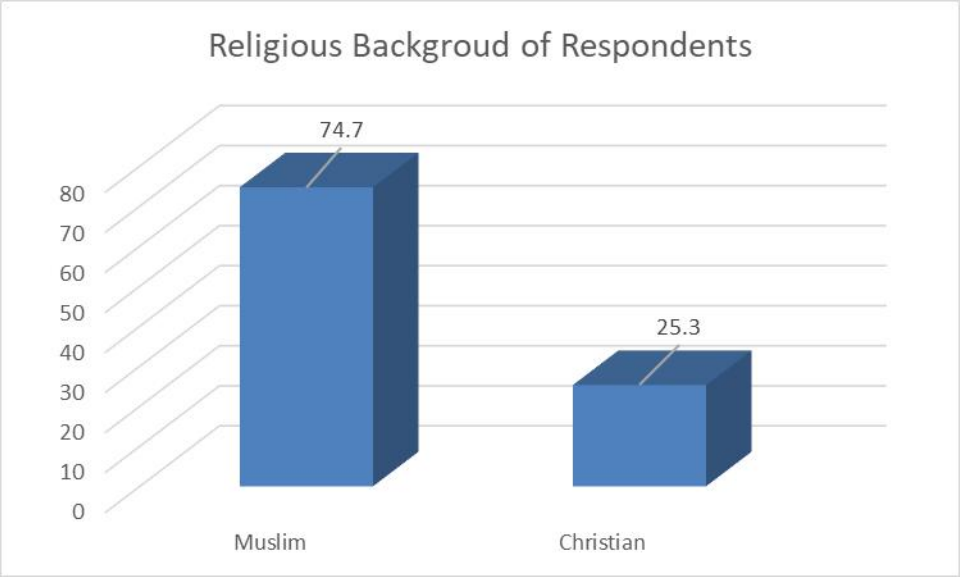


Figure 4.19: Religious Background of Moyiba Respondents

Residence Status of Respondents

Freetown experienced massive in-migration after the rebel war, most of the in-migrates created shelter in slums and hillsides. An overwhelming majority (365) of respondents described themselves as settlers, accounting for 71.8%, while 28.2% of the respondents (144) described themselves as indigene as presented in Figure 4.19.

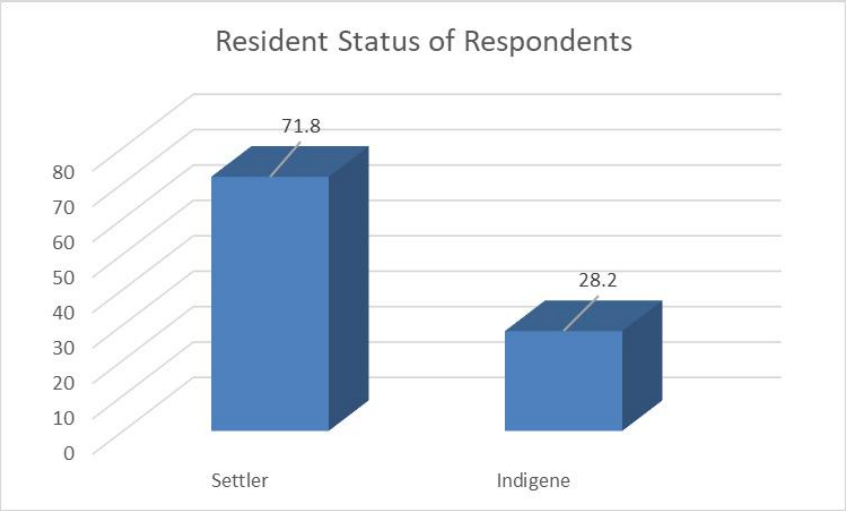


Figure 4.20: Residence Status of Moyiba Respondents

Building Stock and Tenure

Though laws exist to prevent illegal construction in high-risk areas, these are often ignored for these types of informal development and there's no enforcement from the mandated authorities to prevent/ correct these situations. Therefore, over the years, more and more households have settled in high-risk areas due to lack of urban planning, low housing supply and high prices of formal housing that make them unaffordable for most of the Freetown population.

Freetown experienced massive in-migration after the rebel war, most of the in-migrates created shelter in slums and hillsides. Due to poverty, high rental costs and a shortage of land for settlement expansion, the migrant population had no option but to reclaim the available land at the seafront or

hillsides to build their dwelling shacks. Some residents had refrain from gradually investing in their houses due to tenure insecurity. In some cases, there is a lack of formal land titles even among landlords in the community.

With regards to land tenure, much of the residential development in Moyiba is characterized as informal and unplanned, in many cases built on land claimed which was formally within the forest reserve and reclaimed land from water catchment and landslide areas. These areas, generally located on the slopes of the ridgeline, are often characterized as being high-risk and more susceptible to landslides or flooding. The rapid and unregulated residential expansion uphill has resulted in significant removal of vegetation resulting in frequent landslides and flooding. Though laws exist to prevent illegal construction in these high-risk areas, these are often ignored for these types of informal development. Therefore, over the years, more and more households have settled in high-risk areas due to lack of urban planning, low housing supply and high prices. This issue further exacerbates housing tenure instability.

Despite the informal status of much of the community, the housing stock is not entirely reflective of this, with many dwellings constructed of permanent materials. Much of the housing stock is concrete block construction with basic housing facilities. There are some more basic dwellings, constructed from sheet metal and other basic and temporary materials. Figure 4.20 presents the typical building types and unplanned residential development at Moyiba community.

Figure 4.21: Unplanned Residential Development at Moyiba

4.5.2 Education Profile

Moyiba is relatively well supplied with educational facilities, however, the service and building conditions are far from being ideal, and the community reports shortages of teaching staff, materials, and facilities within the buildings, like the lack of proper toilets.

A survey of education institutions was undertaken as part of this study, showing there are currently 24 schools in Moyiba, which include 16 primary, 4 secondary schools. Stakeholders noted that schools are generally understaffed and lack proper facilities, such as toilets.

Educational Attainment

Table 4.16 indicates that over one-fourth of respondents, which is 28.1% in Moyiba, indicated that they never had any form of formal education. However, 20.2% in Moyiba reported that they had attained tertiary level education as shown in the following graph. The data shows that there may be limited opportunities for employment on the project from the community, particularly for positions requiring technical qualifications.

Table 4.16: Educational Attainment of Respondents

Education Level	Number	%
No Education	143	28.1
SSS level	105	20.6
JSS Level	78	15.3
Primary Level	50	9.8
Tertiary Level	103	20.2
Arabic Education	14	2.8
Vocational Studies	16	3.1
Total	**509**	**100**

School Enrolment

As highlighted in Table 4.17, school enrolment assessment of households in Moyiba (72.9%) indicated that most of the school age children were enrolled in school (primary or secondary school). Respondents who reported that their children were not in school were 27.1%. Despite the Free Quality Education initiative introduced by the government, parents are still responsible for commitments such as uniforms, books and other related costs. According to the 2019 Annual School Census Report, Gross Enrolment Rate increased across all levels of education from Pre-primary, primary, junior secondary and senior secondary level.

Table 4.17: Moyiba School Enrolment Status

School Enrolment Response	Moyiba	
	Frequency	%
Yes	371	72.9
No	138	27.1
Total	509	100

Source: Socio-Economic Household Survey, June 2023

Educational Attainment by Gender

Educational level is one of the key determinants for measuring standard of living. As presented in Table 4.18, the assessed educational attainment by gender indicated that there is less educational attainment among women compared to men in the community.

Table 4.18: Education Attainment by Gender

Educational Attainment	Moyiba		
	Male (%)	Female (%)	Total (%)
No Education	13	15	28.1
SSS Level	13	7	20.6
JSS Level	8	7	15.3
Primary school level	5	5	9.8
Tertiary level	15	6	20.2
Arabic education	3	0	2.8
Vocational	2	1	3.1
Total	**60**	**40**	**100**

Socio Economic Household Survey, June 2023

4.5.3 Livelihood and Economic Profile

The main economic activity and source of income in Moyiba is trading followed by stone mining or the manual stone crushing (Figure 4.21). Other sources of income include the growing and selling of vegetables, selling wood, coal, providing transportation through motorbike and general petty trading. It was noted that there are carpentry workshops, motorcycle mechanic workshop, a pub and mixed goods shops along the roads within the community. In addition, open markets are located at the intersection with Blackhall Road. Petty traders were reported to have access to microcredit facilities and a women's group that secures credit from an organization called Mua Fasa.

The are no formal jobs in the community and its residents are vulnerable due to the financial pressures associated with the high cost of living. Remarks during stakeholder engagement indicated that bike riding and stone crushing contributed largely to youth employment opportunities, whilst others noted that many of the youth in the community prefer to stay unemployed.

Numerous socio-economic difficulties prevail in the neighborhood, which is reflective of the condition of other communities throughout Freetown. These challenges include joblessness, and limited access to vital public amenities like potable water, sanitation facilities, healthcare services, and education. The living standard is poor with many people living in the slum areas. Women and children are seen supporting household heads in breaking large rocks in this community.

Figure 4.22: Stone Mining in Moyiba

Livelihood Activity by Gender

Livelihood activity by gender was assessed to understand livelihood activity undertaken by women as opposed to men as this has direct relationship with their earnings. Table 4.19 indicated that more women are engaged in trading activities than men. Also, there are more men engaged in mining (sand and stone) than women. Women are mostly engaged in the informal sector livelihood activities.

Table 4.19: Livelihood Activity by Gender

Main Occupation	Moyiba		
	Male (%)	Female (%)	Total (%)
Trading	22.6	25.7	48.3
Fishing	0.2	0.2	0.4
Fish Monger	0.4	0.2	0.6
Self Employed	2.6	1.0	3.5
Commercial Bike Rider	6.7	0.4	7.1
Civil Servant	2.6	0.6	3.1
NGO Worker	2.0	0.2	2.2
Quarrying (Stone Breaking)	6.3	2.6	8.8
Teaching	2.9	1.0	3.9
Local Govt. Administrator	1.0	0.0	1.0
Daily Labour	2.2	0.2	2.4
Others	2.9	2.8	5.7
Unemployed	1.6	4.5	6.1
Taxi/Truck Driver	2.8	0.0	2.8
Artisan (Voc. skills)	2.2	0.6	2.8
Health Worker	1.2	0.2	1.4
Total	**60**	**40**	**100**

Socio Economic Household Survey, June 2023

Average Monthly Income by Gender

Income from main livelihood activity by gender was investigated. Data showed that there is economic gender inequality, men continued to earn more than women in their main livelihood activities (Table 4:20).

Table 4.20: Main Occupation Average Monthly Income

Income Level	Moyiba		
	Male (%)	Female (%)	Total (%)
Up to SLL 200	2	10	12
SLL 201 – SLL 400	11	9	21
SLL 401 – SLL 600	8	7	15
SLL 601 – SLL 800	5	5	10
SLL 801 - SLL1,000	6	4	10
SLL1,001 - SLL1,500	9	3	12
SLL1,501 – SLL 2,000	11	2	12
SLL 2,001 – SLL 2,500	6	0	6
SLL 2,501 – SLL 3,000	2	0	2
Above SLL 3,000	0	0	0
Total	**60**	**40**	**100**

Socio Economic Household Survey, June 2023

4.5.4 Infrastructure and Utility Services

Access to Electricity

According to the residents, the electricity supply is not regular and mostly unreliable, especially during the dry season when the Bumbuna hydroelectric dam water level is low. Additionally, they experience frequent low voltage in many areas. The community do not have security or streetlights which makes movement difficult at night as most of the roads are not well paved.

The community is connected to the national grid with electricity generated by EGTC and supplied by the EDSA. Survey results indicated that 84.9% in Moyiba uses Electricity from mains (EDSA) even though they use Torch Light or Candle when there is power outrage. In addition, about 15.1% are not using electricity from the EDSA, these households either use generator, Candle or Torch Light to light homes at night). Access to electricity for Freetown is 82% (EDSA Demand Forecast Report, 2023). Table 4.21 presents electricity access in Moyiba.

Table 4.21: Electricity Access in Moyiba

Energy Source for Lighting Home	Frequency	%
Electricity from generator only	1	0.2
Electricity from mains (EDSA) only	64	12.6
Electricity from mains (EDSA) Torch Light	361	70.9
Electricity from mains (EDSA) Torch Light Candle	7	1.4
Torch Light only	76	14.9
Candle Only	0	0.0
Total	**509**	**100**

Socio Economic Household Survey, June 2023

Accessibility to Portable Water

Households in the community depend on different sources of water for both domestic and drinking purposes is from a combination of sources such as pipe borne water, hand dug well, Pond, Stream and spring as presented in Table 4:22. During the FGD and Stakeholder consultations, it was reiterated that access to water becomes difficult during the dry season when some water wells and other sources of water dry up, women and children spend up to 2 to 4 hours a day in search of both domestic and drinking water.

As reported in Sierra Leone Demographic Health Survey, 2019, the three most common improved sources of drinking water in both urban and rural households are protected dug wells (30% in urban

and 13% in rural households), tube wells or boreholes (11% in urban and 24% in rural households), and public taps/standpipes (21% in urban and 8% in rural households, Based on the district distribution data, the percentage of households with access to an improved source of drinking water is highest in Western Area Urban (98%) and lowest in Moyiba (33%) Access to an improved source of drinking water is most common among residents in the highest wealth quintile and least common among those in the lowest quintile (96% and 30%, respectively (Sierra Leone Demographic Health Survey, 2019)

Table 4.22: Moyiba Community Water Source

Community Water Source	Moyiba (%)
Pipe borne water only	25
Hand dug well only	8
Pipe borne water, hand dug well, Pond, Stream, Spring	22
Pipe borne water, well with hand pump	18
Pipe borne water, Stream/Spring	21
Other	6
Total	**100**

Socio Economic Household Survey, June 2023

Access Road and Transport Mobility

Access and internal mobility in Moyiba are reduced due to the deplorable condition of the unpaved roads and lack or walkways and footbridges connecting the different sections of the community over Granville Brooke stream. There are several roads with improper width and connected to drains but they are insufficient to provide a level of service to attend the whole community, services and businesses. The lack of footbridges and walkways in good conditions, coupled with the absence of street lighting are a risk for the community, mostly for children, women, elders and others with reduced mobility.

The main access into Moyiba is via Moyiba-Quarry Road (a dilapidated road), which branches off from Blackhall Road. This road serves as a primary road in Moyiba, it passes through the centre of the community, before continuing uphill past the Iman Sadiq Secondary School and onto the quarry at the top of the ridge. Large lorries use this road to transport crushed rock from the quarry.

There is the Borrow Pit Road which Tee off from the primary road at the Community Health Centre junction, serving the western area of Moyiba. This road loops back towards Blackhall Road as well as traversing the steep slopes of the southern ridge, providing informal access onto Leicester (this is however only motorable for four-wheel drives and motorcycles). The existing road network integrates the community with the wider urban context. These roads are rough with patches of pavement, gullies, rock outcrops, shallow and disjointed drains, they do not have streetlights or any other form of lighting, all these conditions make access very difficult.

Drainage

Moyiba is not an exception in Freetown communities with inadequate, incomplete and poorly maintained drainage, resulting in flooding during the wet season. The presence of Granville Brooke acting as a natural drain is not a solution since many structures were built in its fringes, risking the integrity of such structures during seasonal floods, and moreover, the creek is used as a waste depository, reducing its effectiveness and capacity to drain water downstream. As assessed during the study, the drains in Moyiba which are in poor condition and often not connected are clogged with a significant volume of silt, reducing the effectiveness of drainage.

A drainage channel is present along a section of Moyiba-Quarry Road and Borrow Pit Road (starts from the health centre to the borrow pit playing field). As remarked during the consultation, poor design which limits the carrying the capacity of the drains was highlighted in addition to poor maintenance

4.5.5 Health and Sanitation

There is currently one health centre in Moyiba, located at the intersection between Quarry Road and Borrow Pit Road adjacent the Moyiba Community Primary School. Common diseases reported include malaria, fevers, typhoid, pneumonia, cholera, tuberculosis, skin diseases, malnourishment, and smallpox. Several of these are associated with poor hygienic and sanitation conditions and exacerbated by the clogging of drainage routes offering breeding ground to mosquitos.

Health Status

The common diseases experienced in the communities as assessed during the survey, revealed that malaria is the most prevalent disease (about 39.7%) in the surveyed area as presented in Table 4.23, followed by Common Cold and other types of diseases. As with national data, Malaria is endemic throughout the country and the leading cause of death and disease in Sierra Leone, malaria is regarded as the single biggest killer, accounting for 38% of all hospital admissions in Sierra Leone (Demographic Health Survey Report 2020).

Table 4.23: Disease Prevalence in Project Area

Disease Prevalence	Number	%
Malaria	202	39.7
Diarrhea/Dysentery	13	2.5
Skin Disease/Rash	5	1.1
Cold Cough and/or Flu	116	22.8
Vomiting/Stomach Problem	17	3.3
Typhoid	28	5.5
Others	128	25.1
Total	**509**	**100**

Socio Economic Household Survey, June 2023

Sierra Leone is faced with many challenges in providing healthcare due to a lack of resources and a shortage of qualified healthcare workers (HCWs), with about 0.07 Physicians and 0.45 nurses/midwives per 1000 population according to the World Bank collection of development indicators. The low-resourced setting in addition to inadequate levels of training and resources often put strain and stress on the health worker among other occupation health issues. Sierra Leone needs significantly more high cadre health workers to meet the average health worker density for the WHO Africa region, which is 15.5 per 10,000 population, well below the WHO recommended 22.6 per 10,000 population minimum.

Knowledge of HIV/AIDS

About 75.6% of the respondents (385) reported they have heard and are aware of the HIV/Aids (Figure 4.22). They revealed to have first heard about it from health workers, media (Radio, TV and Newspaper) and and/or school.

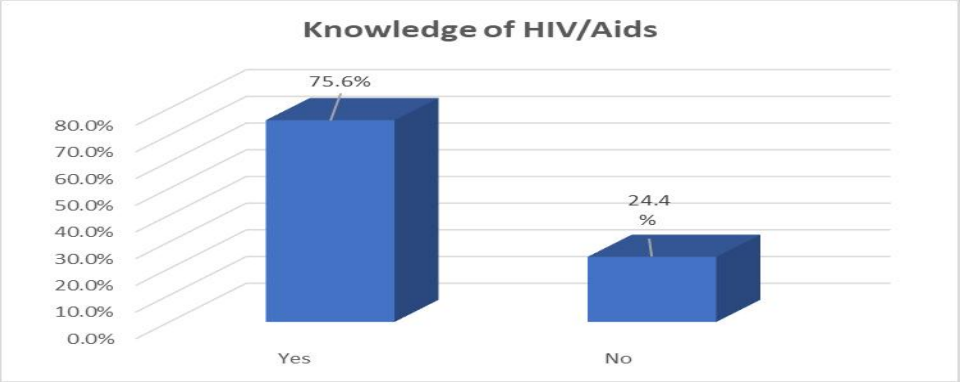


Figure 4.23: Knowledge of HIV/AIDS in Moyiba

Transmission and Prevention of HIV/AIDS and Test for HIVAIDS

Respondents' knowledge on HIV/AIDS transmission and prevention was sought, result indicates that all the respondents have heard about the disease and knew at least one means by which it is transmitted, however, test rate is low with only 22% of the respondents stating that they have been tested. Data implies that there is good awareness and knowledge of its mode of transmission however, majority of household heads have not been tested.

Sanitation

Few toilets which are pit latrines are reported available in the community due to the hard ground conditions which generally makes construction of pits or sewers difficult. It was noted during consultation that these toilets do not to work well and pollute drainage channels. While some houses have their own toilets, most do not. While planning requirements mandate the need for a toilet in each dwelling, houses are built illegally, without planning or building permits, this requirement is not fulfilled resulting in limited properties with private toilets.

There are two public toilet blocks in Moyiba (with four individual toilets each, two for men and two for women). These toilets are Ventilated Improve Pit Latrine types, and are managed by a committee, headed by the youth chairman. A fee of Le 1 is paid for use of the toilet, but deprived and disabled people are exempted from paying. The system is imperfect and poorly controlled. People without access to toilets defecate in plastic bags which are thrown into the Granville Brooke (Table 24). Open defecation is noticeably common.

As presented in Table 4.24, 71.3% of respondents have access to sanitation facility (Traditional Pit Latrine) while about 10.6% have access to flush facility. Human faeces were also observed on the road and in the drainage channels which suggests open defaecation practice in the community.

The most common toilet facility in Sierra Leone is the pit latrine with 33% of the population using it especially in the rural areas. About 27% of the rural population practices open defecation. Urban dwellers have improved sanitation facilities than rural households. Sanitation is far below the Sustainable Development Goal (SDG) of 66% target for the country. (GoSL, 2019).

Table 4.24: Sanitary Facility in Use in Moyiba

Sanitary Facility	Moyiba	
Traditional Pit Latrine	363	71.3%
Flush	54	10.6%
Ventilated Improved Pit Latrine	77	15.1%
Stream/River	5	1.0%
Others	10	2.0%
Total	**509**	**100**

Socio Economic Household Survey, June 2023

4.5.6 Solid Waste Management

Consultation with the community members and stakeholders indicates that there are no designated facilities, nor system for waste collection and disposal in Moyiba. As a result, many households do not dispose of waste appropriately, waste is either burnt or dumped either directly or indirectly into the Granville Brooke stream.

There is a waste collection facility (transfer station) built on Quarry Road, However, despite being well located, the facility is not utilised by the community. Engagement suggested this was due to the poor design, location and ineffective waste collection operations at a municipal level. Irregular waste disposal, is a major issue in the community, polluting the water sources, reducing the effective natural water flow from Granville Brooke, leading to overflows, and creating a health and sanitation problem for the population.

As presented in Table 4.25, about 61% of households use disposal site behind their house while 27% of households either dispose of waste on the street or in the drainage channels. The poor waste management practices were noticeable in the community as piles of solid waste was observed on the street and in drainages during the survey.

Table 4.25: Moyiba Solid Wastes Management Practice

Solid Wastes Management	Number	%
Burn for composting	65	13
Street/Drainage	135	27
Backyard dump	309	61
Total	**509**	**100**

Socio Economic Household Survey, June 2023

4.5.7 Energy Use for Cooking

While no respondent out of the 509 interviewed in Moyiba during the survey mentioned gas as clean energy source, charcoal (79.2%) and/or wood (16.9%) was indicated as the main source of energy for cooking as presented in Table 4.26.

Table 4.26: Energy Source for Cooking in Moyiba

Energy Source	Frequency	%
Charcoal	403	79.1
Wood	7	1.4
Gas	0	0
Charcoal/Gas	13	2.6
Charcoal/Wood	86	16.9
Total	**509**	**100**

Source: Socio Economic Household Survey, June 2023

4.5.8 Gender Based Violence (GBV) Assessment

Respondents Awareness of GBV

During the stakeholder consultation and group meetings with women and youths in the community, response to questions on the awareness of issues of gender- based violence in each of the three communities revealed that residents are aware of issues of gender-based violence as presented in Table 4.27.

Table 4.27: Moyiba Awareness of Issues of Gender-Based Violence

Gender Based Violence Awareness	Moyiba	
	Frequency	%
Yes	232	45.6%
No	277	54.4%
Total	**509**	**100**

Source: Socio Economic Household Survey, June 2023

GBV Prevalence in Moyiba

During the stakeholder consultation meetings and face-to-face meetings, residents responded that a series of gender-based violence practices do occur in the project area, prominent among them are sexual violence and wife beating. As highlighted in Table 4.28 issues relating to child marriage, intimate partner violence and honor crime ranks high in the community, followed by wife beating.

Table 4.28: Prevalence of Gender Based Violence in Moyiba

Multiple Choice Questions	Moyiba	
	Frequency	%
Child Marriage only	1	0.4
Wife beating only	33	14.7
Female Genital Mutilation (FGM) only	1	0.4
Sexual violence only	13	5.8
Intimate partner violence only	5	2.2
Child Marriage & wife beating	16	7.1
Child Marriage and sexual violence	15	6.7
Child Marriage & FGM	3	1.3
Child Marriage, Sexual Violence, FGM & Wife Beating	16	7.1

Child Marriage Sexual Violence, Intimate Partner Violence FGM Wife Beating honour crime	93	41.5
Sexual violence & wife beating	28	12.5
Total	**224**	**100**

Source: Socio Economic Household Survey, June 2023

GBV Trend in the Project Communities

The trend of gender-based violence in the community revealed that there had been a general decrease in incidents of gender-based violence in Moyiba asserting that GBV is on the decrease (Table 4.29).

Table 4.29: Gender Based Violence Trend in Moyiba

GBV Trend Description	Moyiba	
	Frequency	%
Remain the same	41	8.1
On the decreased	144	28.3
On the increased	47	9.0
No Response	277	54.4
Total	**509**	**100.0**

Source: Socio Economic Household Survey, June 2023

4.5.9 Respondents Knowledge and Perception of the Proposed Project

Respondents Knowledge of the Project

Respondents were asked of their knowledge of the proposed neighborhood upgrade project. The data suggested that eight (8) people out of every ten (10) people at Moyiba have not heard of the project, however, this was in direct contrast with participants in the FGD and Stakeholder Consultation meetings. Figure 4.23 highlights the awareness level among the residents in Moyiba.

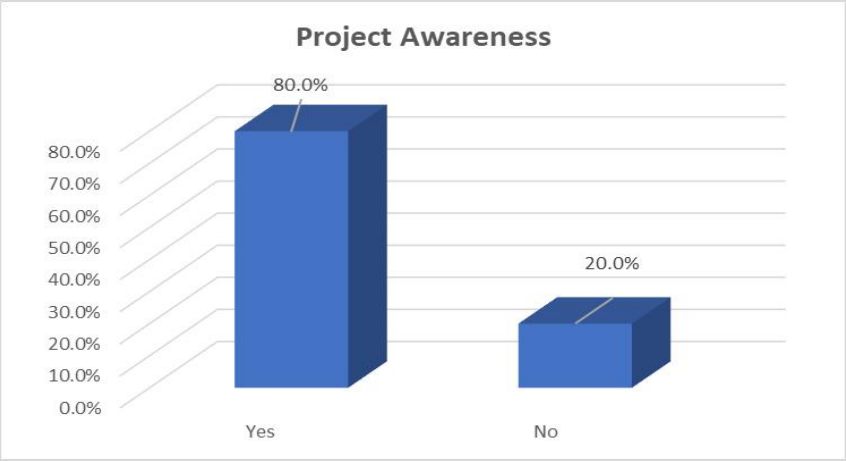


Figure 4.24: Awareness of Respondents about the Project in Moyiba

Respondents Perception about the Project

Respondents were asked about their perception of proposed neighborhood upgrade Project. Overwhelming majority (81.9%) of respondents in Moyiba could not respond to this question as they claimed not to have heard of the project. While Table 4.30 detailed the perception of residents about the project. Based on the responses received, there is a need to create extensive awareness among the residents.

Table 4.30: Project Perception of Moyiba Respondents

Respondents Awareness	Moyiba	
	Frequency	%

Good	88	17.3
Indifferent	4	0.8
Blanks	417	81.9
Total	**509**	**100**

Source: Socio Economic Household Survey, June 2023

4.5.10 Land Use

Information gathered during desk review reveal that Moyiba was established in 1919 as a farming community (known as Kamanda Farm). In 1966, a stone quarry was established in the community which encouraged the onset of some residential development. Since the end of the civil war in 2002, and the rural – urban migration, Moyiba became an informal urban settlement in the outskirts of Freetown that presented rapid urban growth in the last decades, triggered by the influx of migrants from rural areas in Sierra Leone seeking available land, access to services livelihood opportunities and safety during the internal conflict. Much of this residential development is informal and illegal, built without planning permission from Freetown City Council, exacerbated by weak governance in the wake of the war[5].

The community sits on the slopes of Gloucester and Leicester Peak, it has relatively good access to the rest of the city through the main road, but internal mobility is hampered due to deplorable roads and walkways. Regardless of its informal condition, the quality of the construction of houses appears to be better than other communities under analysis. The community is crossed from west to east by Granville Brooke, which gives Moyiba a distinctive character, but at the same time, the creek divides the community into two. The lower part of the settlement, facing the main road is populated by a market and other commercial dwellings, the upper parts are mostly used for residences encroaching on the original forest coverage. A quarry dominates the upper east part, attracting migrants to encroach and build around its fringes.

The influx of migrants continues, at present and any available patch of empty land is usually used for construction, regardless of its hazard or risk susceptibility. Development control is barely enforced in Sierra Leone making the encroachment and development in non-suitable places something common. The complexity of the topography and the organic and unplanned growth have resulted in a deficit in transport infrastructure, making mobility and access difficult for the population while hindering public services delivery and accessibility, these accessibility and service availability are notably lower in the upper parts of the settlement.

With much of the accessible, low-lying land previously developed and due to the sharp rise in residential costs following the influx of displaced persons into Freetown, sporadic informal development has moved up the steep slopes of the surrounding ridgelines towards Gloucester and Leicester Peak beyond. This land is known to be unsuitable for housing and prone to natural hazards, however, many residents faced economic stagnation and as such were compelled to settle in these locations to be close to existing communities and employment[6]. The Moyiba Area Action Plan states that the total non-urban area in the community has decreased by 19.3% between 2016 and 2021. This is three times higher than the wider Freetown city average of 7.68%[7].

The bulk of urban development in Moyiba is residential, stretching from Blackhall Road in the north, to the slopes of the southern ridgeline in the south. Commercial development is generally restricted to the north of the community, in buildings with frontage onto Access Road (as far as the Medical Centre and to a lesser extent, the Granville Brooke bridge), Blackhall Road and Mamba Ridge Road. There are very limited number of civil or community land uses in Moyiba, these generally being the schools and the community's sole medical centre. Land used for public open space is limited to the Borrow Pit sports field (below), and the Granville Brooke. Figure 4.24 presents Moyiba land-use map.

[5] SLURC/DPU Action Learning Alliance, Understanding urban risk traps in Freetown, 2017

[6] Kallon, S.B. (2008) Pollution and Sanitation Problems as Setbacks to Sustainable Water Resources Management in Freetown. Journal of environmental health 71(5), pp. 34-7

[7] Draft Moyiba Action Area Plan (for consultation), SLURC, January 2023

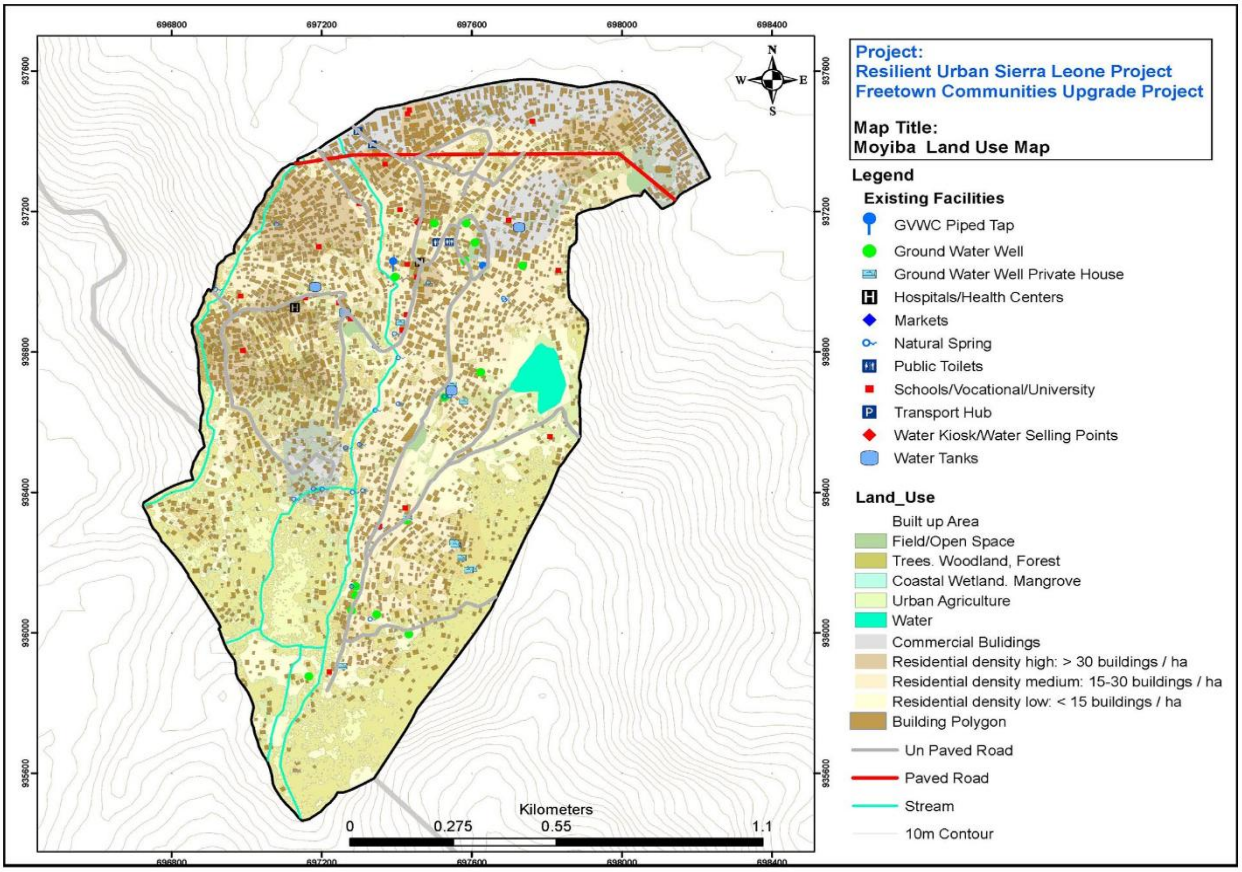


Figure 4.25: Moyiba Land Use Map

4.6 Moyiba WASH Facilities Locations and Due Diligence Findings

Table 4.31 presents the results of a site-specific technical and environmental due-diligence assessment for proposed and rehabilitation designated Water, Sanitation and Hygiene (WASH) facilities within the Moyiba community. It evaluates multiple geo-referenced locations earmarked for refillable plastic water tanks, tank boreholes, new water-table wells, rehabilitation of existing wells, and pour-flush sanitation units, including their physical setting, drainage conditions, access constraints, hygiene status, slope stability, and environmental and land-related risks.

Across the assessed sites, prevailing challenges include poor drainage and runoff exposure, sloping and erosion-prone terrain, limited accessibility, widespread sanitation deficits, and the need for substantial soil stabilization and erosion-control measures in several high-risk locations, particularly around schools, markets, health centres and densely populated residential clusters. The report identifies targeted mitigation actions such as installation of retaining structures, improved surface drainage, upgraded access routes, hygiene enhancement measures, leak-proof water conveyance systems, and protection of vulnerable users to ensure the safe, climate-resilient and socially responsible delivery of WASH infrastructure in Moyiba.

Table 4.31: Moyiba Site - Specific WASH Facilities Locations and Due Diligence

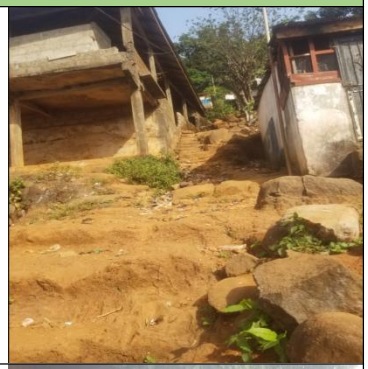
Location Code/ Coordinates	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
002 Lat: 8.4776390 Long: 13.2044090	REFFILLABLE PLASTIC TANKWATER TANK	Flat Land	Well-drained with no standing water	Some access (50–80%), with visible gaps. Moderately clean, occasional waste or dumping.	No contamination risk, requires monitoring	Close to an ASP halted road, existing pipes laid in unburied drains with contamination risk during leakage.	Improve pipe management and consider a pumping machine to boost water supply. Install leak-proof infrastructure.	
003 Lat: 8.4758600 Long: 13.2065200	REFFILLABLE PLASTIC TANKWATER TANK	Flat Land	Poor drainage with significant runoff or erosion risk	Some access (50–80%), with visible gaps. Poor hygiene, widespread waste and contamination signs.	High erosion risk, mitigation needed	Site near Moyiba market, challenging access and significant runoff risk.	Improve access paths, install retaining walls, and address drainage issues.	

Location Code/ Coordinates	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
004 Lat: 8.468162 Long: 13.206857	CONSTRUCTION OF TANK BOREHOLES	Flat Land	Poor drainage with significant runoff or erosion risk	Limited access (below 50%), signs of open defecation. Poor hygiene, widespread waste and contamination signs.	No contamination risk, but monitoring needed	Borehole located beside a mosque, erosion affecting surrounding areas, mini water facilities close by.	Install erosion control measures and improve water access. Enhance sanitation around the facility.	
005 Lat: 8.462707 Long: 13.208245	CONSTRUCTION OF TANK BOREHOLES	Sloped	Poor drainage with significant runoff or erosion risk	Limited access (below 50%), signs of open defecation. Poor hygiene, widespread waste and contamination signs.	No contamination risk, but requires significant improvements	Site near ACF facility, within a community with many children. Limited access and poor sanitation.	Improve infrastructure, enhance drainage, and address sanitation access for vulnerable groups.	

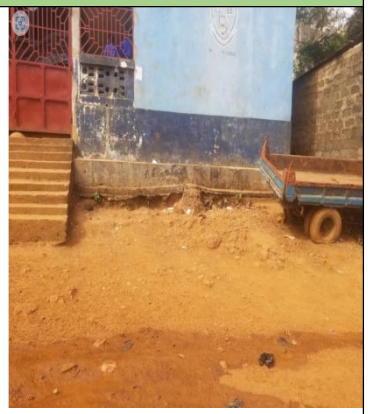
Location Code/ Coordinates	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
006 Lat: 8.471343 Long: -13.207783	CONSTRUCTION OF TANK BOREHOLES	Flat Land	Minor pooling during rainfall, manageable	Limited access (below 50%), signs of open defecation. Poor hygiene, widespread waste and contamination signs.	No contamination risk	Borrow pit used as a football pitch, ongoing festival activities, drainage issues higher than ground level.	Improve access and drainage, ensure facilities are suitable for vulnerable groups.	
007 Lat: 8.469716 Long: 13.208151	CONSTRUCTION OF TANK BOREHOLES	Sloped	Severe drainage issues, unsuitable	Limited access (below 50%), signs of open defecation. Poor hygiene, widespread waste and contamination signs.	No contamination risk	Site near existing tank from Guma along Baghdad Road, erosion risk.	Install erosion control measures and enhance access to mitigate risks from drainage.	
008 Lat: 8.4728790 Long: 13.2060940	CONSTRUCTION OF TANK BOREHOLES	Flat Land	Minor pooling during rainfall, manageable	Limited access (below 50%), signs of open defecation. Poor hygiene, widespread waste and contamination signs.	Slight risk, requires basic controls	Site near Moyiba Health Center, existing well more than 50 meters away, sanitation needs improvement.	Improve drainage and enhance hygiene practices around the well to prevent contamination.	

Location Code/ Coordinates	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
009 Lat: 8.4731470 Long: 13.2065290	CONSTRUCTION OF TANK BOREHOLES	Flat Land	Poor drainage with significant runoff or erosion risk	Limited access (below 50%), signs of open defecation. Poor hygiene, widespread waste and contamination signs.	No contamination risk	Site near Moyiba Primary School, existing non-functional tap, potential disruption to school activities.	Ensure minimal disruption to school activities, install drainage around the proposed borehole.	
010 Lat: 8.4734880 Long: 13.2049940	CONSTRUCTION OF TANK BOREHOLES	Flat Land	Slightly loose, minor erosion risk	Low (0–10°): Stable, suitable for construction	Poor drainage with significant runoff or erosion risk	Easily accessible with existing paths/roads	Limited access (below 50%), signs of open defecation: Poor hygiene, widespread waste and contamination signs	

Location Code/ Coordinates	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
014 Lat: 8.4647430 Long: 13.2030560	CONSTRUCTION OF NEW WATER TABLE WELL	Sloped	Unstable, visible cracks or major erosion	High (21–30°): Requires significant mitigation, such as retaining walls	Poor drainage with significant runoff or erosion risk	Challenging access, substantial improvements needed	Limited access (below 50%), signs of open defecation: Poor hygiene, widespread waste and contamination signs	
015 Lat: 8.474540 Long: 13.2084960	CONSTRUCTION OF NEW WATER TABLE WELL	Sloped	Unstable, visible cracks or major erosion	Moderate (11–20°): Requires erosion control measures	Poor drainage with significant runoff or erosion risk	Inaccessible without major infrastructure upgrades	Some access (50–80%), with visible gaps: Poor hygiene, widespread waste and contamination signs	

Location Code/ Coordinates	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
								
017 Lat: 8.468980 Long: 13.203656	CONSTRUCTION OF NEW WATER TABLE WELL	Flat Land	Loose soil with signs of erosion	Moderate (11–20°): Requires erosion control measures	Poor drainage with significant runoff or erosion risk	Challenging access, substantial improvements needed	Limited access (below 50%), signs of open defecation: Poor hygiene, widespread waste and contamination signs	
018 Lat: 8.4713040 Long: 13.2051910	Pour Flush	Low Lying Coastal Area	Lateritic soils moderately stable, erosion-prone	Low (0–10°): Stable, suitable for construction	Poor drainage with significant runoff or erosion risk	Inaccessible without major infrastructure upgrades	No access (below 50%), signs of open defecation: Poor hygiene, widespread waste and contamination signs	

Location Code/ Coordinates	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
019 Lat: 8.4702070 Long: 13.2074280	CONSTRUCTION OF NEW WATER TABLE WELL	Sloped	Unstable, visible cracks or major erosion	High (21–30°): Requires significant mitigation, such as retaining walls	Severe drainage issues, unsuitable	Inaccessible without major infrastructure upgrades	Limited access (below 50%), signs of open defecation: Poor hygiene, widespread waste and contamination signs	

Location Code/ Coordinates	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
020 Lat: 8.467446 Long: 13.208629	REFILLABLE PLASTIC WATER TANK	Flat Land	Slightly loose, minor erosion risk	Low (0–10°): Stable, suitable for construction	Minor pooling during rainfall, manageable	Easily accessible with existing paths/roads	Improve drainage around the tank to manage minor pooling and enhance access during rainfall.	

Location Code/ Coordinates	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
021 Lat: 8.4657660 Long: 13.2075570	POUR FLUSH TOILET	Flat Land	Loose soil with signs of erosion	Low (0–10°): Stable, suitable for construction	Poor drainage with significant runoff or erosion risk	Easily accessible with existing paths/roads	Strengthen drainage systems to reduce erosion and ensure better runoff management.	
022 Lat: 8.4699840 Long: 13.2083480	POUR FLUSH TOILET	Sloped	Loose soil with signs of erosion	Low (0–10°): Stable, suitable for construction	Poor drainage with significant runoff or erosion risk	Easily accessible with existing paths/roads	Implement erosion control measures such as terracing or retaining walls to manage runoff and erosion risks.	

Location Code/ Coordinates	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
023 Lat: 8.469186 Long: 13.202761	POUR FLUSH TOILET	Sloped	Unstable, visible cracks or major erosion	High (21–30°): Requires significant mitigation, such as retaining walls	Poor drainage with significant runoff or erosion risk	Easily accessible with existing paths/roads	Major soil stabilization required; consider installing retaining walls and improving drainage.	
034 Lat: 8.4701990 Long: 13.2072940	REHABILITATION OF EXISTING WATER WELL	Sloped	Unstable, visible cracks or major erosion	Very High (Above 30°): Unsuitable for construction without major intervention	Severe drainage issues, unsuitable	Inaccessible without major infrastructure upgrades	Limited access (below 50%), signs of open defecation	

Moyiba Vulnerability Analysis

In Moyiba, **131 out of 484 PAPs (28.4%)** were identified as vulnerable. The most affected groups are **widows (38.2%)**, **elderly persons (27.5%)**, and **dependent single mothers (22.9%)**, with smaller proportions of child-headed households and persons with disabilities. While Moyiba has the largest absolute number of vulnerable individuals, the distribution highlights the need for **broad-based support programs** targeting women-led and elderly households.

Category	Number	% of Vulnerable	% of Total PAPs
Physical Disability	8	6.1%	1.7%
Illness	1	0.8%	0.2%
Widows	50	38.2%	10.8%
Dependent Single Mothers	30	22.9%	6.5%
Child-Headed Households	6	4.6%	1.3%
Elderly Persons	36	27.5%	7.8%
Total Vulnerable	131	100%	28.4%

4.6 Coconut Farm Environmental Baseline

4.6.1 Topography

Coconut Farm is a small community situated in a steep, hilly area on the eastern side of Freetown, approximately 3 kilometres from the city centre. The landscape's physical characteristics can be divided into a steep hillside, steep hilltop, and flat undulating land with an elevation between 20 to 50 meters above sea level. Towards the hillside, huge rocks and stones are found, considered hanging rocks and stones.

Most of the houses are on steeply sloping ground that wraps around a spur of higher ground branching from Mount Aureole. The housing meets the existing tree line of the grounds around Fourah Bay College at around +250m asl in the south. The northern part of the area of interest (AoI) is on largely flat ground (+50m asl) and is bounded by the curve in the Bai Bureh Road and Granville Road Cemetery. The Coconut Farm community football pitch is located on flatter ground, coinciding with the confluences of informal drains and natural channels that funnel rainy season water from high to low ground.

Figure 4.25 presents high and very high landslide susceptibility (potential for landslides to initiate) in the steep terrain that constitutes much of the Coconut Farm community. Hazards from landslides is greatest where the topography forms channels or gullies, as any landslide material would run out in this direction with susceptibility incidence of rockfalls from the Mount Aureole cliff.

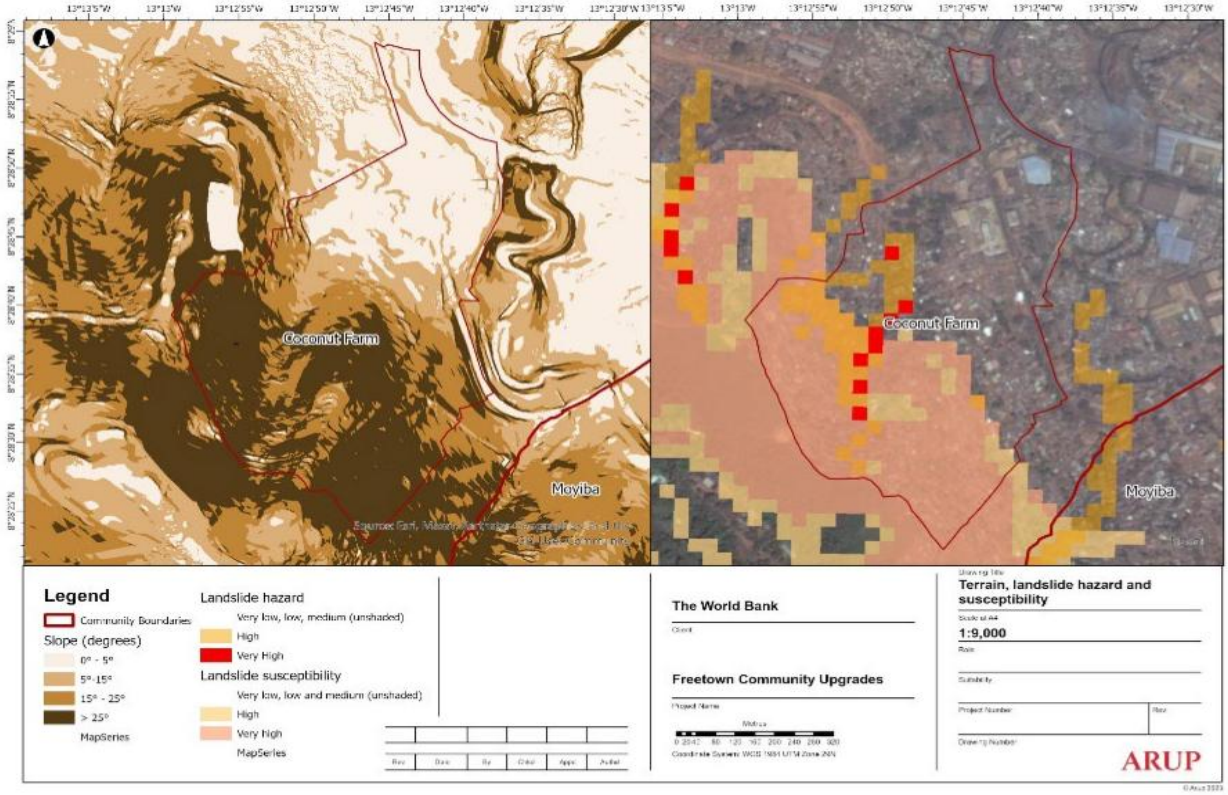


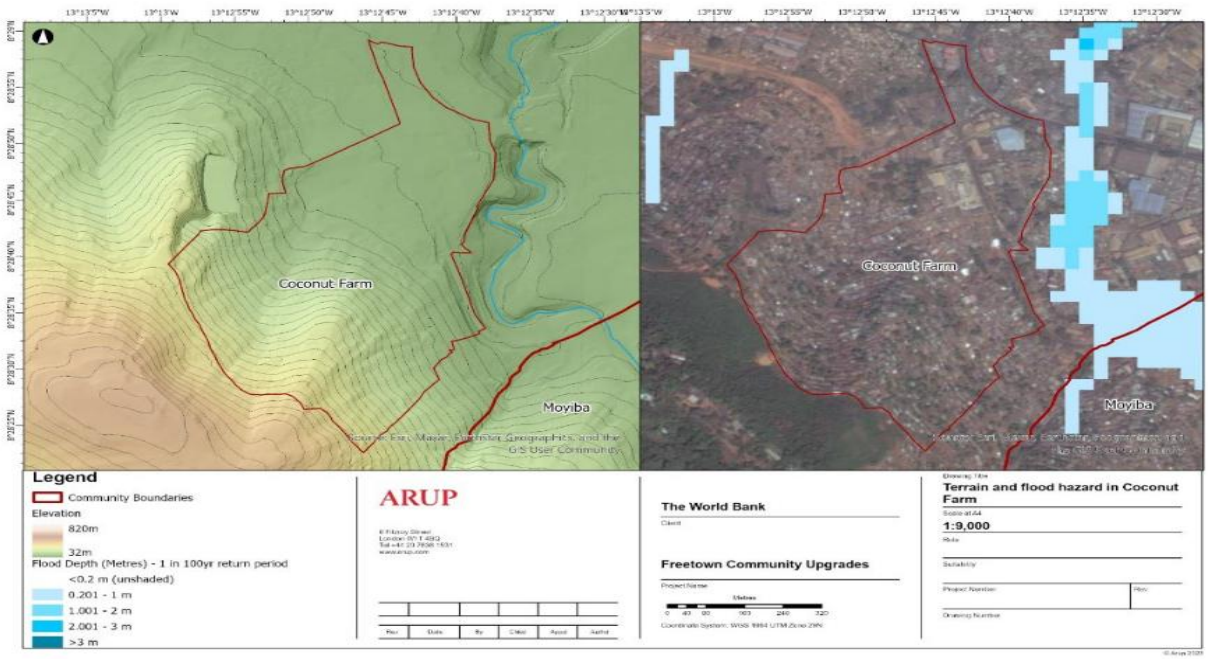
Figure 4.26: Coconut Farm Landslide Hazard Susceptibility Terrain (Source Arup, 2023)

4.6.2 Hydrology and Flood Hazard

Coconut Farm lies within a natural river catchment denoted 'C4' after the Sierra Leone Multi-City Hazard Review and Risk Assessment[8], however, the main channel of Granville Brooke passes to the

[8] World Bank, 2018. Sierra Leone Multi-City Hazard Review and Risk Assessment: Final Report (Volume 2 or 5) Freetown City Hazard and Risk Assessment

north of the community. Figure 4.26 presents the flood hazard susceptibility of Coconut Farm terrain for a 1 in 100-year return period (1% chance of annual exceedance) which follows the path of Granville Brooke running to the north of the AoI. The hydrology of the terrain also presents a pluvial and fluvial flooding tendency that could be exacerbated by inadequate and blocked drainage, deforestation as reported by the community as a frequently occurring hazard at during the rainy season with rainwater following the flow path picked out by the very high landslide. The annual rainy season (May to October), which can result in up to 594mm of rain per month on average in August in Freetown leads to flooding and triggers landslides in the steep terrain. A holistic, catchment-scale flooding and drainage interventions as proposed under the neighbourhood upgrade project could ameliorate the flooding problems experienced annually by the community in Coconut Farm.



4.6.3 Air Quality

Figure 4.27: Coconut Farm Flood Hazard Susceptibility Terrain (Source Arup, 2023)

Real-time air quality baseline study was carried out every 1-15 minutes over a 1 hour averaging time to describe the existing air quality condition of Coconut Farm. The parameters monitored during the study include Nitrogen dioxide (NO_2), Sulphur dioxide (SO_2), Carbon Monoxide (CO), Particulate Matter with an aerodynamic diameter of less than 10 micrometres (PM10), and Particulate Matter with an aerodynamic diameter of less than 2.5 micrometres (PM2.5).

The existing sources of air pollutants in the community include:

- Movement of vehicles on unpaved road
- Household fuel combustion such as gas, charcoal and firewood.
- Fugitive dust sources (windblown dust from bare ground as well as dust being transported by winds).

Table 4.32 presents the daily average ambient air quality concentrations monitored within the community in comparison to the World Health Organization (WHO) and the World Bank Group (WBG) EHS Guidelines.

Table 4.32: Coconut Farm Daily Average Ambient Air Quality Concentrations

			Air Quality parameters						
			PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	NO_2 (µ/g³)	SO_2 (µ/g³)	CO (µ/g³)	Temp (o^C)	Relative Humidity
		WHO (µ/g³)	50	15	25	40	4	NA	NA
Code	**Easting**	**Northing**							
CNM1	696640	937238	BDL	BDL	BDL	BDL	BDL	34.12	55.66
CNM2	696759	937612	BDL	BDL	BDL	BDL	BDL	33.11	55.00
CNM3	696849	938002	42.4	30.1	BDL	BDL	BDL	31.12	54.96

Source: Detailed Field Survey, July 2024

Particulate Matter

PM10 concentration value of 42.4 µg/m³ found to be below the WHO guidelines of 50 µg/m³ as presented in Table 4.32 was detected only uphill at the rod termination point. This is probably due to the windblown dust from unpaved roads and other human activities (outdoor cooking) during the periods of sampling. The average PM2.5 value of 30.1 µg/m³ is above the permissible limits of 15 µg/m³.

Sulphur Dioxide

The values of SO_2 were below detection limit (BDL) throughout the duration of monitoring. This BDL could be attributed to the absence of non-sulphur combustion engines or industrial facilities within the community.

Nitrogen Dioxide

The levels of NO_2 were below detection limit at all the sampling locations. This suggests that there are no vehicular or industrial activities that is generating NO_2.

Carbon Monoxide

The CO values were below detection limit throughout the duration of the monitoring.

4.6.4 Noise Level

Noise is considered 'nuisance' when it is excessive, disruptive and/or displeasing. Nuisance noise and/or high noise levels can affect both physiological and psychological human health, with long-term excessive noise levels being damaging to human hearing. Very high noise level exposure especially for a long duration can have both auditory (e.g., permanent loss of hearing) and non-auditory effects (Mathias, et al., 2013). Table 4.33 present the Noise Level monitored in Coconut Farm in comparison the World Bank Group (WBG) EHS Guidelines.

Noise source was mainly from traffic noise and vehicular movement. The values recorded during the daytime were above WHO/WBG EHS guidelines with a range of 68.5 – 79.2 dB (A) which could be attributed to human activities from vehicular movement and critical from the use of generator in the area. Table 4.33 present the Noise Level monitored in the community.

Table 4.33: Noise Level in Coconut Farm

WBG EHSG Guideline Noise Level – one Hour Leq, dB (A)			
Day (7:00 – 10:00 pm)			55
Night (10:00-7:00 pm)			45
			Continuous Sound Level Leq, dB (A)
Code	**Easting**	**Northing**	
CNM1	696640	937238	70.6
CNM2	696759	937612	79.2
CNM3	696849	938002	68.5

Source: Detailed Field Survey, July 2024

4.6.5 Soil Quality

While the concentration of other heavy metals is negligibly low, Zinc had the highest concentration with a mean of 12.5 mg/kg which is negligible when compared to the target level for the composite samples collected from each location as presented in Table 4.34. The values of zinc observed in the soil samples may be due to the broken ceramic deposited in the sampling area. This could be adjudged a localized condition of the sampling area.

Table 4.34: Mean Chemical Properties of Soil Samples in Coconut Farm

Location	pH	Na	Cu	Cr	Mg	Pb	Fe	Ca	Ph	Zn	P	As	F. Coli
		mg/kg											MPN/100m
C. Farm	7.88	2.33	1.16	0.34	9.38	BDL	0.15	6.03	0.5	12.45	5.25	0	BDL
Netherlands Standards	6.5 - 8.5		50.00	100.00		50.00				200.00			

Source: Detailed Field Survey, June 2023

4.6.6 Surface Water Quality

The chemical properties of the surface water sampled in Coconut Farm community is presented Table 4.36. The water body varied in depths of 0.1m at the edge to 0.7m at the middle. The water body is slightly acidic with a mean pH 6.83, which could be attributed to atmospheric decomposition and soil leaching. The high conductivity mean value (575.67 μScm^{-1}) above the WHO standard 420.00 μScm^{-1} which could possibly be attributed to the presence of ionized materials flushed into the water body.

The recorded dissolved oxygen mean value (10.40 mg/l) is an indication that the water body can support aquatic life. The metals (Ca and Mg) constitute the exchangeable cations. The mean concentration of calcium value (26.67 mg/l) and magnesium in the water body is low to insignificant. The presence of coliform bacteria in the water body indicated pollution by faeces.

Table 4.35: Surface and groundwater sample collection locations in Coconut Farm

Location	Easting	Northing
Surface Water		
CSW1	697021	937467
CSW2	697051	937713
CSW3	697056	937937
Groundwater		
CGW2	696885	937854
CGW1	696797	937528

Table 4.36: Physio-chemical Properties of Surface Water in Coconut farm

Parameters	Cond	T D S	pH	DO	Turb	Temp	Ch	Al	NH3	Ca
WHO Standard	<420mg/l	<248ppm	6.5-85	NA	<5.0NTU	No. value	0.03-0.5	<0.2mg/l	0	<250mg/l
Mean Value	575.67	287.83	6.83	10.40	21.67	25.47	0.00	0.05	0.01	26.67
Parameters	**Cu**	**Fe**	**Mn**	**Mg**	**NO^-_2**	**NO^-_3**	**K**	**PO43-**	**Si**	**SO_4^{2-}**
WHO Standard	<1.0mg/l	<0.3mg/l	<0.4mg/l	<200	<3.0mg/l	<10mg/l	<6.0mg/l	<20mg/l	<15mg/l	<400Mg/l
Mean Value	0.48	0.07	0.04	0.01	0.05	3.33	0.67	0.97	0.01	23.93
Parameters	**SO^{2-}_3**	**Cl^-**	**As**	**Cr**	**HCO_3**	**Zn**	**e-coli**	**F. coliform**		
WHO Standard	0	<250mg/l	<0.01mg/l	<0.05mg/l	-	<5.0 mg/l	Zero	Zero		
Mean Value	0.27	4.67	0.00	0.12	0.00	0.10	-	76.67		

Source: Detailed Field Survey, June 2023

4.6.7 Groundwater Water Quality

Groundwater from hand dug well is the major source of potable water supply in the community. This is in part due to the lack of supply of reliable drinking water by Water Supply Company. The groundwater beneath the area presents a relatively thin lens of fresh water to saline with depth associated with coastal aquifers. Table 4.37 presents the physio-chemical properties of groundwater in the study area.

The pH values of the groundwater at Coconut Farm are below the WHO limit which tends to be acidic with a mean value of 5.05. The groundwater table is generally low, thus the variation in the pH of the assessed groundwater may be attributed to seepage from the soil surface of acid iron containing materials into the groundwater during runoff. A possible health effect could be gastrointestinal infection. The recorded mean conductivity value of 72.5 mg/l is within the WHO limit while the detected concentration of metals is negligibly low. The recorded value of dissolved oxygen in the groundwater is 56.1 mg/l.

Table 4.37: Mean Physio-chemical Properties of Groundwater in Coconut Farm

Parameters	Cond	T D S	pH	DO	Turb	Temp	Ch	Al	NH3	Ca
WHO Standard	<420mg/l	<248ppm	6.5-85	NA	<5.0NTU	No. value	0.03-0.5	<0.2mg/l	0	<250mg/l
Mean Value	72.5	29.35	5.05	52.15	0	28	0	0.015	0.005	30.4
Parameters	**Cu**	**Fe**	**Mn**	**Mg**	**NO^-_2**	**NO^-_3**	**K**	**PO43-**	**Si**	**SO_4^{2-}**
WHO Standard	<1.0mg/l	<0.3mg/l	<0.4mg/l	<200	<3.0mg/l	<10mg/l	<6.0mg/l	<20mg/l	<15mg/l	<400Mg/l
Mean Value	0.50	0.06	0.18	0.01	0.04	1.50	0.55	0.10	0.07	6.10
Parameters	**SO^{2-}_3**	**Cl^-**	**As**	**Cr**	**HCO_3**	**Zn**	**e-coli**	**F. coliform**		
WHO Standard	0	<250mg/l	<0.01mg/l	<0.05mg/l	-	<5.0 mg/l	Zero	Zero		
Mean Value	0	3.5	0	0.01	0	0				

Source: Detailed Field Survey, June 2023

4.7 Bai Bureh corridor Environmental Baseline

4.7.1 Air Quality

Observed sources of air emissions in the Bai Bureh corridor include:

- Heavy vehicular movement along the highway
- Open waste burning and dumpsite activities
- Dust from unpaved surfaces and construction-type disturbances
- Commercial and domestic fuel combustion

Table 4.38 presents the daily average ambient air quality concentrations monitored within the Bai Bureh corridor in comparison to the World Health Organization (WHO) and the World Bank Group (WBG) EHS Guidelines.

Table 4.38: Bai Bureh Corridor Average Ambient Air Quality Concentrations

	Air Quality Parameters									
			PM_{10} (µg/m³)	**$PM_{2.5}$ (µg/m³)**	**NO_2 (ppb)**	**SO_2 (ppb)**		**CO (ppb)**	**Temp (o^C)**	**Relative Humidity**
		WHO (µ/g³)	**50**	**15**	**25**	**40**		**4**	**N/A**	**N/A**
Code	**Easting**	**Northing**								
BBR1	8.370916	13.088916	62.56	23.6	1.12	1.12	0.17	388.5	25	77.5
BBR2	8.48063	13.209266	17.61	21.78	1.59	0.65	0.44	432.05	27	66.5
BBR3	8.480414	13.209699	9.06	23.11	1.68	0.79	0.28	345.40	25.75	69.5
BBR4	8.48518	13.207347	10.55	21.71	1.36	1.01	0.51	345.10	24.9	72.5

Source: Detailed Field Survey, February 2026

Particulate Matter

$PM_{2.5}$ levels ranged between 21.40 – 25.21 µg/m³, with the highest concentration recorded at BBR1 during morning monitoring. PM_{10} values varied across sites, with peaks up to 65.12 µg/m³ at the outfall location. Elevated particulate levels are attributable to traffic density, dust resuspension and nearby waste handling activities.

Sulphur Dioxide

SO_2 values ranged from 0.09 – 1.19 ppb, while H_2S ranged from 0.12 – 0.62 ppb, both associated with waste decomposition and vehicle emissions.

Nitrogen Dioxide

NO_2 concentrations ranged from 1.09 – 1.83 ppm across sampling points. These elevated values indicate emissions from combustion engines and roadside activities. Oxides of nitrogen are known contributors to respiratory irritation and atmospheric pollution.

Carbon Monoxide

CO concentrations ranged between 300.0 – 432.3 ppm, with higher values observed during daytime periods. These values reflect traffic intensity and localized combustion sources such as waste burning.

4.7.2 Noise Level

Noise monitoring was conducted at the same four locations using Type 1 sound level meters, with 30-minute sampling intervals during morning and daytime periods in accordance with ISO 1996 and EPA guidance. As presented in Table 4.39, peak noise (LAmax) reached 76.3 dB(A) at BBR1, driven primarily by traffic and roadside commercial activities. Dominant contributors to ambient noise include heavy highway traffic, community and market activities, musical instruments and celebrations and occasional construction-related sounds. Noise levels were generally higher near the outfall and drainage turn, where traffic density and human activities are concentrated.

Table 4.39: Noise Level in Coconut Farm

WBG EHSG Guideline Noise Level – one Hour Leq, dB (A)			
Day (7:00am – 7:00 pm)			55
			Continuous Sound Level Leq, dB (A)
Code	Easting	Northing	
BBR1	8.370916	13.088916	54.2
BBR2	8.48063	13.209266	51.3
BBR3	8.480414	13.209699	47.7
BBR4	8.48518	13.207347	46.7

Source: Detailed Field Survey, February 2026

4.7.3 Surface Water Quality

Surface water samples were collected from four monitoring points along the canal system discharging toward Granville Brook and analysed for physico-chemical and bacteriological parameters. Results indicate generally neutral pH values (6.9–7.4), but turbidity levels (7–13 NTU) exceeded WHO drinking-water guideline limits. Electrical conductivity varied considerably, reaching 4200 µS/cm at BBR3, while total dissolved solids peaked at 2100 mg/L at the same location. Elevated concentrations of nitrate, phosphate and chloride suggest contamination linked to waste dumping, fertilizer runoff and domestic wastewater discharge. Heavy metals and related parameters showed moderate contamination, with copper recorded up to 0.43 mg/L, manganese up to 0.44 mg/L, and sulphate peaking at 99.4 mg/L (Table 4.41), reflecting the influence of surrounding anthropogenic activities.

Bacteriological analysis further confirmed water-quality deterioration, with E. coli detected in some samples (up to 90 MPN/100 ml), faecal coliform present at all monitoring locations, and non-faecal coliform counts exceeding WHO guideline limits. These findings indicate significant faecal contamination, likely arising from open defecation, nearby pit latrines, and domestic activities along the canal banks. Overall, the surface water quality demonstrates clear anthropogenic impacts and is unsuitable for direct human consumption without adequate treatment.

Table 4.40: Surface Sample Collection Locations n Bai Bureh Corridor

Location	Easting	Northing
Surface Water		

BBR1	8.370916	13.088916
BBR2	8.48063	13.209266
BBR3	8.480414	13.209699
BBR4	8.48518	13.207347

Table 4.41: Physio-chemical Properties of Surface Water in Bai Bureh corridor

Parameters	**Cond**	**T D S**	**pH**	**DO**	**Turb**	**Temp**	**Ch**	**Al**	**NH3**	**Ca**
WHO Standard	<420mg/l	<248ppm	6.5-85	NA	<5.0NTU	No. value	0.03-0.5	<0.2mg/l	0	<250mg/l
Mean Value	1083.25	541.63	7.1		9.25				9.25	
Parameters	**Cu**	**Fe**	**Mn**	**Mg**	**NO^-_2**	**NO^-_3**	**K**	**PO43-**	**Si**	**SO_4^{2}-**
WHO Standard	<1.0mg/l	<0.3mg/l	<0.4mg/l	<200	<3.0mg/l	<10mg/l	<6.0mg/l	<20mg/l	<15mg/l	<400Mg/l
Mean Value	0.35			0.38				8.88		99.4
Parameters	**SO^{2-}_3**	**Cl^-**	**As**	**Cr**	**HCO_3**	**Zn**	**e-coli**	**F. coliform**		

Bai Bureh Road PAP Vulnerability Analysis

Bai Bureh presents the **highest vulnerability prevalence**, with **30 out of 50 PAPs (58%)** classified as vulnerable. The profile is dominated by **dependent single mothers (63%)**, followed by widows (17%) and low-income households (17%). This concentration of socio-economic disadvantage makes Bai Bureh the **priority area for targeted assistance**, requiring **enhanced livelihood support and poverty alleviation measures**.

Category	**Number**	**% of Vulnerable**	**% of Total PAPs**
Physical Disability	0	0%	0%
Low-Income Households	5	17%	10%
Illness	0	0%	0%
Widows	5	17%	10%
Dependent Single Mothers	19	63%	36%
Child-Headed Households	0	0%	0%
Elderly Persons	1	3%	2%
Total Vulnerable	30	100%	58%

4.8 Coconut Farm Socio-economic Baseline

Coconut Farm, as most peripheral Freetown communities, experienced a rapid population growth driven by incoming migration. The community sits within ward 421 which consists of the entire Quarry, part of Ashobi corner and parts of Granville Brooke 1. Population estimates for Coconut Farm vary depending on exact boundaries used and data source. In respect of this project the

delimitation of Coconut Farm as designated by the stakeholders, covers approximately 0.39km^2 and 1,105 buildings (Open Street Map data, May 2022 imagery).

4.8.1 Demographic Profile of Respondents

The socio-economic baseline for households within the statutory road setback in Coconut Farm is further detailed in the Resettlement Plan report that is developed in addition to this ESIA. This includes a census of affected households and an analysis of tenure for those residing in informal or high-risk areas

Sampled Population

The estimated population of the community confirmed with records from Statistics Sierra Leone is presented in Table 4.42. Also, the total sampled population and households are presented on the table. A sample size of 240 households was randomly surveyed from a population of 7,794 (Data provided by Statistics Sierra Leone) in Coconut Farm. According to the 2021 Population and Housing Census, the population per house is 8.8 persons and ranges from a low of 7.9 persons in the Southern region to a high of 9.4 persons in the Eastern region. On average, Sierra Leone has 1.6 households per house and ranges from a low of 1.4 in the Southern region to a high of 1.9 in the Western Area. The Population of Freetown is 609,174 and the national population is 7,548,702. Freetown accounts for 8.1 of the national population. (2021 Mid-term Population & Housing Census).

Table 4.42: Coconut Farm Sampled Household and Population

Community	Pop.(A)	No Of Houses (B)=A/8.8	Ave No of Households C=B*1.6	Min. Sample Size 15% D=(15% *C)	Actual Sample Size
Coconut Farm	7794	886	1417	213	240

Source: Socio Economic Household Survey, June 2023/July, 2024

Gender Distribution

Table 4.43 presents the gender distribution of respondents consulted during the survey. Females (131) constituted the bulk (54.6%) of the respondents, while males constituted 45.4%. At the national level the gender distribution is 49.4 males and 50.6 females with a sex ratio of 96.8 males per 100 females.

Table 4.43: Gender of Respondents

Gender	Number	%
Male	109	45.4
Female	131	54.6
Total	**240**	**100**

Source: Socio Economic Household Survey, June 2023/July 2024

Marital Status

From the project social survey of Coconut farm area, majority (63.8%) of respondents were married, 23.8% were single, and 10.8% were either divorced or widowed as presented in Figure 4.27.

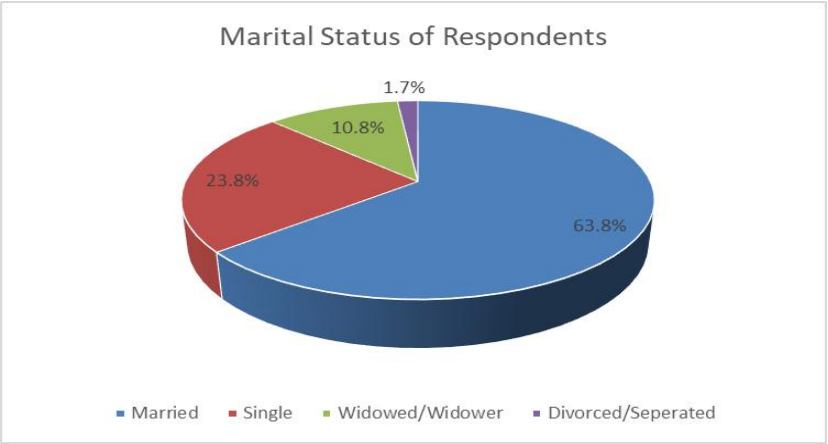


Figure 4.28: Marital Status of Coconut Farm Respondents
Source: Socio Economic Household Survey, June 2023/July, 2024

Status of Respondents

The questionnaires administered was targeted at household heads, where the household head was unavailable, the household was represented by the spouse or other representatives of the household including the son or daughter. Other representatives include the household head's mother or sibling. About 67.9% of respondents were either household heads or their spouse, and 10.8% of respondents being sons or daughters of the household head. The remainder were brothers or sisters of the household head. Table 4.44 presents status of Coconut Farm respondents.

Table 4.44: Status of Coconut Farm Respondents

Respondents	Coconut Farm	%
Household Head	126	52.5%
Spouse	37	15.4%
Son/Daughter of HH	26	10.8%
Brother/Sister	24	10.0%
Mother/father of household head	6	2.5%
Others	21	8.8%
Total	**240**	**100.0%**

Source: Socio Economic Household Survey, June 2023/July, 2024

Age Distribution

Respondents interviewed during the survey were within ages 19–75years. 22.1% were below 30 years, 25.0% were within 30–39 years, 23.3% were between 40 and 49 years, 18.8% were between 50 and 59 years, and 10.9% were above 60 years (Table 4.45).

Table 4.45: Coconut Farm Age Distribution

Age	Number	%
19 - 29 years	53	22.1%
30 - 39 years	60	25.0%
40 - 49 years	56	23.3%
50 - 59 years	45	18.8%
60 - 69 years	22	9.2%
70 and above	4	1.7%
	240	100.0%

Source: Socio Economic Household Survey, June 2023/July, 2024

Ethnicity of Respondents

A variety of ethnic groups were found resident in the community, the bulk are Temnes (129) at 53.8%. Other ethnic groups of significance are Limba, Loko, Mende and Madingo as presented in

Table 4.46. Freetown is home to all the eighteen ethnic groups in Sierra Leone. The Temnes and Mendes form the largest in Freetown and Sierra Leone at large, each forming about one third of the country's population.

Table 4.46: Coconut Farm Respondents Ethnicity Distribution

Ethnicity	Number	%
Temne	129	53.8%
Kono	1	0.4%
Madingo	13	5.4%
Limba	34	14.2%
Fullah	19	7.9%
Mende	12	5.0%
Others	8	3.3%
Loko	15	6.3%
Kissi	0	0.0%
Creole	8	3.3%
Sherbro	1	0.4%
Foreign National	0	0.0%
Total	**240**	**100%**

Source: Socio Economic Household Survey, June 2023/July, 2024

Religious Background

As presented in Figure 4.28, although Sierra Leone is a secular state, the predominant religion affiliation in the community is Islam practiced by 89.2% (214) respondents in Coconut Farm. Christianity account for 10.8% in the community practiced by 26 respondents. The relationships between the different religious groups have been peaceful. According to a 2020 estimates by the Pew Research Center 78.5% of Sierra Leone's population are Muslims (mostly Sunni Muslims), 20.4% are Christians (mostly Protestants) and 1.1% belong to a traditional African religion or other beliefs. The Inter-Religious Council of Sierra Leone estimated that 77% of Sierra Leone's population are Muslims, 21% are Christians, and 2% are followers of traditional African religion.

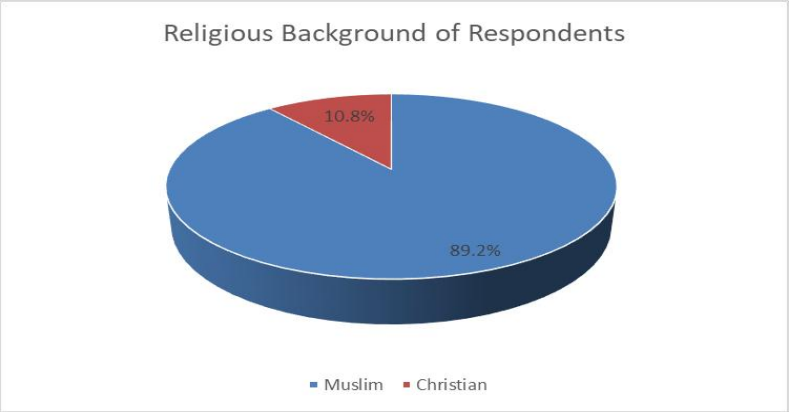


Figure 4.29: Religious Background of Coconut Farm Respondents
Source: Socio Economic Household Survey, June 2023/July, 2024

Residence Status of Respondents

Freetown experienced massive in-migration after the rebel war, most of the in-migrates created shelter in slums and hillsides. An overwhelming majority (169) of respondents described themselves as settlers, accounting for 70.4%, while 29.6% of the respondents (71) described themselves as indigene accounting for 30% as presented in Figure 4.29.

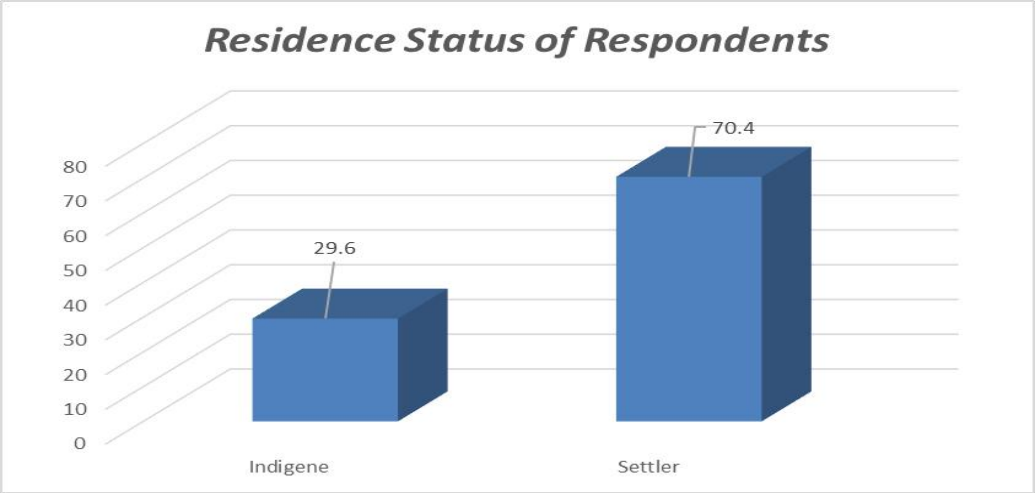


Figure 4.30: Residence Status of Coconut Farm Respondents
Source: Socio Economic Household Survey, June 2023/July, 2024

Building Stock and Tenure

Though laws exist to prevent illegal construction in high-risk areas, these are often ignored for these types of informal development and there's no enforcement from the mandated authorities to prevent/correct these situations. Therefore, over the years, more households have settled in high-risk areas due to lack of urban planning, low housing supply and high prices[9] of formal housing that make them unaffordable for most of the Freetown population.

Despite the informal status of much of the community, the housing stock is not entirely reflective of this, there is a high number of permanent residential buildings in Coconut Farm, some of which are multistorey. There are also several smaller structures, constructed predominantly from basic materials used for temporary housing such as metal sheeting, however these are less prevalent and generally seem to be constrained to the low-lying flat land, close to the stormwater drain. Some residents had refrain from gradually investing in their houses due to tenure insecurity. In some cases, there is a lack of formal land titles even among landlords in the community. Figure 4.30 presents typical building types in Coconut Farm Community.

Figure 4.31: Typical Building Types in Coconut Farm Community

4.8.2 Education Profile

The Public Education system does not have the capacity to adequately address the educational needs of the growing population in the community. There are 7 private and 1 public primary school,

World Bank (2018). Urban Sector Review. Freetown: Options for Growth and Resilience.

1 public Junior Secondary and 1 private Senior Secondary School. It was reported that the teachers are often volunteers and are not on government payroll. To compensate for the overpopulated government schools, there are a number of private schools, which include a community school called Ndawa primary school (a 20-year-old deteriorating structure); the Quarry Sidique; Sierra Leone Muslim Brotherhood primary and secondary; and Science World (a private senior secondary school)[10]

At the national level, the 2015 census revealed that of the total population aged 3 years and above (6,589,838), 44.2% had never attended school. 48.6% of the population over 10 years old is illiterate. The percentage of the population that had never attended school in rural areas (32.7%) is almost three times more than those in urban areas (11.5%).

Educational Attainment

As presented in Table 4.47 over one-fourth of respondents representing 31.7% in Coconut Farm indicated that they never had any form of formal education. However, 16.3% reported that they had attained a tertiary level education. The data suggests that there may be limited opportunities for employment on the project from this community, particularly for positions requiring technical qualifications.

Table 4.47: Educational Attainment of Respondents

Education Level	Number	%
No Education	76	31.7
SSS Level	48	20.0
JSS Level	39	16.3
Primary School Level	14	5.8
Tertiary Level	39	16.3
Arabic Education	16	6.7
Vocational	8	3.3
Total	**240**	**100**

Source: Socio Economic Household Survey, June 2023/July, 2024

School Enrolment

As highlighted in Table 4.48, school enrolment assessment of households in Coconut Farm indicated that 81% of the school age children were enrolled in school (primary or secondary school). Respondents who reported that their children were not in school were 19%. Despite the Free Quality Education initiative introduced by the government, parents are still responsible for commitments such as uniforms, books and other related costs. According to the 2019 Annual School Census Report, Gross Enrolment Rate increased across all levels of education from Pre-primary, primary, junior secondary and senior secondary level.

Table 4.48: Coconut Farm School Enrolment Status

School Enrolment Response	Coconut Farm	
	Frequency	%
Yes	195	81
No	45	19
Total	**240**	**100**

Source: Socio Economic Household Survey, June 2023/July, 2024

Educational Attainment by Gender

[10] CEMMATS and Arup (2023) Resilient Urban Sierra Leone Project- Freetown Communities Upgrade project: Community Upgrade Plan.

Educational level is one of the key determinants for measuring standard of living. As presented in Table 4.49, the assessed educational attainment by gender indicated that there is less educational attainment among women when compared to men in the community.

Table 4.49: Education Attainment by Gender

Educational Attainment	Coconut Farm		
	Male (%)	Female (%)	Total (%)
No Education	12.1%	19.6%	31.7%
SSS Level	9.2%	10.8%	20.0%
JSS Level	5.4%	10.8%	16.3%
Primary school level	1.7%	4.2%	5.8%
Tertiary level	9.6%	6.7%	16.3%
Arabic education	6.3%	0.4%	6.7%
Vocational	1.3%	2.1%	3.3%
	45.4%	**54.6%**	**100.0%**

Source: Socio Economic Household Survey, June 2023/July, 2024

4.8.3 Livelihood and Economic Profile

In Coconut Farm, the primary economic activities and income sources for residents revolve around crafting pots (for coal stoves) and producing metal boxes. Additionally, some community members work as stone miners and engage in petty trading, while others pursue trades such as welding, tailoring, carpentry, and bricklaying. A portion of residents participate in "cash-for-work" activities, which involve informal and irregular work like waste collection, water fetching, and other odd jobs. Notably, the majority of those who are employed are self-employed[11].

There are limited employment and livelihood opportunities in the community and unemployment is high, mostly among the younger in the labour force. There's no local market to get provisions from, and transportation costs puts an additional strain to the already limited resident's income and for the local merchants. Possibly due to lack of space, the community lacks its own local market. Most residents conduct their buying and selling at Blackhall Road or Moyiba market, which contributes to higher prices for essential goods, given the additional transportation costs.

The youth in the community predominantly find employment in physical and labour-intensive work due to limited job opportunities. To make ends meet, they also collect and sell plastic waste. To facilitate waste collection, some individuals rely on tricycles, but the increasing cost of fuel in recent years and poor access ways has made it less financially viable. While potential employers like a mattress factory and the Electricity Distribution and Supply Authority (EDSA) exist in the area, residents report challenges in securing employment, despite a pool of skilled individuals within the community. It was reported that complaints have been raised about these factories not meeting their corporate social responsibility obligations, which exacerbates the high unemployment rate and contributes to issues of drug and alcohol abuse among residents.

Gender roles within the community are distinct, with women taking on business-related responsibilities while men are engaged in physical labor. Women, often viewed as more trustworthy with loans, are frequently the targets of micro-credit programs[12]. In the aftermath of the war, women played an increasingly prominent role as many men lost their lives, and they continue to be active in decision-making processes within the community. Several NGOs, including UKAID, ActionAid, Save the Children, and Christian Brothers, have implemented programs aimed at empowering vulnerable individuals and children in the community. However, as of now, there are no active programs in progress.

Livelihood Activity by Gender

[11] World Bank (2018). Urban Sector Review. Freetown: Options for Growth and Resilience.
[12] RUSLP (2020) Environmental and Social Management Framework for the Resilient Urban Sierra Leone Project

Livelihood activity by gender was assessed to understand livelihood activity undertaken by women as opposed to men as this has direct relationship with their earnings. Table 4.50 indicated that more women are engaged in trading activities than men. Also, there are more men engaged in mining (Stone Breaking) than women. Women are mostly engaged in the informal sector livelihood activities.

Table 4.50: Livelihood Activity by Gender

Main Occupation	Coconut Farm		
	Male (%)	Female (%)	Total (%)
Trading	19.2	28.8	47.9
Self Employed	3.3	1.3	4.6
Civil Servant	4.2	1.7	5.8
Quarrying (Stone Breaking)	2.1	0.4	2.5
Teaching	2.9	0.4	3.3
Local Govt. Administrator	0.4	0.8	1.3
Others	5.8	9	14.6
Unemployed	5.0	10.8	15.8
Taxi/Truck Driver	1.7	0.0	1.7
Artisan (Voc. skills)	0.8	1.3	2.1
Health Worker	0.0	0.4	0.4
Total	**45.4**	**54.6**	**100**

Source: Socio Economic Household Survey, June 2023/July, 2024

Average Monthly Income by Gender

Income from main livelihood activity by gender was investigated. Data showed that there is economic gender inequality, men continued to earn more than women in their main livelihood activities (Table 4:51).

Table 4.51: Main Occupation Average Monthly Income

Income Level	Coconut Farm		
	Male (%)	Female (%)	Total (%)
Up to SLL 200	6.3	18.3	24.6
SLL 201 – SLL 400	6.3	10.4	16.7
SLL 401 – SLL 600	5.4	7.1	12.5
SLL 601 – SLL 800	5.8	4.2	10.0
SLL 801 - SLL1,000	7.5	5.8	13.3
SLL1,001 – SLL 1,500	7.5	4.6	12.1
SLL 1,501 – SLL 2,000	3.3	2.1	5.4
SLL 2,001 – SLL 2,500	1.7	1.3	2.9
SLL 2,501 – SLL 3,000	1.3	0.8	2.1
Above SLL-3,000	0.4	0.0	0.4
Total	45.4	54.6	100.0

Source: Socio Economic Household Survey, June 2023/July, 2024

4.8.4 Social Situation

Numerous socio-economic difficulties prevail in the project area which is the situation across other communities throughout Freetown. These challenges encompass elevated levels of joblessness, limited access to vital public amenities like potable water, sanitation facilities, healthcare services, and education. In Coconut Farm, documented concerns are available regarding cliques (youth gangs) that are based at the old school environment[13], Gaza, and Mount Aureole, intimidation of disabled people, high rates of drug abuse amongst youth including gang culture and children are forced to do street trading, which results in most of them absconding from home. However, there are youth groups within the community such as Combined Youth Organization and The Money Team which participate in regular community cleaning exercises.

[13] RUSLP (2020) Environmental and Social Management Framework for the Resilient Urban Sierra Leone Project

The physically challenged population do not have crutches or wheelchairs. Since they are vulnerable and handicapped, the representative stated they are mostly unemployed and live by street begging. There is no community centre and one which was constructed by funding from Prince Charles (UK monarch), but managed by a family in the community the land was leased from, has been transformed to a school.

4.8.5 Utility Services and Infrastructure

Access to Electricity

The community is connected to the national grid with electricity generated by EGTC and supplied by the EDSA. 90.4% of the respondents uses Electricity from mains (EDSA) even though they use Flashlight (Chinese Light) or Candle when there is power outrage. As highlighted in Table 4.52, about 9.6% of the respondents were not using electricity from the EDSA, these households either use Flashlight (Chinese Light) or Candle to light homes at night). Access to electricity for Freetown is 82% (EDSA Demand Forecast Report, 2023).

Table 4.52: Electricity Access in Coconut Farm

Energy Source for Lighting Home	Frequency	%
Electricity from Generator	1	0.4
Electricity from mains (EDSA)	160	66.7
Electricity from Mains (EDSA) & Electricity from Generator	1	0.4
Electricity from mains (EDSA) & Electricity from generator torch light	4	1.7
Electricity from mains (EDSA) & torchlight	47	19.6
Electricity from mains (EDSA) & torch light Candle	4	1.7
Torchlight only	20	8.3
Candle only	3	1.3
Total	**240**	**100**

Source: Socio Economic Household Survey, June 2023/July 2024

Communications

Most of the people have access to mobile phones, but the telephone signal/ network is very poor.

Accessibility to Portable Water

As reported in the community upgrade plan report the estimated water supply coverage is 45% of the total community population. The water authority, GUMA Valley, oversees the water supply. However, piped network does not reach the upper parts of the community, and the supply of water is both intermittent and not enough to cover the population needs. Water supply in Coconut Farm comes from three sources which include refilled water tanks, piped water supply to the lower lying ground, and private groundwater wells.

The water in Coconut Farm is provided from 10 public water tanks, 12 commercial groundwater wells, and 4 water kiosks. A small section of the community located close to Blackhall Road has access to pipe borne water via a community tap connected to the Guma Valley Water grid; this is cheaper than some private water wells located in the neighbourhood. There are no public groundwater wells, but some inhabitants have dug private wells to sell groundwater above market prices to other members of the community for whom sometimes it is the only nearby accessible source of water. Currently no rainwater harvesting takes place.

During stakeholder engagements it was reported that poor road conditions and inconsistencies in payment make it unviable for Guma to supply water at a regular basis. Supply at public taps from Guma Valley are inconsistent and are only turned a few times a week and often at night which poses a safety risk for young women and girls. Domestic water is reported to be gathered from the ‘Bando Stream’. Table 4.53 presents sources applicability in the community.

Table 4.53: Coconut Farm Community Water Source

Community Water Source	Frequency	(%)
Pipe Borne Water only	84	35
Hand Dug Well only	7	3
Pipe Borne Water, Hand Dug Well, Pond, Stream, Spring	46	19
Pipe Borne Water, Well with Hand Pump	37	16
Pipe Borne Water, Stream/Spring	53	21
Other	13	6
Total	**240**	**100**

Source: Socio Economic Household Survey, June 2023/July 2024

Road Network Access and Transport Mobility

Coconut Farm is located in a central position west to Blackhall Road; however, it lacks integration with the rest of the city and accessibility is constrained due to a limited number of roads and the deplorable state of the road conditions. Internal mobility and goods transport is mainly carried out through tricycles and motorbikes in the lower parts and the use of artisanal load carrier through pathways and narrow roads in the slopes to reach higher parts. Most of the neighbours are pedestrians as the community lacks safe walkways or steps.

There are community access roads which were built by the community people through self-help. One of the roads leads from Blackhall Road into Ashobi Corner, other leads to the center of Coconut farm. Most of the roads are not motorable and do not have proper drainage with the exception of the Benz Garage Quarry and the Ashobi Corner Roads.

The main sources of transportation are motor bikes and tricycles (Kekeh). Delivery vehicles only come to deposit goods, but no bus service (Poda Podas) ply the community routes. This causes the problem of movement by the people most of the time and it leads to high transportation cost as motor bikes charge Le.5-10 from the main road into Coconut Farm and Ashobi Corner. The drains are cleaned by the youths during public cleaning and previously on national cleaning days which are no longer in existence.

Drainage

As for many other communities across Freetown, drainage is inadequate in this community resulting in flooding during the wet season. This is most obvious around the intersection with Blackhall Road as the downstream drain (south of Blackhall Road) is too narrow to continue the flow further downstream to the outfall location. In addition, the V-shaped drainage channel along Bai Bureh Road which conveys water from the outfall back of Saint Martins Church to the Granville Brooke stream is narrow, shallow, filled with waste and silt. This is exacerbated by the accumulation of waste and silt that blocks the drainage channels (Figure 4.29). It was observed that some drainage structures were recently upgraded in the community by Concern Worldwide /UNOPS and that some of the existing roads do have open, road-side drainage however these are in poor condition and too shallow and blocked as reported in the community upgrade plan (CUP). As noticeable it was also reported by that the existing drainage system uphill is inadequate which causes severe flooding in the lower parts of the community especially around the location of the community football field with high runoff of flash flood impact.

Figure 4.32: Typical Drainage Condition in Coconut Farm

4.8.6 Health and Sanitation

As reported in the community upgrade plan (CUP), in 2019, an NGO (Lifeline) built a Community Health Centre (CHC) for the provision of basic outpatient services to the community. As part of the facilities of the CHC is a labour room which is leaking due to the damaged roof. It was reported in the ESMF[14] that the capacity of the health facility is inadequate to address the health needs of the growing population in the community. It was also noted that the health centre currently does not have the ability to treat severe or difficult health issues nor the ability to safely dispose of hazardous waste (no incinerator).

Health Status

The common diseases experienced in the communities as assessed during the survey, revealed that malaria is the most prevalent disease in the surveyed area with 162 of 240 respondents having experienced it in the last two weeks prior to the survey as presented in Table 4.54, followed by Cold Cough and/or Flu, Typhoid and other types of diseases. As with national data, Malaria is endemic throughout the country and the leading cause of death and disease in Sierra Leone, malaria is regarded as the single biggest killer, accounting for 38% of all hospital admissions in Sierra Leone (Demographic Health Survey Report 2020).

Table 4.54: Disease Prevalence in Project Area

Disease Prevalence	Multiple Choice
Malaria	162
Diarrhea/Dysentery	8
Skin Disease/Rash	7
Cold Cough and/or Flu	97
Vomiting/Stomach Problem	12
Typhoid	41
Others	11

Source: Socio Economic Household Survey, June 2023/July, 2024

Sierra Leone is faced with many challenges in providing healthcare due to a lack of resources and a shortage of qualified healthcare workers (HCWs), with about 0.07 Physicians and 0.45 nurses/midwives per 1000 population according to the World Bank collection of development indicators. The low-resourced setting in addition to inadequate levels of training and resources often put strain and stress on the health worker among other occupation health issues. Sierra Leone needs significantly more high cadre health workers to meet the average health worker density for the WHO Africa region, which is 15.5 per 10,000 population, well below the WHO recommended 22.6 per 10,000 population minimum

Knowledge of HIV/AIDS

About 90.8% of the respondents (218) reported they have heard and are aware of the HIV/Aids. They revealed to have first heard about it from health workers, media (Radio, TV and Newspaper) and and/or school. Figure 4.32 presents knowledge of HIV/AIDS by respondents in Coconut farm

[14]RUSLP (2020) Environmental and Social Management Framework for the Resilient Urban Sierra Leone Project.

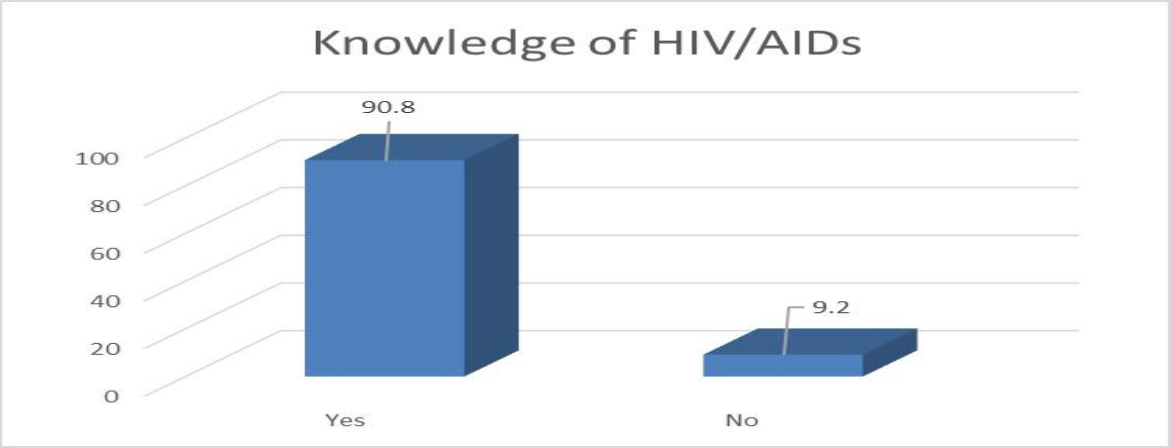


Figure 4.33: Knowledge of HIV/AIDS in Coconut Farm
Source: Socio Economic Household Survey, June 2023/July, 2024

Transmission and Prevention of HIV/AIDS and Test for HIVAIDS

Respondents' knowledge on HIV/AIDS transmission and prevention was sought, result indicates that all the respondent has heard about the disease and knew at least one means by which it is transmitted, however, test rate is relatively high among the community residents 66.7% of the respondents stating that they have been tested. Surveyed data suggests that there is good awareness and knowledge of its mode of transmission however, about 24.2% of the respondents are yet to be tested.

Sanitation

There is no public toilets and no formal sewerage network in the community. While some houses have their own toilets, most do not, resulting to the use of public spaces, drainages and roadsides. Planning requirements mandate the need for a toilet in each dwelling, most dwellings are built without planning or building permission from the local planning authority, this requirement is not fulfilled resulting in limited properties with private toilets. As presented in Table 4.55, 55.8% (134) of respondents indicated access to the traditional pit latrines which are poorly constructed and not properly maintained while about 21.7% (52) have access to Water Closet (flush facility). Human faeces were also observed on the road and in the drainage channels which suggests open defaecation practice in the community.

The most common toilet facility in Sierra Leone is the pit latrine with 33% of the population using it especially in the rural areas. About 27% of the rural population practices open defecation. Urban dwellers have improved sanitation facilities than rural households. Sanitation is far below the Sustainable Development Goal (SDG) of 66% target for the country. (GoSL, 2019).

Table 4.55: Sanitary Facility in Use in Coconut Farm

Sanitary Facility	Coconut Farm	
	Frequency	%
Traditional Pit Latrine	134	55.8
Flush	52	21.7
Ventilated Improved Pit Latrine	53	22.1
Stream/River	0	0.0
Others	1	0.4
Total	**240**	**100**

Source: Socio Economic Household Survey, June 2023/July 2024

4.8.7 Solid Wastes Management

Solid waste management in the community is characterized by a severe lack of formal infrastructure, leading to significant environmental and hydraulic hazards. Approximately 59% of households dispose of waste directly into drainage channels, while another 29% dump waste on streets or in public spaces. These practices have resulted in critical blockages downstream, particularly near Ben's Garage, where plastic accumulation severely compromises the drainage system's functionality. The cessation of previous sanitation officer oversight and monthly cleanup initiatives has exacerbated these conditions, leaving residents with few alternatives beyond burning refuse or dumping it in the environment.

The transition to a tricycle-based collection system has faced significant operational hurdles. While intended to provide door-to-door service for a fee, the system is frequently undermined by poor road conditions that prevent access to certain neighborhoods, leading to inconsistent collection and the accumulation of waste bags. Furthermore, rising fuel and maintenance costs have made the business model economically challenging for independent operators. Despite these systemic failures, local youth organizations like the Combined Youth Organization and The Money Team have stepped in to collect recyclables and manage refuse disposal at Granville Brooke, underscoring the potential for community-led initiatives if provided with adequate institutional support and improved access infrastructure. Table 4.56 presents the data of Coconut Farm solid wastes management practice.

Table 4.56: Coconut Farm Solid Wastes Management Practice

Solid Wastes Management	Number	%
Burn for Composting	29	12%
Street/Drainage	70	29%
Backyard Dump	141	59%
Total	**240**	**100%**

Source: Socio Economic Household Survey, June 2023/July 2024

4.8.8 Energy Use for Cooking

While 80% of the 192 respondents interviewed in Coconut Farm during the survey mentioned charcoal as the main energy source, 0.4% indicated gas as the energy source for cooking as presented in Table 4.57.

Table 4.57: Energy Source for Cooking in Coconut Farm

Energy Source	Frequency	%
Charcoal	192	80.0%
Wood	21	8.8%
Gas	1	0.4%
Charcoal/Gas	6	2.5%
Charcoal/Wood	20	8.3%
Total	**240**	**100%**

Source: Socio Economic Household Survey, June 2023/July 2024

4.8.9 Gender Based Violence (GBV) Assessment

Respondents Awareness of GBV

Awareness of issues of Gender based Violence was sought, result revealed that 78.8% of the household head were aware of issues of gender- based violence in their community, this was affirmed during stakeholder consultation and FGD meetings with women and youths in the community as presented in Table 4.58.

Table 4.58: Gender-Based Violence Issues Awareness in Coconut Farm

Gender Based Violence Awareness	Frequency	%

Yes	189	78.8
No	51	21.3
Total	**240**	**100.**

Source: Socio Economic Household Survey, June 2023/July 2024

GBV Prevalence in Coconut Farm

Respondents were asked of the prevalence of GBV in the community, a series of GBV issues were evident in the Coconut farm community with Wife beating and Child marriage as the most prominent, other issues GBV issues include FGM, intimate partner violence and honor crime, and this was confirmed during the stakeholder consultation and FGD meetings. Table 4.59 illustrates GBV issues in the Coconut Farm Community.

Table 4.59: Prevalence of Gender Based Violence in Coconut Farm

Multiple Choice Questions	Coconut Farm	
	Frequency	%
Child Marriage only	9	4
Wife Beating only	55	23
Female Genital Mutilation (FGM) only	16	7
Sexual Violence Only	10	4
Intimate Partner Violence only	8	3
Child Marriage & Wife Beating	63	26
Child Marriage and Sexual Violence	11	5
Child Marriage & FGM	8	3
Child Marriage, Sexual Violence, FGM & Wife Beating	17	7
Child Marriage Sexual Violence, Intimate Partner Violence FGM Wife Beating Honor Crime	21	9
Sexual Violence & Wife Beating	22	9
Total	**240**	**100**

Source: Socio Economic Household Survey, June 2023/July 2024

GBV Trend in the Project

The trend of gender-based violence in the communities revealed that there had been a general decrease in incidents of gender-based violence with 54% of the respondents at Coconut Farm asserting that GBV is on the decrease (Table 4.60).

Table 4.60: Gender Based Violence Trend in Coconut Farm

GBV Trend Description	Coconut Farm	
	Frequency	%
Remain the same	5	2
On the Decreased	122	54
On the Increased	55	23
No Response	51	21
Total	**240**	**100**

Source: Socio Economic Household Survey, June 2023/July 2024

4.8.10 Respondents Knowledge and Perception of the Proposed Project

Respondents Knowledge of the Project

Respondents were asked of their knowledge of the proposed neighborhood upgrade project. The data assessed indicated that six (6) out every (10) people in Coconut Farm have not heard of the project. However, this was in direct contrast with participants in the FGD and Stakeholder

Consultation meetings who confirmed awareness. Figure 4.33 highlights the awareness level among the residents in the project area to the survey.

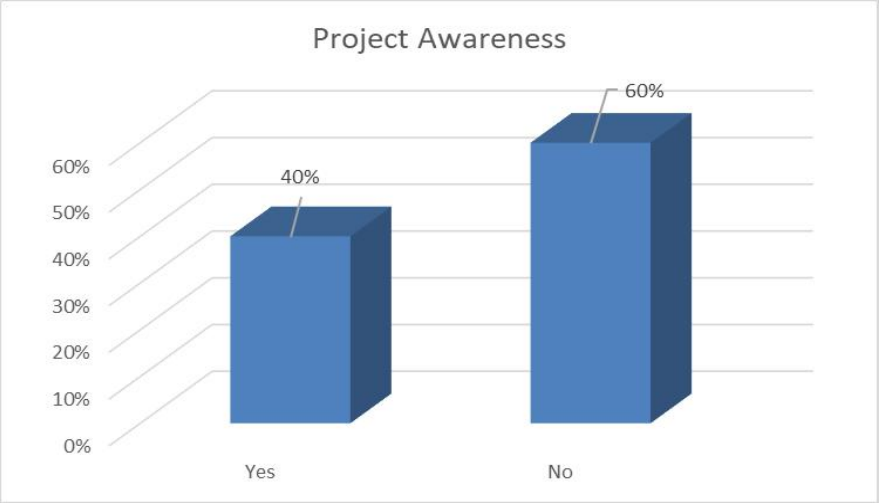


Figure 4.34: Project Awareness of Respondents Coconut Farm
Survey, June 2023/July 2024

Respondents Perception about the Project

In Coconut Farm where the project has gained some popularity, respondents were asked about their perception of the proposed neighborhood upgrade Project, 60% feel good about the project, as presented in Table 4.61.

Table 4.61: Project Perception in Coconut Farm

Respondents Awareness	Coconut Farm	
	Frequency	%
Good	144	60
Indifferent	0	0
Blanks	96	40
Total	**240**	**100**

Source: Socio Economic Household Survey, June 2023/July 2024

4.9 Coconut Farm WASH Facilities Locations and Due Diligence Findings

The following summary captures the core findings of the due-diligence assessment for the Coconut Farm WASH infrastructure project. The assessment provides a detailed geo-referenced evaluation of multiple sites designated for the rehabilitation and construction of diverse WASH facilities, ranging from solar-powered boreholes and refillable water tanks to VIP and pour-flush toilets. The findings highlight a landscape characterized by significant environmental and technical constraints, particularly terrain instability, erosion-prone slopes, and severe drainage deficits. Many sites exhibit unstable soil conditions, including visible cracking and waste accumulation, which present high contamination risks to both existing wells and proposed water-table developments.

To ensure the delivery of climate-resilient and socially responsible infrastructure, the report categorizes sites based on their required level of intervention. While some locations are suitable for routine development, others demand substantial engineering solutions, such as retaining walls, erosion-control structures, and comprehensive access upgrades. These tailored recommendations are designed to mitigate risks to nearby sensitive receptors, including residential clusters and mosques, ensuring that all interventions align with World Bank environmental and social risk-management standards and international best practices for hygiene and sanitation. Table 4.62 the Coconut Farm site - specific wash facilities locations and due diligence findings.

Table 4.62: Coconut Farm Site - Specific WASH Facilities Locations and Due Diligence Findings

Location Code/ Coordinate	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
001 Lat: 8.4795130 Long:13.2136250	Rehabilitation Of Existing Water Well	Sloped, unstable with visible cracks and major erosion.	Poor drainage with significant runoff or erosion risk. Accessible with existing paths/roads.	Limited sanitation access, poor hygiene with widespread contamination. No groundwater contamination risk.	Land is legally available. No nearby structures or vegetation at risk.	There is an existing well located near a stream, which serves as a vital water source for the surrounding residents. The well which has no cover is surrounded with a perimeter fence. Washing activities been carried out around the well	Implement erosion control measures and improve drainage to reduce runoff and erosion risks. Enhance hygiene practices in the community.	
002 Lat: 8.4774550 Long: 13.2142550	Rehabilitation Of Existing Water Well	Sloped, unstable with visible cracks and major erosion.	The location has a rugged terrain with stone steps leading to the water source making it unsuitable for construction without significant stabilization measures.	There is a significant amount of garbage, including plastic bottles, wrappers, and other waste materials, scattered around the vicinity of the well, particularly in the drainage	Location within a private compound with multiple households. Legally available. None of the Nearby structures is at risk, Slight contamination risk.	Severe drainage issues, unsuitable. Inaccessible without major infrastructure upgrades. There are signs of **green algae** on the stone or concrete surfaces near the water collection point caused	Major intervention needed to stabilize the site and improve access. Enhance hygiene and sanitation.	

Location Code/ Coordinate	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
				area. Poor hygiene, widespread waste, stagnant water near the collection point.		by constant presence of water and high moisture levels in the area.		
003 Lat: 8.4820860 Long: 13.2167290	Construction Of Tank Boreholes	Sloped, slightly loose with minor erosion risk.	Minor pooling during rainfall, manageable.	Easily accessible with existing paths/roads.	No contamination risk. Nearby structures not affected.	The immediate surroundings are covered with dense greenery, including shrubs and small trees, with patches of grass and scattered vegetation.	Maintain good drainage and improve hygiene around the area.	
004 Lat: 8.4776720 Long: 13.2117060	Construction Of Tank Boreholes	Flat Land, stable and compact	Minor pooling during rainfall, manageable.	Easily accessible with existing paths/roads. Limited access to sanitation (below 50%), signs of open defecation. About 3 water reservoir tanks were	The location is in front of the community Mosque with no contamination risk.	The location is Infront of a mosque making it accessible for residents	Improve access to sanitation and enhance waste management practices.	

Location Code/ Coordinate	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
				seen around with water supply from the Guma				
005 Lat: 8.4785980 Long: 13.2133740	Construction Of Tank Boreholes	Flat Land, loose soil with signs of erosion.	Poor drainage with significant runoff or erosion risk.	Poor hygiene, widespread waste and contamination signs.	No contamination risk, no nearby structures. The rocky cliff behind the toilet	There is an existing water tank connected to Guma which serve the neighborhood	Improve drainage to reduce erosion and runoff. Enhance hygiene practices.	

Location Code/ Coordinate	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
006 Lat: 8.4799310 Long: 13.2156370	Vip Toilets	Flat Land, stable and compact. There is a rocky cliff behind the existing toilet	Poor drainage with significant runoff or erosion risk.	Easily accessible with existing paths/roads. Limited access with signs of open defecation. The surrounding environment is somewhat overgrown with grass and small plants. There is some litter scattered on the ground in front of the structure The surrounding environment is somewhat overgrown with grass and small plants indicating a lack of maintenance	Location within a private compound with multiple households. Legally available. None of the Nearby structures is at risk, Slight contamination risk.	Existing toilet in a very poor state, with waste littered around it.	Rehabilitate the toilet facility and implement waste management measures.	

Location Code/ Coordinate	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
007 Lat: 8.4769940 Long:13.2152160	Pour Flush Toilets	Flat Land, stable and compact.	Severe drainage issues, unsuitable. Challenging access, substantial improvements needed.	Limited access (below 50%), signs of open defecation, poor hygiene.	Location not accessible to the public. There is pooling resulting from lack of water outlet making the area a breeding ground for unpleasant odors.	Accessibility only through a private compound, secluded from the neighborhood.	Improve accessibility and drainage. Enhance sanitation in the area.	
008 Lat: 8.4795730 Long: 13.2129330	Construction Of New Water Table Well	Flat Land, unstable, visible cracks or major erosion.	Minor pooling during rainfall, manageable.	Easily accessible with existing paths/roads. Limited access, poor hygiene with widespread contamination.	The ground is uneven and covered with rocks, bricks, and other construction debris.	The location appear to be a rough and rugged environment that might be challenging to navigate. Proper cleanup could greatly improve the area.	Improve drainage and enhance hygiene and sanitation practices.	

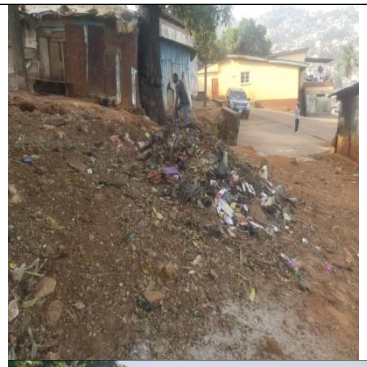
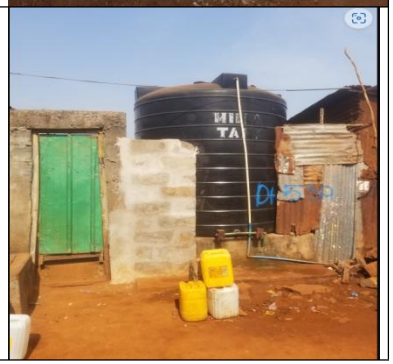
Location Code/ Coordinate	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
009 Lat: 8.4789660 Long: 13.2125920	Construction Of New Water Table Well	Flat Land, loose soil with signs of erosion.	Poor drainage with significant runoff or erosion risk.	Limited access (below 50%), signs of open defecation, poor hygiene.	No contamination risk. There are nearby structures but not at risk	The environment is characterized by drainage filled with an accumulation of solid waste.	Improve drainage and ensure proper sanitation access.	

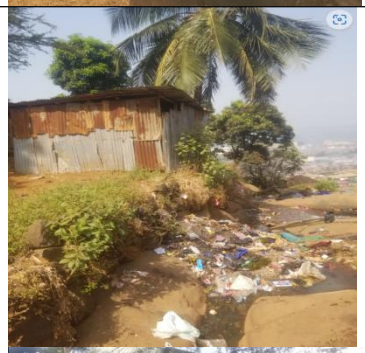
Location Code/ Coordinate	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
010 Lat: 8.4765520 Long: 13.2119750	Construction Of New Water Table Well	Sloped, Loose soil with signs of erosion	Moderate (11–20°): Requires erosion control measures.	Poor drainage with significant runoff or erosion risk.	Inaccessible without major infrastructure upgrades	Limited access (below 50%), signs of open defecation. Poor hygiene, widespread waste and contamination signs.	Improve access and install proper erosion control measures. Enhance drainage and sanitation access.	
011 Lat: 8.4786050 Long: 13.2119520	Pour Flush Toilets	Sloped, Unstable, visible cracks or major erosion	High (21–30°): Requires significant mitigation, such as retaining walls.	Minor pooling during rainfall, manageable	Inaccessible without major infrastructure upgrades	Limited access (below 50%), signs of open defecation. Poor hygiene, widespread waste and contamination signs.	Improve accessibility with proper infrastructure, and install retaining walls. Enhance hygiene practices and sanitation.	

Location Code/ Coordinate	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
012 Lat: 8.4757220 Long: 13.2121650	Construction Of New Water Table Well	Flat Land, Unstable, visible cracks or major erosion	High (21–30°): Requires significant mitigation, such as retaining walls.	Severe drainage issues, unsuitable	Inaccessible without major infrastructure upgrades	Limited access (below 50%), signs of open defecation. Poor hygiene, widespread waste and contamination signs.	Implement retaining walls, improve drainage, and enhance hygiene access and sanitation.	

Location Code/ Coordinate	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
013 Lat: 8.4827320 Long: 13.2162950	Construction Of New Water Table Well Refillable Plastic water Tank	Stable and compact	Low (0–10°): Stable, suitable for construction	Well-drained with no standing water	Easily accessible with existing paths/roads	Some access (50–80%), with visible gaps. Moderately clean, occasional waste or dumping.	Ensure continued proper waste management and improve access to sanitation.	
014 Lat: 8.4786230 Long: 13.2115600	Refillable Plastic tank water	Flat Land, Unstable, visible cracks or major erosion	Low (0–10°): Stable, suitable for construction	Well-drained with no standing water	Easily accessible with existing paths/roads	Some access (50–80%), with visible gaps. Poor hygiene, widespread waste and contamination signs.	Improve sanitation access and waste management practices.	

Location Code/ Coordinate	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
015 Lat: 8.4775950 Long: 13.2146860	Refillable Plastic Water Tank	Sloped, slightly loose, minor erosion risk	Low (0–10°): Stable, suitable for construction	Poor drainage with significant runoff or erosion risk	Challenging access, substantial improvements needed	Limited access (below 50%), signs of open defecation. Poor hygiene, widespread waste and contamination signs.	Address access issues and improve drainage to reduce erosion. Enhance hygiene practices.	

Location Code/ Coordinate	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
017 Lat: 8.4812130 Long: 13.2155530	Construction Of Tank Boreholes	Sloped, Loose soil with signs of erosion	Low (0–10°): Stable, suitable for construction	Poor drainage with significant runoff or erosion risk	Easily accessible with existing paths/roads	Limited access (below 50%), signs of open defecation. Poor hygiene, widespread waste and contamination signs.	Improve drainage to prevent erosion, maintain accessibility, and promote sanitation.	
019 Lat: 8.4814340 Long: 13.2165710	Vip Toilets	Sloped, Unstable, visible cracks or major erosion	Severe drainage issues, unsuitable	Challenging access, substantial improvements needed	Yes (within 30 meters of borehole)	Limited access (below 50%), signs of open defecation. Moderately clean, occasional waste or dumping.	Improve infrastructure to enhance accessibility. Implement waste management and hygiene practices.	

Location Code/ Coordinate	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
031 Lat: 8.4725280 Long: 13.2112450	Pour Flush Toilets	Flat Land, Unstable, visible cracks or major erosion	Moderate (11–20°): Requires erosion control measures.	Severe drainage issues, unsuitable	Inaccessible without major infrastructure upgrades	Limited access (below 50%), signs of open defecation. Poor hygiene, widespread waste and contamination signs.	Implement retaining walls, improve drainage, and enhance hygiene access and sanitation.	

Coconut Farm Vulnerability Analysis

Coconut Farm recorded **51 vulnerable households out of 173 PAHs (32.9%)**, with **elderly-headed households (45%)** forming the largest group. Widows (29%) and dependent single mothers (22%) also represent significant shares. Although the overall percentage is moderate, the **high concentration of elderly households** underscores the importance of **age-sensitive resettlement assistance** and livelihood restoration.

Category	**Number**	**% of Vulnerable**	**% of Total PAHs**
Physical Disability	1	2%	0.6%
Illness	0	0%	0%
Widows	15	29%	9.7%
Dependent Single Mothers	11	22%	7.1%
Child-Headed Households	1	2%	0.6%
Elderly Persons	23	45%	14.8%
Total Vulnerable	51	100%	32.9%

4.10 Bai Bureh Socio-economic Baseline

Bai Bureh Road, like many urban corridors in Freetown, has experienced rapid population growth driven by incoming migration and incremental densification along the road corridor. The road traverses multiple municipal wards in the eastern part of the city, including portions of Ward 346, Ward 348, and Ward 349, which collectively cover residential neighbourhoods, commercial nodes, and informal settlements along the corridor.

Population estimates for the Bai Bureh Road corridor vary depending on the exact boundaries applied and the data source used, as the road itself does not constitute a discrete administrative unit. For the purpose of this project, the delimitation of Bai Bureh Road (From Up-gun Junction – Granville Brooke) as designated by stakeholders covers approximately 0.15 km² and comprises an estimated 450 buildings, based on OpenStreetMap building footprint data and recent satellite imagery.

4.10.1 Demographic Profile of Respondents

Sampled Population

Table 4.63 provides the estimated population of Bai Bureh as verified by Statistics Sierra Leone, including details of the surveyed households. For this study, 100 households were randomly selected from the Bai Bureh community population for socio-economic assessment.

Data from the 2021 Mid-term Population and Housing Census indicate that the national average household size is approximately 8.8 persons per dwelling, with regional variations across the country. In terms of housing occupancy, Sierra Leone records an average of about 1.6 households per housing unit, with slightly higher concentrations observed in the Western Area.

Freetown has a population of 609,174 compared to the national total of 7,548,702, representing about 8.1% of the country's population.

Table 4.63: Bai Bureh Sampled Household and Population

Community	Population (A)	No Of Houses (B)=A/8.8	Ave No of Households C=B*1.6	Min. Sample Size 15% D= (15% *C)	Actual Sample Size
Bai Bureh	3,960	450	720	108	100

Source: Socio Economic Household Survey, January, 2026

Gender Distribution

The survey conducted along Bai Bureh Corridor shows a fairly balanced gender composition among respondents, with females making up 52% and males 48% of participants as presented in Table 4.64. This distribution is slightly higher for females compared to the national average, where males account for 49.4% and females 50.6%, yielding a sex ratio of 96.8 males per 100 females.

Table 4.64: Gender of Respondents

Gender	Number	%
Male	48	48
Female	52	52
Total	**100**	**100**

Source: Socio Economic Household Survey, January 2026

Marital Status

The socio-economic survey conducted along Bai Bureh Road revealed that the majority of respondents were married (61%), while single respondents accounted for 20%, and widows/widowers made up 19% of the total surveyed population. This indicates a predominance of married households along the corridor, reflecting family-based settlement patterns in the area.

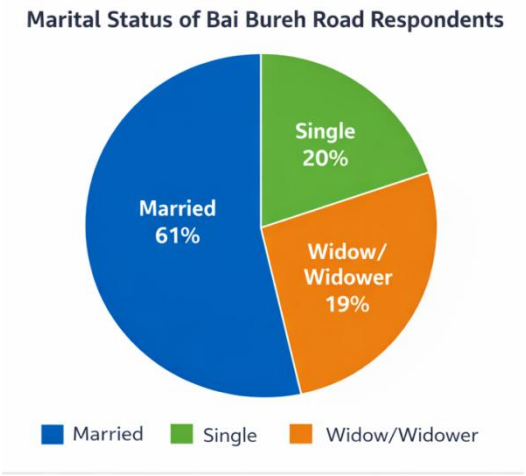


Figure 4.35: Marital Status of Bai Bureh Respondents
Source: Socio Economic Household Survey, January, 2026

Status of Respondents

The survey administered along Bai Bureh Road primarily targeted household heads. In cases where the household head was unavailable, the respondent was the spouse or another household member, such as a son, daughter, sibling, or parent of the household head. As presented in Table 4.65, about 65% of respondents were either the household head or their spouse, while 6% were sons or daughters of the household head. The remaining respondents included siblings, parents, or other representatives, reflecting the diversity of household representation during the survey.

Table 4.65: Status of Bai Bureh Respondents

Respondents	Bai Bureh	%
Household Head	55	55%
Spouse	10	10%
Son/Daughter of HH	6	6%
Brother/Sister	9	9%
Mother/father of household head	15	15%
Others	5	5%
Total	**100**	**100.0%**

Source: Socio Economic Household Survey, January, 2026

Age Distribution

Respondents interviewed along Bai Bureh Road ranged in age from 19 to 75 years. The majority were concentrated in the 30–49 years age bracket, with 45% aged 30–39 years and 30% aged 40–49 years. Younger respondents aged 19–29 years accounted for 15%, while older age groups 50–59 years, 60–69 years, and 70 years and above made up 5%, 3%, and 2% of respondents respectively (Table 4.66). This distribution reflects a population largely in the working-age and economically active group along the corridor.

Table 4.66: Bai Bureh Age Distribution

Age	Number	%
19 - 29 years	15	15%
30 - 39 years	45	45%
40 - 49 years	30	30%
50 - 59 years	5	5%
60 - 69 years	3	3%
70 and above	2	2%
	240	100%

Source: Socio Economic Household Survey, January, 2026

Ethnicity of Respondents

The survey conducted along Bai Bureh Road revealed a diverse ethnic composition among residents. The majority of respondents were Temne, accounting for 53% of the surveyed population (Table 4.67). Other significant groups included Limba, Loko, Mende, and Madingo, reflecting the multi-ethnic nature of Freetown. The city hosts all eighteen recognized ethnic groups in Sierra Leone, with the Temne and Mende being the largest both in Freetown and nationally, each representing roughly one-third of the country's population.

Table 4.67: Bai Bureh Respondents Ethnicity Distribution

Ethnicity	Number	%
Temne	53	53%
Limba	14	14%
Loko	6	6%
Mende	5	5%
Madingo	5	5%
Fullah	4	4%
Creole	4	4%
Others	9	9%
Total	**100**	**100%**

Source: Socio Economic Household Survey, January 2026

Religious Background

Findings from the survey along Bai Bureh Road reveal that the majority of residents identify as Muslims, representing **89%** of the respondents (Figure 4.36). Christians account for **10%**, while the remaining **1%** follow traditional African religions or other spiritual beliefs. This distribution highlights both the dominance of Islam in the corridor and the presence of multiple faiths living together peacefully. The community demonstrates a tradition of interfaith tolerance, with harmonious relations between religious groups forming part of daily social interactions.

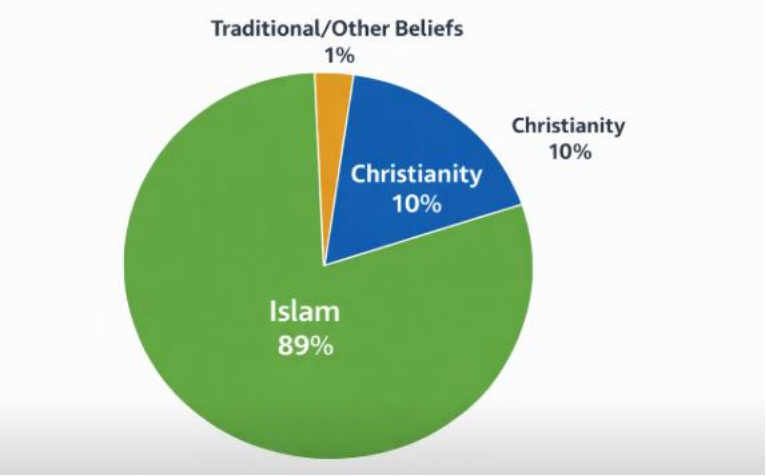


Figure 4.36: Religious Background of Bai Bureh Respondents
Source: Socio Economic Household Survey, January 2026

Residence Status of Respondents

Bai Bureh Road has experienced significant in-migration since the civil conflict, with immigrants settling in both formal and informal areas. Survey results show that 70% of respondents identify as settlers, while 30% are indigenes. This reflects the presence of both recent arrivals and long-term residents. The corridor thus has a mixed community composition. Settlers and indigenes coexist along the road. Figure 4.37 presents residence status of Bai Bureh respondents.

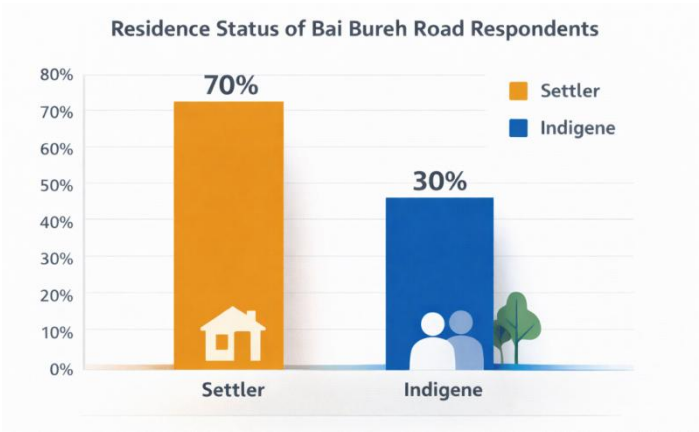


Figure 4.37: Residence Status of Bai Bureh Respondents
Source: Socio Economic Household Survey, January, 2026

4.10.2 Education Profile

Bai Bureh Road hosts a mix of public and private educational institutions, including St. Theresa Roman Catholic Primary School and St. Boniface Preparatory School, both located within the same compound adjacent to the project work corridor.

These facilities constitute highly sensitive receptors, given their proximity to the proposed works and the presence of vulnerable populations (school children). As such, there is a significant interface between school activities and construction operations, necessitating the implementation of targeted mitigation measures to manage potential impacts related to noise, dust, traffic safety, and restricted access.**Educational Attainment**

Survey results along Bai Bureh Road show that over one-fourth of respondents (**32%**) have never received formal education (Table 4.68). About **16%** of residents have attained tertiary education, while the remainder have completed various levels of schooling, including primary, junior and senior secondary, Arabic, and vocational education. This distribution indicates that while some residents have advanced qualifications, many may face challenges accessing employment that requires formal or technical skills.

Table 4.68: Educational Attainment of Respondents

Education Level	Number	%
No Education	32	31.7
SSS Level	20	20
JSS Level	16	16.3
Primary School Level	6	5.8
Tertiary Level	16	16.3
Arabic Education	7	6.7
Vocational	3	3.3
Total	**100**	**100**

Source: Socio Economic Household Survey, January 2026

School Enrolment

As presented in table 4.69, the assessment of households along Bai Bureh Road corridor shows that the majority of school-age children are enrolled in school, either at the primary or secondary level. About 81% of children attend school, while 19% are not enrolled. Although the government's Free Quality Education initiative has reduced some barriers, parents remain responsible for costs such as uniforms, books, and other school-related expenses.

Table 4.69: Bai Bureh School Enrolment Status

School Enrolment Response	Bai Bureh	
	Frequency	%
Yes	81	81
No	19	19
Total	**100**	**100**

Source: Socio Economic Household Survey, January 2026

Educational Attainment by Gender

Educational attainment is a key indicator of living standards. Survey results along Bai Bureh corridor show that men generally have higher levels of formal education compared to women. While a significant portion of both genders has no formal education, men are more represented at tertiary and Arabic education levels, whereas women are more concentrated in junior and senior secondary levels and primary education. Table 4.70 presents the education attainment by gender.

Table 4.70: Education Attainment by Gender

Educational Attainment	Bai Bureh		
	Male (%)	Female (%)	Total (%)
No Education	12%	20%	32%
SSS Level	9%	11%	20%
JSS Level	5%	11%	16%
Primary school level	2%	4%	6%
Tertiary level	10%	5%	15%
Arabic education	5%	1%	6%
Vocational	1%	4%	5%
	44%	**56%**	**100.0%**

Source: Socio Economic Household Survey, January 2026

4.10.3 Livelihood and Economic Profile

Residents along Bai Bureh corridor engage in a variety of livelihood activities, combining informal and small-scale businesses with physical labour. Trading, self-employment, and stone breaking are common, while others work as artisans, drivers, or in service roles (Table 4.71). Youth often participate in labour-intensive work and waste collection to compliment household income. There are local factories and a heavy machinery equipment assembly outlet within the community which provides formal employment, however, access to these jobs is limited.

Employment opportunities are constrained, with high unemployment, particularly among the younger population. The absence of a local market forces residents to buy and sell at distant markets, increasing costs for goods. Gender roles are distinct: women dominate trading and informal businesses, often benefiting from micro-credit programs, while men primarily engage in physical labour. Women also play a key role in community decision-making.

Table 4.71: Livelihood Activity by Gender

Main Occupation	Bai Bureh		
	Male (%)	Female (%)	Total (%)
Trading	19	29	48
Self Employed	3	1	5

Civil Servant	4	2	6
Quarrying (Stone Breaking)	2	0	2
Teaching	3	0	3
Local Govt. Administrator	0	1	1
Others	6	9	15
Unemployed	5	11	16
Taxi/Truck Driver	2	0	2
Artisan (Voc. skills)	1	1	2
Health Worker	0	0	0
Total	**45**	**55**	**100**

Source: Socio Economic Household Survey, January, 2026

Average Monthly Income by Gender

Income from primary livelihood activities along Bai Bureh Road shows a clear gender disparity, with men generally earning higher amounts than women. Most residents earn low to moderate incomes, with a larger proportion of women in the lower income brackets, while men dominate the higher income ranges (Table 4:72).

Table 4.72: Main Occupation Average Monthly Income

Income Level	Bai Bureh		
	Male (%)	Female (%)	Total (%)
Up to SLL 200	6	18	24.6
SLL 201 – SLL 400	6	10	16.7
SLL 401 – SLL 600	5	7	12.5
SLL 601 – SLL 800	6	4	10.0
SLL 801 - SLL1,000	8	6	13.3
SLL1,001 – SLL 1,500	8	5	12.1
SLL 1,501 – SLL 2,000	3	2	5.4
SLL 2,001 – SLL 2,500	2	1	2.9
SLL 2,501 – SLL 3,000	1	1	2.1
Above SLL-3,000	0	0	0.4
Total	45	55	100.0

Source: Socio Economic Household Survey, January, 2026

4.10.4 Social Situation

Bai Bureh Road faces multiple socio-economic challenges, common across Freetown, including high unemployment and limited access to essential services such as potable water, sanitation, healthcare, and education. Concerns reported in the area include youth involvement in gangs, substance abuse, and children engaged in street trading. Some community youth groups, such as the Combined Youth Organization and The Money Team, actively participate in community clean-up initiatives. People with physical disabilities face significant hardships, often lacking assistive devices and living in vulnerable conditions, including street begging. The community currently lacks a dedicated community center.

4.13.5 Utility Services and Infrastructure

Access to Electricity

Electricity access within the Bai Bureh corridor is characterized by widespread grid connectivity, the community hosts the second largest electric energy generation substation in Freetown; however, reliability remains a significant constraint. Most households adopt a fuel-stacking approach, combining grid electricity with generators and informal lighting sources such as torchlights and candles. This reflects underlying energy insecurity and highlights the need for improved power reliability and alternative energy solutions. Citywide, electricity access in Freetown is estimated at 82% (EDSA Demand Forecast Report, 2023).

Table 4.73: Electricity Access in Bai Bureh

Energy Source Category	Frequency	%
Grid Electricity (EDSA) – Primary	21	21%
Grid + Generator (Backup Power)	40	40%
Grid + Informal Lighting (Torch/Candle)	24	24%
Generator Only	6	6%
Informal Lighting Only (Torch/Candle)	9	9%
Total	**100**	**100%**

Source: Socio Economic Household Survey, January, 2026

Communications

Most of the people have access to mobile phones, but the telephone signal/ network is very poor.

Accessibility to Portable Water

Access to potable water along Bai Bureh Road remains limited, with only about 45% of residents having regular access (Table 4.74). The water supply is managed by Guma Valley Water Company. Residents rely on a combination of piped water, private groundwater wells, and refilled water tanks. Public water points and commercial wells serve as the main sources, while some households purchase water from private wells at higher costs. Rainwater harvesting is not practiced in the community. Poor foot access conditions and irregular payments further restrict regular water delivery, and collection from public taps, streams, or ponds can pose safety risks, especially for women and girls.

Table 4.74: Bai Bureh Community Water Source

Community Water Source	Frequency	(%)
Pipe Borne Water only	35	35
Hand Dug Well only	3	3
Pipe Borne Water, Hand Dug Well, Pond, Stream, Spring	19	19
Pipe Borne Water, Well with Hand Pump	16	16
Pipe Borne Water, Stream/Spring	21	21
Other	6	6
Total	**100**	**100**

Source: Socio Economic Household Survey, January, 2026

Road Network Access and Transport Mobility

Internal footpath access teeing off from the Bai Bureh Road corridor in Freetown's East End consists largely of informal, narrow, and often unpaved pedestrian pathways linking dense residential areas to the main road. Developed organically without formal planning, these routes traverse steep, hilly terrain and become particularly difficult to use during the rainy season. Poor surface conditions, limited maintenance, and safety concerns further restrict accessibility for residents.

Drainage

Drainage along Bai Bureh Road is inadequate, resulting in frequent flooding during the wet season. Narrow and shallow channels, especially the V-shaped drainage conveying water to the Granville Brooke stream, are often blocked with silt and waste, reducing flow capacity. Some drainage upgrades have been implemented by NGOs, but most existing structures remain poorly maintained and insufficient, particularly uphill, causing flash flooding in lower areas, such as near the community football field. The lack of effective drainage infrastructure poses both safety and sanitation risks for residents. Figure 4.38 present the Gorge at the end of Bai Bureh Corridor

4.10.6 Health and Sanitation

Figure 4.38: Gorge at the End of Bai Bureh Corridor

Healthcare access along the Bai Bureh Road corridor in Freetown's East End comprises a mix of public and private facilities. The following medical facilities are located within the vicinity of the proposed Bai Bureh Road project corridor:

- Life Care Hospital (Eastern Branch): Located at 116 Bai Bureh Road, Grassfield, Kissy. The facility is strategically situated along the main corridor and provides a range of healthcare services, including specialized clinical services, laboratory diagnostics, and 24-hour emergency care.
- Rokupa Government Hospital: Situated along Bai Bureh Road, this public health facility offers comprehensive reproductive, maternal, and newborn healthcare services, in addition to general inpatient and outpatient care.
- Under-Five Hospital: situated at the Back of Saint Theresa Roman Catholic School, provides maternal and paediatric services.

Health Status

Malaria is the most commonly reported disease among residents along Bai Bureh Road, followed by cold, cough, flu, and typhoid (Table 4.75) as recorded during the socio-economic household survey conducted in, January 2026. Other conditions such as diarrhoea, vomiting, and skin diseases are also observed. These trends align with broader health challenges in adjacent communities like Coconut Farm, highlighting the need for improved preventive and primary healthcare services in the area.

Table 4.75: Disease Prevalence in Project Area

Disease Prevalence	Multiple Choice	Multiple Choice
Malaria	45	45
Diarrhea/Dysentery	25	25
Skin Disease/Rash	10	10
Cold Cough and/or Flu	5	5
Vomiting/Stomach Problem	3	3
Typhoid	3	3
Others	9	9

Source: Socio Economic Household Survey, January, 2026

Sierra Leone faces persistent challenges in healthcare provision due to limited resources and a shortage of qualified health workers. Nationally, there are approximately 0.07 physicians and 0.45 nurses/midwives per 1,000 population, well below WHO recommended levels. These shortages place significant strain on healthcare workers, particularly in low-resource communities such as Bai Bureh Road.

Knowledge of HIV/AIDS

Residents of Bai Bureh Road show high awareness of HIV/AIDS, with 91% of respondents reporting they have heard of the disease. Information sources include health workers, media (radio, TV, newspapers), and schools. While knowledge of transmission and prevention is widespread, about 67% of residents reported having been tested, leaving approximately 24% untested (Figure 4.39). These figures reflect the trends observed in nearby Coconut Farm, indicating a generally good level of awareness and engagement with HIV/AIDS education in the area.

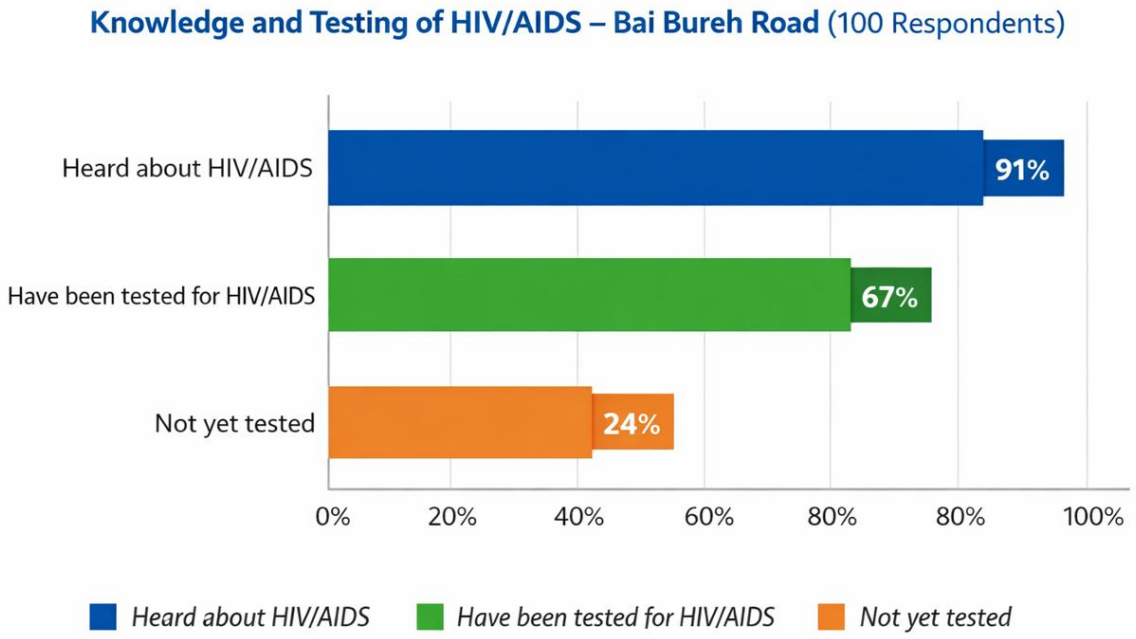


Figure 4.39: Knowledge of HIV/AIDS in Bai Bureh
Source: Socio Economic Household Survey, January 2026

Transmission and Prevention of HIV/AIDS and Test for HIVAIDS

Sanitation infrastructure in Bai Bureh Road is limited. The community lacks public toilets and a formal sewer network. Most residents rely on traditional pit latrines, while some have access to ventilated improved pit latrines or flush facilities. Open defecation is observed in certain areas, reflecting a gap in basic sanitation services. This situation mirrors challenges in adjacent Coconut Farm, where sanitation coverage is also below national targets.

Sanitation

There is no public toilet access or formal sewerage network in Bai Bureh Road. While a few households have private toilets, the majority do not, as most dwellings were constructed without building permits or adherence to planning regulations. Consequently, only a limited number of properties have functional private toilets. Traditional pit latrines are the most common facility, but many are poorly constructed and inadequately maintained. Open defecation is observed in some areas, including along roads and drainage channels, highlighting significant hygiene challenges.

Flush toilets and ventilated improved pit latrines are present in a smaller portion of households. This situation reflects broader national trends, where pit latrines are widely used, particularly in rural areas, and open defecation remains prevalent. Overall, sanitation coverage falls short of the Sustainable Development Goal target of 66%, underscoring the need for improved infrastructure and better enforcement of planning requirements. Table 4.76 present the sanitary facility in Use in Bai Bureh.

Table 4.76: Sanitary Facility in Use in Bai Bureh

Sanitary Facility	Bai Bureh	
	Frequency	%
Traditional Pit Latrine	56	56
Water Closet (Flush facilities)	12	12
Ventilated Improved Pit Latrine	22	22
Stream/River	10	10
Others	0	0
Total	**100**	**100**

Source: Socio Economic Household Survey, January, 2026

4.10.7 Solid Wastes Management

Solid waste management along Bai Bureh Road in Freetown's East End reflects the broader challenges facing the city, including inconsistent collection, no skip containers, and widespread illegal dumping. Overflowing bins and poor service coverage result in waste being disposed of in drains and open spaces, frequently causing drainage blockages and flash flooding during the rainy season. Collection is largely managed by the Freetown City Council and private contractors, with waste transported to the overburdened Granville Brooke Dumpsite. High waste generation rates, limited cost recovery, open burning, and insufficient transfer infrastructure contribute to environmental and public health risks, despite ongoing reform efforts by the Freetown City Council under initiatives such as Transform Freetown and Klin Salone.

Table 4.77: Bai Bureh Solid Wastes Management Practice

Solid Wastes Management	Number	%
Burn for Composting	12	12%
Street/Drainage	29	29%
Backyard Dump	59	59%
Total	**100**	**100%**

Source: Socio Economic Household Survey, January, 2026

4.13.8 Energy Use for Cooking

Households within the Bai Bureh Road corridor predominantly rely on solid fuels, particularly charcoal, as their primary cooking energy source, whereby households combine charcoal with cleaner fuels such as LPG (gas), depending on affordability, meal type, and availability. Exclusive reliance on LPG is limited due to cost and supply constraints; however, partial LPG adoption is more widespread as presented in table 4.78. The continued dependence on charcoal and wood presents notable environmental and public health concerns, particularly indoor air pollution and associated respiratory risks, thereby reinforcing the need for gradual transition to cleaner cooking solutions.

Table 4.78: Energy Source for Cooking in Bai Bureh

Energy Source	Frequency	%
Charcoal	55	55%
Wood	9	9%
Gas	5	5%
Charcoal/Gas	21	21%
Charcoal/Wood	10	10%
Total	**100**	**100%**

Source: Socio Economic Household Survey, January, 2026

4.10.9 Gender Based Violence (GBV) Assessment

Respondents Awareness of GBV

Most respondents (79%), reported awareness of gender-based violence issues within the community. This aligns with stakeholder consultations and focus group discussions with women and youth, confirming a shared recognition of GBV challenges as presented in Table 4.106.

Table 4.79: Gender-Based Violence Issues Awareness in Bai Bureh Road**Gender Based Violence Awareness**	**Frequency**	**%**
Yes	79	79
No	21	21
Total	**100**	**100%**

Source: Socio Economic Household Survey, January, 2026

GBV Prevalence in Bai Bureh

As presented in Table 4.81, multiple forms of GBV were reported in the community, with wife beating and child marriage being the most common. Other forms identified include FGM, sexual violence, intimate partner violence, and honor-based crimes. These findings underscore the persistent gender-based challenges in the community and highlight the need for awareness campaigns, legal protection, and support services.

Table 4.81: Prevalence of Gender Based Violence in Bai Bureh

Multiple Choice Questions	Bai Bureh	
	Frequency	%
Child Marriage only	4	4
Wife Beating only	23	23
Female Genital Mutilation (FGM) only	7	7
Sexual Violence Only	4	4
Intimate Partner Violence only	3	3
Child Marriage & Wife Beating	26	26
Child Marriage and Sexual Violence	5	5
Child Marriage & FGM	3	3
Child Marriage, Sexual Violence, FGM & Wife Beating	7	7
Child Marriage Sexual Violence, Intimate Partner Violence FGM Wife Beating Honor Crime	9	9
Sexual Violence & Wife Beating	9	9
Total	**100**	**100**

Source: Socio Economic Household Survey, January, 2026

GBV Trend in the Project

The trend of gender-based violence along Bai Bureh Road suggests a modest decline in incidents over recent years. Approximately 54% of respondents reported that GBV has been decreasing, while

23% indicated an increase, and a small proportion felt that the situation has remained the same. This reflects ongoing community efforts to address GBV, though challenges remain. (Table 4.82).

Table 4.82: Gender Based Violence Trend in Bai Bureh

GBV Trend Description	Bai Bureh	
	Frequency	%
Remain the same	2	2
On the Decreased	54	54
On the Increased	23	23
No Response	21	21
Total	**100**	**100%**

Source: Socio Economic Household Survey, January, 2026

4.10.10 Respondents Knowledge and Perception of the Proposed Project

Respondents Knowledge of the Project

Residents were asked about their awareness of the proposed neighborhood upgrade along Bai Bureh Road. Survey results suggest that around 60% of respondents had not heard about the project (Figure 4.40), whereas participants in FGDs and stakeholder consultations confirmed that awareness exists among engaged community members. This highlights the importance of targeted information dissemination to ensure all residents are informed about the project.

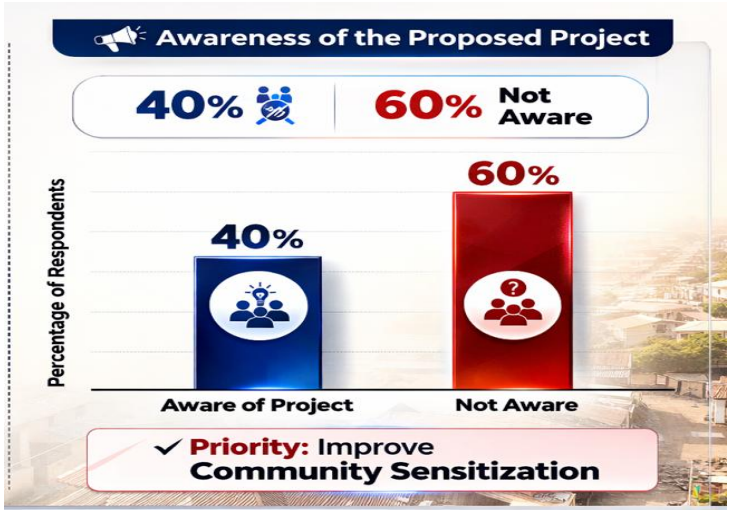


Figure 4.40: Project Awareness of Respondents Bai Bureh
Source: Socio Economic Household Survey, January, 2026

Respondents Perception about the Project

Along Bai Bureh Road, the proposed drainage expansion has gained some awareness among residents. Survey results indicate that 60% of respondents have a positive perception of the project, while 40% did not provide a response. No respondents reported indifference, as summarized in Table 4.83.

Table 4.83: Project Perception in Bai Bureh

Respondents Awareness	Bai Bureh	
	Frequency	%
Good	60	60
Indifferent	0	0
Blanks	40	40
Total	**100**	**100**

Source: Socio Economic Household Survey, January, 2026

4.11 Portee - Rokupa Environmental Baseline

4.11.1 Topography

Portee-Rokupa are two neighboring interconnected coastal communities located in a small bay in the eastern part of the Freetown peninsula. The total area of Portee-Rokupa is approximately 0.735 km^2. Portee-Rokupa community is positioned within two different wards: 408 (parts of Rokupa) and 409 (entire of Portee and parts of Rokupa). The neighborhoods slope gently from a high of about +40m above sea level to meet the coastline. The two communities are bisected by a large open channelized drain. This acts as an “unofficial” physical boundary between the two communities, leading residents to strongly identify themselves with either Portee or Rokupa, depending on whether they are located to the north or the south respectively. Most of the housing is on gently sloping ground that falls to the coastline.

As presented in Figure 4.41 the terrain is at a shallower slope angle than much of Freetown, landslide susceptibility and hazard are not considered high or very high in this community. The main feature of the terrain of this AoI is the coastal inlet/delta where the outfall of the natural stream (now channelized) meets the coastline. The steeper slope angles that form the natural edge of the coastline in the community. Most of the informal housing is found on the lower-lying ground of this minor delta.

Figure 4.41: Portee/Rokupa Landslide Hazard Susceptibility Terrain (Source Arup, 2023)

4.11.2 Hydrology and Flood Hazard

The communities share boundaries with Kuntolor to the north, Congo water to the east, Grass field to the west and Rokel River to the south which empties into the Atlantic Ocean[15]. The community lies within a natural river catchment denoted ‘C5’ after the Sierra Leone Multi-City Hazard Review and

[15] Tumwebaze et at (2022) Water and sanitation service levels in urban informal settlements: a case study of Portee-Rokupa in Freetown, Sierra Leone. Journal of Water, Sanitation and Hygiene for Development (2022) 12 (8): 612–621.Available at: .https://iwaponline.com/washdev/article/12/8/612/90177/Water-and-sanitation-service-levels-in-urban

Risk Assessment[16]. Figure 4.42 presents the flood hazard susceptibility Map for 1 in 100-year return period.

Fluvial flooding tendency is exacerbated in the community by inadequate and blocked drainage channels. Coastal Flooding is also a hazard in the community with sea-level projected to rise and shown to inundate the low-lying coastal areas of this minor delta for both upper and lower-bound projections for 2050. A red line has been drawn along the coast by the government through the NPAA to prevent the coastal communities from extending settlements seaward. A holistic, catchment-scale flooding and drainage intervention as proposed under this investment will assist in ameliorating the flooding problems experienced annually by the community in Portee Rokupa.

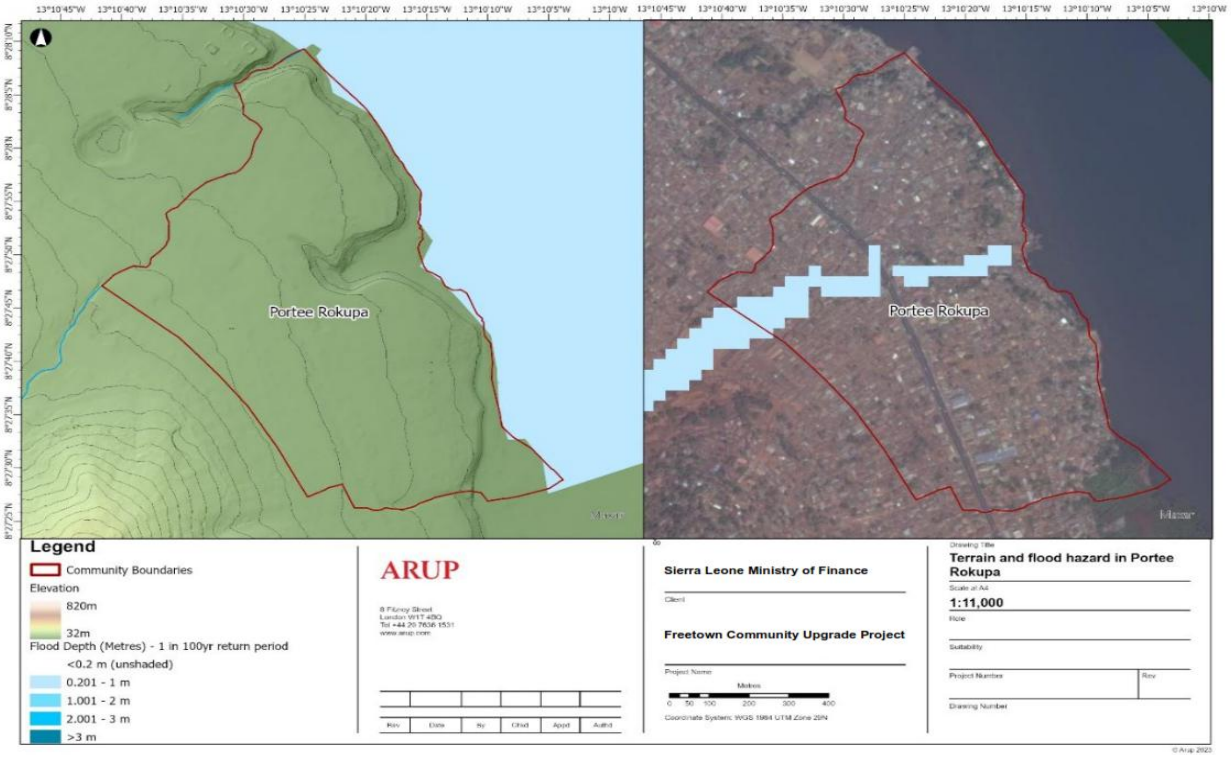


Figure 4.42 : Flood Hazard Susceptibility Map for Portee/Rokupa

4.11.3 Air Quality

Real-time air quality baseline study was carried out every 1-15 minutes over a 1 hour averaging time to describe the existing air quality condition of Portee - Rokupa. The parameters monitored during the study include Nitrogen dioxide (NO_2), Sulphur dioxide (SO_2), Carbon Monoxide (CO), Particulate Matter with an aerodynamic diameter of less than 10 micrometers (PM10), and Particulate Matter with an aerodynamic diameter less than 2.5 micrometers (PM2.5).

The existing sources of air pollutants in the community include:

- Movement of vehicles on unpaved road
- Household fuel combustion such as gas, charcoal and firewood.
- Fugitive dust sources (windblown dust from bare ground as well as dust being transported by winds).

[16] World Bank, 2018. Sierra Leone Multi-City Hazard Review and Risk Assessment: Final Report (Volume 2 or 5) Freetown City Hazard and Risk Assessment

Table 4.84 presents the daily average ambient air quality concentrations monitored within the community in comparison to the World Health Organization (WHO) and the World Bank Group (WBG) EHS Guidelines.

Table 4.84: Portee/Rokupa Daily Average Ambient Air Quality Concentrations

Parameters			Air Quality parameters						
			PM_{10} (µg/m^3)	$PM_{2.5}$ (µg/m^3)	NO_2 (µ/g^3)	SO_2 (µ/g^3)	CO (µ/g^3)	Temp (0^C)	Relative Humidity
		WHO (µ/g$^{3)}$	50	15	25	40	4	NA	NA
Code	Easting	Northing							
RNM1	700956	935664	50.4	36.0	BDL	BDL	BDL	32.5	46.28
RNM2	701369	935591	BDL	BDL	BDL	BDL	BDL	31.34	46.28
RNM3	701340	935988	BDL	BDL	BDL	BDL	BDL	32.51	46.28
RNM4	700856	935663	BDL	BDL	BDL	BDL	BDL	31.81	46.28

Source: Detailed Field Survey, July 2024

Particulate Matter

The particulate sampling was carried out at each location over a three-day period. The PM 10 concentration of 50.4 µg/m3 was only detected at sampling point by Bai Bureh Road as presented in Table 4.84. This is probably due to emission from the heavy vehicular movement around the area.

Sulphur Dioxide

The values of SO_2 were below permissible level/detection limit (BDL) throughout the duration of monitoring. The low value could be attributed to the absence of non-sulphur combustion engines or industrial facilities within the community.

Nitrogen Dioxide

The levels of NO_2 were below detection limit at all the sampling locations. This suggests that there were no vehicular or industrial activities that is generating NO_2.

Carbon Monoxide

Trace concentration of CO was observed in RNM1 and RNM4. This could be attributed to vehicular emissions. Other locations were below detection limit throughout the duration of the monitoring.

4.11.4 Noise Level

Noise is considered 'nuisance' when it is excessive, disruptive and/or displeasing. Nuisance noise and/or high noise levels can affect both physiological and psychological human health, with long-term excessive noise levels being damaging to human hearing. Very high noise level exposure especially for a long duration can have both auditory (e.g., permanent loss of hearing) and non-auditory effects (Mathias, et al., 2013). As present in Table 4.85 the values recorded in Portee - Rokupa ranges from 47.6 – 69.1 dB (A) and could be attributed to vehicular movement and use of generator.

Table 4.85: Noise Level in Portee/Rokupa Farm

WBG EHSG Guideline Noise Level – one Hour Leq, dB (A)			
Day (7:00 – 10:00 pm)			55
Night (10:00-7:00 pm)			45
Code	Easting	Northing	Continuous Sound Level Leq, dB (A)
RNM1	700956	935664	69.1
RNM2	701369	935591	42.5
RNM3	701340	935988	44.4
RNM4	700856	935663	61.0

Source: Detailed Field Survey, July 2024

As presented in Table 4.86, while the concentration of other heavy metals is negligibly low magnesium had the highest concentration with a mean of 10.55 mg/kg for the composite samples collected from each location. Microorganisms isolated from the soil include *Streptococcus faecalis* which is an indication of faecal pollution.

Table 4.86: Mean Chemical Properties (mg/l) of Soil Samples in Portee/Rokupa

Location	pH	Na	Cu	Cr	Mg	Pb	Fe	Ca	Ph	Zn	P	As	F. Coli
		mg/kg											MPN/100m
P. Rokupa	7.56	0.55	1.47	10.55	5.45	0.91	0.12	0.48	0.14	0.33	6.00	0.00	113.33
Netherlands Standards	6.5 - 8.5		50	100		50				200			

Source: Detailed Field Survey, June 2023

4.11.5 Surface Water Quality

The results from the surface water quality monitoring within the communities is compared with the WHO standard and presented in Table 4. 88. The mean pH value of the water body indicates that the water body is slightly alkaline (6.93) which could be attributed to atmospheric decomposition. The mean conductivity value (412.00 μScm^{-1}) is within the WHO limit. The conductivity value may be due to the presence of ionized materials flushed into the water body. The metals (Ca and Mg) constitute the exchangeable cations. The mean concentration of calcium is 68.67 mg/l while the mean concentration of magnesium in the water body ranged 0.20 mg/l). The presence of coliform bacteria in the water body indicated pollution by faeces.

Table 4.87 presents the location and coordinates of surface and groundwater samples collection points in Rokupa.

Table 4.87: Rokupa/Portee Surface and Groundwater Sample Collection Locations

Location	Easting	Northing
Surface Water		
RSW1	701177	936017
RSW2	701410	935940
RSW-Upper	700377	935634
Gound Water		
RGW1	701064	935592
RGW2	701375	935714

Table 4.88: Physio-chemical Properties of Surface Water in Portee/Rokupa

Parameters	Cond	T D S	pH	DO	Turb	Temp	Cl	Al	NH3	Ca
WHO Standard	<420mg/l	<248ppm	6.5-85	NA	<5.0NTU	-	0.03-0.5	<0.2mg/l	0	<250mg/l
Mean Value	412.00	212.67	6.93	5.77	8.00	28.17	0.00	0.05	0.05	68.67
Parameters	**Cu**	**Fe**	**Mn**	**Mg**	**NO^-_2**	**NO^-_3**	**K**	**PO43-**	**Si**	**SO_4^{2-}**
WHO Standard	<1.0mg/l	<0.3mg/l	<0.4mg/l	<200	<3.0mg/l	<10mg/l	<6.0mg/l	<20mg/l	<15mg/l	<400Mg/l
Mean Value	0.48	0.07	5.21	0.20	0.05	3.33	0.67	0.97	0.01	19.07
Parameters	**SO^{2-}_3**	**Cl^-**	**As**	**Cr**	**HCO_3**	**Zn**	**e-coli**	**F. coliform**		
WHO Standard	0	<250mg/l	<0.01mg/l	<0.05mg/l	-	<5.0 mg/l	Zero	Zero		
Mean Value	0.30	43.33	0.00	0.06	0.00	0.00	-	100.00		

Source: Detailed Field Survey, June 2023

4.11.6 Groundwater Quality

Groundwater from hand dug well is the major source of potable water supply in the community. This is in part due to the lack of supply of reliable drinking water by Water Supply Company. The groundwater beneath the area presents a relatively thin lens of fresh water to saline with depth

associated with coastal aquifers. Table 4.89 presents the physio-chemical properties of groundwater in the study area.

The pH values of the groundwater at Portee - Rokupa is below the WHO limit which tends acidic with a mean value of 5.14. The groundwater table is generally low, thus the variation in the pH of the assessed groundwater may be attributed to seepage from the soil surface of acid iron containing materials into the groundwater during runoff. A possible health effect could be gastrointestinal infection. The recorded mean conductivity value of 105.25 mg/l is within the WHO limit while the detected concentration of metals is negligibly low. The recorded value of dissolved oxygen in the groundwater is 47.35 mg/l.

Table 4.89: Mean Physio-chemical Properties of Groundwater in Portee - Rokupa

Parameters	Cond	T D S	pH	DO	Turb	Temp	Cl	Al	NH3	Ca
WHO Standard	<420mg/l	<248ppm	6.5-85	NA	<5.0NTU	-	0.03-0.5	<0.2mg/l	0	<250mg/l
Mean Value	105.25	34.80	5.14	47.35	4.40	28.20	0.00	0.05	0.06	47.00
Parameters	**Cu**	**Fe**	**Mn**	**Mg**	**NO^-_2**	**NO^-_3**	**K**	**PO43-**	**Si**	**SO_4^2-**
WHO Standard	<1.0mg/l	<0.3mg/l	<0.4mg/l	<200	<3.0mg/l	<10mg/l	<6.0mg/l	<20mg/l	<15mg/l	<400Mg/l
Mean Value	0.47	0.08	0.18	0.16	0.03	1.00	1.00	0.50	0.01	39.90
Parameters	**SO^{2-}_3**	**Cl^-**	**As**	**Cr**	**HCO_3**	**Zn**	**e-coli**	**F. coliform**		
WHO Standard	0	<250mg/l	<0.01mg/l	<0.05mg/l	-	<5.0 mg/l	Zero	Zero		
Mean Value	0.02	45.00	0.00	0.01	0.00	0.00	#DIV/0!	20.00		

Source: Detailed Field Survey, June 2024

4.12 Portee - Rokupa Socio-economic Baseline

The Portee Rokupa settlement was established in the early 1940s. As a result of the expansion of the urban economy in the 1950s, many people from Port Loko came to trade in the community, known by its nickname, Ro-Poti. The area consists predominately of residential dwellings, with a consolidated strip of commercial buildings around the main paved road where a market is functioning. Estimates of population for the area of interest (AoI) delineating the community at Portee Rokupa vary depending on the exact boundaries used and the data source. In respect of this study, the AoI is approximately 0.74km^2 and includes 2,365 buildings (Open Street Map data, May 2022).

4.12.1 Demographic Profile of Respondents

The socio-economic baseline for households within the statutory community of Rokupa is further detailed in the Resettlement Plan report that is developed in addition to this ESIA. This includes a census of affected households and an analysis of tenure for those residing in informal or high-risk areas

Sample Population

The estimated population of the community confirmed with records from Statistics Sierra Leone is presented in Table 4.90 with the total sampled population and households. A sample size of 655 households was randomly surveyed from a population of 17,397 (Statistics Sierra Leone) in Portee-Rokupa. According to the 2021 Population and Housing Census, the population per house is 8.8 persons and ranges from a low of 7.9 persons in the Southern region to a high of 9.4 persons in the Eastern region. On average, Sierra Leone has 1.6 households per house and ranges from a low of 1.4 in the Southern region to a high of 1.9 in the Western Area. The Population of Freetown is 609,174 and the national population is 7,548,702. Freetown accounts for 8.1 of the national population. (2021 Mid-term Population and Housing Census).

Table 4.90: Portee - Rokupa Sampled Household and Population

Community	Pop.(A)	No Of Houses	Ave No of	Min. Sample	Actual Sample

		(B)=A/8.8	Households C=B*1.6	Size 15% D=(15% *C)	Size
Portee - Rokupa	17,397	1977	3163	477	655

Source: Socio Economic Household Survey, June 2023

Gender Distribution

Table 4.91 presents the gender distribution of respondents consulted during the survey. Males (436) constituted the bulk (66.6%) of the respondents, while females (219) constituted 33.4%. At the national level the gender distribution is 49.4 males and 59.9 females with a sex ratio of 96.8 males per 100 females.

Table 4.91: Gender of Respondents

Gender	Number	%
Male	436	66.6
Female	219	33.4
Total	655	100

Source: Socio Economic Household Survey, June 2023/July 2024

Marital Status

As presented in Figure 4.43, majority (73.7%) of respondents were married, 10.4% were single, and 15.9% were either divorced or widowed.

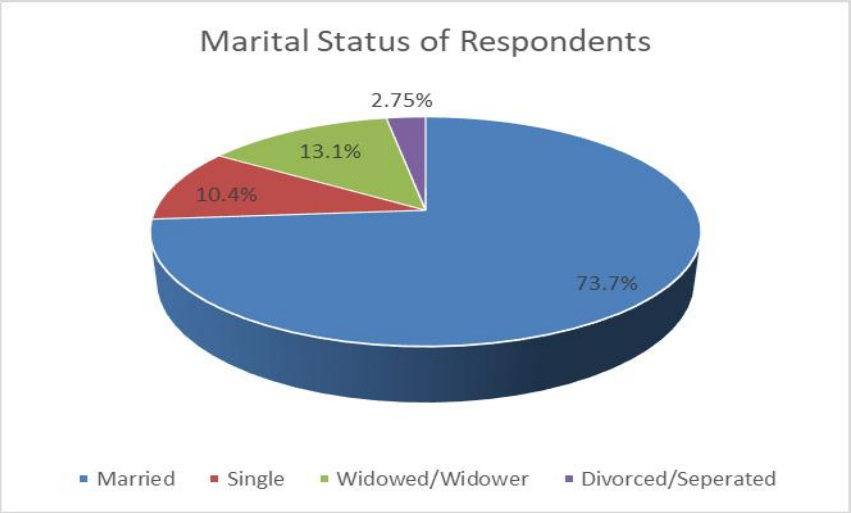


Figure 4.43: Portee - Rokupa Respondents Marital Status

Status of Respondent

The questionnaires administered was targeted at household heads, where the household head was unavailable, the household was represented by the spouse or other representatives of the household including the son or daughter. Other representatives include the household head's mother or sibling. 88.1% of respondents were either household heads or their spouse, and 7.6% of respondents being sons or daughters of the household head. The remainder were brothers or sisters of the household head. Table 4.92 presents status of Portee- Rokupa respondents.

Table 4.92: Status of Portee - Rokupa Respondents

Respondents	Portee - Rokupa	%
Household Head	421	64.3
Spouse	156	23.8
Son/Daughter of HH	50	7.6
Brother/Sister	19	2.9

Mother/father of household head	5	0.8
Others	4	0.6
Total	**655**	**100**

Source: Socio Economic Household Survey, June 2023/July 2024

Age Distribution

Respondents interviewed during the survey were within ages 19–75years. 9.6% were below 30 years, 19.8% were within 30–39 years, 32.2% were between 40 and 49 years, 23.8% were between 50 and 59 years, and 14.5% were above 60 years (Table 4.93).

Table 4.93: Portee - Rokupa Age Distribution

Age	Number	%
19 - 29 years	63	9.6
30 - 39 years	130	19.8
40 - 49 years	211	32.2
50 - 59 years	156	23.8
60 - 69 years	85	13.0
70 and above	10	1.5
	655	100.0

Source: Socio Economic Household Survey, June 2023/July 2024

Ethnicity of Respondents

A variety of ethnic groups were found resident in the community, the bulk are Temnes (399) at 60.9%. Other ethnic groups of significance are Limba, Mende and Madingo as presented in Table 4.94. Freetown is home to all the eighteen ethnic groups in Sierra Leone. The Temnes and Mendes form the largest in Freetown and Sierra Leone at large, each forming about one third of the country's population.

Table 4.94: Portee - Rokupa Respondents Ethnicity Distribution

Ethnicity of Household Head	Rokupa/Portee	
Temne	399	60.9
Kono	14	2.1
Madingo	51	7.8
Limba	53	8.1
Fullah	18	2.7
Mende	63	9.6
Loko	21	3.2
Creole	4	0.6
Others	32	4.9
Total	**655**	**100**

Source: Socio Economic Household Survey, June 2023/July 2024

Religious Background

As presented in Figure 4.44, although Sierra Leone is a secular state, the predominant religion affiliation in the community is Islam practiced by 84.7% in Portee-Rokupa representing 555 of the respondents, Christian account for 15.3% in Portee–Rokupa practiced by 100 of the respondents.

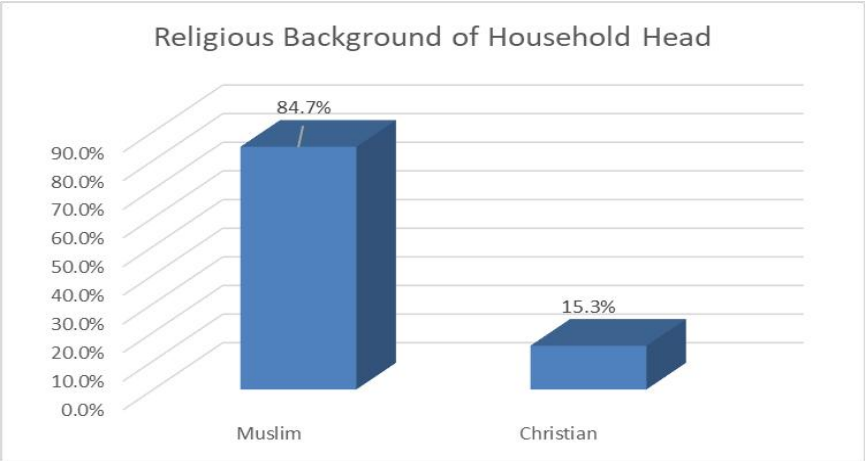


Figure 4.44: Religious Background of Portee – Rokupa Respondents
Source: Socio Economic Household Survey, June 2023/July 2024

Residence Status of Respondents

Freetown experienced massive in-migration after the rebel war, most of the in-migrates created shelter in slums and hillsides. About 78% of respondents described themselves as settlers, while 22% of the respondents described themselves as indigene as presented in Figure 4.45.

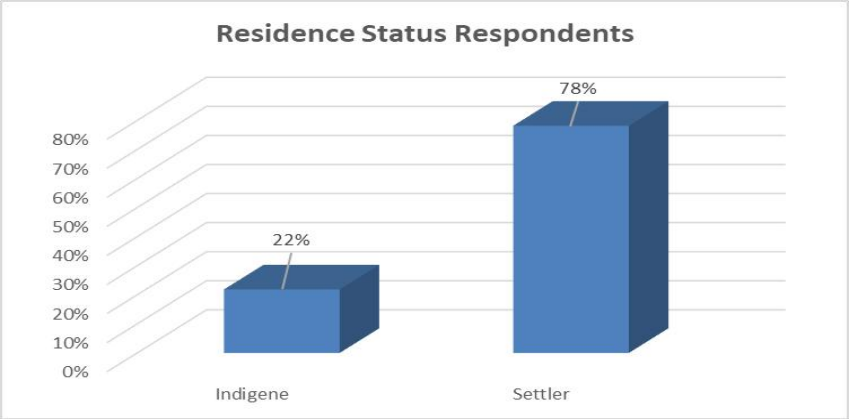


Figure 4.45: Residence Status of Portee - Rukupa Respondents
Source: Socio Economic Household Survey, June 2023/July 2024

Building Stock and Tenure

There is a wide variety of building stock in this community ranging from multi-storied and concrete brick buildings with reinforcement, mud houses and CI sheets/bush sticks shacks (panbody) houses that are most common in the Rokupa Wharf area. Much of the land in the Rokupa Wharf area is characterized as informal, built on land reclaimed by waste and silt to flow into the delta area. The area is very vulnerable to both fluvial and coastal flooding. Though laws exist to prevent illegal construction in the high-risk areas, the laws are often ignored for these types of informal development. Therefore, over the years, more households have settled in high-risk areas due to lack of urban planning, low housing supply and high rental prices[17]. This issue further exacerbates housing tenure issues. Figure 4.46 presents typical building types in Portee – Rokupa Community.

[17] World Bank (2018). Urban Sector Review. Freetown: Options for Growth and Resilience.

Figure 4.46: Typical Building Types in Portee - Rokupa Community

4.12.2 Education Profile

Access to higher education is limited due to the non-existence of public secondary schools. There's a high percentage of population in the informal areas of the community with no formal education. Portee-Rokupa has 4 primary schools (3 in Rokupa, 1 in Portee), 3 Junior Secondary School (2 in Rokupa, 1 in Portee), and 3 senior secondary schools (2 in Rokupa, 1 in Portee). This lack of a public secondary school reduces the student's opportunity to benefit from the government's "Free Quality Education" program. There is also little job security for teachers with reports of some residents they currently offer free teaching service at the local school.

Educational Attainment

Table 4.95 indicates that over one-fourth of respondents, is 27.8% in Portee - Rokupa indicated that they never had any form of formal education while 36.8 attained secondary education. However, only 3.8% reported that they had attained a tertiary level education. The data suggests that there may be limited employment opportunities in the project for residents of these communities, particularly for positions requiring technical qualifications.

Table 4.95: Educational Attainment of Respondents

Education Level	Number	%
No Education	182	27.8
SSS Level	158	24.1
JSS Level	83	12.7
Primary school level	77	11.8
Tertiary level	87	13.3
Arabic education	39	6.0
Vocational	29	4.4
Total	**655**	**100**

School Enrolment

As highlighted in Table 4.96, school enrolment assessment of households in Portee - Rokupa (81.5%), indicated that most of the school age children were enrolled in school (primary or secondary school). Respondents who reported that their children were not in school were 18.5%. Despite the "Free Quality Education" initiative introduced by the government, parents are still responsible for commitments such as uniforms, books and other related costs. According to the 2019 Annual School Census Report, Gross Enrolment Rate increased across all levels of education from Pre-primary, primary, junior secondary and senior secondary level.

Table 4.96: Portee - Rokupa School Enrolment Status

School Enrolment Response	Portee - Rukupa	
	Frequency	%

Yes	534	81.5
No	121	18.5
Total	655	100

Source: Socio-Economic Household Survey, June 2023/July 2024

Educational Attainment by Gender

Educational level is one of the key determinants for measuring standard of living. As presented in Table 4.97, the assessed educational attainment by gender indicated that there is less educational attainment among women compared to men in the community.

Table 4.97: Education Attainment by Gender

Educational Attainment	Portee - Rokupa		
	Male (%)	Female (%)	Total (%)
No Education	14	13.7	27.8
SSS Level	18	6.4	24.1
JSS Level	9	4.1	12.7
Primary school level	6	5.8	11.8
Tertiary level	11	2.3	13.3
Arabic education	6	0.2	6.0
Vocational	4	0.9	4.4
Total	**67**	**33**	**100**

Source: Socio Economic Household Survey, June 2023/July 2024

4.12.3 Livelihood and Economic Profile

Economic life in the coastal informal areas of Portee and Rokupa is primarily defined by a precarious fishing industry and concentrated roadside trading. While the margins of the main Freetown transport route host intense commercial activity with both formal businesses and informal vendors, this disappears moving toward the coast. The fishing sector, the primary source of income for many families, is severely hindered by seasonal scarcity, the lack of cold storage facilities which forces immediate sales of catch and high operational costs. Prohibitive diesel prices and a monopoly on equipment, such as Yamaha engines and nets sourced exclusively from Guinea, further limit the financial security of local fishers.

Social and structural barriers also restrict broader economic growth within these communities. Youth face significant unemployment, often finding themselves excluded from fishing boat crews due to concerns over sharing limited daily earnings. While microcredit schemes exist, they are frequently avoided due to inflexible interest rates and unprofitable business conditions, even though women are targeted as more reliable borrowers. Despite various NGO-led vocational training programs in skills like tailoring, soap making, and welding, graduates often lack the startup resources to sustain these vocations. This underscores a critical need for alternative livelihoods and more accessible financial support to bridge the gap between training and stable employment.

Figure 4.47: Rokupa Wharf Fishing Boats

Livelihood Activity by Gender

Livelihood activity by gender was assessed to understand livelihood activity undertaken by women as opposed to men as this has direct relationship with their earnings. Table 4.98 indicated that both men and women are engaged in trading activities. Women are mostly engaged in the informal sector livelihood activities.

Table 4.98: Livelihood Activity by Gender

Main Occupation	Portee - Rokupa		
	% Male	% Female	% Total
Trading	25.2	22.1	47.3
Fishing	8.9	2.0	10.8
Fish Monger	1.4	0.9	2.3
Self Employed	4.9	0.6	5.5
Commercial Bike Rider	2.3	0.0	2.3
Civil Servant	3.5	0.8	4.3
NGO Worker	1.1	0.0	1.1
Quarrying (Stone Breaking)	0.0	0.0	0.0
Teaching	1.8	0.9	2.7
Local Govt. Administrator	0.3	0.3	0.6
Daily Labour	0.6	0.0	0.6
Others	5.8	1	7
Unemployed	4.0	3.5	7.5
Taxi/Truck Driver	3.8	0.0	3.8
Artisan (Voc. skills)	2.3	0.5	2.7
Health Worker	0.3	0.6	0.9
Sand Mining	0.5	0.0	0.5
Total	**67**	**33**	**100**

Source: Socio Economic Household Survey, June 2023/July 2024

Average Monthly Income by Gender

Income from main livelihood activity by gender was investigated. Data showed that there is economic gender inequality, men continued to earn more than women in their main livelihood activities (Table 4: 99).

Table 4.99: Main Occupation Average Monthly Income

Income Level	Portee - Rokupa		
	Male (%)	Female (%)	Total (%)
Up to SLL 200	7.8	6.4	14.2

SLL 201 – SLL 400	5.3	4.6	9.9
SLL 401 – SLL 600	9.9	6.0	15.9
SLL 601 – SLL 800	7.0	2.1	9.2
SLL 801 – SLL 1,000	10.2	4.7	15.0
SLL 1,001 – SLL 1,500	6.3	2.6	8.9
SLL1,501 – SLL 2,000	4.0	2.1	12.8
SLL 2,001 – SLL 2,500	4.0	1.2	5.2
SLL 2,501 – SLL 3,000	1.8	1.4	3.2
Above SLL 3,000	3.5	2.3	5.8
Total	**66.6**	**33.4**	**100.0**

Source: Socio Economic Household Survey, June 2023/July 2024

4.12.4 Social Situation

Numerous socio-economic difficulties prevail in all three neighbourhoods and are shared throughout Freetown. These challenges encompass elevated levels of joblessness, limited access to vital public amenities like potable water, sanitation facilities, healthcare services, and education. The Rokupa Wharf community has many disabled who are confronted with several challenges including unemployment, lack of survival skills, and street begging. The representative of people with disability runs a blacksmith center from which he trains many other people in blacksmithing, the organization is called Indigenous Handicap Blacksmith Development Association.

The proposed rehabilitation and reconstruction of walkways follow the natural terrain hence steps are required at certain steep sections as indicated in the walkway profiles. Handrails are provided in the engineering drawings and BOQ. The layout of the steps may be adjusted to suit site conditions during construction per the instruction of the supervising engineer. Streetlights are indicated in the solar street-lighting layout.

4.12.5 Utility Services and Infrastructure

Access to Electricity

As documented in the CUP, approximately 95% of the houses in this community have access to electricity, however a significant number of the connections are illegal which increases the risk of fires and add to the network's instability and reliability. There's no streetlighting as the few existing have been vandalized. 96.5% of the respondents uses Electricity from mains (EDSA) even though they use Torchlight or Candle when there is power outrage. In addition, about 3.5% of the respondents were not using electricity from the EDSA, these households either use torchlight to light homes at night). Table 4.100 presents electricity access in Portee – Rokupa.

Table 4.100: Electricity Access in Portee – Rokupa

Energy Source Category	Frequency	%
Grid Electricity (EDSA) – Primary Only	433	66.1%
Grid + Generator (Backup Power)	26	4.0%
Grid + Informal Lighting (Torch/Candle)	185	28.2%
Informal Lighting Only (Torch)	23	3.5%
Total	**655**	**100%**

Source: Socio Economic Household Survey, June 2023/July 2024

Communications

Most of the people have access to mobile phones, but the telephone signal/ network is very poor.

Accessibility to Portable Water

The lower part of the community, closer to the coastline, does not have pipe-borne water access, water wells are salty, and some water tanks are not even replenished for long periods. During the site assessment, it was discovered that Portee - Rokupa does not have pipe-borne water access

within the informal settlement which means the community either accesses water wells which are salty or goes out of the community to buy water over long distances.

While the water sources in the area are applied for domestic uses (washing and cleaning) as the wells are salty or contaminated, portable water for the Portee - Rokupa community is from public piped water taps, water kiosks, water tanks and private and public groundwater wells.

During FGD and Stakeholder consultations, it was reiterated that access to water becomes difficult during the dry season when some water wells and other sources of water dry up, women and children spend up to 2 to 4 hours a day in search of both domestic and drinking water. Table 4.101 presents Portee - Rokupa community water sources.

Table 4.101: Portee - Rokupa Community Water Source

Community Water Source	Frequency	(%)
Pipe Borne Water only	320	48.9
Hand Dug Well only	129	19.7
Pipe Borne Water, Hand Dug Well, Pond, Stream, Spring	52	7.9
Pipe Borne Water, Well with Hand Pump	127	19.3
Pipe Borne Water, Stream/Spring	12	1.8
Other	15	2.3
Total	**655**	**100**

Source: Socio Economic Household Survey, June 2023/July 2024

Road Network Access and Transport Mobility

The main Bai Bureh Road runs north to south through the two communities, and is paved and in good condition, however crossing for people is dangerous due to the inexistence of crossing indications or amenities. The roads inside the community are unpaved and in poor condition.

Access to the wharf can be dangerous due to the current conditions of the steps and ramps. This situation makes accessibility difficult, especially during the wet season. The roads inside the community are unpaved and rocky with unconnected drainage systems. Mobility is poor in the informal area, with no access to vehicles. The main access in and out of the informal part of the community is via a path off Bai Bureh Road next to the Ghaddafi Mosque or Zara Lane which is currently a dead end to vehicles before it reaches the wharf area.

Currently, there is no direct vehicular access to the Rokupa Wharf area. The roads and path access are very narrow and are in constant use by the community transporting water and goods in and around the community. Additionally, buildings have encroached on the right of way making access very narrow (Figure 4.48).

Figure 4.48: Narrow Pathways in Rokupa

Drainage

The primary drainage system that runs across the main Bai Bureh Road to Lower Rokupa is not equipped to handle the water flow from upstream, thus significantly increasing the risk of flooding during the wet season. The limited drainage systems in the Wharf area of the community are insufficient to manage the water flow effectively. In some instances, drains were observed to have been poorly routed beneath existing structures due to inadequate planning and design. Furthermore, the already narrow drains are obstructed by waste, which has been discarded both upstream and by community residents.

4.12.6 Health and Sanitation

Health and sanitation in Portee-Rokupa are characterized by a severe lack of resources and a dangerous intersection between infrastructure deficits and social vulnerability. While the community has access to the Rokupa Government Hospital (a specialized obstetrics and newborn care facility) and a small health post in Portee, these facilities are largely inadequately equipped. The community health centre in the Rokupa Wharf area is particularly affected by understaffing and a lack of essential resources, making it difficult to address the health needs of the high-density coastal population.

The public health crisis is exacerbated by extreme sanitation failures, including a lack of private toilets and the prevalence of fecal matter in open waterways. Beyond waterborne diseases, these conditions have fostered a high-risk environment for sexual exploitation and abuse. The community identifies this through the slogans "fish for fish" and "water for water," describing a predatory system where fishermen and water-well owners exchange essential resources for sex. This vulnerability is directly linked to the community's water crisis, as Guma Valley's intermittent supply often arrives only at night, leaving women and girls in a precarious position to secure water for their households.

Health Status

The common diseases experienced in the communities as assessed during the survey, revealed that malaria is the most prevalent disease (about 65.1%) in the surveyed area as presented in Table 4.102, followed by Vomiting/Stomach Problem and other types of diseases. As with national data, Malaria is endemic throughout the country and the leading cause of death and disease in Sierra Leone, malaria is regarded as the single biggest killer, accounting for 38% of all hospital admissions in Sierra Leone (Demographic Health Survey Report 2020).

Table 4.102: Disease Prevalence in Project Area

Disease Prevalence	Number	%
Malaria	403	61.5
Diarrhea/ Dysentery	31	4.7
Skin Diseases/ Rash	12	1.8
Cold, Cough and/or Flu	18	2.7
Vomiting/stomach problems	71	10.8
Typhoid	18	2.7
Others	102	15.6
Total	**655**	**100**

Source: Socio Economic Household Survey, June 2023/July 2024

Sierra Leone is faced with many challenges in providing healthcare due to a lack of resources and a shortage of qualified healthcare workers (HCWs), with about 0.07 Physicians and 0.45 nurses/midwives per 1000 population according to the World Bank collection of development indicators. The low-resourced setting in addition to inadequate levels of training and resources often put strain and stress on the health worker among other occupation health issues. Sierra Leone needs significantly more high cadre health workers to meet the average health worker density for the

WHO Africa region, which is 15.5 per 10,000 population, well below the WHO recommended 22.6 per 10,000 population minimum

Knowledge of HIV/AIDS

About 90.8% of the respondents (595) reported they have heard and are aware of the HIV/Aids. They revealed to have first heard about it from health workers, media (Radio, TV and Newspaper) and and/or school. Figure 4.49 presents knowledge of HIV/AIDS by respondents in Portee – Rokupa.

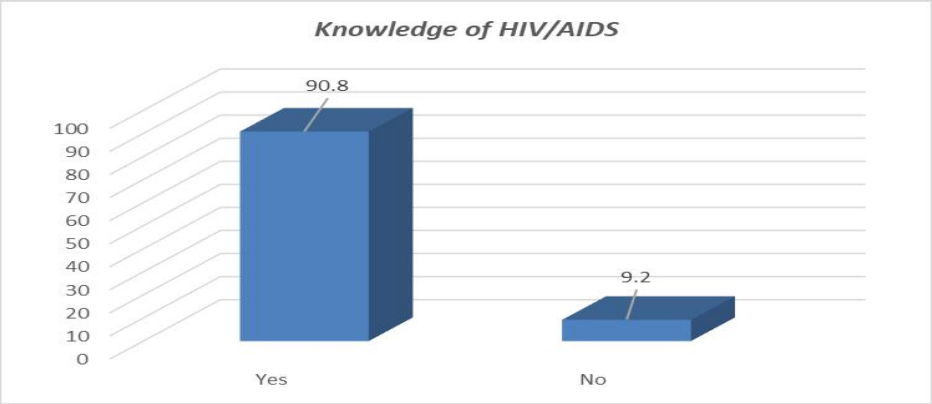


Figure 4.49: Knowledge of HIV/AIDS in Portee - Rokupa

Transmission and Prevention of HIV/AIDS and Test for HIVAIDS

Respondents' knowledge on HIV/AIDS transmission and prevention was sought, result indicates that all the respondents have heard about the disease and knew at least one means by which it is transmitted, however, test rate is low among the community residents with 68.5% of the respondents stating that they have been tested. Surveyed data suggests that there is good awareness and knowledge of its mode of transmission however, majority of the respondents are yet to be tested.

Sanitation

Sanitation in the informal coastal areas of Portee-Rokupa is in a state of crisis, characterized by a severe lack of private facilities and a reliance on hazardous "hanging toilets." These structures, constructed from sticks and sacks directly over the sea, are poorly maintained and facilitate the direct discharge of human waste into the water. For residents without access to these shared facilities, open defecation along the beach or the disposal of "flying toilets" (waste in carrier bags) into waterways is common practice. Survey data confirms that approximately 28.5% of the population defecates openly (Table 4.103) or throws waste into the sea, while those in seaside households rely almost exclusively on hanging latrines. The public health implications of these conditions are profound. The improper disposal of feces and the resulting clogging of drainages have created ideal breeding grounds for mosquitoes and flies, leading to the frequent spread of malaria, typhoid, cholera, and diarrhea. Beyond waterborne and vector-borne diseases, the community faces respiratory illnesses and allergies linked to mold in damp, overcrowded buildings, as well as the spread of skin diseases and tuberculosis. These health challenges are further compounded by poor ventilation and pest infestations, highlighting a direct link between the precarious living conditions in the informal settlements and the community's high disease burden.

Table 4.103: Sanitary Facility in Use in Portee - Rokupa

Sanitary Facility	Portee - Rokupa	
	Frequency	%
Traditional Pit Latrine	171	26.1
Flush	137	20.9
Ventilated Improved Pit Latrine	159	24.3

Stream/River	187	28.5
Others	1	0.2
Total	**655**	**100**

Socio Economic Household Survey, June 2023/July 2024

The most common toilet facility in Sierra Leone is the pit latrine with 33% of the population using it especially in the rural areas. About 27% of the rural population practices open defecation. Urban dwellers have improved sanitation facilities than rural households. Sanitation is far below the Sustainable Development Goal (SDG) of 66% target for the country. (GoSL, 2019).

4.11.7 Solid Waste Management

Solid waste management in Portee-Rokupa is severely compromised by geographical and behavioral barriers, leading to hazardous environmental practices. The community's lack of motorable road access, particularly in the wharf area, renders the city-wide tricycle collection system unviable. Consequently, residents frequently dispose of waste in waterways, leading to downstream blockages of drainage channels. This indiscriminate disposal is further reinforced by a reluctance to pay for collection services in the absence of enforcement or restraint. A particularly dangerous localized practice is the use of waste for land reclamation. Residents utilize a "fence and capping" system—piling large quantities of waste at the sea edge, securing it with fencing, and capping it with gravel—to create platforms for new housing construction. Survey data confirms that approximately 64% of households dispose of waste directly into the sea (Table 4.104), with evidence of open burning also widespread. These practices not only threaten the maritime ecosystem but also result in the construction of homes on unstable, contaminated, and high-risk reclaimed land.

Table 4.104: Portee - Rokupa Solid Wastes Management Practice

Solid Wastes Management	Number	%
Burn for Composting	32	5
Sea Disposal	420	64
Street/Drainage	102	16
Backyard Dump	101	15
Total	**655**	**100**

Source: Socio Economic Household Survey, June 2023/July 2024

4.12.8 Energy Use for Cooking

While 66.2% of the 130 respondents interviewed in community during the survey mentioned charcoal as the main energy source, 1.5% indicated gas as the energy source for cooking as presented in Table 4.105.

Table 4.105: Energy Source for Cooking in Portee – Rokupa

Energy Source	Frequency	%
Charcoal	420	64.
Wood	24	3.7
Gas	10	1.5
Charcoal Gas	41	6.3
Charcoal Wood	151	23.1
Charcoal Wood Gas	9	1.4
Total	**655**	**100**

Source: Socio Economic Household Survey, June 2023/July 2024

4.11.9 Gender Based Violence (GBV) Assessment

Respondents Awareness of GBV

During the stakeholder consultation and group meetings with women and youths in the community, response to questions on the awareness of issues of gender- based violence in the communities revealed that residents are aware of issues of gender-based violence as presented in Table 4.106.

Table 4.106: Gender-Based Violence Issues Awareness in Portee – Rokupa

Gender Based Violence Awareness	Portee – Rokupa	
	Frequency	%
Yes	452	69%
No	203	31%

Source: Socio Economic Household Survey, June 2023/July 2024

GBV Prevalence in Portee - Rokupa

During the stakeholder consultation meetings and face-to-face meetings, residents responded that a series of gender-based violence activities are occurring in the project area, prominent among them are sexual violence and wife beating. As highlighted in Table 4.107 issues relating to child marriage, intimate partner violence, FGM and honor crime ranks high in the community, followed by wife beating.

Table 4.107: Prevalence of Gender Based Violence in Portee – Rokupa

Multiple Choice Questions	Portee - Rokupa	
	Frequency	%
Child Marriage only	12	1.8
Wife Beating only	40	6.1
Female Genital Mutilation (FGM) only	12	1.8
Sexual Violence only	16	2.4
Intimate partner violence only	9	1.4
Child Marriage & wife beating	14	2.1
Child Marriage and sexual violence	16	2.4
Child Marriage & FGM	39	6.0
Child Marriage, Sexual Violence, FGM & Wife Beating	131	20.0
Child Marriage Sexual Violence, Intimate Partner Violence FGM Wife Beating Honor Crime	45	6.9
Sexual Violence & Wife Beating	321	49.0
Total	**655**	**100**

Source: Socio Economic Household Survey, June 2023/July 2024

GBV Trend in the Project

As presented in Table 4.108, the trend of gender-based violence in the communities revealed that there had been a general decrease in incidents of gender-based violence as stated by 39% of respondents in at Portee - Rokupa, 14% of the respondent believed that the issue of GBV has neither reduced none increased and 31% do not have anything to say about gender based violence in the community.

Table 4.108: Gender Based Violence Trend in Portee - Rokupa

GBV Trend Description	Portee - Rokupa	
	Frequency	%
Remain the same	94	14
On the decreased	253	39
On the increased	105	16
No Response	203	31
Total	655	100

Source: Socio Economic Household Survey, June 2023/July 2024

4.12.10 Respondents Knowledge and Perception of the Proposed Project

Respondents Knowledge of the Project

Respondents were asked of their knowledge of the proposed neighborhood upgrade project. The assessed data indicated that eight (8) people out of every ten people at Portee - Rokupa have not

heard of the project. However, this was in direct contrast with participants in the FGD and Stakeholder Consultation meetings. Figure 4.50 highlights the awareness level among the residents in the project area to the survey.

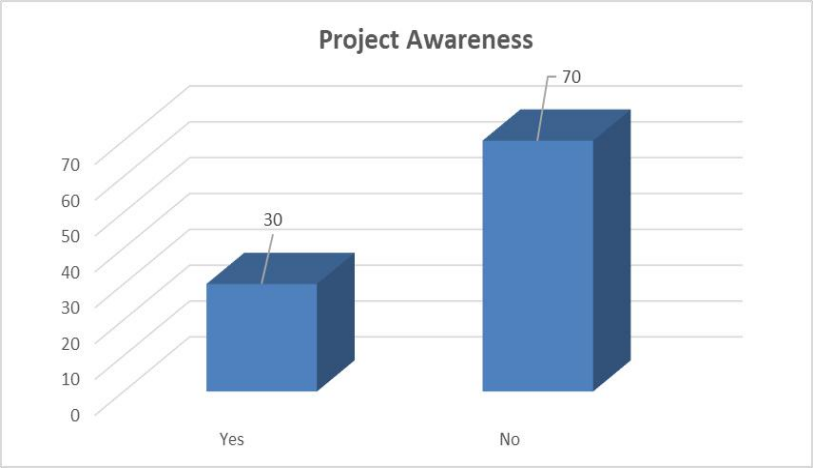


Figure 4.50: Project Awareness of Respondents Portee – Rokupa
Source: Socio Economic Household Survey, June 2023/July 2024

Respondents Perception about the Project

As presented in Table 4.109, while 30% feel good about the project, 70% of respondents seem not to be aware, hence no reaction.

Table 4.109: Project Perception in Portee - Rokupa

Respondents Awareness	Portee - Rokupa	
	Frequency	%
Good	197	30
Indifferent	0	0.0
Blanks	458	70
Total	655	100

Source: Socio Economic Household Survey, June 2023/July 2024

4.12.11 Archaeological and Cultural Heritage

The archaeological and cultural heritage of these communities is defined by a mix of tangible burial sites and deeply rooted traditional societies..

The social fabric is significantly influenced by two major cultural institutions:

- **Bondo Society:** A traditional female-only secret society that prepares young women for adulthood and marriage. While central to local identity and maturity rites, it is a subject of significant human rights debate due to the practice of female genital mutilation, which is recognized as a breach of international law despite being defended as a traditional pillar by some community leaders.
- **Ojeh Society:** A male society of Yoruba origin tracing back to the "liberated Africans" of the 19th century. Widely distributed across Freetown, the society is well-known for its masked dancers who perform in distinctive, brightly colored costumes during community events and ceremonies.

4.12.12 Land Use

The land use in Portee and Rokupa is defined by high-density, unplanned urban expansion that has largely displaced the original mangrove ecosystem. The community is bifurcated between a consolidated commercial strip along the upper paved roads and a sprawling informal residential zone

in the lower coastal areas. Much of this lower development sits on unstable land reclaimed using construction debris and waste, creating significant structural and environmental risks.

A critical deficit of public open space exists, with available land often repurposed as hazardous waste dumps. This physical layout, combined with the difficult topography of the Rokupa Wharf area, severely restricts access to essential services. These conditions are reinforced by an outdated 1960s legislative framework that lacks modern provisions for climate resilience or risk-sensitive planning. Addressing these challenges requires an integrated "renovate and retrofit" strategy to transition these high-risk informal settlements into safe, productive urban spaces. Figure 4.51 presents Portee – Rokupa land use map.

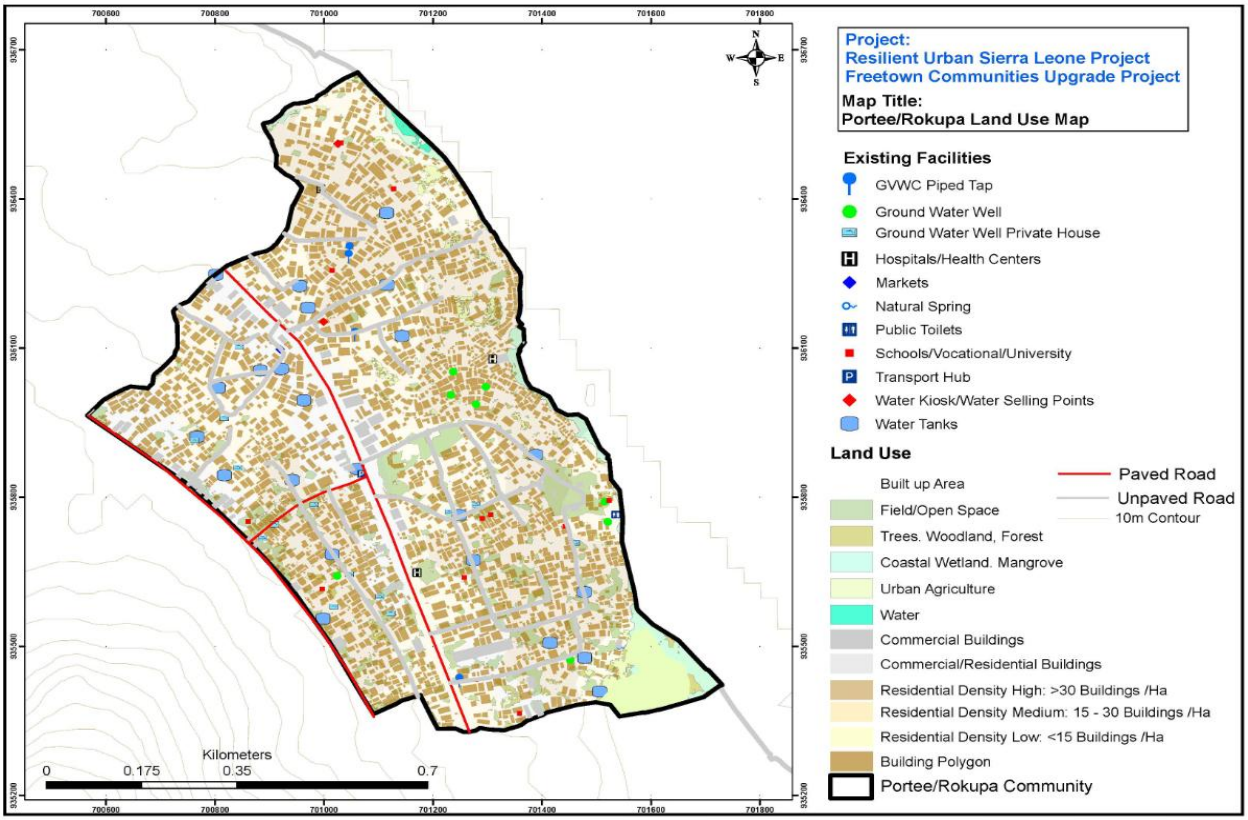


Figure 4.51: Portee – Rokupa Land Use Map

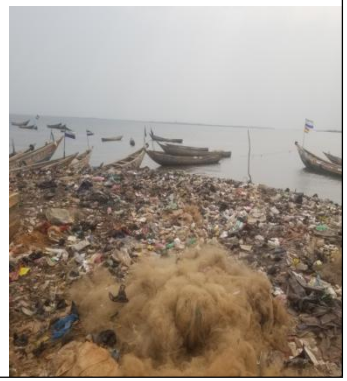
4.13 Portee – Rokupa WASH Facilities Locations and Due Diligence Findings

The assessment offers a comprehensive geo-referenced analysis of several sites earmarked for the construction and rehabilitation of vital WASH facilities, including tank boreholes, water-table wells, and both VIP and pour-flush toilets. The findings reveal a highly constrained environment defined by waterlogging in low-lying coastal zones, severe drainage deficits, and loose, eroding soils. The proximity of many sites to the shoreline and active fishing areas creates a significant risk of saline intrusion, while widespread solid-waste accumulation and open defecation heighten the potential for source-water pollution.

To ensure the delivery of resilient and socially responsible infrastructure, the report outlines a tiered approach to site development. While inland, flatter locations are deemed suitable for development with standard mitigation, the most vulnerable coastal sites will require substantial engineering interventions, such as raised platforms, lined drainage channels, and slope stabilization. These recommendations aim to align all interventions with World Bank risk-management requirements, emphasizing the need for robust hygiene management systems and, in some cases, the relocation

of facilities away from the most hazardous coastal zones. Table 4.110 presents Portee – Rokupa site - specific wash facilities locations and due diligence report.

Table 4.110: Portee – Rokupa Site - Specific WASH Facilities Locations and Due Diligence

Location Code/ Coordinates	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
002 Lat: 8.4632660 Long: 13.1758530	Pour Flush Toilet	Low-lying coastal area	Waterlogged, no visible drainage	Limited access (<50%), widespread waste	High risk, unsuitable without mitigation	Close proximity to the coast with contamination risk; nearby dump site and fishing boats	Relocate facility, improve drainage, and implement stricter waste and hygiene controls	

Location Code/ Coordinates	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
004 Lat: 8.4650630 Long: 13.1743600	Rehabilitation of Water Well	Flat land	Severe drainage issues, unsuitable	Limited access (<50%), signs of open defecation	Moderate risk, needs additional measures	Restricted neighborhood requiring water channeling	Improve drainage, channel water properly, and ensure better hygiene practices	
006 Lat: 8.4655510 Long: 13.1750640	Rehabilitation of Water Well	Sloped	Severe drainage issues, unsuitable	There is a significant amount of garbage, including plastic bottles, wrappers, and other waste materials, scattered around the vicinity of the well. Poor hygiene, widespread waste, stagnant water near the collection point.	Slight risk, requires basic controls	Secluded, existing hand pump present	Improve drainage, stabilize surroundings, and ensure proper water supply management	

Location Code/ Coordinates	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Manageme nt	Observatio n	Recommendati on	Location Representative Pictures
007 Lat: 8.4632010 Long: 13.1705110	Pour Flush Toilets	Low-lying coastal area	Severe drainage issues, unsuitable	Limited access (<50%), signs of open defecation	Moderate risk, needs additional measures	Permanent and semi-permanent structures present; drainage filled with waste	Improve drainage, remove waste, and provide sanitation facilities	

Location Code/ Coordinates	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
008 Lat: 8.4638550 Long: 13.1714730	VIP Toilets	Low-lying coastal area	Waterlogged, no visible drainage	Limited access (<50%), signs of open defecation	Moderate risk, needs additional measures	Open space, about 20m from the coast	Address waterlogging, stabilize land, and improve access	
011 Lat: 8.4652380 Long: 13.1713120	CONSTRUCTION OF TANK BOREHOLES	Flat Land Low (0–10°): Stable, suitable for construction	Unstable, visible cracks or major erosion	Limited access (<50%), signs of open defecation	Poor drainage with significant runoff or erosion risk	Easily accessible with existing paths/roads	Improve drainage, stabilize land, and ensure proper hygiene practices	

Location Code/ Coordinates	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
012 Lat: 8.4599540 Long: 13.1691690	CONSTRUCTION OF TANK BOREHOLES	Flat Land Low (0–10°): Stable, suitable for construction	Stable and compact Poor drainage with significant runoff or erosion risk	Limited access (<50%), signs of open defecation	Land is legally available. No nearby structures or vegetation at risk.	Easily accessible with existing paths/roads	Improve drainage, stabilize land, and ensure proper hygiene practices	
013 Lat: 8.4634460 Long: 13.1721410	CONSTRUCTION OF NEW WATER TABLE WELL	Flat Land	Slightly loose, minor erosion risk. Severe drainage issues, unsuitable	Unsuitable for construction without major intervention	Land is legally available. No nearby structures or vegetation at risk.	Easily accessible with existing paths/roads	Provide better access, link water to the toilet, and manage	

Location Code/ Coordinates	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
014 Lat: 8.4612700 Long: 13.1719830	Pour Flush TOILETS	Flat Land Low (0–10°): Stable, suitable for construction	Stable and compact Severe drainage issues, unsuitable	Poor hygiene, widespread waste and contamination signs.	Land is legally available. No nearby structures or vegetation at risk.	Inaccessible without major infrastructure upgrades	Provide better access, link water to the toilet, and manage	
015 Lat: 8.4655510 Long: 13.1750640	CONSTRUCTION OF TANK BOREHOLES	Flat Land Low (0–10°): Stable, suitable for construction	Loose soil with signs of erosion Poor drainage with significant runoff or erosion risk	Poor hygiene, widespread waste and contamination signs.	Land is legally available. No nearby structures or vegetation at risk.	Challenging access, substantial improvements needed	Improve drainage, stabilize land, and ensure proper hygiene practices	

Location Code/ Coordinates	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
016 Lat: 8.4662440 Long: 13.174507	CONSTRUCTION OF TANK BOREHOLES	Flat Land Low (0–10°): Stable, suitable for construction	Loose soil with signs of erosion Poor drainage with significant runoff or erosion risk	Poor hygiene, widespread waste and contamination signs.	Land is legally available. No nearby structures or vegetation at risk.	Challenging access, substantial improvements needed	Improve drainage, stabilize land, and ensure proper hygiene practices	
018 Lat: 8.4668050 Long: 13.1731810	CONSTRUCTION OF TANK BOREHOLES	Flat Land Low (0–10°): Stable, suitable for construction	Stable and compact Well-drained with no standing water	Poor hygiene, widespread waste and contamination signs.	Land is legally available. No nearby structures or vegetation at risk.	Easily accessible with existing paths/roads	Improve drainage, stabilize land, and ensure proper hygiene practices	

Location Code/ Coordinates	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
019 Lat: 8.4579310 Long: 13.1725890	CONSTRUCTION OF TANK BOREHOLES	Flat Land Low (0–10°): Stable, suitable for construction	Stable and compact Well-drained with no standing water	Poor hygiene, widespread waste and contamination signs.	Land is legally available. No nearby structures or vegetation at risk.	Easily accessible with existing paths/roads	Improve drainage, stabilize land, and ensure proper hygiene practices	
020 Lat: 8.4584680 Long: 13.173118	CONSTRUCTION OF TANK BOREHOLES	Flat Land Low (0–10°): Stable, suitable for construction	Unstable, visible cracks or major erosion Poor drainage with significant runoff or erosion risk	Easily accessible with existing paths/roads. Limited access, poor hygiene with widespread contamination.	Poor drainage with significant runoff or erosion risk	Easily accessible with existing paths/roads	Improve drainage, stabilize land, and ensure proper hygiene practices	
021 Lat: 8.4608050 Long:13.174323	CONSTRUCTION OF TANK BOREHOLES	Flat Land Low (0–10°): Stable, suitable for construction	Slightly loose, minor erosion risk Minor pooling during rainfall, manageable	Easily accessible with existing paths/roads. Limited access, poor hygiene with widespread contamination.	Land is legally available. No nearby structures or vegetation at risk.	Easily accessible with existing paths/roads	Improve drainage, stabilize land, and ensure proper hygiene practices	

Location Code/ Coordinates	Facility Type	Site Condition	Drainage and Access	Hygiene and Water Supply	Land and Risk Management	Observation	Recommendation	Location Representative Pictures
022 Lat: 8.4624230 Long:13.173887	CONSTRUCTION OF TANK BOREHOLES	Flat Land Low (0–10°): Stable, suitable for construction	Stable and compact Minor pooling during rainfall, manageable	Easily accessible with existing paths/roads. Limited access, poor hygiene with widespread contamination.	Land is legally available. No nearby structures or vegetation at risk.	Easily accessible with existing paths/roads	Improve drainage, stabilize land, and ensure proper hygiene practices	

Portee–Rukupa Vulnerability Analysis

In Portee–Rukupa, **53 out of 259 PAPs (22%)** fall into vulnerability categories. The majority are **elderly persons (37.7%)**, **dependent single mothers (32.1%)**, and **widows (28.3%)**, with illness accounting for a small share. Although the proportion of vulnerable PAPs is the lowest among the four sites, the **dominance of elderly and female-headed households** indicates a need for **social protection and gender-responsive interventions**.

Category	Number	% of Vulnerable	% of Total PAPs
Physical Disability	0	0%	0%
Illness	1	1.9%	0.4%
Widows	15	28.3%	6.2%
Dependent Single Mothers	17	32.1%	7.1%
Child-Headed Households	0	0%	0%
Elderly Persons	20	37.7%	8.3%
Total Vulnerable	53	100%	22%

Cumulative PAP Vulnerability Analysis

The studies has identified significant proportions of vulnerable households across project-affected neighborhoods in Freetown, with prevalence ranging from 22% in Portee–Rukupa to 58% in Bai Bureh. The most consistently affected groups are widows, elderly-headed households, and dependent single mothers**,** with Bai Bureh showing the highest concentration of vulnerability, dominated by single-mother households. Moyiba, while having the largest absolute number of vulnerable persons (131), reflects similar patterns. These findings underscore the need for targeted resettlement assistance, including vulnerability allowances and livelihood program enrollment, to ensure equitable support and safeguard the welfare of disadvantaged groups.

Location	Total PAPs/PAHs	Vulnerable (No.)	Vulnerable (%)	Dominant Categories
Moyiba	484	131	28.4%	Widows, Elderly, Single mothers
Coconut Farm	173	51	32.9%	Elderly, Widows, Single mothers
Portee-Rukupa	259	53	22%	Elderly, Single mothers, Widows
Bai Bureh	50	30	58%	Single mothers, Widows, Low-income
TOTALS	966	265	27.4%	

Policy Recommendations for Vulnerable Groups

- **Enhanced Compensation:**
  Provide a 10% vulnerability allowance on top of standard compensation for poor and ultra-poor households, ensuring financial support is proportionate to their heightened risk.
- **Livelihood Restoration Programs:**
  Enroll vulnerable households (widows, elderly, dependent single mothers, and low-income groups) into tailored livelihood initiatives such as skills training, microfinance access, and small enterprise support to restore income streams.
- **Targeted Social Support:**
  Establish community-based assistance mechanisms (health outreach, childcare support, psychosocial services) to address the specific needs of households headed by women, children, or the elderly.
- **Monitoring & Inclusion:**
  Integrate vulnerability tracking into the resettlement monitoring framework, ensuring that vulnerable groups are not only compensated but also actively included in development benefits and decision-making processes.

All of these will be implemented under the RP developed alongside this ESIA.

Stakeholder Engagement

05

Chapter Five : Stakeholder Engagement

The Project has developed, consulted upon and disclosed a Stakeholder Engagement Plan (SEP), including popularization of the Grievance Mechanism (GM).

Stakeholder engagement forms an integral part of the environmental and social impact assessment (ESIA) process. It provides stakeholders with Project information and an opportunity to comment and/or ask questions to be addressed in the ESIA and management plans design.

This section presents the Stakeholder Engagement Report (SER), which highlights the summary of the Stakeholder Engagement process as a fundamental part of the proposed neighbourhood upgrade project's Environmental and Social Impact Assessment (ESIA). The SER will be updated periodically according to the engagements planned in the RUSLP Stakeholder Engagement Plan (SEP) to ensure all communication with stakeholders is logged and tracked.

Early and ongoing stakeholder engagement in the ESIA process is consistent with international good practice (World Bank ESF) and required under the SLEPA Act of the EIA process. Thus, this SER will continue to summarize all preconstruction engagements and outcomes of the engagement that will be undertaken during the construction and operation phases.

The World Bank ESS serves as a benchmark to assure that the potential adverse impacts of the neighborhood upgrade project on people and their rights, livelihoods, culture and environment are avoided or, where avoidance is not possible, it is minimized, mitigated, offset and compensated.

5.1 Objectives of the of the Stakeholder Engagement

The objectives of the stakeholder engagement carried out include:

The fundamental principle of stakeholder engagement is to ensure stakeholders have meaningful input in the early stages of the ESIA. The ESIA engagement program is designed to address the following three primary goals:

1) Identify stakeholders which may be affected by the Project and disseminate information to them and other concerned members of the public including, but not limited to, the Project description, potential environmental and socioeconomic effects, planned mitigation measures and monitoring throughout the various phases of the Project
2) Actively seek comments from stakeholders regarding existing environmental and socioeconomic conditions in the Project area (the 3 communities), potential environmental and/or socioeconomic effects of the Project and possible mitigation measures that could be incorporated to resolve those issues; and
3) Document and respond to all issues raised in a timely manner.

5.2 Stakeholder Engagement Plan

The Stakeholder Engagement approach documented in the project SEP has been implemented since the commencement of the project screening, scoping, baseline information collection phases and ESIA development. It serves to ensure compliance with the World Bank ESS10 Stakeholder Engagement and Information Disclosure which recognizes the importance of open and transparent engagement between the project proponent and stakeholders as an essential element of good international best practice in project implementation.

5.3 Stakeholder Engagement

Site visits were conducted through the deployment of social experts and enumerators to the three neighbourhoods in May/June 2023 and July 2024, to verify information obtained through literature reviews and to collect primary data for this report. During these visits, the following activities were undertaken:

- Consultative meetings with local community authorities

- Focus group discussions
- Household surveys

To cover a wide range of stakeholders in the study area, one-on-one interaction with potential affected people during social survey, meetings were conducted at selected places with women groups, men and road users to understand the people's perception about the project as well as their issues and concerns. Overall project features, social safeguards, issues related to women's safety and security, environmental safeguards, and enhancement measures that would be implemented in the project like providing noise barriers, road safety measures etc. were also discussed with the public.

The FCC and PMU provided support for the stakeholder engagement. Town hall meetings, focus group discussions and interviews were carried out at the communities of Moyiba, Coconut Farm and Portee - Rokupa. The goal of stakeholder engagement during was to enable stakeholders to understand the proposed Project and outline the preliminary potential impacts and potential benefits of the Project in a timely manner. The engagement process gives the stakeholders the platform to comment on the proposed neighbourhood upgrade activities and to share their concerns and feedback. Stakeholders were given the opportunity to comment on the reports that are produced; it enabled the communities to be part of the solutions for the development of mitigation of project impacts.

Consultations regarding land use restriction and involutory resettlement, identification, assessment and valuation of affected properties, cut-off dates, and compensation entitlements were conducted separately in alignment with ESS5 and are documented in detail within the Stakeholder Engagement section of the Resettlement Plan developed in addition to this ESIA report. The RP conducts targeted consultations on land, compensation, and resettlement entitlements. *General ESIA consultations are complemented by RP consultations specific to land acquisition and compensation.*

5.3.1 Scoping Phase – Sensitization Stakeholder Engagement (May 4 – 6, 2023)

The meeting started with the registration of participants to keep track of the stakeholders present and it proceeded with opening prayers offered in silence. Thereafter, there was a brief introduction followed by a non-technical presentation on the planned development intervention and the ESIA process. This was followed by discussions, and a Questions and Answers session, allowing the stakeholders to provide comments and suggestions. All questions and comments were noted and documented and where possible, immediate response was provided by the ESIA Stakeholder Engagement Team from Citseo/Dalan. Representatives from the Project proponent (FCC and PMU) attended the meeting.

During consultations, the following positive impacts of RUSLP proposed interventions were highlighted:

- **Improved Accessibility:** The roads would ease access within the communities when completed.
- **Improved Sanitation and Hygiene Standards:** residents would benefit from new connections to the main water supply or executed water scheme and will experience improved health and hygiene at household level. Diseases will be reduced because of improved drainage and proper management of waste that would previously remain stagnant in the unlined side drains. Reduced dust exposure means less respiratory diseases.
- **Improved Security:** A well-lit neighbourhood by the proposed street lighting proposed would help in ensuring residents feel safe walking at night and businesses could operate until late hours.
- **Land Appreciation**: Upgrading of infrastructure in the settlements will made the area more appealing, leading to a rise in land prices and property value appreciation.

- **Improved Livings Standards**: living standards in the settlements would improve due to a combination of factors including reduced dust emission from the road, fewer incidence of water-borne illnesses, and more conducive environment to carry out business in the three communities.
- **Employment and Improved Livelihoods:** The project will provide some employment during implementation while the combination of the proposed project when completed will trigger thriving businesses, increased rent rate and general increased earnings.
- **Gendered impacts in livelihood improvement:** Most of the businesses that would operate at night mostly would belong to women due to improved security.
- **Improved Aesthetics:** RUSLP proposed infrastructure development and associated planning requirements such as clearing of some unplanned structures (makeshift) will improve aesthetics in the three communities. Proposed roads when completed would aid better planning i.e. it will prevent haphazard building construction.
- Improved drainage channels would improve drainage of storm water in the settlement thereby reducing flood risk.
- RUSLP during implementation will increase interaction and relations between various groups in the communities and integration of its institutional framework.

In addition, the following negative impacts were highlighted during the consultations:

- **Accessibility Challenges:** Based on community sentiments, accessibility difficulty within the communities is envisaged during construction due to improper construction practice of Contractors who often do not provide safe access to buildings and routing/diversions for vehicular and human traffic. Moreover, persons living with disability and the elderly, could have unique accessibility challenges during and after construction, which must be considered by the PMU and the Contractors.
- **Safety Concerns**: The need for proper design of roads to ensure safety community residents was highlighted. Request was made for signage, installation of guard rails around rivers and where necessary, bumps, pedestrian walkway.
- Likewise, making the roads and culverts user friendly for people with disability was emphasized to make the roads safe for the community residents.
- Pollution from dust and noise nuisance during construction especially as most contractors don't pour water to suppress dust nor deploy well maintained equipment.
- The project will trigger the displacement of permanent and makeshift structure encroaching on the RoW of roads and drainage to be constructed.
- Exposure of community residents to project risks and hazards.

While the attendance record and minutes of meeting are presented in Annex 2. Table 5.1 presents the summary of concerns raised by the communities during the consultation carried out in the communities.

Table 5.1: Summary of Concerns Raised by the Communities during Consultation

Items	Description
Date of Consultation	May 4 – 6, 2023
Project Location	Moyiba, Coconut Farm and Rokupa Communities
Name of Stakeholder(s)	Community head, Chiefs, Women leader, Youths, Fishing community, FCC
Language of Communication	English

Subject Matter	Rehabilitation and Reconstruction Community Facilities
Subject of Discussion	Project introduction, Proponent, World Bank Support, Existing Community Challenges, Project Benefits, Community Health and Safety, Potential Impacts, Land Acquisition and Resettlement Issues, Complaints and Grievance Redress
Opening Remark	At each of the communities, the FCC representative opened the meeting with brief introduction of the project team and the purpose of our visit to the community. The community head of each community introduces the community leaders as represented. Brief re

Stakeholders Questions, Comments and Clarifications	Consultant Responses
The participants enquired about the employment of the locals to ensure the youths enjoy economic benefits from the project. Enquiry was made regarding the number of people that will be engaged by the project from the community	While the team was not precise on the employment size, it is said that the project may may employ an estimated 14 technical staff, 50 skilled and 100 unskilled labourers of which 30% should be women, they were assured that the residents in each community in the engagement of workers of the project.
The people enquire if the project will trigger resettlement and if compensation will be paid for impacted structure.	The team responded that feasibility studies is ongoing, to determine the intervention footprint in each community. The study will guide the determination of which structure or physical asset that will be impacted. Every structure that will be impacted by the project will be compensated for at present market value.
The Participants raised concern that most of the rehabilitation and reconstruction works trigger nuisance and impact on a number of socially sensitive receptors existing along the roads. Noise may become a nuisance with some other community health and safety issues	All vehicles, equipment and machinery used for construction works will be regularly monitored to ensure emission levels conform to SEQS. Vehicles and equipment used will be fitted as applicable, with silencers and properly maintained. Construction activities will be restricted to being carried out between 9 a.m. and 5 p.m. and the best construction practices will be implemented.
The participants enquired that the closures and detours would be communicated to the nearby community.	Partial road closures and detours would be clearly marked on the roadside, before execution of the works, to ensure minimum disruption.
Overall, the participants appreciated the project and foresee it as a positive sign of development. Participants raised a concern regarding temporary restrictions to access by-passers will occur due to construction activities. They suggested undertaking construction activities at a quicker pace and abandonment should be avoided.	The team briefed that the contract will be bound to provide a schedule of work and that it will be communicated to the community residents. The contract will also work in sections to reduce the risk of restrictions on access. Participants were also briefed on GRM regarding the enumeration of any concerns. Likewise, funding will not be a constraint to implementation as a World Bank supported project.
What is the scope of the project, and what kind of work will be done under the neighborhood upgrade project?	While the probable investment under RUSLP was highlighted, stakeholders from the communities were told that extent and scope of the subprojects under RUSLP was being finalized and that the specific details will be presented upon completion.
The communities pointed out that rainwater usually accumulates within the communities which causes flooding before receding due to poor drainage. Water drainage should be provided for the drainage of rain/flood water.	The field team briefed that the damaged culverts and proper drainage channel will be constructed under RUSLP intervention. Flooding will either stop or be greatly minimized.

5.3.2 Stakeholder Engagement during Baseline Data Gathering (June 20 – 25, 2023)

The stakeholder engagement continued at the community level with the aim of gathering baseline data to be utilized for further environmental, socio-economic and cultural analyses. Collecting baseline data prior to the implementation of the project activities is a crucial step when developing a prospective evaluation of the project. The social baseline field survey was carried out in June 2023 and in Bai Bureh Road in January and February 2026.

Engagement objectives during the baseline data gathering included:

- Understanding the existing socio-economic context of the project area, to use it as a benchmark of pre-project livelihoods and conditions

- Identifying stakeholders who are potentially sensitive / vulnerable to the proposed project or able to support in the implementation of the information disclosure and mitigation measures
- Check the veracity of stakeholder feedback to differentiate between perceived and factual impact.

All the sections within the three neighborhoods were considered in the socio-economic survey. The method applied was face to face interviews with a sample of the households located in the neighborhoods. The households were asked in detail about their social and economic situation through developed socioeconomic sample survey questionnaires (SSES questionnaire). The information was then used to analyze the gathered data and assess the given indicators on quality of life in these neighborhoods.

For primary data collection, the tools were designed to enable the teams to record information clearly and concisely while in the field. These tools are complementary and intended to collect information with varying levels of detail. The combination of research tools included the following activities undertaken in terms of stakeholder engagement:

- Review of secondary data
- Reconnaissance survey to identify all the sections of the neighbourhood that will be directly or indirectly affected and to alert community leaders and residents of the Project and the impact assessment studies
- Key Informant Interviews
- Focus Group Discussions (FGDs) with groups of Local authorities, Youth, Women, Traders, Stone miners
- Face to face interviews through a Socio-Economic Sample Survey.
- Collection of historic data and experience of residents

A detailed social baseline assessment and identification of impacts are presented in Chapter 4 and Chapter 7 respectively.

Community Issues

All issues raised by each engagement meeting, FGDs and KII are summarized in the following section. The issues log was interrogated and similar issues grouped together into in Table 5.2 and Table 5.2 There were no substantive differences raised during the local authorities' meetings and FGDs or between the different KIIs.

Overall, most of the target participants in these engagements had high expectations that their quality of life would improve and that the road/drainage construction which will contribute significantly to overcoming flood in the communities and other subprojects would provide more economic transformation and improve livability within the communities. Access road to the Wharf area ranks high among those transacting and operating their business in the area.

The main anticipated negative impacts raised by community members and key informants related to:

- Loss of / damage to houses and livelihood impact
- Increased risk of unwanted social outcomes (e.g. teenage pregnancy, and school absenteeism/ dropouts) during construction for youths seeking quick and gratification
- Construction disturbance from noise, dust, etc. and traffic safety risks, especially at sensitive receptors such as schools and mosque/churches close to construction
- Increased crime over sale of alcohol
- Interference with water supply sources, such as wells and water supply pipelines etc.

5.3.3 Stakeholder Engagement Bai Bureh Corridor (January 28, 2026)

The stakeholder engagement for the Bai Bureh corridor to downstream Granville Brook section along Bai Bureh Road was conducted on January 28, 2026. The session introduced the proposed neighbourhood upgrading works within the Moyiba and Coconut Farm communities, including an explanation of downstream impacts necessitating drainage expansion and rehabilitation along the Bai Bureh corridor to accommodate increased surface runoff. The potential environmental and social (E&S) impacts on the affected communities were clearly communicated to ensure adequate awareness and preparedness among Project Affected Persons (PAPs).

Notwithstanding the relevance of the engagement, the exercise recorded a relatively low turnout, primarily due to competing livelihood priorities, as many PAPs were engaged in their daily economic activities at the time of the meeting. Given the low turnout recorded during the initial consultation, a structured follow-up engagement strategy was immediately applied and implemented in line with ESS10 to ensure inclusive participation, improved information disclosure, and effective stakeholder feedback integration throughout the project lifecycle as outlined below:

1. **Targeted Repeat Engagements:** Conduct follow-up meetings at more convenient times (early mornings, evenings, or weekends) to accommodate PAPs' work schedules.
2. **Segmented Community Consultations:** Organize smaller, location-specific engagements within Bai Bureh Road and adjoining communities to improve accessibility and participation.
3. **Door-to-Door Sensitization:** Implement household-level outreach, particularly for vulnerable and hard-to-reach groups, to ensure no PAP is excluded from the consultation process.
4. **Stakeholder Mapping and Prioritization:** Update the stakeholder register to identify and actively engage key groups, including traders, tenants, women, youth, and vulnerable households.
5. **Use of Local Communication Channels:** Disseminate information through community leaders, local radio, religious centers, and town announcers to broaden awareness.
6. **Disclosure of Simplified Information Materials:** Provide translated and easy-to-understand materials (flyers, posters) explaining project scope, impacts, and entitlements.
7. **Grievance Redress Mechanism (GRM) Awareness:** Strengthen awareness and accessibility of the GRM to allow PAPs provide feedback outside formal meetings.
8. **Documentation and Feedback Integration:** Ensure all subsequent engagements are well documented, and feedback is systematically incorporated into project design and implementation planning.

Key Feedback and Concerns

- **Drainage Blockage and Diversion:** most of the participants (including Mr. Lamin Bangura and the local Chief's representative) highlighted that the flooding issues on Bai Bureh Road from the outfall are largely due to backflow of water resulting from the construction of a structure on drainage across the highway by the St. Theresa Primary School which has completely blocked the drainage without providing any diversion to enhance the flow towards Race Course and downstream . This action diverted water from Coconut Farm along the narrow V-shaped channel along Bai Bureh Road toward Granville Brooke, overwhelming the existing, narrow road drainage.
- **Support for Expansion:** Residents, specifically those whose compounds currently flood during the rainy season, expressed strong support for the expansion of the drainage to accommodate the increased water pressure from the upstream areas.
- **Livelihood Impacts:** Significant concerns were raised regarding the potential demolition of makeshift structures and or alteration of permanent structures adjacent to the drainage.

PAPs emphasized that these structures are primary sources of livelihood and sought clarity on how the project would mitigate economic displacement. The E&S consultants and the PMU assured them separate consultations will be conducted for land acquisition and resettlement after which a census will be undertaken to identify affected properties, valuate them and compensation made at replacement cost. In addition, those whose livelihood (trading close to the drainage) will be affected for the duration of the work will also be compensated

- **Inter-Agency Collaboration:** Stakeholders questioned the absence of the Sierra Leone Roads Authority (SLRA). Project officials clarified that the SLRA is a collaborative partner and is fully aware of all project activities and participated in the review of the drainage design and initial consultations. The team added that the SLRA engineer that is assigned to the project was contacted prior to the visit but could not make it due to other official engagements.
- **Data Collection Cooperation:** The project team announced an upcoming census and data collection exercise, requesting full cooperation from residents during the special engagements and data collection to ensure accurate project planning and impact assessment with cutoff date set as January 31, 2026.

Table 5.2: Issues and Concerns Raised by Stakeholders during FGDs and KIIs for Roads

Aspect	Questions/Issues/Comments	Neighborhood	Response
Increase in anti-social behavior	· Young girls are likely to be trapped in love relationships (casual and long-term) with construction workers and work-seekers; this could lead to an increase in pregnancies (many of which may be unwanted) and sexually transmitted diseases. · There is a concern that the girls will be attracted to the Contractors in anticipation of an improved lifestyle. These relationships could lead to conflict between the local men and the migrants. · Awareness must be raised about this risk and the likely consequences of such relationships.	· Moyiba · Coconut Farm · Portee –Rokupa	· As much as practicable, local labour will be used for unskilled jobs in accordance with RUSLP LMP to minimize the need to import labour and to reduce these identified risks. · Though this indirect impact is difficult to prevent, manage or mitigate, project workers from outside the area will be informed about this risk as part of Codes of Conduct. · The community will be properly sensitized about this risk.
Increased health risks	· There is a concern that migrant contract workers and jobseekers will enter into sexual relationships with local people, thus increasing the transmission/ prevalence rate of infectious diseases (e.g. HIV) and pregnancy. We should bear in mind the "Water for Water" menace	· Moyiba · Coconut Farm · Portee –Rokupa	· The Project aims to minimize in migration of workers by employing as many local workers as possible. · The community will be properly sensitized about this risk.
	· Dust from construction activities could contribute to an increase in respiratory (dust-related) illnesses.	· Moyiba · Coconut Farm	· Construction activities will generate increased dust during the dry season. · The E & S management plan will include the need to suppress the dust by spraying water within the construction activity area as applicable. The Contractors will be required to prepare C-ESMP to manage the E &S impact and risks generated by the project.
Construction disturbances	·		·
	· The construction process will lead to various disturbances, including noise and dust pollution. This could result in disruption to school children in their classrooms, places of worship and even residences wherever construction activity is close to such sensitive receptor.	· Moyiba	· Noise from construction is difficult to control but noise inducing works will be carried out in a manner that reduces noise disturbance impacts.
Safety of people	· An increase in road traffic will pose significant safety risks to all road users, including people (notably children). Children walking to school or playing outside school premises are particularly vulnerable. · Since project activities will be going on in more than one location at a time. How will the project ensure the safety of community dwellers interfacing with the project activities especially the vulnerable group (aged, children, disabled etc.)	· Moyiba · Coconut Farm · Portee –Rokupa ·	· Road safety awareness will be conducted at schools along with the project footprint activities area to alert them to dangers and responsible road use during the construction works. · The community will be sensitized, and provision will be made for guardrails around crossing points near schools and community neighborhoods.
External cultural influences	· Cultural practices and family structures could be influenced by 'foreign' practices; thus, diluting cultural practices and norms. Youth are most likely to be	· Coconut Farm	· Though this potential indirect impact is difficult to prevent, manage or mitigate. Project workers will receive training that will include an overview of local traditions, norms and

	influenced by outside behavior.		practices, and the need to be respectful of these. · Intolerance of local norms and culture including disrespectful behavior will not be tolerated by the workforce and it will form part of the Code of Conduct to signed by individual worker engaged.
Increased cost of living, debt and public nuisance	· Project workers will collect goods and possible request services from local businesspeople on credit and not honour their credit obligations, thus resulting in debt and fighting that could result in harmful incidents.	· Moyiba · Coconut Farm · Portee –Rokupa	· This concern is beyond the control of the project or the contractors to be engaged. But it will form part of awareness to caution the public and the project workers.
Technical queries relating to the Project design or features	· What are the types of projects that will be sited in each of the communities?	· Moyiba · Coconut Farm	· Details of projects for each community will be published during the decision-making phase presented at the Public Hearing which will be communicated
	· Will copies of the design illustrating the developments be available to the public/onsite? This is to ensure that stakeholders who are knowledgeable can monitor activities of contractors who may want to deviate from the design. People are also interested in knowing the extent of project footprint impact.	· Moyiba	· The precise subproject footprint alignment is still being confirmed as the basis for the work to be carried out under the RP Consultancy. · They are not available for distribution at this current time.
	· To what extent is the project going to disrupt activities at the Wharf Area, this is because of the fish folk business in the area.	· Portee –Rokupa	· Details of the project footprint will be made available at the decision-making stage, and it will be disclosed publicly.
Communication Process	· What is the channel for expressing our grievance in case we are dissatisfied with anything during the project?	· Moyiba · Coconut Farm · Portee –Rokupa ·	· We have the Community Development (CDC) and Grievance redress committee (GRC) set up already. Members will be selected elected and credible persons (male & female) from the communities. · A grievance register will be maintained for people to log and track their concerns and resolution.
	· Will there be an opportunity or platform for people to express their views and concerns during construction?	· Moyiba · Coconut Farm · Portee –Rokupa	· The Contractor will be required to have a Community Liaison Officer (CLO) throughout construction to manage community concerns. · The PMU could also be reached if there is any complaint. A Complaint/ Suggestion box will be placed at strategic locations in he communities · A grievance register will be maintained for people to log and track their concerns and resolution.
Land tenure disputes	· How will land ownership disputes be dealt with?	· Portee –Rokupa	· The project maintains a compensation policy in developing the resettlement plan to address issues directly related to the acquisition of land or loss of property caused by project activities. Claims involving deep-rooted tenure conflict must be addressed through the relevant national legal frameworks and dedicated dispute resolution bodies.
Employment opportunities	· What are employment opportunities available to the youths and women? Are they going to be given priority? · The recruitment process should be fair. The local recruitment process should be transparent and	· Moyiba · Coconut Farm · Portee –Rokupa	· As much as practicable, local labour will be used for unskilled jobs in accordance with RUSLP LMP to minimize the need to import labour and to reduce these identified risks. · Contractors will be required to comply with the LMP which requires unskilled positions to be given to local labour.

	unbiased. The workforce should be representative of the demographics, including the employment of women.		
Resettlement locations preference	· Can the people that need to be resettled select where they would like to move to?	· Moyiba · Coconut Farm · Portee –Rokupa	· The RAP consultant and PMU will engage each household that requires resettlement to discuss options for where they can move. · Generally, it is expected that affected households under the neighbourhood upgrade project will be resettled to locations closely related to where they were displaced
Resettlement and compensation issues	· What arrangement does the project have for those whose business premises or means of livelihood will be temporarily disrupted or permanently impacted by the project activities. · They are concerned about compensation and the process of resettlement; some are worried that they will be 'bullied into giving up their land'.	· Moyiba · Coconut Farm · Portee –Rokupa	· As part of this consultancy, the consultants will develop a separate resettlement plan which will address the project related compensation and resettlement issues.

5.4. Information Disclosure and Community Involvement

A range of stakeholder engagement and communication methods will be required during different phases of the project, beyond the conduct of the ESIA studies. Meetings with community stakeholders will be held at regular intervals as agreed with stakeholders. Table 5.3 present the Stakeholder Engagement Plan Matrix.

Table 5.3: Stakeholder Engagement Action Plan (SEP) Matrix

Activity	Responsibility Stakeholder	Stakeholder	Topic of discussions	Nature of Activity	Frequency
Launching and joint monitoring in the field	Contractor and PMU Engineers/ Safeguards, Supervising Consultant	FCC, WARDC and Local Council /Community Leader, Community Members	Project Commencement	On site	During launching to start its construction and preliminary joint monitoring
Construction Site Meetings	Contractor and PMU Engineers/ Safeguards, Supervising Consultant	Local authority including those that engaged on the construction work, local authorities and Community leaders	Construction and activity review	Meeting and discussion at site	Project site – monthly
Introduction of GRM structure and sensitize on GRM function	Contractor, PMU Engineers/ Safeguards Supervising Consultant	District, LC and Community representatives	GRM Process	Meeting, Site Visit	During the implementation (quarterly)
Review on implementation of Environmental plan and recommendation	Contractor	Community Leader, community members, PMU Engineers/Safeguards Supervising Consultant	ESMP Implementation	Meeting, Site Visit	Monthly
Review GRM and update information of GRM	PMU Engineers/ Safeguards Supervising Consultant, Contractor, GRM' Committee	Community Leader, community members, municipality	Grievance review	Meeting, Site Visit	Monthly /quarterly depends on the issue raise in the project site
Review on implementation of OHS plan, Waste management plan,	Contractor, Supervising Consultant	Technical Staff, Community Leader	OHS/Job hazard review	Meeting, Site Visit	Monthly
Monitor excavation	Contractor	PMU Engineers/ Safeguards Supervising Consultant	Construction Activities	Site monitoring	Daily during excavation until finalizing the work
Monitoring of the ESMP implementation and technical compliance	PMU Engineers/ Safeguards Supervising Consultant	Contractor	Review of site monitoring findings	Site monitoring, meeting	Daily and as required
Joint Monitoring Visit	Joint Monitoring Visit PMU, FCC, WARDC and Local Council	WB, PMU, Ministries, Contractors, Community Members, Local Authorities, Community Leader,	Construction and E&S activity review	Site Monitoring Visits, Meetings	Monthly or as required

5. 5 Recommendations

Based on the consultations, this ESIA report makes several recommendations:

- There should be frequent and meaningful engagement between the local council and the communities, to enable the communities to share information on issues affecting them because of the project in their respective communities.
- Hold regular community meetings to review progress and obtain feedback.

- Issues raised in the communities that requires the Contractors to address should be escalated to PMU and feedback given within a reasonable time.
- Community involvement at preliminary design stage prior to finalization to avert potential adverse impacts project based local knowledge.
- Project handovers should not be a boardroom affair but rather be publicly undertaken and involve the community.
- Monitoring and evaluation of on-going works should involve the community.
- Consultations during project planning and implementation should involve diverse stakeholders as possible, as per project requirements at the time, and in a timely manner.
- There is need for a dedicated grievance officer at site level to track the grievances progress and provide feedback to the various committees/levels.
- Put in measures for Operation and Maintenance of infrastructure early in the project design, and implementation to ensure proper management and sustainable use of the infrastructure.
- Design consideration should prioritize the Vulnerable Groups to ensure the ease of accessibility for the elderly and disabled to the WASH infrastructure.
- Community involvement should be strongly considered during project commissioning.
- Involve beneficiary communities in monitoring the implementation of safeguards.

Analysis of Alternatives

06

Chapter Six : Analysis of Alternatives

The feasibility study and the ESIA considered the analysis of alternatives to ensure that the best among all possible options is selected. The analysis entailed identifying alternative forms of development and considering the environmental and social implications of these alternatives to demonstrate that the proposed scheme is environmentally preferable. The process involved consultation with the communities and various stakeholders where different suggestions and solutions were proposed for the neighborhood upgrading subprojects. This section analyses the project alternatives and their implications. The alternatives include alternative investment; the current project option; alternative design and technology option and the No Projectll option.

6.1 No Project Alternative

The option of doing nothing was considered. The No Project option in respect to the proposed intervention investment implies that the status quo is maintained, i.e. no execution of the proposed subprojects (roads and drains, standalone drainage channels, sanitation facilities, street lighting, and slope stabilization/retaining wall). The “no project alternative” would imply that the status quo remains in the communities: poor road conditions, poor drainage and sanitation conditions, and inappropriate sewage disposal leading to environmental pollution including safety hazards susceptibility to slips, trips and falls due to landslides/falls. The health-related risks will persist and environmental degradation in the communities will continue.

The No Project Option is the least preferred considering the socio-economic and environmental perspective due to the following factors:

- The 3 communities shall continue to be exposed to flood hazards, and livelihood will be harder in future than today. This situation shall claim the lives of people
- Development of infrastructural facilities (drainages, retaining structures, roads and associated infrastructure) will not be undertaken
- The settlements will continue to lack essential life-supporting infrastructure and living conditions will continue to be deplorable
- The environment will continue to suffer degradation due to sewer and untreated wastewater discharge as evident in Rokupa Wharf
- The communities shall continue to use queues to fetch water from the few water sources within their communities and will continue to use hung toilets or used the drainage channels and nearby public spaces to relieve themselves.
- The agents of diseases such as malaria and diarrhea will thrive and continue with its attendant economic costs of the diseases
- The challenge of slums and informal settlements to the local authorities and government will remain unaddressed and will imply overall economic development
- RUSLP will not achieve its goal and objective of improving the living conditions of the community residents.

From the analysis above, it becomes apparent that the No Project alternative is no alternative to the local people and the GoSL - FCC.

6.2 Analysis of Design Alternative

Road Alignments and Pavement Designs

The road upgrade implementation options in the neighborhoods have been guided by a comprehensive approach of reshaping the physical structure of the neighborhood. The design

consideration for each typical section of each road has been chosen according to site realities with the aim of minimizing the impact on the built-up area. Some regulations have been waived to align with minimum design standard to achieve the road upgrade goal by considering the technical constraints in terms of transit capacity of the neighborhood roads without compromising the safety of road users and community residents. The selected alternatives are the best to serve a wide coverage area and the community interests, the selected options were ranked highly by the community and considered by project proponents as a priority for social economic development based on available resources. The selected roads are expected to provide a link between various public facilities and ease commuting within each neighborhood. The road alignment impact footprint considers sectional finalization based on site realities by prioritizing avoidance to minimize impact on structures and disturbance by adopting best engineering practice feasible during actual construction works. In essence, the road design consideration minimizes as much as practicable the displacement of people (involuntary resettlement).

Pavement Design Options

There are two pavement design options initially considered by the consultants

Option 1: Use of cement/sand concrete pavement

Option 2: Use of bituminous material

Option 2 was selected due to its minimal E&S risks in comparison to option one:

- Bituminous paved roads have minimal dust
- Bituminous paved roads utilize lower quantities of local materials (aggregates, sand and water)
- The Bitumen Road provides a smooth surface to ride on and emits less noise
- It also has a lower starting cost and overall maintenance cost than concrete pavement.

A single pavement option was considered due to the low-volume capacity of the roads hence, the roads are designed to carry less than three million (3 x 106) equivalent standard axles. A flexible pavement structure has been selected for the road design. Flexible pavements are designed to accommodate varying traffic loads and environmental circumstances while providing a long-lasting and smooth riding surface for road users considering the elements such as traffic volume, soil quality, climatic conditions, and estimated service life of 20 years design based on consultation with the client.

6.3 Design for the Drainages

The key alternative considered in the design of the drainages was either open or covered drains. Even though open drains are hardly congested and easy to clean in comparison to cover drains, cover drains have the advantages of improving community health and safety and inhibit the deposition of waste into the drainage.

Covered drains to be installed especially at centers, residential areas, schools, health centers and other social infrastructure facilities. In addition, the covered drains will avoid the need to create separate drainage and walkways.

6.4 Lighting

The Community has challenges during their night movement within these communities at night. It is very challenging due to the lack of street/security lights at strategic locations. There are very few streetlights operational streetlights at the lower end of Moyiba and Coconut Farm are existing but are not inadequate to meet the needs of the community. Furthermore, the power supply to the community is unreliable, irregular and needs improvement to meet the demands of the community. The objective is to provide Street/Security lights at strategic locations in the community especially

along walkways, Water supply points, public toilets, health centre, and security threat zones within the community.

The proposed all-in-one Solar Street Lights design means that the Monocrystalline Solar Panel, Charge Controller, Lithium Battery, Motion sensor and LED Light are all housed in one unit, making it compact and easy to install. This design also reduces the risk of theft. Solar Street Lights shall comprise of 80W/18V High efficiency Monocrystalline solar panel; Charge controller auto switch – 10 amps; Over Voltage protect; Under Voltage protect; 30Ah/12V LifeP04 Lithium Battery; Motion sensor with 12 - 14 hours lighting per night (Smart lighting mode); P67, 60W Bright LED Modules complete with all mounting accessories. The panel shall be equipped with a dedicated self-cleaning unit which automatically cleans the solar panel three times a day. In the case of low sunlight (rainy days) the unit shall have at least 3 nights backup time. This unit shall be mounted on a 6 to 8 meters galvanized pipe. The system life span shall be 10 years or more.

The proposed solar street lighting is a clean and renewable energy source, making it environmentally friendly. It does not emit harmful pollutants, which are beneficial for the environment and human health. It is a reliable energy source and do not require any external power source. It requires low maintenance with light efficiency, waterproofing, and the connection between cables and components. The demerit of the solar lighting includes:

- **Weather Dependent:** Solar streetlights rely on the sun to power the lights, which means that they may not work effectively in areas with limited sunlight. This can be a disadvantage during long periods of overcast or rainy weather.
- **Limited Brightness:** Solar streetlights may not provide as much brightness as traditional streetlights, such as one lighting system in 200 watts or 500 watts. But solar streetlights are ideal for the proposed use.
- **Battery Life:** The battery life of solar streetlights is limited, and the lights may need to be replaced after 10 years. It should be noted that this is the proposed design life for the project
- **Maintenance:** Although solar streetlights are generally maintenance-free, they may still require some upkeep and cleaning to ensure they are working effectively.

6.5 Water Supply Option

The objective of design is to provide a water supply system which will be technically and environmentally (hygiene) sound, cost and energy effective with an economic operational life to meet the needs of the neighborhoods. If these objectives are met, it will alleviate water supply challenges in the dry season, enhancing livelihood and economic activities. Various alternatives such as source of water, pipeline routes, location of facilities and construction materials to be used were analyzed as presented below:

Borehole Sources

Based on the site assessment of an existing borehole in the community, a drill depth of not more than 100 m is proposed. Subject to the drilled depth and result of a pumping test to be undertaken after the well is developed, the submersible pump capacity to be installed and depth of installation shall be determined. A reinforced concrete water tower of dimension of 3.5 x 3.5 m (L x W), with two levels suspended slabs at heights of 4.3 m and 8.3 m shall be mounted with two sets of 10,000 L plastic water tanks that will serve as storage for water pumped from the borehole, for supply to the public through onsite faucets.

Borehole water is groundwater drawn from an aquifer and would be obtained by installing a pump to draw the water for human consumption. Usually, water from the boreholes is free from pathogens such as cholera, typhoid, dysentery guinea worm and many others due to the natural attenuation filtering by the soil profile of surface water contaminated by pathogens before reaching the depth of

aquifer. The probable contamination of the boreholes is the natural chemical content of the ground water, which must be analyzed to ascertain if the dissolved chemical constituents are within the permissible limits for consumption

Hand Dug Wells

Hand dug wells are proposed to be sunk in areas where a borehole drilling rig cannot reach. While the new wells will be lined with reinforced concrete walls and fitted with a cover slab and a hand pump mounted to eliminate daily contaminant exposure by hand bailing, it is expected that the well will be subjected to flushing and portability test for quality assurance.

Water Sourcing from Guma Valley Water Company

In order to sustain water supply to the neighborhoods, the Storage tank connected to GVWC network is proposed to be sited uphill to supply the lower ends of the community. This will be done through the installation of pipeline and Public Water Storage and Supply Tank (PWSST) points to source water from pumping transmission from the GVWC main pipe.

6.6 Sanitation Intervention Options

Faecal sludge management constitutes five stages: User Interface, Collection/Storage, Transportation, Treatment, and End-use/Disposal. The intervention intends to provide an onsite sanitation system for the community, specifically at the User -Interface and Collection/ Storage level but in due consideration of the feasibility of the rest of the service chain. The following are the specific focus of the sanitation intervention.

The design concept applies to an onsite sanitation system aiming at meeting the objectives of minimizing O&M cost and ensuring maximum access and usability. The type of sanitation is influenced by factors such as technical (including the informally planned nature of the settlements), environmental, economic and social (user preference). It is a challenge to balance the competing factors mentioned above in selecting the most feasible option. The following three options have been designed, for adaptability to the various factors, for application in specific site conditions.

Public/ Communal Pour Flush Toilet with Septic Tank

The pour flush toilet (or squatting pan) is designed to prevent users from seeing or smelling the excreta of previous users. Thus, it is generally well accepted. Provided that the water seal is working well, it should be almost no odours and the toilet is expected to be clean and comfortable to use. Because there are no mechanical parts, Pour-flush toilets are quite robust and rarely require repair. Even though it is a water-based toilet, it requires regular cleaning to maintain hygiene and prevent the buildup of stains. To reduce water requirements for flushing and to prevent clogging, it is recommended that dry cleansing materials and products used for menstrual hygiene be collected separately and not flushed down the toilet.

Public/Communal VIP Toilet

The Ventilated Improved Pit latrines are designed as an improvement to overcome the disadvantages of the simple pit latrines such as fly and mosquito nuisance and unpleasant odors with the installation of a vent pipe, fly screen and a squatting cover in the VIP latrines. The system is an engineered effective sanitation option that could be emptied mechanically. The advantages of Ventilated Improved Pit Latrine include odor and insect controls; minimized health risk, ease of construction and maintenance including minimum water requirement. The major disadvantages of the VIP latrine option may include potential groundwater pollution, lack of space for relocating the pit in densely populated areas and difficulty of construction in rocky terrain of Moyiba and Coconut Farm likewise the high-water table areas of Rokupa Wharf. This option is considered feasible in any of the three communities

Construction Technology and Materials

There were different alternative materials such as laterite, sand, gravel, stone or asphalt that should be used while upgrading the project roads. While earthen roads are cheaper, they are less durable. The use of stone is increasingly being opposed to due to damage incurred to vehicles. Chip seal technology is preferred over the other options because it provides a spacious surface, adequately stable due to its adequate strength, structure and durability. It is also worth noting that construction using durable materials like asphalt is the priority of the government of Sierra Leonne as evident across Freetown.

The roads will be constructed using national and internationally accredited materials (e.g. stones, gravels, and, cement, steel and bitumen) to comply with technical/security, public health/safety and environmental aesthetic requirements. Equipment and technologies that save resources and energy will be given priority. The construction activities project will also utilize a huge quantity of water; therefore, rainwater should be harvested at the works yard and should be harvested and used in construction activities or supply to construction works yards for flushing toilets and other non-domestic activities. Heavy use of timber shall be discouraged to minimize destruction of natural resources (recommend using steel poles). Construction equipment and machinery shall be incorporated with pollution control devices like dust arrestors/precipitators, emission control, noise abatement devices and desulfurization devices. The equipment and vehicles with the highest levels of combustion efficiency and with capability to use cleaner fuels shall be used for enhanced safety features and regularly inspected.

6.7 Neighbourhood Upgrade Current Project Option

This option means the proposal to invest in infrastructure prioritized in the 3 communities should be pursued. This is the most feasible and priority option according to the residents in the communities. It will address their immediate infrastructure needs and meet all criteria for funding under RUSLP. The advantages and disadvantages of settling on the option are as follows:

Advantages

- The living standards of the residents will be improved by the upgrading of roads, sewerage, drainage and water supply infrastructure
- The project will contribute to improved environmental management as it will provide a means for proper disposal of sanitary waste, prevention of soil erosion and reduced human health risks
- Cases of diseases related to sanitary conditions will reduce and the health status of residents in the settlements will improve
- It will improve social cohesion (residents will come use the improved public spaces as meeting points)
- The upgrade of infrastructure will boost property value in the neighborhoods, and more investments will be made.
- The project will contribute to the national development goals and the MDGs
- The upgrade activities will contribute to improving accessibility to the hard-to-reach sections of the communities,
- The investment will provide short term job opportunities for residents and will improve the socioeconomic condition of residents around the neighborhoods and help improve their quality-of-life construction phase to serve the workers etc.)

Disadvantages

- There will be short-term nuisance both environmentally and social (dust, noise, access deterrent etc.) during the upgrade phase.
- The displaced will suffer losses that will have both social and economic consequences if not compensated.
- there will be hike in the cost of rented properties in the upgraded neighborhoods to the disadvantage of the majority low-income earners

Summary

The current project option/alternative seem plausible from environmental, economic and social standpoint therefore is selected over the other alternatives.

6.8 Bai Bureh Road Drainage Project Analysis of Alternatives

The following analysis of alternatives has been developed based on the design documents for the Bai Bureh Road Drainage Design.

6.8.1 "No Project" Alternative

Under this scenario, the existing drainage conditions along Bai Bureh Road and the adjacent Blackhall Road area would remain unchanged.

- **Environmental Impact:** Continued uncontrolled runoff leading to soil erosion and potential flooding of residential and church properties.
- **Social Impact:** Higher risk of waterborne diseases due to stagnant water and property damage during peak precipitation.

Conclusion: This alternative is rejected as it fails to meet the objectives of the Resilient Urban Sierra Leone Project (RUSLP) to upgrade Freetown communities.

6.8.2 Design & Technology Alternatives (Culvert Selection)

The design team evaluated different conveyance structures to manage the significant elevation changes (e.g., from **37.948m** at Chainage 0+000 to **8.841m** at Chainage 0+425).

Option A: Open Trapezoidal Channels

- **Pros:** Lower initial construction cost.
- **Cons:** High risk of waste dumping (clogging), larger land footprint required in densely populated areas, and safety risks for pedestrians.

Option B: Reinforced Concrete Box Culverts (Selected Option)

- **Justification:** The project utilizes 2M x 2M Box Culverts.
- **Benefits:** This design maximizes hydraulic capacity within a restricted corridor, allows for "Road Foot Path" integration, and reduces maintenance needs compared to open channels. Section D-D confirms a robust 1.20m wall height and 0.90m internal width for secondary sections.

6.8.3 Alignment and Slope Optimization

The alignment was analyzed to minimize the "Cut & Fill" requirements while ensuring gravity flow.

- **Slope Analysis:** The design incorporates varying gradients to manage high-velocity flows, including a 3.78% slope through church property and a steeper 8.74% slope in identified "Sloppy Areas" near the outfall.
- **Mitigation:** To prevent scour at high-gradient sections, the design specifies an "Area to be Stone Pitched" near Chainage 0+290.

Description of Potential Environmental and Social Impacts

07

Chapter Seven Description of Potential Environmental and Social Impacts

This chapter presents the potential positive and negative risks and impacts that could be potentially associated with the implementation of the proposed neighborhoods upgrade. project. The impact assessment considered relevant project activities and the environmental and social aspects they would interact with in order to identify the issues to be focused on during project implementation including the issues raised by stakeholders during consultation. The analysis of impacts relates to activities that would be carried out during:

- Mobilization phase (Preconstruction)
- Construction phase
- Operational/Maintenance phase
- Decommissioning of the facilities such as works yard, equipment and materials used for construction, operation and maintenance of the roads.

7.1 Impact Zones

The ESIA study has considered two critical impact zones, namely:

- **Core Impact Zone**

These include the area immediately bordering each subproject footprint areas which are confined within the three neighborhoods. This depends on the type of subproject and therefore differs from subproject to another. The road and drainage investments (including the Right of Way) core impact zone can span 500m while the construction zone can be within 15m from the centerline of the road.

- **Zone of Influence**

The zone of influence includes the wider geographical areas of the project in this case the three communities, the neighboring communities, material sourcing areas and routes within Western Area.

7.2 Impact Evaluation Methodology

The identification and assessment of environmental and social impacts were based on World Bank Group Environmental and Social Framework, EHS Guidelines and ISO 14001:2015 Environmental Management Standard and the EPA Act 2022, which include the following steps:

- Identification of project positive and negative impacts during the different phases of the project (pre-construction, construction, operation and decommissioning)
- Identification of potential environmental and social risks and impacts (hazards or sources of potential impacts) associated with each activity; and
- Evaluation of environmental and social impact significance based on the above steps, major activities during the various phases of the project were identified along with the associated environmental and social aspects. To ensure a comprehensive evaluation, a variety of measures were considered to identify and weigh the likely environmental and social risks and impacts. These measures included overlaying the project components on maps of existing conditions to identify potential impacts; and reviewing published documents that provide guidance on performing impact analysis for infrastructure projects such as the World Bank Environmental Assessment Sourcebook.

Impact Identification and Assessment

Several environmental impacts (positive and negative) associated with the proposed upgrade activities were identified through field work, desktop analysis and the use of experts' judgment. The following section highlights the impacts anticipated throughout the lifecycle of the proposed project.

Impact Significance

To objectively screen for issues considered as potential impacts and to determine the likely significance of those impacts, general consequence criteria covering natural (physical and biotic) and socioeconomic components were developed. These consequence criteria (Table 7.1) were applied to potential impacts to determine their level of effect. In addition, impact likelihood criteria (Table 7.2) were also applied to potential impacts to determine their likelihood level.

Table 7.1: Impact Significance Definition

Significance	Definition
Not Significant	**Not Significant**. Any impacts are not expected to be indistinguishable from the baseline or within the natural level of variation. These impacts do not require mitigation and are not a concern of the decision-making process.
Low	Detectable but Not Significant. Impacts with a "**Low**" significance are expected to be noticeable changes to baseline conditions, beyond what would naturally occur, but are not expected to cause hardship or degradation. However, these impacts warrant the attention of decision-makers and should be avoided or mitigated where practicable.
Moderate	Impacts with a "**Moderate**" significance are likely to be noticeable and result in lasting changes to baseline conditions, which may cause hardship to or degradation of the receptor. Broader consequences for the ecosystem or community are not anticipated. These impacts are a priority for mitigation in order to avoid or reduce their significance
High	Impacts with a "**High**" significance are likely to have damaging and lasting changes to the functioning of a receptor and may have broader consequences (e.g. on ecosystem health or community well-being). These impacts are a priority for mitigation in order to avoid or reduce their significance.

To obtain a measure of the risk associated with each potential impact, likelihood criteria (Table 7.2) identifying the probability of occurrence of each potential impact were estimated to take into consideration existing safeguards and controls to be put in place by the project proponent.

Table 7.2: Rating of Impacts

Likelihood	Rating	Definition
4	Severe/high	Adverse impacts on people and/or environment of medium to large magnitude, spatial extent and duration more limited than critical (e.g. predictable, mostly permanent, and irreversible). The potential risk impacts of projects that may affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples are to be considered at a minimum potentially severe
3	Moderate	Impacts of low magnitude, limited in scale (site-specific) and duration (temporary), can be avoided, managed and/or mitigated with relatively uncomplicated accepted measures.
2	Minor	Very limited impacts in terms of magnitude (e.g. small, affected area, very low number of people affected) and duration (short), may be easily avoided, managed, mitigated.
1	Negligible	Negligible or no adverse impacts on communities, individuals, and/or environment.

A modified Leopold impact assessment matrix is used for combining the severity of impact and the likelihood of occurrence. The potential impacts of each activity are ranked by combining the severity and likelihood criteria as shown in Table 7.3. During the project lifecycle, appropriate practices and

measures will be put in place undertaken to mitigate the potential adverse impacts. These mitigation plans, which conform to national and international guidelines, are addressed alongside each potential impact to ease applicability alignment.

Table 7.3: Impact Significance Matrix

	Receptor Sensitivity				
Impact magnitude		Negligible	Low	Moderate	High
	Negligible	Negligible	Negligible	negligible	Low
	Low	Negligible	Low	Low/Moderate	Moderate
	Moderate	negligible	Low/moderate	Moderate	High
	High	Low	Moderate	High	High

Table 7.4: Impact Significance in Numbers

	Receptor Sensitivity				
Impact magnitude		0	1	2	3
	0	0	0	0	0
	1	0	1	2	3
	2	0	2	4	6
	3	0	3	6	9

The overall level of an impact is determined by its position on the impact risk assessment matrix. This qualitatively allows for the evaluation of the risk of each impact. The use of risk (consequence and probability of occurrence) to screen and evaluate impacts enables this ESIA to identify and focus on resources most likely to be at risk due to the project. Impacts placed within the red boxes have a “high” risk rating.

These high-risk impacts become priority issues for further evaluation or management action. Impacts in the yellow category are “medium” risk impacts, with a medium priority. These are considered tolerable, but efforts should be made to reduce the impact on levels that are as low as reasonably practical. Impacts in the green boxes indicate events with “low” risk corresponding to low significance and low priority. These are considered acceptable and do not require specific mitigation.

As presented in Table 7.4, a simple matrix with the following ratings was used to determine magnitude of the impacts: +9=Very high positive impacts; +6=High positive impacts; +1=Minor positive impact; 0= No impacts; -1=Minor negative impact; -6=High negative impacts; -9=Very high negative impacts

7.3 Potential Environmental and Social Risks and Impacts

Potential environmental risks and impacts associated with the project area and construction works include but not limited to loss of land and assets along the proposed roads with side drains, drainage canals and the locations of WASH facilities and probably street lighting, soil erosion and compaction, sedimentation of streams, contamination of soil and water sources, disruption of surface and sub-surface drainage patterns, deposition of airborne road dust and airborne emissions. Table 7.5 presents the environmental social aspects triggered by critical project components and associated impact indicators.

The main project adverse impacts include:

- Incomplete project and environmental degradation due to poor designs and specifications of infrastructure and materials selection (road and WASH)

- Loss of residential and business properties such as land and houses (Moyiba, Coconut Farm, Rokupa, Bai Bureh);
- Damages to public utilities and common property resources i.e. water supplies, drinking water tap points, water tanks, power lines/poles and schools etc. and respectively
- Damage of public infrastructure facilities such as water pipes, electricity and telecommunication installations
- Disruption to traffic and inhibit access to home, businesses and public utilities (schools, health centre, mosques, etc.).
- Noise and vibration by construction activities
- Changes in land use patterns and pollution impacts associated with materials sourcing areas such as quarries and borrow sites where aggregates and laterite will be purchased
- Increased water and soil pollution from sites preparation, campsite/works yards sitting (where applicable), dumpsites, material sources, water drainage, increased erosion and sediments, hazardous materials
- Air quality deterioration, noise and vibration pollution (dust, CO and other air pollutants)
- Occupational health and safety risks (HIV, GBV, prostitution, drug abuse, communicable diseases, etc.)
- Clogging of side drainages and channels due to poor solid waste management
- Localized flooding on Granville Brooke due to the outfall at Bai Bureh Road from Coconut Farm and the improved drainage channels in Moyiba
- Land Degradation due to erosion and sedimentation caused by construction work
- Impacts on public utilities (water pipelines, electricity).
- Pitfalls due to unprotected wells and latrine pits.
- Risk of landslides and flooding and downstream runoff impacts due to unstable landscapes, slopes during clearing, construction especially in the rainy season
- Landslides due to the use of machinery on steep and unstable slopes
- Pitfalls due to unprotected wells and latrine pits.
- Flooding and pollution of seabed due to solid waste disposed of in drainage channel and possibly from the Granville Brooke dumpsite that is transported downstream as the flow rate increases

Potential negative impacts related to the loss of residential structures, commercial kiosks (e.g., for pharmacists and traders), and economic trees are addressed through the compensation and livelihood restoration measures detailed in Chapter 5 of the Resettlement Plan developed for this subproject.

The RP provides mitigation measures: compensation, relocation assistance, livelihood restoration. All mitigation measures for physical and economic displacement are detailed in the RP.

While Annex 26 highlights the environmental/social components and associated impact indicators; Table 7.7 presents detailed potential impacts and mitigation measures for the roads and retaining structures.

Table 7.5: Matrix Potential Environmental and Social Impacts

#	Potential Impacts	Impact Rating Criteria					Impact Significance Rating		
		Temporal Scale	Reversibility	Cumul. Effects	Residual Impact	Mob Phase	Const Phase	Demob Phase	OPM Phase
Social Impact									
1	Job creation and increased income to local community	MT	IR			+6	+9	+1	+6
2	Increased Economic Growth	LT		✓	✓	0	0	0	+9
3	Flood and sewage discharge problems reduction	LT		✓	✓	0	0	+1	+9
4	Enhance technology, social cultural adoption	ST	IR		✓	+6	+9	+3	+6
5	Improved Transportation and road accessibility	MT				0	+1	+1	+1
6	Improved community life and social services	MT				0	+1	+1	+9
7	Land expropriation, loss of property and resettlement	ST	R			-6	-3	0	0
8	Destruction of public utilities, infrastructure and access	ST	R			-3	-6	0	0
9	Potential threats from spread of STDs and communicable diseases)	LT	IR		✓	-1	-9	-1	-1
10	Safety and health risks	ST	R		✓	-1	-3	0	+1
11	Road traffic accidents	MT	R			-1	-3	-1	-6
12	Reduce risk to the community life (landslide/landfall/rock rollover, slips, falls)	LT	IR	✓	✓	-1	-3	-1	-1
13	Increased Immigration and flux	ST	R			-1	-2	0	-1
14	Resource use conflict	ST	R	✓		-1	-1	0	-1
15	Gender based impact	ST	R	✓		-3	-9	-1	-1
Environmental Impacts									
16	Reduced water resources pollution	LT		✓	✓	0	0	+3	+9
17	Increased safe water availability to the local communities	LT		✓	✓	0	+1	+3	+3
18	Environmental/Aesthetic improvement	LT	R	✓	✓	0	+1	+3	+3
19	Water and soil degradation	ST	R			-1	-2	-1	-1
20	Environmental pollution (noise, vibration and air pollution)	MT	R		✓	-1	-3	-1	-3
21	Increased water usage (during construction)	ST	R	✓		-1	-6	0	-1
22	Pollution due to waste generated	ST	R	✓	✓	-1	-6	-1	0
23	Loss of trees/biodiversity and Natural Habitat	LT	R	✓	✓	-1	-6	0	0
24	Degradation of resources and management	LT	IR		✓	-9	-2	0	0
25	Interfere with local hydrology	LT	IR		✓	-3	-6	-6	-6

Temporal Scale: Short Term (ST), Medium Term (MT), Long Term (LT) **Reversibility**: Reversible (R), Irreversible (IR)
Significance: Highly Adverse (-9); Adverse (-3); Mild Adverse (-1); No impact (0); Mild Beneficial (+1); Beneficial (+3); highly Beneficial (+9);

Table 7.7: Potential Impacts and Mitigation Measures for the Roads and Retaining Structures

Media	Potential Impact	Project Development Phase	Significance	Probability of Impact and Impact	Possible Mitigation Measures
Air Quality	Potential for fugitive emission or particulate matter (dust) from site clearing, earthworks, stockpile materials, heavy vehicles during construction /operation phase.	Mobilization Construction Operation	Substantial Low Moderate	Prob: 4, Impact: 3 Risk: Medium	• Dust minimization measures shall be implemented including watering of the construction areas, including the road surfaces under construction. • Soil stockpiles and stores of friable material will be covered to reduce the potential for fugitive emissions of dust where possible. • Vehicles carrying friable materials will be enclosed or sheeted. • Loading, unloading and handling of dusty materials will only be carried out in designated areas. • Regular damping of unpaved roads or exposed soils/ground to control dust/particulate matter and keep it down. • Limit active construction activities to not more than a total of 500 meters at a time on a 2.0 km road length section to minimize dust • Workers would be provided with dust protection PPE • Limit heavy works to 08:00–17:00
	Potential for road traffic exhaust emission (NOx, PM etc.) including dust from vehicular movement during construction	Mobilization Construction Operation	Moderate Low	Prob: 3, Impact: 3 Risk: Medium	• Ensure vehicles/machines are switched off when not in use. • Ensure only vehicles required to undertake works are operated on-site. • Ensure all construction vehicles, plant and machinery are well maintained and in full operating condition. • Effective preventative maintenance established to ensure all construction equipment and electricity generators are maintained in good working order and do not adversely impact air quality due to inadequate maintenance or damage. • Concrete batching, crushing and screening plants will be fitted with dust extraction and / or suppression systems where necessary. • Use protective gears like helmets and dust masks by the construction crew
Noise and vibration	Potential for increased noise generation from construction machinery, earth moving equipment because of construction activities	Construction	Substantial	Prob: 4, Impact: 6 Risk: Medium	• Install noise reduction devices such as silencers and mufflers as appropriate to mobile plant and equipment. • Limit the active construction site to not more than 500 meters per 2.0 km lengths • Limit work to daylight hours. Schedule noisy construction activities during specific times in the day especially near the sensitive receptors
	Vehicle movement both during construction, operation could cause	Construction Operation	Substantial Moderate		• Advance notice will be given to communities if short-term noisy construction activities are to take place, which could

Media	Potential Impact	Project Development Phase	Significance	Probability of Impact and Impact	Possible Mitigation Measures
	increase noise				cause these levels to be exceeded.
	Potential for project activities to cause noise Works near Church Property could cause structural vibration and noise nuisance to congregants and students;	Mobilization Construction Decommissioning	Moderate		• Near places of worship, construction producing nuisance level noise be minimised or rescheduled so as not to occur on locally recognised religious day. • Work areas will be organised and operated strive to restrict noise levels to not exceed World Bank thresholds at the nearest sensitive receptor during normal activities. • If existing noise levels exceed these threshold values, the Project will not cause more than a 3dB increase in measured ambient levels during normal activities •
Soils/Erosion	Potential impact on soils physical, chemical and biological properties from clearing, excavation during construction.	Construction Operation Decommissioning	Substantial	Prob: 3, Impact: 6 Risk: High	• Vegetation along drainage lines and gullies will be protected where practicable to provide natural attenuation of flows. • Where possible, drainage outlets will discharge into vegetated areas and not to exposed soil. • Slope stability measures will be incorporated such as benching and installation of erosion protection features such as silt barriers and sedimentation ponds. • Area to be cleared will be kept to the minimum necessary to prevent disturbance of soils outside the boundary • Works activities should be undertaken cautiously on slopes
	Soil erosion from vegetation removal, soil exposure, excavations during construction and road rehabilitation and slope stabilization.	Construction	substantial		
	Potential for contamination from stockpile areas, wastes storage areas, waste on drainage channels, fueling of vehicles	Construction Operation	Moderate		
Surface Water	Risk of water pollution from soil erosion during construction and heavy rainfall Potential contamination from accidental discharge of cement, epoxy, and paints Deterioration of surface water quality (streams, springs, coastal waters) Downstream impacts via drainage systems (Benz Garage–Granville Brook, Moyiba culverts, Portee–Rokupa channel to sea)	Construction	Substantial	Prob: 3, Impact: 6 Risk: High	• Design and construct adequate drainage systems to manage stormwater runoff effectively. • Plan construction activities during the dry season to minimize the risk of erosion and runoff. If construction must occur during the rainy season, ensure that all excavated areas are stabilized before the onset of heavy rains • Use re-vegetation techniques to stabilize exposed soil surfaces. Planting grass or other vegetation promptly can help reduce erosion • Install silt fences, and other control structures to capture sediment before it enters water bodies. These structures help reduce sedimentation and protect water quality • Store construction materials away from water bodies and drainage channels to prevent erosion and runoff • Implement the waste management plan to handle construction waste properly. Avoid disposing of hazardous materials near water sources • Refuelling, maintenance and wash-down of construction vehicles and equipment will only occur in designated areas and away from surface water bodies and provided with secondary impermeable containment measures. • The construction contractor should be contractually

Media	Potential Impact	Project Development Phase	Significance	Probability of Impact and Impact	Possible Mitigation Measures
					required to take all reasonable precautions to prevent and clean up all spills / leaks and take necessary measures to prevent materials from falling into surface water or pollute soils or groundwater. • The Environmental and Social Management Plans including spills and waste management measures shall be implemented. • For work to be undertaken close to surface water bodies measures will be taken to ensure that pollution of water resources does not occur •
	Potential for wastewater discharges into water body	Construction Operation	Moderate	Prob: 3, Impact: 2 Risk: Medium	• Set-up temporary disposal mechanism within the construction area and properly dispose solid waste generated Institute wastewaters treat regime prior to release into water bodies
Visual Aesthetics	Landscape impacts from site preparation and construction activities including vegetation removal and soil removal	Construction	Low	Prob: 2, Impact: 2 Risk: Low	• Construction material to be stacked in designated area and cordoned off. • Contractors shall have designated parking areas for equipment and machinery
	Reduced aesthetic quality impact resulting from presence of equipment, vehicles and machinery and poor waste management practices	Construction	Low		
Wastes	Potential impact on the environment due to nonexistence of sustainable waste management practice and increase of generation of waste streams	Construction Operation	Substantial	Prob: 3, Impact: 6 Risk: High	• Waste bins will be provided at all construction sites for the disposal of the various types of wastes generated by the project. These bins will be clearly marked to facilitate segregation of waste, for collection, transportation and disposal. • In terms of waste management during operations, the feasibility studies proposed the use of huge plastic bins to be located at designated spots within the communities • Separation of domestic and hazardous waste at the source shall be strictly enforced. • Where possible, wastes will be re-used or recycled. This is a requirement for waste oils, other hydrocarbons and tires and other hazardous and non-hazardous wastes • Institute local laws that will discourage the burning of waste • All personnel will be trained in the appropriate management of waste according to the WMP. • Dispose solid waste at the Granville Brook Dumpsite, Freetown
	Potential impact on environmental media (soil, water, air) and the community from waste transportation and disposal of spoils and	Construction	Substantial		• Proper storage, transport and disposal of hazardous wastes (oily wastes, used batteries, fuel drums) in the designated areas by the national/municipal authorities in accordance with National Environmental Law.

Media	Potential Impact	Project Development Phase	Significance	Probability of Impact and Impact	Possible Mitigation Measures
	contaminated materials.				• Implement sediment control measures to prevent erosion and sedimentation, which can clog storm channels • Implement a hazardous materials management plan that includes proper storage and handling of fuels, oils, and other hazardous materials.
	Disposal of spoils in unsuitable areas such as hilly terrain could result in environmental impacts including erosion, water pollution, obstruction of drainage patterns, etc. spoils disposal will be particularly pertinent for the urban upgrading project and the landfill construction project.		Substantial		• Side tipping of spoils in any hilly locations will be strictly prohibited. • Roads will be designed to achieve a balance between the amount of spoil produced from cuttings and that required for fill to minimise the need for disposal of surplus.
Loss of trees and biodiversity	Potential impact on few economic trees could be triggered through poor construction preparation practices for the retaining wall to be constructed adjacent to the Iman Sadiq School in Moyiba and on the culvert embankment at Granville Brooke Culvert.	Construction	Low	Prob: 2, Impact: 2 Risk: Low	• Re-plant the indigenous vegetation as much as practical once work is completed by the original species. • Spare the trees that must not necessarily be removed. • The landscaping plan should seek to avoid the use of non-native and potentially invasive species.
Natural Habitat	Impact natural habitat during site clearing activities.	Construction	Moderate	Prob: 2, Impact: 2 Risk: Low	• Contractor to only use public non-productive land for laydown/equipment storage. • Ensure that stockpile is secured and stored in a safe place. • Vegetate stockpiles if storage required for long periods
Flood and landslide	Increased runoff from upgraded roads and drainage may trigger flooding and overland flow, leading to landslides in Granville Brook, Blackhall Road, and Rokupa Wharf areas Erodible slopes may release rocks and loose materials, posing risks to houses and communities located below road level Impact is likely across all three communities, with highest risk at Rokupa Wharf and Moyiba approach and uphill end area	Construction Operation	High	Prob: 4, Impact: 6 Risk: High	• Earth works not to be done during rainy seasons • Provision alternative drainage for rainwater if earthworks fill established drainage lines • Best construction practices to be employed • Flood/landslide emergency response measures to be employed by contractors. • Clear channels downstream • Construct secondary channels to divert the water to reduce the flow velocity • Slope Stabilization, erosion control measures, and relocation/monitoring of high-risk populated areas/communities. • Schedule construction activities during the dry season to minimize the risk of flooding and runoff impacts. This reduces the likelihood of construction sites being inundated during heavy rainfall • Implement effective drainage systems to manage stormwater and prevent flooding. This includes constructing diversion drains, interceptor ditches, and sediment ponds to capture and manage runoff

Media	Potential Impact	Project Development Phase	Significance	Probability of Impact and Impact	Possible Mitigation Measures
					• Use erosion control measures such as silt fences, sediment retention basins, and vegetation planting to stabilize soil and prevent sedimentation in water bodies • Implement the planting of trees and vegetation to increase ground permeability and reduce runoff. This can help in absorbing excess rainwater and reducing the speed of stormwater flow • Keep land clearance to a minimum and avoid clearing areas of highly erodible soils and steep slopes prone to erosion. • Implement slope stabilization techniques to prevent erosion and further triggering of landslides • Temporary drainage systems should be installed to prevent landslides during construction, such as cutting slopes. Permanent drainage systems for surface water management and slope stabilization should be installed, with adequate monitoring and maintenance • Develop and implement emergency response plans with early warning systems and community awareness to address potential landslide/flooding events noting the downstream impact on residents Granvile brook outfall Avoidance of unnecessary clearing and excavation and the use of humans instead of machines to work on slopes and the planting of grasses and stone pitching will improve on slope stability • Conduct routine geotechnical inspections of high-risk slopes, especially at Portee Wharf and Moyiba approach and uphill end area •
Flooding (Granville Brook Water Backflow) due to Outfall in Bai Bureh Road	High-velocity runoff leading to downstream erosion/scour in the drainage outfall from Blackhall Road to and along Bai Bureh Road to Granville Brooke is likely to occur and the Granville Brooke is highly eroded and poses high environmental risks. This impact is generally probable within the three neighborhoods with critical concern at the Rokupa Wharf area – .	Construction Operation	High	Prob: 4, Impact: 6 Risk: High	**Construction Phase (Immediate Actions):** • De-silting and clearing the of Granville Brook to remove eroded soils resulted from construction activities to restore channel capacity • Stabilize the degraded sections of the stream banks using rip-rap and gabions • Install temporary upstream sediment traps/check dams **Permanent Engineering Measures:** • Development of upstream flood attenuation/detention ponds **Integrated Waste–Drainage Management:** • Install self-cleaning trash racks at culvert inlets • Construct bund walls around the dumpsite to prevent

Media	Potential Impact	Project Development Phase	Significance	Probability of Impact and Impact	Possible Mitigation Measures
					waste encroachment into drainage channels **Watershed-Level Measures:** • Reforestation of upstream catchments to reduce runoff intensity • Promote permeable surfaces to reduce surface runoff volume
Solid Waste	Dumping of solid waste and siltation of drainages and culverts is a key concern. There are a few sediment traps along some road corridors. Solid waste concerns especially side drains and waterways should be addressed comprehensively.	Construction Operation	Substantial	Prob: 4, Impact: 6 Risk: High	• Develop and implement a waste management plan. • All solid waste from the drainages should be disposed of in a government-approved dumpsite • Granville Brooke dumpsite should be regularly pushed to avoid waster littering on the stream
GHG	Emissions from construction activities like fuel combustion, power generators, concrete batching plant, operational vehicles could cause adverse impacts on air quality affecting the health and welfare of people, crops and sensitive natural fauna and flora	Construction Operation	Moderate Low	Prob: 3, Impact: 3 Risk: Medium	• Use of ozone depleting substances such as chlorofluorocarbons (CFCs), halons, carbon tetrachloride, trichloroethane and halogenated hydro bromofluoro carbons (HBFCs) will not be permitted. • Plant trees to help sequester GH gases (such as CO_2)
Wildlife	Potential impact during material sourcing including noise from vibration equipment	Construction	Negligible	Prob: 1, Impact: 2 Risk: Low	• No species of global conservation significance occurs at the protect sites and so it is not expected that such species will be affected • Workers would be advised that in the unlikely event undomesticated animals are encountered, they are not to be killed; but instead caught and released into a similar environment.
	Potential impact on endangered and threatened species around the hilltop areas due to habitat loss during construction	Construction	Negligible (no endangered and threatened species		
Aquatic life	Potential impact on aquatic life (fish spawning ground), from oil spillage and discharge of wastewater or other contaminants during construction and the flow of wastewater into the streams and sea.	Construction	Low	Prob: 2, Impact: 2 Risk: Medium	• The construction contractor will implement waste management and environmental health and safety plans to limit water pollution. • No species of global conservation significance occurs at the project sites and so it is expected that such species will not be affected. Aquatic bird species only occur a considerable distance away from the project sites.
Hydrological disruption on drainage systems	Construction, especially during the rainy season due to poor solid waste management, and topographic vulnerability could lead to changes in natural water flow and increased run off which can lead to flooding and waterlogging especially in downstream communities	Construction	Substantial	Prob: 4, Impact: 6 Risk: High	• Rehabilitate and expand existing open drainage systems to handle peak flows • Rehabilitate culverts to accommodate stormwater volumes and ensure drains are properly interconnected • Improve solid waste collection and disposal systems to prevent drain blockages. • Establish local flood monitoring and communication systems • Reduce obstruction of natural drainage paths and

Media	Potential Impact	Project Development Phase	Significance	Probability of Impact and Impact	Possible Mitigation Measures
					exposure of structures to floods • Install covered drains in high-density areas • Provide structures that will improve slope stabilization and erosion control to minimize soil loss and sedimentation into drains • Ensure erosion control at outlets. • Install temporary water storage structures to reduce stormwater runoff discharge.
Social					
Access to healthcare facilities	Potential positive impact from improved access to healthcare facilities and health care in responding to emergencies	Operation			• No mitigation required
Reduction in the number of sanitation facilities in the 3 neighborhoods	Insufficient sanitation facilities to serve residents Potential conflict due to dissatisfaction of owners whose sites were rejected The investment will not fully serve the intended objective of the project	Pre construction Operation	Substantial	Prob: 3. Impact. 3, Risk: Medium	• Conduct early engagements with local authorities and beneficiaries to explain the reasons for the change in scope • Provision of alternative sanitation facilities which are ideal for the communities
Job creation, flood control	Potential positive impact of the Project includes creation of employment, (expected to employ 20 technical staff, 50 skilled technicians and 150 unskilled labourers (30% women), flood and improved access to basic services.	Construction Operation	Substantial		• No mitigation required
	Increase in individual and household wellbeing due to increased income from direct and indirect employment	Construction Operation	Substantial		• Flag persons are to be provided where the plant cross/meet the community road.
			High	Prob: 3, Impact: 3 Risk: Medium	
Infrastructure service	Potential strain on existing infrastructure and waste services due to increased population and increased vehicle from contractor presence in the community	Construction	Low		• The contractor's Community Liaison Officer collaborates with communities to identify sensitive areas and inform communities before movement. • Request for road closure must be approved by the relevant authority
Economics, Livelihood	Disruption of livelihood activities resulting from land acquisition for Project	Construction Operation	High	Prob: 3, Impact: 3 Risk: Medium	• Stakeholders Engagement Plan developed and implemented • Develop and implement Resettlement Plan (RP), including Livelihood Restoration Plan (LRP) • Ensure commensurate compensation •
	Temporary disruption of livelihood activities due to blockades, diversions, traffic etc., during construction Potential economic loss due to damage to assets from Project related activities	Construction	Moderate Low		

Media	Potential Impact	Project Development Phase	Significance	Probability of Impact and Impact	Possible Mitigation Measures
Community health and safety	Risks of accident and injury during Project related activities	Construction Operation	Moderate Low	Prob: 3, Impact: 2 Risk: Medium	• Adequate signage and warnings including "highly-flammable", "no smoking" • Provide routine medical tests opportunities for workers, so that affected workers will be isolated and treated to avoid the spread of infection to others • Ensure that construction workers and host community are adequately informed, and aware of local laws • Prepare and implement site specific C-ESMP
	Potential increase in disease (malaria, communicable diseases, HIV) due to migration of workforce to the community	Construction	Moderate		
	Potential mental issues caused by disruption of traditional support and community cohesion resulting from possible resettlement and compensation	Construction Operation	Substantial		
	Rock falls or slide due to lack of bench face stability (bodily Injuries) Struck by moving equipment	Construction	High	Prob: 3, Impact: 3 Risk: Medium	• Physical restraint of rock falls through rock bolting and or shotcrete application, or building a metal, concrete or stone retaining wall.
Community and social cohesion	Potential conflict and tension between communities, local leaders and Project proponent due to unmet expectations around Project benefits and employment	Construction Operation	Substantial	Prob: 3, Impact: 3 Risk: Medium	• Stakeholders Engagement Plan developed and implemented • Undertake continuous engagement throughout the project life span • Raise awareness on the existence of the Grievance Mechanism
Land use and Resettlement	Potential physical and economic displacement during land acquisition	Construction Operation	High	Prob: 3, Impact: 3 Risk: Medium	• Stakeholders Engagement Plan developed and implemented • Develop and implement Resettlement Plan (RP), including LRP • Ensure commensurate compensation • GRM in place for managing grievances
	Potential increase in land disputes during resettlement and compensation	Construction Operation	High		
	Changes in land use (fishing, livestock rearing) resulting from land acquisition, resettlement, and compensation process	Pre-construction Operation Construction	High		
	Potential restriction on land use due to the expansion of the drainage along Bai Bureh Road	Pre-construction Operation Construction	Moderate		
Labour and working condition	Potential injury or loss of life due to inadequate occupational health and safety standards.	Pre-construction Construction Operation	Moderate	Prob: 3, Impact: 3 Risk: Medium	• Labour Management Procedures (LMP) shall be prepared by the Project and adopt and implement by Contractor(s) based on the Project Labour Management Procedures for approval by the Bank/PMU to guide labour relations • Contractors and Sub-contractors will be required to hire labour through a structured HR process and not 'at the gate' • All workers will be given contracts specifying the type of work they are employed to execute and their remuneration package as well as their conditions of service • All contracts will be vetted by the Ministry of Labour and Social Security before they are signed by workers • Contractors shall be required to consider alternative work schedules or shifts to accommodate the hiring of more
	Potential impact on wellbeing of workers due to discrimination, infringement on labour and employment rights (excessive working hours, forced labour)	Construction Operation	Low		

Media	Potential Impact	Project Development Phase	Significance	Probability of Impact and Impact	Possible Mitigation Measures
					female workers.
Labour influx	Risk to community health from HIV/AIDS or other transmitted infections because of the presence of migrant construction labour.	Construction	Moderate	Prob: 3, Impact: 3 Risk: Medium	• Communities and project workers in which sub projects will be undertaken will be sensitized on the potential communicable and sexually transmittable diseases and preventive measures and against stigmatization of persons with such and other infectious diseases using the mass media • Contact numbers (hotlines) of the nearest health facility will be pasted at vantage points in the communities, where the sub projects will be implemented • Workers will not be allowed to receive visitors in project/works yards sites without the express permission of site supervisor. • All workers will sign a Code of Conduct (CoC) prior to start project work
	Risk of gender-based violence from project workers particularly if not hosted in worker's camps.				• Certain employment opportunities on site should be preserved for vulnerable persons such as Persons Living with Disability and women e.g. wardens • A grievance mechanism system will be made available to all workers to report any issues associated with OHS and / or labour and working conditions • All workers will sign a Code of Conduct (CoC) prior to start work • Contractual clauses will be inserted in Contract Documents prohibiting the Contractors/Consultants and their employees from Forced Labour, Child Labour, that also makes reporting all Child Labour cases to law enforcement agencies, the Grievance Redress Committee and Project Consultant mandatory
GBV/SEA/SH	Unwanted aggressive advances, SEA/SH against women and children.	Construction	Substantial	Prob: 3, Impact: 2 Risk: Medium	• Clearly define the GBV requirements and expectations in the bid documents for a GBV action plan, Code of conduct for workers and adequate costing for implementing the GBV plan. • The contractor ESMP should among others, set out the mechanism for receiving, reviewing and addressing GBV complaints in a confidential manner, workers SEA/SH code of conduct and the accountable framework, mapping of GBV response actors within the project areas and working with them to provide quality survivor centred services including case management, referral services and linkage to other services not provided by them, etc.

Media	Potential Impact	Project Development Phase	Significance	Probability of Impact and Impact	Possible Mitigation Measures
					• The supervision consultant shall engage a GBV specialist to supervise implementation of the contractor GBV plan implementation. • Contractual Clauses on mandatory and regular training for workers on required lawful conduct and legal consequences for failure to comply with laws on non-discrimination and GBV will be inserted in the Contractors and Consultants Contracts as well as those of PMU staff. • Contractual Clauses with a commitment to cooperate with law enforcement agencies investigating cases of GBV will be inserted into the Contract Documents of the Contractors, Subcontractors and Supervising Consultant. • Workers of Project Consultants, Contractors and Subcontractors will be made to sign Code of Conduct with acceptable behaviour and sanction against GBV. • Sensitization workshops/training on GBV/SEA/SH shall be undertaken for all employees of the Contractor/Supervising Consultant and Sub-Contractors. • Contractors shall provide contact numbers of the nearest law enforcement Agency Office, the Grievance Redress Committee Members and GBV/SEA Service Providers/FSU to workers and paste same at vantage points within the project zones/sites/communities. • Prohibition posters on sexual exploitation and harassment will be posted in and around the sites as well as in the project communities. • A helpline will be provided and disseminated in all the project communities and facilities by the ACC/EOC to deal with GBV/ SEA/H complaints
Cultural heritage	Sites or items of heritage significance could be found in the course of development work.	Construction	Moderate	Prob: 2, Impact: 2 Risk: Low	• Contractor to be aware of known cultural heritage sites (as noted in ESIA / site surveys) • Flagging or physical barriers to be put in place if required. • Take precautions when excavating. • If any object or site discovered cease works and follow the Chance-Find Procedure (CFP)
Traffic	The increased vehicular movement and speed may result in road safety issues like traffic accidents. Works near Church Property and school facility on Bai Burek corridor could cause restricted access for congregants. and students;	Construction Operation	Substantial	Prob: 3, Impact: 3 Risk: Medium	• Community consultations and meetings on the ongoing works and related hazards will be held. • Active sites will be sealed off from the public using reflective tapes and cones, where necessary road diversions will be created. • Safety initiatives will be developed and implemented, including: – Ensuring that only qualified (licenced) drivers operate machinery. – Implementing speed limits and traffic control

Media	Potential Impact	Project Development Phase	Significance	Probability of Impact and Impact	Possible Mitigation Measures
					measures in appropriate locations. – Implementing safety signage. – Installing speed control devices such as governors on trucks • Movement of large construction machinery will be guided by a flag woman/flagman. • Install safety barriers and temporary walkways for church access.

7.5.4 WASH Facilities Risk-Ranking Matrix

The matrix ranks each location across the 3 communities was based on terrain stability, drainage/runoff exposure, access and hygiene conditions, proximity to sensitive receptors, and need for major mitigation, as documented in the site assessment

General Environmental and Social Setting

The sites are located within densely populated urban and peri-urban neighborhoods, close to markets, schools, mosques, health centres, and public spaces. Many locations exhibit poor surface drainage, erosion-prone soils, sloping terrain, and sanitation deficits, increasing contamination and public health risks if these facilities are not properly designed and managed

Key Risks Identified

Environmental Risks

- Surface runoff and flooding around facilities
- Soil erosion and slope instability
- Potential contamination of water sources due to poor hygiene practices and leaking pipes

Contaminants from latrine excreta may potentially leach into groundwater, thereby threatening human health through well-water contamination.

- Sediment transport into adjacent drains.

Social and Community Risks

- Limited access for women, children and persons with disabilities
- Construction disturbance near schools and markets
- Safety hazards around open excavations
- Disruption of community activities.
- Ownership and control: residents who provided plots for WASH facilities will claim ownership and control of how these facilities should be used in their own terms, this has the potential of social conflicts
- The reduction of sanitation facilities will cause unease for residents who thought they were excluded from benefiting from compensation. The reduction of facilities will also lead to business-as-usual scenario (viz: open defecation on roads, streams and public spaces)
- Pay-For-Use: the cost recovery drive (pay-for-use) may exclude vulnerable persons from using the facilities in addition to traditional beliefs that people should not pay for using a toilet.

Risk Categories Applied

- **Low:** Minor erosion/drainage issues; easily mitigated through routine design measures.
- **Moderate:** Poor drainage or hygiene and some slope risk; standard ESMP controls required. Engineering & hygiene upgrades required.
- **High:** Severe runoff/erosion, unstable slopes, poor access; significant engineering (stabilization, drainage, or access works) and management measures needed.
- **Very High:** Unsuitable without major redesign, relocation, or structural intervention. Seepage of excreta into groundwater bodies

1. Moyiba Wash Sites Risk Classification

While Table 7.8 present detailed risk analysis and classification of the proposed Moyiba Wash site, summary Wash Based on screening:

- **Low–Moderate Risk Sites:** Suitable with routine ESMP measures (002, 008, 020, 021).
- **High-Risk Sites:** Require engineered drainage and slope-stabilization solutions before construction (003–009, 017, 018, 022).
- **Very High-Risk Sites:** May be unsuitable unless major structural works or relocation are undertaken (014, 015, 019, 023, 034)

Table 7.8: Moyiba WASH Facilities Risk-Ranking Matrix

Location Code	Facility Type	Key Risk Drivers	Overall Risk	Priority Actions
002	Refillable Plastic Water Tank	Exposed pipes, leakage risk, moderate hygiene	Moderate	Bury/secure pipes, leak-proof fittings, pumping system
003	Refillable Plastic Water Tank	Market proximity, runoff, erosion, waste	High	Retaining walls, drainage channels, access upgrade
004	Tank Borehole	Poor drainage, erosion near mosque	High	Slope protection, sanitation buffer, drainage
005	Tank Borehole	Sloping land, poor sanitation, children nearby	High	Drainage upgrade, sanitation facilities, fencing
006	Tank Borehole	Pooling water, public use area	Moderate–High	Drainage correction, access control
007	Tank Borehole	Severe drainage, erosion, existing tank nearby	High	Major erosion control, access improvement
008	Tank Borehole	Minor pooling, hygiene risks near health centre	Moderate	Drainage lining, hygiene management
009	Tank Borehole	Poor drainage near school	High	Stormwater diversion, school-safe scheduling
010	Tank Borehole	Loose soils, runoff, sanitation issues	Moderate–High	Soil stabilization, drainage works
014	New Water-Table Well	Unstable steep slope, poor access	Very High	Retaining walls or relocation
015	New Water-Table Well	Sloped terrain, inaccessible	Very High	Redesign or relocate
017	New Water-Table Well	Loose soil, erosion	High	Slope treatment, access roads
018	Pour-Flush Toilet	Low-lying area, runoff, poor access	High	Raised platform, drainage, flood protection
019	New Water-Table Well	Steep slope, severe drainage	Very High	Relocation or major stabilization
020	Refillable Water Tank	Minor erosion and pooling	Low–Moderate	Improve drainage apron
021	Pour-Flush Toilet	Loose soil, runoff	Moderate	Drainage strengthening
022	Pour-Flush Toilet	Sloped site, erosion	Moderate–High	Terracing/retaining structures
023	Pour-Flush Toilet	Unstable slope	Very High	Major stabilization or relocation

034	Rehab Existing Well	>30° slope, inaccessible	Very High	Relocation or major civil works

2. Coconut Farm Wash Sites Risk Classification

The Coconut Farm WASH package includes rehabilitation of existing wells, construction of tank boreholes and new water-table wells, installation of refillable plastic tanks, and construction of pour-flush toilets. Each site was assessed for terrain stability, drainage, hygiene, access, contamination risks, and land status. The locations fall within dense residential settings, some near mosques, private compounds, streams, and rocky slopes. Many sites show unstable soils, erosion scars, solid-waste accumulation, sanitation deficits, and limited public access, increasing risks of contamination and community exposure if not carefully managed. Key environmental risks include flooding and runoff around wells/toilets, probable slope failure and soil erosion and waste-driven contamination pathways. Social risks assessed include restricted access through private land, safety hazards during construction, and public-health exposure near water points.

While Table 7.9 presents detailed risk analysis and classification of the proposed Coconut Farm Wash site, Summary of risks aligned to each site is highlighted below:

- **Low–Moderate Risk Sites:** Suitable with routine ESMP measures (003, 004, 013, 014).
- **High-Risk Sites:** Require engineered drainage and slope-stabilization solutions before construction (001, 005, 006, 008, 009, 015, 017).
- **Very High-Risk Sites:** May be unsuitable unless major structural works or relocation are undertaken (002, 007, 010–012, 019, 031)

Table 7.9: Coconut Farm WASH Facilities Risk-Ranking Matrix

Location	Facility Type	Main Risk Drivers	Overall Risk	Priority Actions
001	Rehab Existing Well	Stream proximity, erosion, poor hygiene	High	Drainage works, erosion control, hygiene upgrades
002	Rehab Existing Well	Rugged slope, waste, algae, poor access	Very High	Major stabilization or relocate
003	Tank Borehole	Minor erosion, vegetation	Low–Moderate	Maintain drainage, hygiene
004	Tank Borehole	Mosque frontage, sanitation gaps	Moderate	Improve sanitation, waste management
005	Tank Borehole	Loose soil, runoff, waste	High	Drainage & erosion controls
006	VIP Toilet	Poor drainage, contamination risk	High	Rehabilitate, manage waste
007	Pour-Flush Toilet	Severe drainage, secluded access	Very High	Redesign access & drainage
008	New Well	Unstable ground, debris	High	Cleanup, stabilize, drainage
009	New Well	Runoff, waste-filled drains	High	Drainage channels, sanitation
010	New Well	Sloped site, inaccessible	Very High	Relocation or heavy stabilization
011	Pour-Flush Toilet	Steep slope, access	Very High	Retaining walls or relocate
012	New Well	Severe drainage, steep slope	Very High	Redesign / relocation
013	Tank + Plastic Tank	Well drained, stable	Low	Routine hygiene management
014	Plastic Tank	Good drainage, hygiene poor	Moderate	Waste management, sanitation
015	Plastic Tank	Poor access, runoff	High	Access paths, drainage
017	Tank	Erosion, sanitation	High	Drainage + hygiene

	Borehole			
019	VIP Toilet	Near borehole, slope	Very High	Relocation strongly advised
031	Pour-Flush Toilet	Severe drainage, unstable	Very High	Major stabilization or relocate

3. Portee-Rokupa Wash Sites Risk Classification

The Portee–Rokupa WASH package comprises rehabilitation of existing wells, construction of tank boreholes and new water-table wells, and construction of pour-flush toilets in low-lying coastal communities prone to flooding and sanitation challenges Sites are located along tidal flats, dense informal settlements, and waste-dumping zones. Drainage is poor, soils are loose, and several locations are exposed to storm surge and saline intrusion. Key Risks include Flooding, erosion, saline contamination, waste accumulation, access constraints, and public-health exposure.

While Table 7.10 present detailed risk analysis and classification of the proposed Portee - Rokupa Wash site. Summary of risks aligned to each site is highlighted below:

- **Low–Moderate Risk Sites:** Suitable with routine ESMP measures (006, 009, 011).
- **High-Risk Sites:** Require engineered drainage and slope-stabilization solutions before construction (001, 002, 004, 005, 007, 012).
- **Very High-Risk Sites:** May be unsuitable unless major structural works or relocation are undertaken (003, 008, 010).

Table 7.10: Portee-Rokupa WASH Facilities Risk-Ranking Matrix

Location	Facility Type	Main Risk Drivers	Overall Risk	Priority Actions
001	Rehab Existing Well	Coastal flooding, waste dumping	High	Raise apron, drainage, hygiene control
002	Tank Borehole	Poor drainage, saline exposure	High	Raised platform, lined drains
003	New Well	Close to shoreline, unstable soil	Very High	Relocate inland
004	Pou Flush Toilet	Waterlogging, contamination risk	High	Elevate structure, flood proofing
005	Pour-Flush Toilet	Narrow access, erosion	High	Access upgrading, retaining walls
006	Tank Borehole	Moderate drainage issues	Moderate	Improve surface grading
007	Rehab of Well	Waste accumulation, runoff	High	Cleanup, fencing, drains
008	New Well	Tidal influence, low elevation	Very High	Relocate or major elevation
009	Plastic Tank	Good drainage	Low	Routine hygiene mgmt
010	Pour Flush Toilet	Close to sea, soft soil	Very High	Relocate
011	Tank Borehole	Moderate runoff	Moderate	Drainage lining
012	Pour-Flush Toilet	Flood-prone Low-lying coastal area, runoff, poor access	High	Raised base, drains

Table 7.11 present the general potential impacts and mitigation measures related to the WASH facilities and location.

Table 7.11: Crosscutting Potential Impacts and Mitigation Measures Related to the WASH Facilities

Media	Potential Impact	Project Development Phase	Significance	Probability of Impact and Impact	Possible Mitigation Measures
Design and Specifications	Inadequate geophysical studies for siting of boreholes and failed reticulation leading to failed water supply Poor designs of water towers and stanchions	Preconstruction	Low	Prob: 3, Impact: 2 Risk: Moderate	• Use approved standards and designs. • Conduct proper geophysics prior to siting boreholes • Improve and approve design against WBG EHS guidelines for facility design, • Ensure competent contractors and skilled workers are engaged
	Poor design of toilets including improper septic tank design may pose negative impacts.	Preconstruction	Low	Prob: 2, Impact: 2 Risk: Low	• Carefully design of toilet facilities with site specific consideration by Design Consultant
	Poor design of pour flush toilets	Preconstruction	Moderate	Prob: 2, Impact: 2 Risk: medium	▪ Select materials that are resistant to the local climatic conditions • Ensure correct estimated users of the facility
Failed Borehole	Drilling of dry boreholes	Preconstruction	Low	Prob: 2, Impact: 2 Risk: Low	• Conduct geohydrological assessment to determine groundwater availability
Air Quality	Potential for particulate matter (dust) from earthworks, stockpile materials for masonry works, fugitive emission from heavy vehicles (drilling rig) during borehole drilling, haulage of materials	Mobilization Construction	Moderate	Prob: 4, Impact: 3 Risk: Medium	• Dust minimization measures shall be implemented including watering of transport route. • Ensure optimal traffic routes. Enforce vehicle speed limits on unpaved roads • Soil stockpiles and stores of friable material will be covered to reduce the potential for fugitive emissions of dust where possible. • Vehicles carrying friable materials will be enclosed or sheeted. • Workers would be provided with dust protection PPE • Deploy serviced vehicles/trucks/motorized equipment
	Potential for road traffic exhaust emission (NOx, PM etc.) including dust from vehicular movement during construction	Mobilization Construction	Moderate Low	Prob: 3, Impact: 3 Risk: Medium	• Ensure vehicles/machines are switched off when not in use. • Ensure only vehicles required to undertake works are operated on-site. • Ensure all construction vehicles, plant and machinery are well maintained and in full operating condition. • Effective preventative maintenance established to ensure all construction equipment and electricity generators are maintained in good working order and do not adversely impact air quality due to inadequate maintenance or damage. • Use protective gears like helmets and dust masks by the construction crew
Noise and vibration	Potential for increased noise generation from prolong use of drilling rig for borehole drilling and equipment deployed for site leveling.	Construction	Low	Prob: 4, Impact: 3 Risk: Medium	• Install noise reduction devices such as silencers and mufflers as appropriate to mobile plant and equipment. • Work areas will be organised and operated strive to restrict noise levels to not exceed World Bank thresholds at the nearest sensitive receptor during normal activities.

Media	Potential Impact	Project Development Phase	Significance	Probability of Impact and Impact	Possible Mitigation Measures
					• Limit drilling work to daylight hours. Schedule noisy construction activities during specific times in the day especially near the sensitive receptors
Soils/Erosion	Potential impact on soils physical, chemical and biological properties from clearing, excavation during construction.	Construction Operation Decommissioning	Low	Prob: 3, Impact: 3 Risk: Medium	• Limit vegetation clearing to areas within the construction site boundary where it is necessary. • Avoid clearing mature trees. • Slope stability measures will be incorporated such as benching and installation of erosion protection features • Area to be cleared will be kept to the minimum necessary to prevent disturbance of soils outside the boundary
	Soil erosion from soil exposure during site preparation and leveling	Construction	Low		
	Potential for contamination from stockpile areas, wastes storage areas, fuelling of vehicles Potential for sludge spillage and degradation during evacuation	Construction Operation	Moderate		
Water Pollution	Potential for water contamination from soil erosion during construction and extreme rainfall event	Construction	Substantial	Prob: 3, Impact: 2 Risk: Medium	• Prevent construction materials and other debris (mud from the drill, grout, etc.) from entering waterways. • Refuelling, maintenance and wash-down of construction vehicles and equipment will only occur in designated areas and away from surface water bodies and provided with secondary impermeable containment measures. • The construction contractor should be contractually required to take all reasonable precautions to prevent and clean up all spills / leak and take necessary measures to prevent materials from falling into surface water or pollute soils or groundwater. • The Environmental and Social Management Plans including spills and waste management measures shall be implemented. • For work to be undertaken close to surface water bodies measures will be taken to ensure that pollution of water resources does not occur
	Construction (eg. Spillage of oil, fuel and chemicals) activities may discharge contaminants into the water body	Construction	Low	Prob: 3, impact: 2 Risk: Medium	
	Potential for wastewater and liquid effluent containing large numbers of germs that are dangerous could infiltrate into the ground/water body	Construction Operation	Moderate	Prob: 3, Impact: 2 Risk: Medium	• Set-up temporary disposal mechanism within the construction area and properly dispose solid waste generated Develop and implement Sludge Management Plan for the toilets
Visual Aesthetics	Reduced aesthetic quality impact resulting from overhead water	Construction	Low	Prob: 2, Impact: 2 Risk: Low	• Ensure a nature blended design and attractive utilization (advertisement) of the tanks. • Immediate evacuation or covering of excavated spoil

Media	Potential Impact	Project Development Phase	Significance	Probability of Impact and Impact	Possible Mitigation Measures
Waste Management	Disposal of construction wastes to existing waste management facility in the Project area	Construction Operation	Low	Prob: 3, Impact: 3 Risk: Medium	• Provide waste bins at all construction sites for the disposal of the various types of wastes generated by the project activities. These bins will be clearly marked to facilitate segregation of waste, for collection, transportation and disposal. • Separation of domestic and hazardous waste at the source shall be strictly enforced. • Where possible, wastes will be re-used or recycled. This is a requirement for waste oils, other hydrocarbons and tires and other hazardous and non-hazardous wastes • All personnel will be trained in the appropriate management of waste according to the WMP.
	E-waste generation from solar and other electrical wastes				• Training shall be provided for workers on safe storage, use and handling of e-waste on site. • E-wastes generated shall be stored in appropriate locations set up at the Project site prior to recycling and/or disposal
	Potential impact on environmental media (soil, water, air) and project area communities from waste transportation and disposal of spoils and contaminated materials.	Construction	Low		• Proper storage, transport and disposal of hazardous wastes (oily wastes, used batteries, fuel drums) in the designated areas by the national/municipal authorities in accordance with National Environmental Law.
Loss of trees and biodiversity	Areas of high ecological value	Construction	Low	Prob: 2, Impact: 2 Risk: Low	• Re-plant the indigenous vegetation as much as practical once work is completed by the original species. • Spare the trees that must not necessarily be removed. • The landscaping plan should seek to avoid the use of non-native and potentially invasive species.
Natural Habitat	Disturb natural habitat during clearing activities	Construction	Negligible	Prob: 2, Impact: 2 Risk: Low	• Clear working area only Avoid unnecessarily destroying habitats around working area
Geology/topography	Excavation and backfilling work will be necessary, particularly in the case of installation of the Sceptic tanks. Thus, changes to topography might occur.	Construction	Low	Prob: 3, Impact: 3 Risk: Medium	• Excavated waste and construction waste will be disposed of at appropriate sites as per the Waste Management Plan; to be prepared by contractor and approved by the relevant authority
Soils	Trampling and hardening of soils by humans and machines	Construction	Low	Prob: 2, Impact: 2 Risk: Low	▪ Nurture vegetation and prevent direct exposure of soils to weather elements • Use vegetal waste as compost to aid rapid vegetal propagation
Soil Erosion	The exposure to rain and wind on soil surfaces during land clearing, earth movement and	Construction	Low	Prob: 2, Impact: 2 Risk: Low	• Ensure that stockpile and laydown/equipment storage.is secured and stored in a safe place. • Vegetate stockpiles if storage required for long periods

Media	Potential Impact	Project Development Phase	Significance	Probability of Impact and Impact	Possible Mitigation Measures
	excavation activities can cause soil erosion.				• Avoid unnecessary exposure of bare ground. • Re-vegetate cleared areas with native plant species as soon as possible. • As far as its reasonable, avoid construction works in the rains. • If possible, construct terraces by shortening long slopes into a series of • shorter, more level step series of shorter, more level steps •
GHG	Emissions from construction activities like fuel combustion, power generators, operational vehicles could cause adverse impacts on air quality affecting the health and welfare of people, crops and sensitive natural fauna and flora	Construction Operation	Moderate Low	Prob: 3, Impact: 3 Risk: Medium	• Use of ozone depleting substances such as chlorofluorocarbons (CFCs), halons, carbon tetrachloride, trichloroethane and halogenated hydro bromofluoro carbons (HBFCs) will not be permitted. • Plant trees to help sequester GH gases (such as CO_2)
Aquatic life	Potential impact on aquatic life (fish spawning ground), from drilling mud, oil spillage and discharge of wastewater or other contaminants during construction into the streams and rivers.	Construction	Low	Prob: 2, Impact: 2 Risk: Medium	• The construction contractor will implement waste management and environmental health and safety plans to limit water pollution.
Environmental pollution	Potential impacts due to the management of pour flush toilets	Operation	Moderate	Prob: 2, Impact: 2 Risk: Medium	• The sceptic tank should be sealed so no water or can enter or leave the tank uncontrolled. • All materials used should be resistant to corrosion for health and safety reasons. ▪
Social					
Job creation	Potential positive impact of the Project includes creation of employment,	Construction Operation	Substantial		• No mitigation required
	Increase in individual and household wellbeing due to increased income from direct and indirect employment. The contractor is expected to employ about 10 technical staff, 20 skilled technicians and 50 labourers of which 30% should be women	Construction Operation	Substantial		Ensured employment is competitive and not discriminatory
Community health	Risks of accident and injury	Construction	Moderate	Prob: 3,	• Adequate signage and warnings including "highly-

Media	Potential Impact	Project Development Phase	Significance	Probability of Impact and Impact	Possible Mitigation Measures
and safety	during Project related activities	Operation	Low	Impact: 2 Risk: Medium	flammable", "no smoking" • Provide routine medical tests opportunities for workers, so that affected workers will be isolated and treated to avoid the spread of infection to others • Ensure that construction workers and host community are adequately informed, and aware of local laws • Prepare and implement site specific C-ESMP
	Potential increase in disease (malaria, communicable diseases, HIV) due to migration of workforce to the community	Construction	Moderate		
Community and social cohesion	Potential conflict and tension between communities, local leaders and Project proponent due to unmet expectations around Project benefits and employment	Construction Operation	Substantial	Prob: 3, Impact: 3 Risk: Medium	• Stakeholders Engagement Plan developed and implemented • Undertake continuous engagement throughout the project life span • Raise awareness on the existence of the Grievance Mechanism
Social conflicts	The management of the completed facilities in which those in control allows users to use the facilities in their own terms The cost recovery drive (payment for use) will exclude vulnerable persons from using the facilities	Operation	High	Prob: 3, Impact: 3 Risk: Medium	• Institute institutional management rather than individuals who may determine the use of the facilities • Institute other forms of cost recovery (such as the inclusion of the maintenance of these facilities in FCC's annual budget)
Labour and working condition	Potential injury or loss of life due to inadequate occupational health and safety standards.	Pre-construction Construction Operation	Moderate	Prob: 3, Impact: 3 Risk: Medium	• Labour Management Plans shall be prepared by Project Contractor(s) based on the Project Labour Management Procedures for approval by the Bank/PMU to guide labour relations • Contractors and Sub-contractors will be required to hire labour through a structured HR process and not 'at the gate' • All workers will be given contracts specifying the type of work they are employed to execute and their remuneration package as well as their conditions of service • All contracts will be vetted by the Ministry of Labour and Social Security before they are signed by workers • Contractors shall be required to consider alternative work schedules or shifts to accommodate the hiring of more female workers.
	Potential impact on wellbeing of workers due to discrimination, infringement on labour and employment rights (excessive working hours, forced labour)	Construction Operation	Low		
Labour influx	Risk to community health from HIV/AIDS or other transmitted infections because of the presence of migrant construction labour.	Construction	Moderate	Prob: 3, Impact: 3 Risk: Medium	• Communities in which sub projects will be undertaken will be sensitized on communicable disease and other infectious diseases using the mass media • Contact numbers (hotlines) of the nearest health facility will be pasted at vantage points in the communities, where the sub projects will be implemented • Workers will not be allowed to receive visitors in project/works yards without the express permission of site supervisor.

Media	Potential Impact	Project Development Phase	Significance	Probability of Impact and Impact	Possible Mitigation Measures

	Risk of gender-based violence from project workers particularly if not hosted in worker's camps.				• Certain employment opportunities on site should be preserved for vulnerable persons such as Persons Living with Disability and women e.g. wardens
					  ◦ A grievance mechanism system will be made available to all workers to report any issues associated with OHS and / or labour and working conditions
					  ◦ All workers will sign a Code of Conduct (CoC) prior to start work
					• Contractual clauses will be inserted in Contract Documents prohibiting the Contractors/Consultants and their workers from Forced Labour, Child Labour, that also makes reporting all Child Labour cases to law enforcement agencies, the Grievance Redress Committee and Project Consultant mandatory
					• Workers should be housed in camps to reduce interface with the communities

GBV/SEA/SH	Unwanted aggressive advances, SEA/SH against women and children.	Construction	Substantial	Prob: 3, Impact: 2 Risk: Medium	• Clearly define the GBV requirements and expectations in the bid documents for a GBV action plan, Code of conduct for workers and adequate costing for implementing the GBV plan. • The contractor ESMP and should among others, set out the mechanism for receiving, reviewing and addressing GBV complaints in a confidential manner, workers SEA/SH code of conduct and the accountable framework, mapping of GBV response actors within the project areas and working with them to provide quality survivor centred services including case management, referral services and linkage to other services not provided by them, etc. • The supervision consultant shall engage a GBV specialist to supervise implementation of the contractor GBV plan implementation. • Contractual Clauses on mandatory and regular training for workers on required lawful conduct and legal consequences for failure to comply with laws on non-discrimination and GBV will be inserted in the Contractors and Consultants Contracts as well as those of PMU staff. • Contractual Clauses with a commitment to cooperate with law enforcement agencies investigating cases of GBV will be inserted into the Contract Documents of the Contractors, Subcontractors and Supervising Consultant. • Workers of Project Consultants, Contractors and Subcontractors will be made to sign Code of Conduct with acceptable behaviour and sanction against GBV. • Sensitization workshops/training on GBV/SEA/SH shall be undertaken for all workers of the Contractor/Supervising

Media	Potential Impact	Project Development Phase	Significance	Probability of Impact and Impact	Possible Mitigation Measures
					Consultant and Sub-Contractors. • Contractors shall provide contact numbers of the nearest law enforcement Agency Office, the Grievance Redress Committee Members and GBV/SEA Service Providers/FSU to workers and paste same at vantage points within the project zones/sites/communities. • Prohibition posters on sexual exploitation and harassment will be posted in and around the sites as well as in the project communities. • A helpline will be provided and disseminated in all the project communities and facilities by the ACC/EOC to deal with GBV/ SEA/H complaints • The PMU recruited a specialized NGO to design and support the operationalization and implementation of a GBV action plan, the NGO has also developed a GM for GBV/SEA/SH grievances which has been merged with the project GM. The NGO is contracted to provide service until the end of the project period.
Cultural heritage	Sites or items of heritage significance could be found during development work.	Construction	Moderate	Prob: 2, Impact: 2 Risk: Low	• Contractor to be aware of known cultural heritage sites (as noted in ESIA / site surveys) • Flagging or physical barriers to be put in place if required. • Take precautions when excavating. • If any object or site discovered cease works and follow the Chance-Find Procedure (CFP)

Traffic	The increased vehicular movement and speed may result in road safety issues like traffic accidents.	Construction Operation	Substantial	Prob: 3, Impact: 3 Risk: Medium	• Community consultations and meetings on the ongoing works and related hazards will be held.
					• Active sites will be sealed off from the public using reflective tapes and cones, where necessary road diversions will be created.
					• Safety initiatives will be developed and implemented, including:
					  • Ensuring that only qualified (licenced) drivers operate machinery.
					  • Implementing speed limits and traffic control measures in appropriate locations.
					  • Implementing safety signage.
					  • Installing speed control devices such as governors on trucks
					• Movement of large construction machinery will be guided by a flag woman/flagman.

7.6 Cumulative Impacts

The cumulative environmental and social risks and impacts, during the construction of roads and WASH facilities in Moyiba, Coconut Farm, and Portee-Rokupa are associated with the simultaneous effects of project related activities during civil works. Cumulative impacts are possible during the implementation of the neighbourhood project considering the multiple sites scattered across the three neighbourhoods with contiguity location of Moyiba and Coconut Farm. This consideration includes noticeable ongoing individual building construction projects especially at Moyiba includes the high traffic on Blackhall Road and business activities and the location of Moyiba Market. The 3 communities and the Bai Bureh corridor are densely populated, vulnerable to flooding and landslides due to informal settlements, poor drainage, and exposure to flooding and sanitation risks. The risks and impacts from concurrent civil works of roads and WASH facilities and their interactions with the existing vulnerabilities could lead to lead to erosion in slopes and sediment runoff during earthworks, flooding and obstruction of the natural drainage channels, contamination of surface water due to increased turbidity from construction waste, degradation of the local ecosystem, noise, dust and air pollution from increased movement of machinery and heavy equipment, accumulated waste and improper disposal, overwhelmed existing drainage systems.
key impacts include:

- Possible pressure on agricultural land and natural resources for movement of vehicles to material sourcing sites.
- Increased traffic pressure, frequency and severity of vehicle accidents on Blackhall and Bai Bureh Road.
- Increase levels of school absentees and dropout due to financial opportunities (stipends and business sales) during construction
- Considerable expansion of informal settlers within the neighborhood.
- Flooding of the Brooke stream and the seabed due to water flow from improved drainage channels in Coconut Farm, Moyiba and water flowing from other communities upstream.
- Cumulative severance access for people whose land and properties have been affected by the subprojects due to land acquisition
- Community disturbance, dust and noise during construction and larger noise impact during operation.
- Increased waste generation and community disturbance.
- Increased social interactions with the local communities and people from outside the project area and associated health effects related to the increased spread and incidence of HIV/AIDS and other transmitted diseases.
- Increase level of GBV, SEA/SH in these communities due to labour influx and increase level of influence attained by some members in the communities (such as in the recruitment of skilled and unskilled workers)
- The influx of people attracted by investment will increase pressure on social infrastructure and utility services (water, power, communication, health and education services, etc.)

7.7 Residual Impacts

7.7.1 Residual impacts related to Health and Safety

The improvement in road conditions will motivate the road users, especially the motorcyclists and car drivers to overspeed and this will lead to pedestrians and another road users being prone to

accidents may threaten the lives of pedestrians and other road users crossing the roads through accidents for a long time. However, with mitigation measures related to good signage, installation of speed bumps, existence of walkways, and sensitization of users on the road safety and enforcement of road safety regulation through community leaders, this impact will be reduced to a minimum acceptable status.

7.7.2 Residual Impacts on Soils

Impacts on soil quality were considered as residual since there are various actions such as maintenance of roads and vehicles from which the contaminants will be released. The construction of the project road and drains may also leave exposed cuttings and banks, where the lack of vegetation or poor construction could foster erosion processes, which should be mitigated with adequate reinstatement measures, including re-vegetation or stone pitching. is put in place. The significance of the residual effects on soil quality and soil erosion is expected to be of a slight negative nature as they may be distinguishable, but they are of a low magnitude, geographically limited, and not disruptive to normal baseline environmental conditions.

7.7.3 Residual impacts on Surface and Groundwater

With regards to surface water quality, the project has a residual impact since surface water may become polluted from the arrival to water bodies of contaminants generated from the road surface and cars and users. With mitigation measures, the significance of the residual cumulative impact is expected to be of a slight negative nature; they may be distinguishable but of a low magnitude, geographically limited, and not disruptive to normal baseline environmental conditions.

Potential contamination of groundwater from contaminants from the project activities deposited on soil could progressively leach the groundwater table and could have a residual impact where roads cross or run parallel on alluvial and colluvial areas where the groundwater table is likely to be shallow especially in Rokupa Wharf area. With the implementation of adequate mitigation measures, the significance of the residual effect on groundwater quality should be of a slight negative nature; it could be distinguishable but of a low magnitude, geographically limited, and not disruptive to normal baseline environmental conditions.

7.7.4 Residual Impacts on Air quality and Noise

Residual effects on air quality will be created from emissions from vehicles and motorcycles. The significance of the residual effect on air quality should be slight; it will be distinguishable and limited in space and time.

7.7.5 Residual Impact Related to Borrow Areas Exploitation

Licensed burrow pits operators will be used for extraction of sub-soil backfill materials and aggregates. Residual negative impacts will include visual, landscape, surface water and biodiversity impacts. Expected landscape impacts include clearing of existing vegetation and change in topography. Surface water impacts will include rill erosion whereas biodiversity impacts will include the disturbance of existing animals such as birds, mice, invertebrates and micro-organisms. It is expected that all borrow pits should be reclaimed and vegetated at the end of the project, which should be included in the construction E&S management plan. The implementation of this plan will reduce the spatial and temporal extent of the impacts and thus bring the impacts to a minor level because landscaping and re-vegetation will bring the pre-existing landscape and biodiversity status.

7.7.6 Residual Impacts Related to Community Severance

The project may have severance residual effects for the affected people whose land and property were taken. These impacts could be limited by the proper implementation of the Resettlement Plan (RP) catering for the social and economic needs/services (settlements, markets, schools, health centres, water supply, etc.) to the affected people.

Environmental and Social Management Plan

08

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Chapter Eight: Environmental and Social Management Plan

This section outlines the environmental management, mitigation, monitoring, and institutional measures that will be implemented during project implementation and operation to minimize negative environmental and social effects and maximize potential benefits. It specifies what activities must be taken and who is responsible for minimizing negative project consequences and maximizing benefits. The purpose of the Environmental and Social Management Plan (ESMP) for the proposed neighbourhood upgrade construction works under RUSLP is to ensure that all necessary identified measures are implemented effectively to protect the environment and social situations in the communities and to comply with the country's environmental and social legislation and applicable World Bank standards. In line with the RUSLP ESMF, this ESMP outlines the site-specific environmental management plan to guide the contractors' activities and the monitoring and coordinating roles of the executing agency in implementing all subprojects. The ESIA with the ESMP will form part of the package of the bidding document that will be shared with the contractors to guide preparation of the contractors' financial proposals and the CESMP and construction methodology.

8.1 Environmental and Social Management Plan

The ESMP as designed will ensure proactive response to the anticipated environmental and social impacts to reduce their effect and ensure compliance with statutory requirements and the World Bank E & S safeguards guidelines. Implementing the ESMP (Table 8.1) will enable RUSLP to:

- Manage the identified project risks and impacts,
- Implement, monitor, and review suggested mitigation measures,
- Provide continuous control of the processes, and
- Improve environmental and social performance of the Project.

8.1.1 Impacts Mitigation/Enhancement Measures

Based on the impacts identified appropriate corresponding mitigation measures have been identified to prevent, minimize, mitigate or compensate for adverse environmental and/or social impacts. In addition, enhancement measures have been developed to improve project environmental and social performance. The roles and responsibilities of implementing these measures are clearly defined alongside the budget for the measures estimated. Also, the cost for environmental and social capacity building and gender mainstreaming have been included.

Mitigation Measures Hierarchy The measures proposed are specific, measurable, achievable and relevant to the proposed and time based (SMART). The measures also considered the environmental laws in Sierra Leone, and the World Bank E & S management framework requirements including the principles of sustainable development and best available technology. The principle of mitigation hierarchy outlined below was also considered:

- **Anticipate and Avoid:** Avoiding investments that are very detrimental and adverse environmental and social impacts (these include road realignment, bends and width adjustments)
- **Minimize or reduce to acceptable levels**: Reducing or minimizing the footprint of an activity is essentially designing 'the subproject so that a feature causing impact is designed out or altered (e.g. reducing road width/work area, dropping off biodigester and tiger worm toilets from the investment list).
- **Mitigation:** reducing the severity of the impacts through the introduction of activities such as silt traps, /fencing, flap gates, self-cleansing trash racks at culverts inlets etc.

- **Offset and Compensation:** reward for enduring risks and impacts. Actions such as replanting economic trees and payment for loss of properties
-

Mitigation for land acquisition and involuntary resettlement shall be implemented strictly in accordance with the Resettlement Plan (RP). This includes the management of compensation for all verified PAPs prior to the commencement of civil works.

Table 8.1: Environmental and Social Management Plan – Roads Drainages and Retaining Structures, Bridges and Solar Lighting Interventions

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
A	**PRE-CONSTRUCTION STAGE**					
A.1	**Pre-construction activities by PMU**					
	Land Acquisition	– The land will be acquired following the provisions of Sierra Leonne land regulatory requirements, Resettlement Policy Framework (RPF), RP, and the ESS5 (Land Acquisition, Restrictions on Land Use and Involuntary Resettlement) shall be referred. – Early completion of works for Iman Sadiq school field shifting and replacement /reconstruction of acquired structures adjacent to the school building at Moyiba. This should be planned for execution during holidays to avoid the risk of accidents and disturbance to the day-to-day activity of the school – The RP serves as the primary implementation tool for land- related impacts and ESS5 compliance, which includes *land acquisition, displacement, and compensation.* – GRM operationalized throughout the project	Corridor of Impact.	Project Steering Committee/ Ministry of Finance Dept., and PMU, RP Implementation Consultant	NGOs SC	TBD in RP survey
	Biding documents	– Prepare bidding documents, which should E&S specifications – Include BOQ line items for E&S mitigation measures – Specify minimum E&S staffing requirements for the Contractor's team – Include penalty provisions clauses for non-compliance with E&S obligations – Define C-ESMP requirements in the bidding documents.	PMU office	PMU Procurement Team	PM	NA
	Tree Cutting	– As far as possible maximum efforts shall be made to minimize the number of trees proposed to be felled by adopting suitable on the spot adjustment of engineering designs. – Trees shall be removed from the Area of Impact and construction sites before the commencement of construction. – The provision as indicated in the ESS 6 (Biodiversity Conservation and Management of Natural Living Resources) and – The Environmental and Social Management Framework (ESMF) shall be adopted.	Corridor of Impact	Contractor, PMU	PMU SC	TBD on RP survey

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		– Compensation payment as required for the lost trees and compensatory tree plantation				
	Utility Relocation and Common Property Resources (CPRs)	– All community utilities and common property resources such as stand posts bore wells, wells, water supply lines, toilets, sewage lines, drainage systems, optical fiber cables, electric power supply lines, shall be relocated and restored by the relevant agencies before the commencement of the road improvement activity. – While relocating these utilities and facilities, all concerned agencies including PMU shall take necessary precautions and shall provide barricades/delineation of such sites to prevent accidental fall into pits, drains both during demolition and construction/ relocation of such facilities. Standard safety practices shall be adopted for all such work. – Access to the Common Property Resources (CPRs) shall be maintained – Relocation sites for all CPRs shall be selected in consultation with concerned communities, local administrative authorities/departments.	Corridor of Impact	Concerned Agencies/ Departments, Contractor	PMU CSC	Utilities contacted to provide informatio n on cost to relocate service lines and poles
	Relocation of Cultural and Religious Properties	– All wholly affected cultural properties within the area of work, shall be relocated to suitable locations, as desired by the Monument and Relics Commission (MRC) and for partially impacted structures enhancement measures shall be applied at the same sites before construction begins, depending on the availability of space, the requirement of the communities and fund availability. – No cultural properties or religious structures shall be removed or relocated without the knowledge and written consent of the MRC or communities or local administration. Sites for the relocation of these religious structures shall be identified following the choice of the community as advised by the MRC. – As far as possible, the architectural elements of the structure should be conserved/reflected/translated into the design of new structures following the wishes of the community as advised by the MRC – Employ Chance Finds Procedures.	Corridor of Impact	PMU, NGOs, Contractor, Concerned Community MRC	PMU CSC FCC	7250
	Orientation of Implementing Agencies and Communities (C-ESMP Training)	– The PMU shall organize orientation sessions during all stages of the project. This shall include on-site training (general as well as specific to the context of this subproject) as well. These sessions shall involve the concerned division-level staff of the PMU involved in the project, Staff of the Site Engineer/ Supervision		PMU, Site Engineer/ Supervision Consultant	PMU,	7250

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		– Consultant and the Contractor. – Briefing sessions shall be held for sub-project community representatives before and during implementation.				
	Mobilization of materials, equipment and personnel on site	– Ensure the Contractor's ESMP (CESMP) is approved by the Engineer and the PMU (draft scope of work for a C-ESMP in annex G) – Obtain all necessary permits and approvals from relevant authorities prior to construction		PMU, Contractor	PMU Supervision Consultant	1250
A.2	– **Pre-construction activities by the Contractor/Engineer of Supervision Consultant**					–
	Joint Field Verification	– The Supervision Consultant and the Contractor shall carry out joint field verification to ascertain the necessity of saving trees, environmental and community resources wherever such representations or suggestions in writing have been received and forwarded by the FCC, PMU or by the site engineer following the local situations (in consultation with the local authority/ interest of community representation). – The complaints/suggestions together with the observations and expert opinion of the joint verification team containing the need for additional protection measures or changes in design/scale/nature of protection measures including the efficacy of enhancement measures suggested in the ESMP shall be summarized in a written document containing all the details with date, time, place, and signature of the individuals involved and this shall be sent to PMU for approval. – The PMU shall maintain proper documentation and justifications/reasons in all such cases where deviation from the original ESMP is proposed.	Project Corridor	Contractor and Environmental Officer of SC	PMU FCC	1250
	Assessment of Impacts due to Changes/ Revisions in the subproject scope	– The Supervision Consultant shall assess the anticipated impacts and revise/modify the CESMP in consultation with the PMU/FCC in accordance with the recommendations made by the field survey party in the event of changes /revisions /unanticipated impacts in the project's scope of work	Project Corridor	Contractor and Environmental Officer of CSC	PMU FCC	3750
A3	**Equipment and Staging Area Setup**					
	Crushers, Hotmix Plants & Batching Plants	– The Contractor shall submit a detailed layout plan for all such sites and seek prior approval of of Supervision Consultant before entering into a formal agreement with a landowner for setting-up such sites. Actions by Supervision Consultant and PMU/FCC against any non-compliance shall be borne by the Contractor at his own cost.	Project Corridor	Contractor	SC Env. Officer and PMU	7250

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		– Arrangements to minimize dust pollution through the provision of windscreens, mist spray units, and dust encapsulation shall have to be provided at all such sites. Specifications of crushers, hot mix plants, and batching plants shall comply with the requirements of the relevant current emission control legislation and Consent – No such installation by the Contractor shall be allowed till all the required legal clearances are obtained from the competent authority and the same is submitted to the PMU and the Supervision Consultant. – Environmental Monitoring (dust and emission) must be conducted to demonstrate compliance.				
	Other Construction Vehicles, Equipment and Machinery	– Efficient and environmentally friendly equipment confirming the latest noise and effluent emission control measures available in the market shall be used in the project. – The Contractor shall maintain a record of Pollution under Control (PUC) certificate for all vehicles and machinery used during the contract period, which shall be produced to the PUM and the Supervision Consultant for verification whenever required.	Project Corridor	Contractor	SC Env. Officer and PMU	3750
A.4	**Identification & Selection of Material Sources**					
	Borrow Areas	– Arrangement for locating the source of supply of material for embankment and subgrade as well as compliance with environmental requirements, as applicable, shall be the sole responsibility of the Contractor. The Environmental and Safety Engineer from the Contractor shall be required to inspect existing borrow area location before approval. – No borrow areas shall be opened for the purpose of this project – SCS should ensure that contractors shall source borrow materials from existing licensed suppliers approved by EPASL – All borrow areas whether in private, community or govt., it operators shall provide evidence of how the land shall be restored either to the original condition or as per the approved rehabilitation plan immediately upon completion of the use of such a source.	Ecologically sensitive area	Contractor	SC Env. Officer and PMU	Included in section 4.5.3 of the BOQ
	Quarries	– The Contractor shall identify materials from existing licensed quarries with suitable materials for construction. Apart from approval of the quality of the quarry materials, the Engineer's representative shall verify the legal status (including environmental clearance, – In examining the compliance of existing quarries, the contractor should not	Quarry area should be located 1000m from any settlement location	Contractor	SC Env. Officer and PMU	Included in the Concrete Works sections

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		purchase material from a quarry and/or crusher units located within 1000m from the forest boundary, wildlife Movement path, breeding and nesting habitats, and national parks/sanctuaries. Materials should not be purchased from quarries or associated plants located within 1000m from the residential/ settlement locations				of the BOQs
	Arrangement for Construction Water	– The Contractor shall source the requirement of water preferentially from surface water bodies, as rivers and tanks outside of the project area. – The Contractor shall be allowed to pump only from the surface water bodies. – The Contractor can contemplate the extraction of groundwater which could serve the communities after construction.	All rivers/ surface water bodies that can be used in the project	Contractor	SC Env. Officer and PMU	3750
	Sand (all river and stream beds used directly or indirectly for the project)	– The Contractor shall procure sand through approved vendors. No new sand quarries will be allowed.		Contractor	SC Env. Officer and PMU	Included in the Concrete Works sections of the BOQs
	Labour Requirements	– The Contractor shall use unskilled labor drawn from local communities to avoid any additional stress on the existing facilities (medical services, power, water supply, etc.) – The recruitment of women and members of vulnerable groups shall be prioritized. – The Contractor shall provide training to build the skills of locally recruited labour. – All staff, skilled and unskilled labour employed on a site shall be required to sign Codes of Conduct that shall ensure compliance with the Environmental, Social, Health and Safety provisions of civil works and consultancy contracts – Implement Labor Management Procedures (LMP) (Annex14) – Develop and operationalize workers GRM	Along the project corridor at construction sites	Contractor	SC Env. Officer and PMU	2500
A5	**Labour Influx**					
	Risk of social conflict	– Provision of information regarding Worker Code of Conduct in local	Construction Workers	Contractor	SC Social Safeguards	1250

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		language(s); – Workers will required to sign a contract including the CoC. – Provision of cultural sensitization training for migrant laborers regarding engagement with local community.	Camps including areas in the immediate vicinity		Officer and PMU	
	Increased risk of illicit behaviour and crime including prostitution, theft and substance abuse)	– Paying adequate salaries for migrant laborers to reduce incentive for theft; – Paying salaries into workers' bank accounts rather than in cash – Sourcing of local workforce – Enforce CoC – Creation of supervised leisure areas in workers' camp – Cooperation with local law enforcement – Introduction of sanctions (e.g., dismissal) for workers involved in criminal activities – Provision of substance abuse prevention and management programs	Construction Workers Camps including areas in the immediate vicinity	Contractor	SC Social Safeguards Officer and PMU	2500
	Adverse impacts on community dynamics	– Provision of services in the works yards to reduce the need for workers to use local community facilities – Provision of entertainment and events for migrant labours within works yards to reduce incentives for mixing with local community	Construction Work yards including areas in the immediate vicinity	Contractor	SC Social Safeguards Officer and PMU	2500
	Influx of Additional Population ("Followers")	– Contractor to hire workers through recruitment offices and avoid hiring "at the gate" to discourage spontaneous influx of job seekers.	Construction Work sites	Contractor	SC Social Safeguards Officer and PMU	2500
	Increased risk of communicable diseases (including STDs and HIV/AIDS)	– Vaccinate migrant laborers against common and locally prevalent diseases – Contracting of an HIV/AIDS service provider to be available on-site – Implementation of HIV/AIDS education program – Information campaign on STDs among the migrant laborers and local community – Education about the transmission of diseases – Provision of condoms	Construction Workers Camps including areas in the immediate vicinity	Contractor	SC Social Safeguards Officer and PMU	2500
	Child labor and school drop out	– Ensuring that children and minors are not employed directly or indirectly on the project (Children are below 14 years and minors are below 18 years). A record of proof of age of workers to be kept by the Contractor.	Construction site	Contractor	SC Social Safeguards Officer and PMU	12500

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
	Increased pressure on accommodation and rents	– When accommodation supply is limited, establishment of works yards facilities with sufficient capacity for workers including sub-contractors and associated support staff (See Annex 20: Workers Camp Site Management Plan)	Areas in the immediate vicinity of the construction camp	Contractor	SC Social Safeguards Officer and PMU	2500
	Inadequate waste disposal and creation of illegal waste disposal sites	– Reduction of waste generation – Sound practices for waste disposal (See Annex 10: Sample Waste Management Plan)	Construction Works Yards and sites	Contractor	SC Env. Officer and PMU	3750
	Wastewater Discharges	– Ensuring works yards and associated facilities are connected to septic tank or other wastewater systems which are appropriate and of sufficient capacity for the number of workers and local conditions.	Construction sites and Works Yard	Contractor	SC Env. Officer and PMU	1250
	Increased demand for freshwater resources	– Water conservation and recycling of water – Consideration of the use of rainwater where feasible – Avoiding contamination of freshwater sources	Construction Workers Camps	Contractor	SC Env. Officer and PMU	1250
	Works yards related land use, access roads, noise and lights	– Placement of works yards away from environmentally sensitive areas to avoid impacts on the local wildlife – Routing new access routes for workers yards to avoid/minimize environmentally sensitive areas. (See Annex 20: Workers Camp Site Management Plan) –	Construction sites and Works Yards	Contractor	SC Env. Officer and PMU	2500
	Increased deforestation, ecosystem degradation, and species loss	– Only wood from commercial sources to be used on the project. – Prohibit the use of wood for fuel – Reduction in energy demand, reduced noise and light generation, reduced and safe use of dangerous chemical substances. – Replant trees along roadside	Construction sites and Works Yards including areas in the immediate vicinity	Contractor	SC Env. Officer and PMU	1,250
	Increased use/demand on natural resources	Minimized land use change and use of other natural resources Avoidance of deforestation around works yards area Prompt and effective response to environmental and social issues raised by supervision consultant (SC).	Construction Works yards including areas in the	Contractor	SC Environmental Officer and PMU	1250

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
			immediate vicinity			
	Possibility of gender-based Violence arising from influx of migrant workers	To address a GBV risk, SEA/SH Prevention and Response Action Plan shall be prepared and implemented. It shall comprise – Signing of Code of Conduct by project workers – Support from the contracted/designated NGO by the PMU (Rainbo Initiatives) and other Institutions for managing GBV/SEA/SH, including GBV responsive GRM. – Integrate GBV into existing IEC strategy/materials, GBV responsive GRM, safety talks, toolbox meeting and regular training – Community consultation and identification of GBV focal points within the community. – Continuous awareness raising and training of workers causes and effects of GBV/SEA/SH – Mapping Hot Spots is prone to GBV within the project area by Service Providers. The areas should be clearly identified and closely monitored throughout the project cycle to ensure GBV prevention and Response identify.	Construction works yards including areas in the immediate vicinity	Contractor	SC Social Safeguards Officer and PMU	3750
A.6	**Setting up Construction Sites**					
	Construction yards Locations – Selection, Design & Layout	Construction works yards shall not be proposed: – Within 1000m of Ecologically sensitive areas/ zones – Within 1000m from the nearest habitation to avoid conflicts and stress over the facilities infrastructure, with the local community. The layout of construction works yards must be prepared and approved by the Supervision Consultant. – The location for stockyard for construction materials shall be identified at least 1000 m from watercourses. The waste disposal and sewage system for the works yards shall be designed, built and operated such that there will be no contamination of the soil or groundwater and ensure that there is no odor generation. –	All Construction Worker yards including areas in the immediate vicinity	Contractor	SC Env Officer and PMU	6500
	Arrangements for Temporary Land Requirement	– The Contractor as per prevalent rules shall carry out negotiations with the landowners to obtain their consent for temporary use of lands for construction works yards sites/ hot mix plants /traffic detours s etc. Proper documentation on the process and outcome of the land acquisition	Areas temporarily acquired for construction sites / hot	Contractor	SC Social Safeguards Officer and PMU	3,500

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		arrangements shall be maintained and reported. – The Engineer shall ensure that the site is cleared up before handing over to the owner (after construction or completion of the activity) and it is included in the contract.	mixed plants / diversions / Detours			
	Sub-Total Preconstruction Phase	–				**US$ 88,250**
B	**CONSTRUCTION STAGE**					
B.1	**Construction Stage Activities by Contractor**					**51,000**
B.1.1	Site Clearance					
	Clearing and Grubbing	– Site clearance including clearance of marked trees for felling and removal has to be carried out before the actual road construction takes place. – Structures and utilities (cabins, commercial properties, hoardings, overhead power transmission lines, cable connections, telephone lines, bore wells, stand posts, wells, statues, temples, etc.) shall be compensated/relocated as per RAP and ESMP provisions before tree felling; clearing or grubbing activities are to be undertaken as these activities may damage structures (private and govt.) and essential facilities/utilities of public use. – All work shall be carried out in such a manner that the damage or disruption to flora is minimum. Only ground cover/shrubs that impinge directly on the permanent works or necessary temporary works shall be removed with prior approval of Supervision Consultant. – The Contractor, under any circumstances, shall not cut or damage trees. Vegetation above 30 cm girth shall be considered as trees and shall be compensated.	Corridor of Impact	Contractor	SC Env. Officer and PMU	6500
	Generation & disposal of Debris	– Debris generated due to the dismantling of the existing road shall be suitably reused in the proposed construction as follows: – Eighty percent (80%) of the sub-grade excavated from the existing road surface, excluding the scarified layer of bitumen, shall be reused in civil works after improving the soil below the subgrade through the addition of sand and suitable cementing material for qualitative up-gradation. – The dismantled scraps of bitumen shall be utilized for the paving of crossroads, access roads and paving works in construction sites and campus, temporary traffic diversions, haulage routes, parking areas along the corridor or in any other manner approved by the Supervision	Throughout Project Corridor	Contractor	SC Env. Officer and PMU	12500

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		Consultant. – At locations identified for disposal of residual bituminous wastes, the disposal shall be carried out over a 60 mm thick layer of rammed clay to eliminate the possibility of leaching of wastes into the groundwater. – The Contractor shall suitably dispose of unutilized non-toxic debris either through filling up of borrows areas located in the wasteland or at pre-designated disposal sites, subject to the approval of the Supervision Consultant. – Debris generated from pile driving or other construction activities along the rivers and streams drainage channels shall be carefully disposed of in such a manner that it does not flow into the surface water bodies or form puddles in the area. – The pre-designated disposal locations shall be part of the Comprehensive Solid Waste Management Plan to be prepared by the Contractor in consultation and with approval of the Supervision Consultant and local competent authority. (See annex 10: Sample Waste Management Plan)				
	Non-bituminous Construction waste disposal	The location of disposal sites shall be finalized before completion of the earthworks on any section of the roads. The Supervising Engineer shall approve these disposal sites conforming to the following – These are not located within the designated forest area – The dumping does not impact natural drainage courses – No endangered/rare flora is impacted by such dumping.	Disposal site locations	Contractor	SC Env. Officer and PMU	6500
	Stripping, stacking and preservation of topsoil	– The topsoil from all sites include roadside widening and working areas, cutting areas construction sites , haul roads in agricultural fields (if any) and areas to be permanently covered shall be stripped to a specified depth of 150mm and stored in stockpiles for reuse. – A portion of the temporarily acquired area and/or shall be earmarked for storing topsoil. The locations for stacking shall be pre-identified in consultation and with the approval of the Supervision Consultant. The following precautionary measures shall be taken by the Contractor to preserve the stockpiles until they are re-used: – Stockpile shall be arranged such that the slope does not exceed 1:2 (vertical to horizontal), and height is restricted to 2 m. – To retain soil and to allow percolation of water, the edges of the pile shall be protected by silt fencing.	Throughout Project Corridor	Contractor	SC Env. Officer and PMU	6500

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		– Multiple handling is to be kept to a minimum to ensure that no compaction occurs. – Such stockpiles shall be covered with empty gunny bags or shall be planted with grass to prevent loss during rains. Such stockpiled topsoil shall be utilized for – Covering reclamation sites or other disturbed areas including borrow areas (not those in barren areas) – Topdressing of road embankment and fill slopes – Filling up of tree pits in acquired temporarily that need to be restored. – Residual topsoil, if there is any, shall be utilized for the plantation works along the road corridor. The utilization as far as possible shall be in the same area/close to the same area from where the topsoil was removed. – The stripping, preservation, and reuse shall be carefully inspected, closely supervised and properly recorded by the Supervision Consultant.				
	Accessibility	– The Contractor shall provide safe and convenient passage for vehicles, pedestrians, and livestock to and from roadsides and property access connecting the project road by providing temporary connecting road and foot path, as necessary. – The Contractor's material supply operators shall take measures necessary to prevent access to the works, borrow pits and quarry sites by members of the public and animals. – Construction activities that shall affect the use of side roads and existing access to individual properties, whether public or private, shall not be undertaken without providing adequate provision approved by the Supervision Consultant. – The Contractor shall ensure that the public (from unauthorized access) and animals are prevented from entering the construction works. – .	All along the project corridor, all access roads.	Contractor	SC Env. Officer and PMU	6500
	Planning for Traffic Diversions and Detours	– Prepare and implement Traffic Management Plan (See annex 11: Sample Traffic Management Plan (TMP) – Detailed traffic control plans shall be prepared by the Contractor and the same shall be submitted to the Supervision Consultant for approval. The traffic control plans shall contain details of temporary diversions, traffic	All along the project Corridor, all access roads.	Contractor	SC Env. Officer and PMU	12500

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		safety arrangements including layouts for signs and barriers, nighttime safety measures, details of traffic arrangement after cessation of work each day, safety measures are undertaken for the transport of hazardous materials and arrangement of flagmen, etc. to regulate traffic congestion. – The Contractor shall provide specific measures for the safety of pedestrians and workers as a part of traffic control plans. – The Contractor shall ensure that the diversion/detour is always maintained in running condition, particularly during the rainy season to avoid disruption to traffic flow. – Appropriate and safe speed limits through working areas and along detours shall be established and enforced. – The Contractor shall also inform the local community of changes in traffic routes and pedestrian access arrangements with assistance from the Supervision Consultant and PMU.				
B.2	**Construction Materials**					**11.500**
	Earth from Borrow Areas for Construction	– All backfill materials should be sourced from license burrow operators approved by the Environment Protection Agency (EPASL)	All along the project corridor, all access roads leading to borrow areas	Contractor	SC Env. Officer and PMU	included in section 4.5.3 of the BOQ
	Water Extraction	– Water for works should be purchased from Guma Valley Water Company and license private water suppliers Minimize the wastewater during construction. – The water usage pattern within the construction yards can be minimized by adopting the following best practices: i. Use of auto shut off taps (without sensors) ii. Install water meters with main supply pipes/water tanks/bore well to assess quantity of consumed water. iii. Create awareness among the work force on the sites at all levels.	All water bodies recommended being used in the project	Contractor	SC Env. Officer and PMU	6500
	Transporting Construction Materials	– All vehicles delivering materials to the site shall be covered to avoid spillage of materials. – All existing highways and roads used by construction vehicles shall be kept	All along the Project corridor and all haul roads	Contractor		5000

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		clean and clear of all dust/mud or other extraneous materials dropped by such vehicles – The contractor should take measures such as GPS monitoring to ensure that all project vehicles are always driven at safe speeds and within specified speed limits – Transportation vehicles shall be cleaned before leaving the site				
B.2.1	**Construction Work**					**65,975**
	Disruption to users of surface water community stream and Brooke	– The contractors should truck water for construction and other uses from Guma valley Water Company or engaged licensed water suppliers	Water withdrawal locations	Contractor	SC Env. Officer and PMU	6250
	Drainage and Flood Control (Granville Brooke and Rokupa)	**Construction Phase (Immediate Actions):** • Stabilize some sections of the stream banks using rip-rap and gabions • Install temporary upstream sediment traps/check dams **Permanent Engineering Measures:** • Development of upstream flood attenuation/detention ponds **Integrated Waste–Drainage Management:** • Clean culvert inlet and outlet and Install self-cleaning trash racks at culvert inlets **Watershed-Level Measures:** • Reforestation of upstream catchments to reduce runoff intensity • Promote permeable surfaces to reduce surface runoff volume – – The Contractor shall ensure that construction materials such as earth, stone, ash or appendage is disposed of such that it does not block the flow of water of any watercourse and cross drainage channels. – The Contractor shall also ensure that no material blocks the natural flow of water in any water course or cross drainage channel, especially at Granville Brooke, Blackhall Road and Rokupa Wharf areas) due to increase flow of water from upgrading construction section of roads and canals uphill – In addition, FCC should properly manage the Granville Brooke dumpsite to deter the deposition of waste on the stream which may cause flooding on the seabed	Surface water sources/ drains	Contractor	SC Env. Officer and PMU FCC	22475

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		– Where necessary before the rainy season, the Contractor shall provide either permanent or temporary drains to prevent water accumulation or flooding in surrounding residential, commercial areas prone to flooding due to construction activities. – Groundwater salinity monitoring and headwall construction				
	Flooding and Landside	• Institute flood/landslide emergency response measures • Clear blocked channels downstream (blockages due to construction activities) • Implement slope stabilization, erosion control measures • Schedule construction activities during the dry season to minimize the risk of flooding and runoff impacts. This reduces the likelihood of construction sites being inundated during heavy rainfall • Implement effective drainage systems to manage stormwater and prevent flooding. This includes constructing diversion drains, interceptor ditches, and sediment ponds to capture and manage runoff • Use erosion control measures such as silt fences, sediment retention basins, and vegetation planting to stabilize soil and prevent sedimentation in water bodies • Implement the planting of trees and vegetation to increase ground permeability and reduce runoff. This can help in absorbing excess rainwater and reducing the speed of stormwater flow • Keep land clearance to a minimum and avoid clearing areas of highly erodible soils and steep slopes prone to erosion. • Implement slope stabilization techniques to prevent erosion and further triggering of landslides • Temporary drainage systems should be installed to prevent landslides during construction, such as cutting slopes. Permanent drainage systems for surface water management and slope stabilization should be installed, with adequate monitoring and maintenance • The contractors should conduct routine geotechnical inspections of high-risk slopes, especially at Portee Wharf and Moyiba approach and uphill end area	Unstable land slopes in surface water channels	Contractor	SC Env. Officer and PMU FCC	12000
	Siltation of Water Bodies and Degradation of Water Quality	– Silt fencing shall be provided before the commencement of earthwork and shall continue till the stabilization of the slopes is completed on the sub-section of the road.	Surface water sources/ drains	Contractor	SC Env, Officer and PMU	12500

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
	Slope Protection and Control of Soil Erosion	– The contractor shall ensure the following: · After construction of road embankments and cuttings, the side slopes of all cut and fill areas shall be graded and covered with grass and shrubs as advised by the supervision consultants · Other measures of slope stabilization shall include mulching netting and seeding of batters and drain immediately on completion of earthworks with the sowing of seeds of grass, shrub and bushes 30cm interval from line to line across the slope and sprinkling of water on such slopes after completion of the earthwork. · Stabilization of embankments and cuttings with appropriate techniques shall commence soon after the embankment formation, to be in place in advance of the rainy season.	High raise embankment and surface water bodies locations	Contractor	SC Environmental Officer and PMU	12750
B.2.2	**Pollution Control**					**12550**
	Water Pollution					
	Water Pollution from Fuel, Lubricants Bituminous Products and Chemicals	– The Contractor shall take all precautionary measures to prevent the wastewater generated during construction from entering streams, water bodies. The contractor shall avoid construction works close to the streams or water bodies during monsoon. – All waste arising from the project is to be disposed of properly or as directed by the Supervision Consultant. The consultant shall certify that all liquid waste disposed of from the sites meet the discharge standards.	Surface water sources/ drains/	Contractor	SC Env. Officer and PMU	6250
	Surface Water Pollution from Fuel, Lubricants, and Chemicals	– The contractor shall ensure that all vehicle/machinery and equipment operation, maintenance and refueling shall be carried out in such a fashion that spillage of fuels and lubricants does not contaminate the ground. Oil interceptors should be provided for vehicle parking, washing down and refueling areas as per the design provided. – The contractor shall arrange for collection, storing and disposal of oily wastes to the pre-identified disposal sites approved by the Engineer – In charge. All spills and collected petroleum products shall be disposed of through an approved vendor.	Surface water sources/ drains	Contractor	SC Env Officer and PMU	3150
	Reduced constructed or surface water resource quality	– Prevent construction materials and other debris (mud from the drill, grout, etc.) backflow or from entering waterways. –	Surface water sources/ drains	Contractor	SC Env Officer and PMU	3150
	Air Pollution					**12500**

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
	Dust Pollution	– The Contractor shall take every precaution to reduce the level of dust (PM10 and PM2.5) from crushers, material storage yards, haul roads and construction sites (including earthwork, dismantling, scarification and material mixing sites) by sprinkling of water, mist spray, encapsulation of dust source and erection of screen /barriers. – Hot mix plant and batch mix plant shall be fitted with dust extraction units and mist spray to keep down the dust emission levels. The PM10 value at 40m from a unit located in such a cluster should be less than 500 µg/m^3 – The Contractor shall provide necessary certificates to confirm that all crushers used in the project conform to relevant dust emission control legislation. Air pollution monitoring shall be conducted as per the Environmental and Social Management and Monitoring Plan (ESMMP) and results shall be used to strengthen/rectify problematic areas. If other existing crushers are used, such units need to have a valid license. – Onsite monitoring of dust, noise and water quality during construction phase should be carried out using light weight, portable, handheld meters.	Construction area/ site, Construction works yards , Materials Loading/ unloading facilities	Contractor	SC Env. Officer and PMU	12500
	Emission from Construction Vehicles, Equipment and Machineries	– The contractor shall ensure that all vehicles, equipment, and machinery used for construction are regularly maintained and conform to the emission standards. – Certification issued for such contrivances obtained from designated/approved authority shall be submitted along with the specified reporting format. – The contractor shall maintain a separate file and submit Pollution under Control (PUC) certificates for all vehicles/equipment/machinery used for the project. Monitoring results shall also be submitted to Supervision Consultant and PMU as per the Environmental and Social Management and Monitoring Plan in the specified format	Construction works yards, Materials Loading/ unloading facilities	Contractor	SC Env. Officer and PMU	
	Noise Pollution					**12500**
	Noise Pollution: Noise resulting from vehicles, Plants and Equipment	The Contractor shall confirm the following: – All plants and equipment used in construction shall strictly conform to the WHO/World Bank EHS guidelines noise standards. – All vehicles and equipment used in construction shall be fitted with exhaust silencers. – Servicing all construction vehicles and machinery should be done regularly and during routine servicing operations, the effectiveness of exhaust	Sensitive locations including Schools, Hospitals and Temples	Contractor	SC Environmental Officer and PMU	12500

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		silencers shall be checked and if found defective shall be replaced. – Limits for construction equipment used in the project such as compactors, rollers, front loaders, concrete mixers, cranes (moveable), vibrators and saws shall not exceed 75 dB (A) (measured at one-meter distance from the edge of equipment in the free field). – Maintenance of vehicles, equipment, and machinery shall be regular and up to the satisfaction of the Engineer to keep noise levels at the minimum. – Idling temporary trucks or other equipment shall not be permitted during periods of unloading or when they are not in active use. – Noisy construction works such as crushing, concrete mixing, batching shall `be stopped during the night time between 6:00 pm to 6:00 am. – No noisy construction activities shall be permitted around educational institutes/health centers (silence zones) up to during working hours. – The contractor shall provide noise barriers to the suggested locations of select schools/ Temples/health centers. – Monitoring shall be carried out at the construction sites as per the monitoring schedule and results shall be submitted to the Supervision Consultant. The engineer shall be required to inspect regularly to ensure compliance of the ESMP. – Onsite monitoring of dust, noise and water quality during construction phase should be carried out using light weight, portable, handheld meters				
B.2.3	**Safety**					**21,400**
	Personal Safety Measures for Labour, Material handling, Painting, etc.	– Prepare and implement an Occupational Health and Safety (OHS) Plan (See annex 6). – The contractor shall continually monitor that the implementation of health and safety complies with measures set out in the contract. – Risk assessments for ongoing and new activities shall be carried out at regular intervals. – All personnel working on the site shall receive induction training in health and safety, and regular safety training related to their tasks. – The contractor shall provide all necessary safety appliances such as safety goggles high visibility vests, helmets, gloves, safety belts, earplugs, masks, boots, etc. to workers and staff with additional equipment for specific activities in accordance with risk. – Protective footwear, gloves and protective goggles to all workers employed	Construction sites	Contractor	SC Env. Officer and PMU	12,000

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		on mixing asphalt materials, cement, lime mortars, concrete, etc. – Welder's protective eye-shields and gloves to workers engaged in welding works – Protective goggles and clothing to workers engaged in stone breaking activities and workers shall be seated at sufficiently safe intervals – Earplugs to workers exposed to loud noise (above 75dB (A)), and workers working in crushing compaction, or concrete mixing operation. – Adequate safety measures for workers during the handling of materials at the site are taken up. – The Contractor shall comply with all regulations regarding safe scaffolding, ladders, working platforms, gangway, stairwells, excavations, trenches and safe means of entry and egress. – The Contractor shall not employ any person below the age of 14 years for any work and no woman shall be employed for the work of painting with products containing lead in any form. – The Contractor shall also ensure that no paint containing lead or lead products is used except in the form of paste or readymade paint. – The contractor shall provide face masks to the workers when the paint is applied in the form of a spray or a surface having dry lead paint is rubbed and scrapped.				
	Traffic and Safety & Pedestrian Safety	– The Contractor shall take all necessary measures for the safety of traffic during construction and shall provide, erect and maintain such barricades, including signs, markings, flags, lights and flagmen as proposed in the Traffic Management Plan/Drawings and as required by the supervising Engineer for the information and protection of traffic approaching or passing through the section of any existing crossroads. – The Contractor shall ensure that all signs, barricades, pavement markings are provided as per standard specifications. – Pedestrian Safety shall be ensured. Pedestrian circulation shall be demarcated before start & unsafe areas shall be cordoned off. – (See annex 11: Sample Traffic Management Plan (TMP) –	All along the project corridor and all haul roads	Contractor	SC Env. Officer and PMU	Provided for in section 1.1.5 of the BOQ
	The risk from Electrical Equipment(s)	The Contractor shall take all required precautions to prevent danger from electrical equipment and ensure that – – No material shall be so stacked or placed as to cause danger or	All construction equipment	Contractor	SC Env. Officer and PMU	3150

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		inconvenience to any person or the public. – All necessary fencing and lights should be provided to protect the public in construction zones. – All machines to be used in the construction shall conform to the relevant Sierra Leonne Standards codes, shall be free from patent defect, shall be kept in good working order, shall be regularly inspected and properly maintained as per SL standard provision and to the satisfaction of the Engineer – In charge. – Precautionary measures shall be taken when working close to the underground or overhead cables				
	First Aid	The contractor shall arrange for - – A readily available first aid unit including an adequate supply of sterilized dressing materials and appliances as per the Factories Rules in every work zone – Availability of suitable transport always to take an injured or sick person(s) to the nearest hospital – Equipment and trained nursing staff at the construction camp.	All construction Equipment and Sites	Contractor	SC Env. Officer and PMU	6250
B.2.4	**Cultural Property**					**3125**
	Chance Find Procedures/ Archaeological Property	– All fossils, coins, articles of the value of antiquity, structures, and other remains or things of geological or archaeological interest discovered on the site are the property of the Government and shall be dealt with as per provisions of the relevant legislation. – The Contractor shall take reasonable precautions to prevent his workmen or any other persons from removing and damaging any such article or thing. He shall, immediately upon discovery thereof and before removal must acquaint the Supervision Consultant who should contact the PMU and MRC instructions to deal with the same, waiting for which all work shall be stopped/suspended. – The Engineer shall seek direction from the MRC before instructing the Contractor to restart the work on the site. See Annex 23: Chance Find Procedures	Along the project sites	Contractor	SC Env. Officer, State Archaeological Department, MRC and PMU	3125
B.2.5	**Works Yard Management**					**8750**
	Location of Construction works yards	– The Contractor shall provide, if required, erect and maintain necessary (temporary) works yards and ancillary facilities during the progress of work – The location, layout and basic facility provision of each works yard shall be	Along the project corridor at the location	Contractor	SC Env. Officer and PMU	

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		submitted to Engineer before their construction. Lighting shall be provided in the works yard area and facilities – The construction shall commence only upon the written approval of the Engineer – In charge.	of construction works yards			
	Potable Water	– The Contractor shall construct and maintain all works yards in such a fashion that uncontaminated water is available for drinking, cooking, and washing within the precincts of every workplace in an accessible place – The contractor shall also guarantee the following: · Supply of sufficient volume of potable water in every workplace/ at suitable and easily accessible places and regular maintenance of such facilities. · If any water storage tank is provided that shall be kept such that the bottom of the tank is at least 1m from the surrounding ground level. · If water is drawn from any existing well, which is within 30mt. the proximity of any toilet, drain or other sources of pollution, the well shall be treated before water is used for drinking. · Compliance with ESMP shall be reported to the supervising consultant every week. S/He shall inspect the works yard periodically, to ensure compliance with the ESMP. (See Annex 20: Workers Camp Site Management Plan) ·	Construction works yards	Contractor	SC Env. Officer and PMU	3125
	Sanitation and Sewage System	– The Contractor shall ensure that - – The sewage system for the works yard is designed, built and operated in such a fashion that no health hazards occur and no pollution of the air, groundwater or adjacent watercourses take place – Separate toilets/bathrooms (M/F), wherever required, screened from those from men (marked in vernacular) are to be provided for women. Adequate natural and artificial lighting should be provided to the sanitation facilities. – Adequate water supply is to be provided in all toilets and urinals – All toilets in workplaces have the dry-earth system (receptacles) which are to be cleaned and kept in strict sanitary condition – Adequate health care is to be provided for the workforce during the entire phase.	Construction Works yards	Contractor	SC Env. Officer and PMU	
	Waste Disposal	– The contractor should provide garbage bins in the works yards and ensure		Contractor	SC Env.	3125

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		that these are regularly emptied and disposed of hygienically as per the Solid Waste Management Plan approved by the supervision consultant. Unless otherwise arranged by FCC, the Contractor must decide for disposal of sewage through municipal authorities or as directed by supervision consultant as provided by the Contractor. See annex 10: Sample Waste Management Plan			Officer and PMU	
	Stock-yards	– Location for stockyards for construction materials shall be identified at least 1000 m from the watercourse and separated and sufficiently away from the works yards – Separate enclosures shall be planned for storing construction materials containing fine particles such that sediment-laden water does not drain into nearby storm water drain.	Construction Works yards	Contractor	SC Env. Officer and PMU	1250
	Fuel storage and refueling areas	– The Contractor shall ensure that all construction vehicle parking location, fuel/lubricants storage sites, vehicle, machinery and equipment maintenance, and refueling sites are located at safe distance (500m) from water courses – All location and lay-out plans of such sites shall be submitted by the Contractor before their establishment and shall be approved by the supervision consultant. – In all fuel storage and refueling areas, if located on areas supporting vegetation, the topsoil shall be stripped, stockpiled and returned after completion of such storage and refueling activities. Fuel storage shall be provided with bunds. – The plan for the construction yard shall also include the process of collecting and disposal of spent oil and grease. The collection and disposal methods for the spent oil and grease submitted as part of the construction works yard plan should be duly approved by the Engineer – In charge.	Construction works yard	Contractor	SC Env. Officer and PMU	1250
B.2.6	**Contractor Demobilization**					**2500**
	Clearing of Construction of works yards & Restoration	– Contractor to prepare and implement (after completion of the intended service) site restoration plans for approval by the supervision consultants. The plan must be implemented by the contractor before demobilization. – On completion of the works, all temporary structures shall be cleared away, all rubbish burnt, excreta or other disposal pits or trenches filled in and effectively sealed off and the site left clean and tidy at the Contractor's expense, to the entire satisfaction of the consultants.	All Construction sites	Contractor and Environment Officer of SC	PMU, FCC	

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		– Residual topsoil shall be distributed on adjoining/proximate barren/rocky areas as identified by the supervision consultant in a layer of a thickness of 75mm - 150mm.				
	Redevelopment of Borrow Areas	– Redevelopment of borrow pits should be done by the licensed operators and shall done in accordance with the closure plans approved by the EPA.	At all borrow area locations suggested for the project.	Contractor and Environment Officer of CSC	PMU, FCC	
B.2.7	**Environmental Enhancement and Special Issues**					**6250**
	Enhancement measures	– Enhancement of all incidental spaces shall be planned and carried out before completion of construction works. – Some of the enhancement measures to be considered along footprint areas include stone pitching of areas susceptible erosion, avenue tree plantation, restoration of water bodies, providing public amenities, planting of shrubs on hilly area/slopes, rainwater harvesting, adequate storm water drainage, Landscaping at junctions to improve aesthetics, etc.	All tree plantations/ greenery areas of the project	Contractor / Forest Department and Environment Officer of CSC	PMU, FCC	31250
	Sensitive Areas	– Sensitive areas like schools and clinics shall be provided with permanent noise barriers before the start of work to minimize the dust and noise impacts due to vehicle movement (during / post - construction). Their effectiveness is to be checked during the operation phase. – Construction activities shall be confined within the present available RoW, regularly strict monitoring/supervision should be done to minimize/control air-noise pollution and abatement of dust particles at the minimum level possible using well maintain modern machinery. Crushers, Hot-mix Plants and Batching Plants should be placed at least 10km aerial distance away from the sanctuary boundary.	Concerned locations	Contractor and Environment Officer of CSC	PMU, FCC	31250
	Sub-total Construction Phase	–				**208,175**
C	**OPERATION STAGE (Activities to be Carried Out by the Contractor (till the DLP) and then PMU and other agencies**					**22500**
	Flood and Landslide	– Clear channels downstream – Construct secondary channels to divert the water to reduce the flow velocity – Regular cleaning of the approach and exit of culvert and stream channel on Granville Brooke – Inspect and make good all stabilized slopes to avoid failure	All along the project	Contractor (DLP) and PMU	PMU, FCC, SLRA	6250

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		– Recanalization of the Granville Brooke and revegetation of its banks to mitigate erosion				
	Monitoring and Evaluation of Environmental and Social Mitigation Measures provided in the Project	– The PMU/FCC shall monitor the operational performance of the various mitigation/ enhancement measures carried out as a part of the project.	All along the project corridor	Contractor (DLP) and PMU	PMU, FCC	1250
	Maintenance of Drainage	– PMU/FCC shall ensure that all drains are periodically cleared, especially before monsoon season to facilitate the quick passage of rainwater and avoid flooding without damaging the land, properties, spurs and check dams erected to stabilize the course and flow of all such drainage channels.	All along the project corridor	Contractor (DLP) and PMU	PMU/S	2500
	Pollution Monitoring	– The frequency of monitoring of the ambient air quality, noise level, water (both ground and surface water) quality, soil pollution/contamination are to be continued at pre-designated locations as identified in the Environmental Monitoring Plan and if necessary, at additional locations for comparative study of pre-operation and post-operation data to ensure further improvement/modification in similar future works. – PMU/FCC shall appoint a specific pollution monitoring agency for this purpose.	All along the project corridor	Contractor (DLP) and PMU	PMU/SC	2500
	Atmospheric Pollution	– Ambient air concentrations of various pollutants shall be monitored as envisaged in the Environmental Monitoring Plan at predesignated locations to compare the levels with the preconstruction data. – Additional data at other locations may be collected as per any site-specific requirement	All along the project corridor	Contractor (DLP) and PMU	FCC/SC	1250
	Noise Pollution	– Noise pollution should be monitored as per the Environmental Monitoring Plan at sensitive locations where pre-construction noise data was collected. The functioning of the noise barriers must be specifically supervised and monitored for further improvement/replication at other affected points if necessary. – Signage indicating „no horn zones" near sensitive locations shall be maintained and kept clean. Monitoring the effectiveness of the pollution attenuation barriers shall be taken up thrice in the operation period.	All along the project corridor	Contractor (DLP) and PMU	PMU/SC	1250

S.No	Project Activities	Management Measure	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		– Onsite monitoring of dust, noise and water quality during operation stage should be carried out using light weight, portable, handheld meters				
	Soil Erosion and Monitoring of Borrow Areas	– Visual monitoring and inspection of soil erosion at existing licensed borrow areas, quarries (if closed and rehabilitated), embankments and other places expected to be affected, shall be carried out before monsoon, during monsoon, and after winter rains to record and monitor the effectiveness of such structures after the completion of project, to evaluate the beneficial effects of each type of activity together with the cost involved.	Borrow areas	Contractor (DLP) and PMU	PMU	3750
	Road Safety and Maintenance of Assets	– Monitor data on any road traffic accidents and identify and implement any remedial measures that may be necessary. – No advertisement/hoarding shall be allowed within the Right of Way limits of the project road.	All along the project corridor	Contractor (DLP) and PMU	PMU	3750
	GRAND TOTAL COST	–				**US$ 318,925**

8.2 WASH Package Site-Specific Construction Mitigation Measures

Table 8.2 to Table 8.4 present the site-specific mitigation measures for the WASH package, developed directly from the conditions, risks, and recommendations assessed and determined during the due-diligence assessment.

Table 8.2: Moyiba Site-Specific Mitigation Measures

Risk	Sites Affected	Mitigation Measures
Engineering and Physical Environment		
Poor drainage / flooding	003–009, 014–023, 034	Lined surface drains; raised plinths; aprons; culvert connections
Slope instability	014, 015, 019, 023, 034	Retaining walls; terracing; soil nailing; relocation if >30°
Soil erosion	003–007, 017, 022	Stone pitching; geotextile; revegetation
Pipe leakage	002	Buried pipelines; pressure testing; shut-off valves
Public Health and Sanitation		
Open defecation / hygiene deficits	Most sites	Hygiene promotion; fencing; washing slabs
Contamination risk	002, 008, 018	Buffer distances; drainage separation
School/market disruption	003, 009	Work scheduling; barriers
Access and Safety		
Poor access	004–007, 014–019, 034	Footpaths; ramps; handrails
Construction hazards	All	Fencing; signage; PPE; traffic marshals

Table 8.3: Site-Specific Mitigation Measures Matrix – Coconut Farm WASH Sites

A. Physical Environment and Engineering Risks				
Risk / Issue	**Locations Affected**	**Mitigation Measures**	**Responsibility**	**Monitoring Indicator**
Slope instability / erosion	001, 002, 010–012, 019, 031	Retaining walls; terracing; soil nailing; stone pitching; geotextiles; redesign or relocation for very-high-risk slopes	Design Engineer / Contractor	Stability inspection reports; no new cracks
Loose soils	005, 008, 009, 015, 017	Compaction; concrete aprons; drainage channels; slope vegetation	Contractor	Compaction tests; erosion absence
Poor or severe drainage	001, 002, 005–007, 009–012, 015, 017, 019, 031	Lined surface drains; culvert connections; raised plinths; soakaways	Contractor / Supervising Engineer	No standing water; functioning drains
Minor pooling	003, 004, 008, 011	Improve surface grading; install shallow drains	Contractor	No post-rain pooling
Debris / rocky surfaces	008	Site cleanup; removal of rubble; level working area	Contractor	Clean site prior to works
B. Water-Quality and Sanitation Risks				
Risk	**Locations**	**Mitigation Measures**	**Responsibility**	**Monitoring Indicator**
Open defecation / poor hygiene	Most sites	Hygiene promotion; fencing; washing slabs; signage	PIU / Health Officers	Campaign records
Waste	002, 005,	Waste bins; cleanup campaigns;	Contractor /	Clean

accumulation around water points	006, 009, 014, 015	routine removal	Community	surroundings
Contamination near boreholes / toilets	006, 019	Sanitary setbacks (>30 m); sealed slabs; drainage separation	Design Engineer	Water-quality tests
Washing at wells	001	Dedicated washing bays away from wells; drainage apron	Contractor	No washing at wellhead
C. Access, Safety and Community Risks				
Risk	**Locations**	**Mitigation Measures**	**Responsibility**	**Monitoring Indicator**
Poor access / private compounds	002, 007, 010–012, 019, 031	Negotiated access agreements; footpaths; ramps; handrails	PIU / Local Authority	Access restored
Mosque frontage / sensitive receptors	004	Work scheduling; consultation; noise/dust controls	Contractor	Community complaints
Construction hazards	All sites	Fencing; warning signs; PPE; traffic marshals	Contractor	Zero accidents
Secluded facilities	007	Open access paths; lighting; drainage outlets	Contractor	Safe public use
D. Facility-Specific Measures				
Facility Type	**Locations**	**Mitigation Action**		
Rehabilitated wells	001, 002	Covers; fencing; aprons; drainage channels; sanitation buffers		
Tank boreholes	003–005, 017	Drainage lining; erosion control; hygiene fencing		
New water-table wells	008–012	Ground stabilization; raised plinths; drainage; waste removal		
VIP toilets	006, 019	Rehabilitation; waste control; relocate where <30 m from boreholes		
Pour-flush toilets	007, 011, 031	Retaining walls; access improvements; drainage redesign		
E. Institutional Controls				
Measure	**Implementer**	**Timing**		
Site-specific ESMP approval	PIU	Pre-construction		
Geotechnical surveys	Consultant	Design stage		
Water-quality testing	Health Authority	Quarterly		
ESF compliance audits	PIU / WB	Quarterly		

Table 8.4: Portee–Rokupa WASH Package Site-Specific Mitigation Measures

Risk	Locations	Mitigation Measures	Responsibility	Monitoring Indicator
A. Coastal & Flooding Risks				
Tidal flooding / storm surge	001, 003, 008, 010	Relocate inland; raise platforms ≥0.5 m; flood barriers	PIU / Engineer	No overtopping
Waterlogging	002, 004, 012	Lined drains; soak away; raised slabs	Contractor	No standing water
B. Soil Stability & Erosion				
Loose coastal soils	003, 008, 010	Soil replacement; geotextile; relocation	Engineer	Stable ground
Erosion channels	005, 007	Stone pitching; retaining walls	Contractor	No scour
C. Pollution & Hygiene				
Solid-waste dumping	001, 007	Cleanup; bins; fencing; awareness	Contractor / Community	Clean area
Toilet contamination	004, 010	Sanitary buffers; sealed pits	Engineer	Water tests
D. Access & Safety				
Narrow pathways	005	Footpaths; handrails	Contractor	Safe access
Construction hazards	All	Fencing; signage; PPE	Contractor	Zero incidents

8.3 Operation Phase Risks related to WASH Facilities

Some of the preventive sanitary mitigation measures during the operation and maintenance phase include:

- Septage should be transported by septage hauler with no discharge or leakage allowed during transportation.
- Ensure preventative maintenance schedule is followed to avoid unhygienic exposures to spillage of septage in the neighborhoods.

Management Mitigation Measures of WASH Facilities

- The pour flush latrines should be accessible and regularly evacuated when full to avoid overflow
- The buildings should be regularly examined to assess the structural integrity of the sceptic tank, which if deteriorated will lead to collapse of the entire structure

Table 8.5 presents the WASH facilities environmental and social management plan.

Table 8.5: WASH Facilities Environmental and Social Management Plan

S/No	Project Activities	Management Measures	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
Preconstruction and Construction Phase						
	Design and Specification	▪ Use approved standards and designs. ▪ Conduct proper geophysics prior to sitting boreholes ▪ Improve and approve design against WBG EHS guidelines for facility design, ▪ Ensure competent contractors and skilled workers are engaged		Design and feasibility consultant	FCC PMU	**Included in the design consultant's cost**
	Failed boreholes	▪ Conduct geohydrological assessment to determine groundwater availability		Design and feasibility consultant	FCC/PMU/WB	
	Land Acquisition	▪ Ensure proper processes are followed for the acquisition of land for siting public toilets and boreholes, as per the RP developed for this Project Component.	Project sites			**Included in RP**
	Mobilization of materials, equipment and personnel on site	▪ Ensure the Contractor's ESMP (CESMP) is approved by the Engineer and the PMU (draft scope of work for a C-ESMP in annex 18) ▪ Obtain all necessary permits and approvals from relevant authorities prior to construction		PMU, Contractor	PMU Supervision Consultant	
	Sub- Total Preconstruction Phase					**US$ 0**
Construction Phase						
	Air Quality	▪ Dust minimization measures shall be implemented including watering of transport route. ▪ Ensure optimal traffic routes. Enforce vehicle speed limits on unpaved roads ▪ Soil stockpiles and stores of friable material will be covered to reduce the potential for fugitive emissions of dust where possible. ▪ Vehicles carrying friable materials will be enclosed or sheeted. ▪ Workers would be provided with dust protection PPE ▪ Deploy serviced vehicles/trucks/motorized equipment ▪ Ensure vehicles/machines are switched off when not in use. ▪ Ensure only vehicles required to undertake works are operated on-site. ▪ Ensure all construction vehicles, plant and machinery are well maintained and in full operating condition. ▪ Effective preventative maintenance established to ensure all construction equipment and electricity generators are maintained in good working order and do not adversely impact air quality due to inadequate maintenance or damage. ▪ Use protective gears like helmets and dust masks by the construction crew	Along the project area	Contractor/ Subcontractors	Supervision Consultant/ PMU	**3600**

S/No	Project Activities	Management Measures	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
	Soils/Erosion	▪ Limit vegetation clearing to areas within the construction site boundary where it is necessary. ▪ Avoid clearing mature trees. ▪ Slope stability measures will be incorporated such as benching and installation of erosion protection features ▪ Area to be cleared will be kept to the minimum necessary to prevent disturbance of soils outside the boundary	Around construction area	Contractor Subcontractors	Supervision Consultant/ PMU	**4250**
	Noise and vibration	▪ Install noise reduction devices such as silencers and mufflers as appropriate to mobile plant and equipment. ▪ Work areas will be organised and operated strive to restrict noise levels to not exceed World Bank thresholds at the nearest sensitive receptor during normal activities. ▪ Limit drilling work to daylight hours. Schedule noisy construction activities during specific times in	Around the community	Contractor	Supervision Consultant/ PMU	
	Water pollution	▪ Prevent construction materials and other debris (mud from the drill, grout, etc.) from entering waterways. ▪ Refuelling, maintenance and wash-down of construction vehicles and equipment will only occur in designated areas and away from surface water bodies and provided with secondary impermeable containment measures. ▪ The construction contractor should be contractually required to take all reasonable precautions to prevent and clean up all spills / leaks and take necessary measures to prevent materials from falling into surface water or pollute soils or groundwater. ▪ The Environmental and Social Management Plans including spills and waste management measures shall be implemented ▪ For work to be undertaken close to surface water bodies measures will be taken to ensure that pollution of water resources does not occur ▪ Set-up temporary disposal mechanism within the construction ▪ area and properly dispose of solid waste generated ▪ Develop and implement Sludge Management Plan for the toilets (See annex 21 Sample Sludge Management Plan)	Streams and water points within the community	Contractor	Supervision Consultant/ PMU	**3600**
	Visual aesthetics	▪ Ensure a nature blended design and attractive utilization (advertisement) of the tanks. ▪ Immediate evacuation or covering of excavated spoil		Contractor	Supervision Consultant/ PMU	850
	Waste Management	▪ Provide waste bins at all construction sites for the disposal of the various types of wastes generated by the project activities. These bins will be clearly marked to facilitate segregation of waste, for collection, transportation and disposal. ▪ Separation of domestic and hazardous waste at the source shall be strictly enforced. ▪ Where possible, wastes will be re-used or recycled. This is a requirement		Contractor/sub -contractors	Supervision Consultant/ PMU	**2500**

S/No	Project Activities	Management Measures	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		for waste oils, other hydrocarbons and tires and other hazardous and non-hazardous wastes ▪ All personnel will be trained in the appropriate management of waste according to the WMP. ▪ Training shall be provided for workers on safe storage, use and handling of e-waste on site. ▪ E-wastes generated shall be stored in appropriate locations set up at the Project site prior to recycling and/or disposal ▪ Proper storage, transport and disposal of hazardous wastes (oily wastes, used batteries, fuel drums) in the designated areas by the national/municipal authorities in accordance with National Environmental Law. See annex 10: Sample Waste Management Plan and annex 21 on sample sludge management plan				
	Loss of biodiversity	▪ Re-plant the indigenous vegetation as much as practical once work is completed by the original species. ▪ Spare the trees that must not necessarily be removed. ▪ The landscaping plan should seek to avoid the use of non-native and potentially invasive species.		Contractor	Supervision Consultant/ PMU	**850**
	Natural habitat	▪ •Clear working area only ▪ • Avoid unnecessarily destroying habitats around working area		Contractor	Supervision Consultant/ PMU	**1700**
	Soils	▪ Nurture vegetation and prevent direct exposure of soils to weather elements ▪ Use vegetal waste as compost to aid rapid vegetal propagation		Contractor	Supervision Consultant/ PMU	1700
	Environmental pollution	▪ The sceptic container should be sealed so no water or gas can enter or leave the chamber uncontrolled. This will protect the soil and secure the oxygen-free environment necessary to start the anaerobic digestion process. ▪ All materials used should be resistant to corrosion for health and safety reasons. ▪ Maintain a worm colony that can live inside the toilet indefinitely so long as the correct environmental conditions are maintained.		Contractor	Supervision Consultant/ PMU	2750
	Drinking water quality from boreholes hand dug wells, spring boxes etc	▪ Careful selection of sites for boreholes and wells to avoid areas prone to contamination. ▪ Design facilities to prevent surface water runoff from entering the wells. ▪ Ensure proper sealing and lining of wells to prevent contamination from surface water and other sources. ▪ Regular monitoring of water quality during and after construction to detect any contamination early Proper disposal of construction waste to prevent contamination of water sources		Contractor	Supervision Consultant/ PMU	**1700**
Social Issues						
	Job Creation	▪ No mitigation required		Contractor	Supervision	

S/No	Project Activities	Management Measures	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
					Consultant/ PMU	
	Child and Forced Labor	▪ Zero tolerance for child and forced labour. ▪ Contractual clauses will be inserted in Contract Documents prohibiting the Contractors/Consultants and their workers from Forced Labour and Child Labour, that also makes reporting all Child Labour cases to law enforcement agencies, PMU, the Grievance Redress Committee and Project Consultant		Contractor	Supervision Consultant/ PMU	
	Community Health and Safety	▪ Adequate signage and warnings including "highly-flammable", "no smoking" ▪ Provide routine medical tests opportunities for workers, so that affected workers will be isolated and treated to avoid the spread of infection to others ▪ Ensure that construction workers and host community are adequately informed, and aware of local laws, as well as Project's E&S risks and mitigation measures. ▪ Cordon off works area and use appropriate signages ▪ Prepare and implement site specific C-ESMP		Contractor	Supervision Consultant/ PMU	4650
	Community and social cohesion	▪ Stakeholders Engagement Plan developed and implemented ▪ Undertake continuous engagement throughout the project life span ▪ Raise awareness on the existence of the Grievance Mechanism		Contractor	Supervision Consultant/ PMU	**650**
	Labour and working condition	▪ Labour Management Plans shall be prepared by Project Contractor(s) based on the Project Labour Management Procedures for approval by the Bank/PMU to guide labour relations ▪ Contractors and Sub-contractors will be required to hire labour through a structured HR process and not 'at the gate' ▪ All workers will be given contracts specifying the type of work they are employed to execute and their remuneration package as well as their conditions of service ▪ All contracts will be vetted by the Ministry of Labour and Social Security before they are signed by workers ▪ Contractors shall be required to consider alternative work schedules or shifts to accommodate the hiring of more female workers. ▪ -Enforce CoC for all workers prior to start project works		Contractor	Supervision Consultant/ PMU	1700
	Labour and working condition	▪ Communities in which sub projects will be undertaken will be sensitized on communicable disease and other infectious diseases using the available and practical channels, including mass media, social media, community gatherings, etc. ▪ Contact numbers (hotlines) of the nearest health facility will be pasted at vantage points in the communities, where the sub projects will be implemented. ▪ Workers will not be allowed to receive visitors in works sites without the express permission of site supervisor. Regular inspection, review and		Contractor	Supervision Consultant/ PMU	4550

S/No	Project Activities	Management Measures	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		recording of HSE performance ▪ Workers – potential slips, trips, falls, fatigue, injuries, and electrocution Communities – motor accidents, poor air quality, increased noise ▪ Certain employment opportunities on site should be preserved for vulnerable persons such as Persons Living with Disability and women e.g. wardens ▪ A workers grievance mechanism system will be made available to all workers to report any issues associated with OHS and / or labour and working conditions, as per the Labor Management Procedures (LMP). ▪ All workers will sign a Code of Conduct (CoC) prior to start work ▪ Contractual clauses will be inserted in Contract Documents prohibiting the Contractors/Consultants and their workers from Forced Labour, Child Labour, that also makes reporting all Child Labour cases to law enforcement agencies, the Grievance Redress Committee and Project Consultant mandatory ▪ Workers should be housed in camps to reduce interface with the communities				
	GBV/SEA/SH	▪ Support will be provided by PMU designated/ contracted NGO (Rainbo Initiatives) GBV risk mitigation measures, including management of GBV responsive GRM. ▪ Clearly define the GBV requirements and expectations in the bid documents for a GBV/SEA/SH prevention and response action plan, Code of conduct for workers and adequate costing for implementing the GBV plan. ▪ The contractor ESMP, should among others, set out the mechanism for receiving, reviewing and addressing GBV complaints in a confidential manner, workers SEA/SH code of conduct and the accountable framework, mapping of GBV response actors within the project areas and working with them to provide quality survivor centred services including case management, referral services and linkage to other services not provided by them, etc. ▪ The supervision consultant shall engage a GBV specialist to supervise implementation of the contractor GBV plan implementation. ▪ Contractual Clauses on mandatory and regular training for workers on required lawful conduct and legal consequences for failure to comply with laws on non-discrimination and GBV will be inserted in the Contractors and Consultants Contracts as well as those of PMU staff. ▪ Contractual Clauses with a commitment to cooperate with law enforcement agencies investigating cases of GBV will be inserted into the Contract Documents of the Contractors, Subcontractors and Supervising Consultant. ▪ Workers of Supervision Consultants, Contractors and Subcontractors will		Contractor/subcontractor	Supervising consultants/PMU/ FCC	**4550**

S/No	Project Activities	Management Measures	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		be made to sign Code of Conduct with acceptable behaviour and sanction against GBV. ▪ Sensitization workshops/training on GBV/SEA/SH shall be undertaken for all workers of the Contractor/Supervising Consultant and Sub-Contractors. ▪ Contractors shall provide contact numbers of the nearest law enforcement Agency Office, the Grievance Redress Committee Members and GBV/SEA Service Providers/FSU to workers and paste same at vantage points within the project zones/sites/communities. ▪ Posters on prohibition of sexual exploitation and harassment will be posted in and around the sites as well as in the project communities. ▪ A helpline will be provided and disseminated in all the project communities and facilities by the ACC/EOC to deal with GBV/ SEA/SH complaints				
	Cultural Heritage	▪ Contractor to be aware of known cultural heritage sites (as noted in the ESIA / site surveys) ▪ Flagging or physical barriers to be put in place if required. ▪ Take precautions when excavating. ▪ If any object or site discovered cease works and follow the Chance-Find Procedure (CFP)		Contractor/sub-contractor	Supervising consultants/PMU/ FCC	4550
	Traffic	▪ Community consultations and meetings on the ongoing works and related hazards will be held. ▪ Active sites will be sealed off from the public using reflective tapes and cones, where necessary road diversions will be created. ▪ Safety initiatives will be developed and implemented, including: ▪ Ensuring that only qualified (licenced) drivers operate machinery. ▪ Implementing speed limits and traffic control measures in appropriate locations. ▪ Implementing safety signage. ▪ Installing speed control devices such as governors on trucks. ▪ movement of large construction machinery will be guided by a flag woman/flagman		Contractor/sub-contractor	Supervising consultants/PMU/ FCC	4550
	Sub- Total (Construction Phase					**- 48,700**
Operation Phase						
	Environmental pollution due to operations of toilets	▪ The toilets should be checked at a similar frequency that traditional faecal be checked for sludge level, roughly every 3-months. Where potential problems are identified, follow-up monitoring will be required after 2 to 4 weeks. The following should be considered: ▪ Simple messages should be given to the users about how to operate the toilet. A selection of these can be developed into a pictorial guide to be put		CDC/facilities operators	FCC	12750

S/No	Project Activities	Management Measures	Location	Responsibility		Mitigation Cost (US$)
				Planning and Execution	Supervision and Monitoring	
		inside the toilets as a reminder.				
	Sub Total (O&M phase)					**12750**
	TOTAL COST					**(US$) 61,450**

SC: Supervision Consultant; DLP: Defect Liability Period
FCC: Freetown City Council CDC: Community Development Committees

8.4 Environmental and Social Monitoring

The implementation of the ESMP shall involve inputs from Contractor, Supervision Consultant and PMU. The Contractor shall be primarily responsible for ensuring the implementation of mitigation measures proposed in the ESMP, which shall be part of the contract documents. Hence, the provision of environmental mitigation cost as a separate head in Bill of Quantities (BOQs) will be made mandatory in contract documents.

However, if the Contractor fails to comply with the implementation of ESMP and reporting properly, the Project shall enforce compliance with the terms of the contract, including adherence to the ESMP and World Safeguards Standards. For the smooth execution of ESMP implementation activities, it has been recommended that all the bills/payments related to ESMP implementation will be approved/authenticated by the Supervision Consultant and PMU E&S team. Table 8.6 presents the indicative cost estimates for implementing the ESMP. ***The mitigation cost by Contractor should be included in the bill of quantity (BoQ). The total cost for the ESIA/ESMP implementation is estimated at. Six Hundred and Eighty-Eight Thousand, Two Hundred and Twenty-Two United States Dollars and Fifty Cents (USD 688,222.50) See summary cost in Table 8.6 below:***

Table 8.6: Indicative Cost Estimates for ESIA/ESMP Implementation

#	Activity	Description	Cost (US$)
1	Mitigation measures	Roads, Drainages and Retaining Structures, Bridges and Solar Lighting Interventions	308,250.00
		WASH Interventions	61,450.00
		Sub Total	**369,700.00**
2	Monitoring measures	Roads, Drainages and Retaining Structures, Bridges and Solar Lighting Interventions	106,250.00
		WASH Interventions	30,000
		Sub Total	**136,250.00**
3	Training and capacity building	Training of relevant stakeholders on Roads, Drainages and Retaining Structures, Bridges and Solar Lighting Interventions	94,500.00
4	Training and capacity building	Training of relevant stakeholders on WASH Interventions	45,000
4	Disclosure of the ESIA	Advertisement in National dailies	10,000.00
		Sub Total	**149,500.00**
		Totals	**655,450**
5	Contingency	5% of All Sub-Totals	327727,500
		GRAND TOTAL	**688,222.50**

8.4.1 Compliance and Effects Monitoring

Compliance monitoring is the systematic collection of environmental data through a series of repetitive measurements. It is essentially a process aimed at measuring the accuracy of predicted impacts of the project as well as measuring the efficacy of recommended mitigation measures. It serves as an early-warning tool to take actions for residual or new impacts and improvement of mitigation measures. For the project, compliance monitoring will focus on ambient air quality, noise, grievance, spillage, waste generation, OHS, public safety etc. Health and Safety issues will be included in EPC contract bid documents and RUSLP will monitor their implementation.

Effects Monitoring is a monitoring study carried out to monitor the effects of the impacts of the project for purposes of re-planning the mitigation measures. After the mitigation measures are implemented,

effects monitoring or evaluation can determine if the mitigation measures have achieved their expected results.

The basis for environmental monitoring will be the database contained in Chapter Four of this report while standards will be in accordance with EPA - SL and WHO instruments. The environmental monitoring schedule and requirements for the proposed project activities are presented in Table 8.8. The PMU and Supervision Consultant shall carry out scheduled monitoring within the subproject area using the monitoring checklists to be prepared based on this ESMP (mitigation and monitoring plan) to aid the monitoring process, while the EPASL will conduct quarterly monitoring of project activities as provided for in the EPA act. The Contractor shall complete the following:

- Train construction staff for the implementation of the ESMP and safety measures with the coordination of the PMU.
- Submit various progress reports to the Environmental and Social Specialists of PMU.
- Explain the implementation of various environmental aspects to visiting national and international agencies and representatives of the donor.
- Receive monitoring reports/notes issued and take action to mitigate various violations of ESMP.
- Regularly submit Reports to PMU Environment Specialists about compliance with the ESMP and various issues related to the HSE including but not limited to the following:
  - OHS Measures adopted (OHS statistics)
  - Fuel and hazardous material consumption
  - Workforce statistics (employment/deployment etc.)
  - Compliance monitoring to check whether the actions proposed in the ESMP are being carried out.
  - Effects monitoring to record the impacts of mitigation measures adopted on the biophysical and social environment; as applicable, these effects shall be repeatedly measured.

The PMU E&S team shall complete compliance monitoring. A record of events and surveys shall be maintained with photographic documentation and necessary measurements as applicable. Examples of compliance and effects monitoring parameters are highlighted below:

- Compliance Monitoring:
  - Frequency of anti-dust water sprays during construction period
  - Installation of signage regarding community health and safety
  - Safety at workplaces and working hours during construction.
  - Incidence of liquid/solid waste in the vicinity of works site (type and amount of waste, amount, interference with local residents, fauna, flora and crops)
  - Plantation of saplings of new trees against trees cut
  - Survival rate of saplings of new trees
  - Arrangements made at construction sites for protection of floral and faunal resources

  - Assurance of installation of signage regarding community health and safety
- Environmental Effects Monitoring
  - Ambient air quality (Particulate matter) during construction phase
  - Surface water quality during construction phase especially at diversion sites
  - Ground water quality at works yards
  - Ground water table at construction sites
  - Number of patients suffering from malaria, cholera, diarrhea, and respiratory ailments during construction phase
  - Noise levels (in dBA), monitored at fixed locations and planned schedule during construction
  - Extent and degree of functionality of diversion channels to ensure un-interrupted water supply
- Social Effects Monitoring
  - Number of local people recruited on project works sites versus others from elsewhere
  - Incidence of child labour and disproportionate wages
  - Social conflict at community level related to the project activities
  - Increase rate of transmission of STDs, determining if the increase is project related
  - Security and Crime, Child protection, Gender equity and Sexual harassment
  - Chance-find archaeological site
  - Grievance redressal mechanism is in place
  - Health screening of labour at site
  - Contractor's staff sensitized on Gender base violence (GBV)

Regular Monitoring

In addition to compliance and effects monitoring, the contractors and consultants shall undertake regular monitoring of the implementation of and compliance with the provisions of all ESMP/CESMP activities.

8.4.2 Environmental and Social Non-compliances and Corrective Measures

The Contractor shall be notified of any violations of the ESMP, as well as any corrective actions required as assessed during monitoring visits. Outlined below are some steps, relating to the increasing severity of environmental violations, which will be implemented. The principle is to keep as many issues within the first few steps as possible.

Step 1: PMU and Contractor shall work out mitigations together and record the facts and the decision implemented.

Step 2: A more serious infringement is observed, and PMU notifies the Contractor of the issues in writing, with a deadline by which the problem must be rectified. All costs will be borne by the Contractor.

Step 3: PMU shall order the Contractor to suspend part, or all, of the works in coordination with the CSC. The suspension will be enforced until the offending parties, procedures, or equipment are corrected and/or remedial measures are put in place if required. No extension of time will be granted for such delays, and all costs will be borne by the Contractor.

Step 4: Breach of contract - One of the possible consequences of this is the removal of a Contractor and/or equipment and/or the termination of the contract. Such measures will not replace any legal proceedings that PMU may institute against the Contractor.

8.4.3 Communication Reporting and Documentation

The following environmental meetings are proposed:

- Primary meetings between the E & S team of PMU, CSC and the Contractor for setting out the format for the regular meetings should be held before the commencement of the project.
- Scheduled Environmental and Social Progress Review Meeting (ESRPM) meetings between the team PMU and the Contractor shall hold at regular intervals.
- The meetings shall discuss the conduct of the construction works, non–compliances noted by the environmental and social teams and measures recommended for their remedy.
- The Contractor, CSC and PMU shall produce monthly, quarterly and work completion reports of the sub-projects based on social and environmental issues. The distribution of the reports shall be through CSC to PMU and World Bank.

A photographic record of the project area shall be kept. The contractor, CSC and the PMU, shall take photographs at key reference locations using a digital camera of the project area in a walkthrough survey. Each photograph shall be presented with the following data:

- Shot number
- All the photographs will be referenced with GPS Coordinates
- Title of photograph
- Date and Time, and
- Photographic features.

The photographic record shall be incorporated into the monthly reports.

Complaints Register: The Contractor will maintain a complaint register at the works yard and workplaces to document all complaints received from the local communities. The register will also record the measures taken to mitigate the reported concerns. The final report will be communicated to the E&S team of PMU. All complaints/issues of the community shall be reported in the monthly progress report for the following month along with the status of last month's complaints and will be reviewed by the E&S team of PIU.

Moreover, telephone numbers and addresses of all concerned tiers within the GRM would be displayed in local languages at all sites, and the same should be distributed in community training/meetings.

Change Record Register: A review of this ESIA/ESMP will be triggered based on two scenarios:

- A change to the designs deviates from the parameters that are safeguarded in this ESMP.
- A discovery in the baseline socio-environmental conditions, which is not recognized or covered by this ESIA/ESMP.

In the event of either scenario, the ESIA/ESMP shall be updated and reissued accordingly. The Contractor, CSC and PMU shall document any change in the project design/operation and shall maintain the design change record.

Communication Plan

Along with or as part of the CESMP, the contractor will prepare a detailed communication plan at the beginning of the project implementation to define and decide to facilitate communities and project PMUs communication as with any other person external party (NGOs, associations, etc.) to the project to communicate with the project, to provide or request for information or file a complaint. Table 8.7 presents proposed communication channels.

Table 8.7: Tools for Communication

Channel	Approach
Project Webpage	The ESF documents including the ESIA Report will be disclosed in the implementing agencies website (Min of Finance) containing project description, implementing arrangements, contact key persons (email, phone of Senior Social Safeguards Specialist). The project webpage will be maintained, updated and review by the ESS of the PMUs during the project implementation period. The ESIA will also be disclosed on World Bank external website.
Radio Communication	At least every 2 weeks a radio announcement will be shared with the communities on the progress of the project and the way the community can communicate with the project PMU.
Public Address System	This can be implored whenever required and the entire community will get the information immediately. It is the most common means of communication in the project communities
Project Blackboard	Within the community, a project board shall be installed highlighting project information, timeline, and information of the works, contractor, and areas of risks.
Suggestion/ Complaint Box	Announcements will be placed and a box for comments will be placed with a lock so only the environmental or social officer can open and respond to any messages. Any complaint from a third party can be filed using this method.
Facebook, WhatsApp, other media	PMU, Consultant, communities can form groups to share information, monitored progress and share photos, progress and completion and benefits of the works.
Email, Telephone, other media	All contacts of the environmental and social management unit be it PIU at National level or at District level will be made public to be used by any stakeholder or third party willing to ask for information, provide suggestion or file a complaint or inform issues affecting the works.

Table 8.8: Environmental and Social Monitoring Plan Roads, Drainages and Retaining Structures, Bridges and Solar Lighting Interventions

Parameter/ Activity	Location	Means of Monitoring	Frequency	Responsible Agency		
				Implemented by	Supervised by	Monitoring Cost (US$)
Stone/Sand Collection	At borrow materials suppliers/ quarries sites/ rivers	Ecological (Biophysical) inspection of the sites before extraction activities of the stone/sand start	Weekly	Contractor	Consultant/ Environmental Specialist	2000
Soil pollution	Construction sites, material storage sites; water drainage channel;	Laboratory analysis for turbidity, BOD and oil/grease	Before sand extraction and monthly during extraction	Contractor at recognized national laboratory	Consultant/ Environmental Specialist	10,000
Soil pollution	Construction sites, material storage sites; water drainage channel;	Visual inspection at filling area that no effluent/spills to soil/land/agricultural lands	Monthly	Contractor	Consultant/ Environmental Specialist	15,1,000
Stability of slopes	Cut, filled, embankment sites.	Visual inspection of erosion prevention measures, retaining walls, compacted area;	Monthly	Contractor	Consultant/ Project Engineer	8000
Hydrocarbon and Chemical storage	At works yards	Visual inspection at storage facilities	Monthly	Contractor	Consultant/ Environmental Specialist	2000
Traffic Safety	Construction sites, Access roads, Pedestrian walkways	Visual inspection of traffic signs/ flags persons placed/used for traffic management;	Monthly	Contractor	Consultant/ Environmental Specialist	10000
Air Quality (dust, smoke)	Construction and extraction sites/ Material storage sites;	Monthly monitoring for NO_2, SO_2, CO, and PM Incident reporting system/Complaints register visual inspection to ensure dust suppression measures (e.g., spraying of waters) are in place, equipment/machinery in use are in good condition.	Daily/Monthly	Contractor	Consultant/ Environmental Specialist	6000
	Sensitive receptors (Homesteads, schools, health center, church, local administrative offices,) along the road corridor;	Continuous monitoring using appropriate instruments and analyzers (for particulate matter, Carbon dioxide, Sulphur, Nitrogen oxides)	Weekly	Contractor	Consultant/ Environmental Specialist	7,250

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Noise	Construction and extraction sites;	Noise measurement (Noise levels on dB); Work restriction between 6:00 a.m.-17:00 p.m. close to sensitive sites;	Weekly	Contractor	Consultant/ Environmental Specialist	1000
Surface Water Quality and Groundwater quality	Water bodies across the project area	Water sampling and analysis (Turbidity, pH, Electrical Conductivity (EC), Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Chloride, Copper, Zinc, Cadmium, Lead, Grease and Oil, and Fecal	Quarterly	Contractor at recognized laboratory	Consultant/ Environmental Specialist	4000
Precipitation	Project sites	Monitoring the level of precipitation/rainfall	Daily	Contractor	Consultants E&S team	2000
Biodiversity protection	Natural sensitive sites in	Sites monitoring in terms of nesting sites and habitats for the biodiversity in the forest;	Once the proposed construction activities are approved;	Conservation Society	Consultant/ Environmental Specialist	2000
Waste management	Construction and extraction sites,	Visual inspection that solid waste is properly disposed of at construction sites	Daily/weekly	Contractor	Consultant/ Environmental Specialist	5000
Drinking Water quality and sanitation	Construction and extraction sites,	Visual inspection that workers are provided with clean water and sanitation facilities (e.g., toilet paper, hand sanitizer,); Drinking water quality results	Daily	Contractor	Consultant/ Environmental Specialist	5000
Restoration of work sites	Work/ Cleared sites	Visual inspection of restored sites (e.g. by tree planting, filling of open borrow pits);	After completion of works	Contractor	Project Engineer/; Consultant/ Environmental Specialist	3000
Safety of workers Monitoring and reporting incidents and accidents	At work sites	Inspection of use of Personal protective equipment (PPEs) and implementation of Occupational Health and Safety and community health and safety measures	Monthly	Contractor	Environmental and Social Specialist	12000
Grievances (Environmental and Social Issues)	In each neighborhood	Number of, and type of complaints received on any project related activity Number of complaints resolved, not resolved (with reasons why not resolved)	Monthly	PMU	Social Specialist	No additional cost
Public/community health and safety and security	Project area, local community and access roads	- Road traffic accidents and incidents - Fatalities on the road involving contractor vehicles. - STDs prevention and awareness creation. - Number of cases of noise nuisance, air pollution and improper waste disposal complaints	Weekly/monthly	Contractor	Consultant/FCC/PMU	5000

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		- Sensitization of food vendors on or near project site on public health requirements, HIV/AIDS and COVID-19 Protocols.				
Population/ Demographic movement and employment	Project area, local communities	Conflict Complains: Number of locals employed versus others - from elsewhere complains from the local	Continuous	Contractor	Consultant/FCC/PMU	No additional cost
Population/ Demographic movement and employment	Project area, local communities	Conflict Complains: Number of locals employed versus others from elsewhere complains from the local	Continuous	Contractor	Consultant/FCC/PMU	No additional cost
Stability of protection works	Slope sites,	Visual inspection of erosion control	Monthly	Contactor	Consultant/PMU	5000
Monitoring the implementation of the provisions of the ESMP/CESMP	Project area and communities, works yards and streams	Visual inspection of these areas to record the effects of the work activities on these receptors	Daily	Consultants	FCC/PMU	No additional cost required (part of the scope of the consultants)
TOTAL						**US$ 106,250,000**

Table 8.9: Environmental and Social Monitoring Plan Water and Sanitation Interventions

Parameter/ Activity	Location	Means of Monitoring	Frequency	Responsible Agency		
				Implemented by	Supervised by	Monitoring Cost (US$)
Stone/Sand Collection	At suppliers' pits/ quarries sites/ rivers	Ecological (Biophysical) inspection of the sites before extraction activities of the stone/sand start	Weekly	Contractor	Consultant/ Environmental Specialist	1000
Soil pollution	Construction sites, material storage sites; water drainage channel;	Laboratory analysis for turbidity, BOD and oil/grease	Before sand extraction and monthly during extraction	Contractor at recognized national laboratory	Consultant/ Environmental Specialist	2000
Soil pollution	Construction sites, material storage sites; water drainage channel;	Visual inspection at filling area that no effluent/spills to soil/land/agricultural lands	Monthly	Contractor	Consultant/ Environmental Specialist	2000
Stability of slopes	Cut, filled, embankment sites.	Visual inspection of erosion prevention measures, retaining walls, compacted area;	Monthly	Contractor	Consultant/ Project Engineer	2000
Hydrocarbon	At works yards	Visual inspection at storage facilities	Monthly	Contractor	Consultant/	2000

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and Chemical storage					Environmental Specialist	
Traffic Safety	Construction sites, Access roads, Pedestrian walkways	Visual inspection of traffic signs/ flags persons placed/used for traffic management;	Monthly	Contractor	Consultant/ Environmental Specialist	2000
Air Quality (dust, smoke)	Construction and extraction sites/ Material storage sites;	Monthly monitoring for NO_2, SO_2, CO, and PM Incident reporting system/Complaints register visual inspection to ensure dust suppression measures (e.g., spraying of waters) are in place, equipment/machinery in use are in good condition.	Daily/Monthly	Contractor	Consultant/ Environmental Specialist	1000
	Sensitive receptors (Homesteads, schools, health center, church, local administrative offices,) along the road corridor;	Continuous monitoring using appropriate instruments and analyzers (for particulate matter, Carbon dioxide, Sulphur, Nitrogen oxides)	Weekly	Contractor	Consultant/ Environmental Specialist	1000
Noise	Construction and extraction sites;	Noise measurement (Noise levels on dB); Work restriction between 6:00 a.m.-17:00 p.m. close to sensitive sites;	Weekly	Contractor	Consultant/ Environmental Specialist	1000
Surface Water Quality and Groundwater quality	Water bodies across the project area	Water sampling and analysis (Turbidity, pH, Electrical Conductivity (EC), Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Chloride, Copper, Zinc, Cadmium, Lead, Grease and Oil, and Fecal	Quarterly	Contractor at recognized laboratory	Consultant/ Environmental Specialist	2000
Biodiversity protection	Natural sensitive sites in	Sites monitoring in terms of nesting sites and habitats for the biodiversity in the forest;	Once the proposed construction activities are approved;	Conservation Society	Consultant/ Environmental Specialist	500
Waste management	Construction and extraction sites,	Visual inspection that solid waste is properly disposed of at construction sites	Monthly	Contractor	Consultant/ Environmental Specialist	500
Drinking Water quality and sanitation	Construction and extraction sites,	Visual inspection that workers are provided with clean water and sanitation facilities (e.g., toilet paper, hand sanitizer,); pH, Temperature, Conductivity, Turbidity, Total	Daily	Contractor	Consultant/ Environmental Specialist	4000

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		Dissolved Solids (TDS), Total Suspended Solids (TSS), Chemical Oxygen Demand (COD) and Biological Oxygen Demand (BOD), Oil and Grease, Total Coliforms and Fecal Coliforms: E. Coli, Heavy Metals, Odor and Color: Nitrate, Ammonia, Phosphate, Magnesium, Chloride (Compare results against national or international standards to ensure compliance and safety)				
Restoration of work sites	Work/ Cleared sites	Visual inspection of restored sites (e.g. by tree planting, filling of open borrow pits);	After completion of works	Contractor	Consultant/PMU	2000
Safety of workers Monitoring and reporting incidents and accidents	At work sites	Inspection of use of Personal protective equipment (PPEs) and implementation of Occupational Health and Safety and community health and safety measures	Monthly	Contractor	Environmental and Social Specialist	3000
Grievances (Environmental and Social Issues)	In each neighborhood	Number of, and type of complaints received on any project related activity Number of complaints resolved, not resolved (w	Monthly	PMU	Social Specialist	No addional cost required
Public/community health and safety and security	Project area, local community and access roads	- Road traffic accidents an incidents - Fatalities on the road involving contractor vehicles. - HIV/AIDS and COVID-19 prevention and awareness creation. - Number of cases of noise nuisance, air pollution and improper waste disposal complaints Sensitization of food vendors on or near project site on public health requirements/protocols	Weekly/monthly	Contractor	Consultant/FCC/PMU	1000
Population/ Demographic movement and employment	Project area, local communities	Conflict Complains: Number of locals employed versus others - from elsewhere complains from the local	Continuous	Contractor	Consultant/FCC/PMU	No additional cost
Pollution due to improper management of toilet facilities	In each neighborhood	Visual inspection	Monthly	CDC	FCC	2000
Stability of protection works	Slope sites,	Visual inspection of erosion control	Monthly	Contactor	Consultant/PMU	1000
Monitoring the implementation of	Project area and communities, works	Visual inspection of these areas to record the effects of the work activities on these receptors	Daily	Consultants	FCC/PMU	No additional cost required

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the provisions of the ESMP/CESMP	yards and streams					(part of the scope of the consultants)
TOTAL						**US$ 30,000**

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8.5 Institutional Arrangements

The institutional arrangement highlights the implementation organization for the ESMP during the proposed construction works.

8.5.1 Project Management Responsibilities

The implementation of the ESMP shall be a contractual obligation between the Contractor and the PMU/FCC. The Contractor shall engage full-time technical staff capable of carrying out the monitoring activities as proposed in the ESMP as contractual obligations under the contract agreement. The overall Safeguards responsibility for the RUSLP project shall rest with the PMU E&S Team. The PMU E&S Safeguards Team shall carry out monitoring activities related to the project during the construction phase by applying checklists and notifying the Contractor of any violations of the ESMP by issuing Site Instructions, checking the progress reports, advise the Project and contractors regarding any violations which require further action and maintain a record of events and surveys for reference. The E&S safeguards supervision of implementing and monitoring ESMP includes stakeholder engagement and GRM administration. The team shall be responsible for the monitoring activities defined in the ESMP as part of their overall monitoring of social and environmental impact management.

8.5.2 Project Management Unit

The overall responsibility for the supervision of ESMP will rest with the PMU which is directly responsible for the project implementation supervision. The PMU has an E&S Team comprising of Environment Specialist, Social Safeguard/Resettlement Specialist, Communications and Community Engagement Specialist and a Gender Specialist. In addition, the PMU recruited a specialized NGO to design and support the operationalization and implementation of a GBV action plan, the NGO has also developed a GM for GBV/SEA/SH grievances which has been merged with the project GM. The NGO is contracted to provide service until the end of the project period. The E&S Team shall be responsible for the supervision of implementing and monitoring the ESMP including resettlement issues, GRM and stakeholder interface. The team shall be responsible for the monitoring defined in the ESMP as part of their overall monitoring of environmental and social management, the specific roles of the E&S team include:

- Prepare bidding documents, which should E&S specifications
- Include BOQ line items for E&S mitigation measures
- Specify minimum E&S staffing requirements for the Contractor's team
- Include penalty provisions clauses for non-compliance with E&S obligations
- Define C-ESMP requirements in the bidding documents.
- Ensure that all contractors/subcontractors/employees are fully aware of their environmental and social responsibilities. This will take the form of an initial environmental and social awareness-training program in which requirements of the ESMP will be explained
- Adequate monitoring to ensure continuous training of all workers old and new
- Adequate monitoring of activities to ensure that the project staff and/or contractor are adhering to all the stipulations of the ESMP
- Monitoring the construction activities throughout the project by means of undertaking site visits and meetings. These visits should be documented as part of the site meeting minutes
- Recruit a third party to conduct a post construction environmental and social audit to ensure that all conditions in the ESIA/ESMP were adhered to.

8.5.3 Construction Supervision Consultant

The Construction Supervision Consultant (CSC) to be engaged by the Project, shall be responsible for monitoring of the ESMP on behalf of the PMU during the execution of RUSLP subprojects construction works, and shall submit agreed periodic reports. In general, the CSC has the following responsibilities regarding the environmental and social aspects of the project:

- Review the documents prepared by the Contractor regarding E&S implementation.
- Monitor the implementation of ESMP regularly during the execution of civil works by the Contractor. The Supervision Consultant E&S team shall comprise the following key positions:
  - Environmental Specialist
  - Social and Resettlement Specialist
  - Occupational Health and Safety (OHS) experts

8.5.4 Contractor Responsibilities

The Contractor shall be responsible for the on-field implementation of the ESMP as well as maintaining responsibility for overall safeguards liabilities resulting from their operations. The Contractor shall also be responsible for training the work crews on all aspects that are relevant for the implementation of the requirements of the ESMP. The procurement bid shall include an environmental and social mitigation budget as part of the engineering costs of the respective works. The key positions to be filled within the contractor's staff for implementation of the ESMP include:

- Environmental Officer(s)
- Occupational Health and Safety (OHS) Officers; and
- Social Safeguards/Community Liaison Officers

Table 8.9 presents the detailed roles and responsibilities for the ESMP implementation organization in with the RUSLP's ESMF.

Table 8.9: Roles and Responsibilities

#	Category	Roles and Responsibilities
1	Environmental Protection Agency (EPA)	· Environmental monitoring and compliance overseer at the State level · Review and approval of draft ESMP report · Lead roles in the provision of advice on screening, scoping, review of draft ESMP in liaison with PMU, receiving comments from stakeholders, public hearing of the project proposals and social liability investigations, monitoring and evaluation process and criteria. · Site assessment and monitoring of ESMP implementation. · Provide necessary licenses/permits for the implementation of the project
2	Ministry of Lands, Housing and Country Planning	· Responsible for the conduct of land surveys establish land ownership and registration. They are also best suited for valuation of land across the country · Responsible for the issuance of building permits · Ensures that the RUSLP subprojects adheres to all relevant laws, regulations and permits.
3	Ministry of Environment and Climate Change	· Provide leadership and develop polices and strategies related to environmental protection and environmental governance polices

4	PMU Safeguard Unit (E & S)	· Safeguards due diligence. · Undertaking intermittent and unannounced monitoring on Occupation Health and Safety (OHS) reports received from the contractors' Safety Officers · Coordinate Environmental and Social Safeguards issues · Review environmental and social baseline data on relevant environmental and social characteristics of the selected project sites as embedded in the ESIA reports · Analyze potential environmental and social impacts · Ensure that these subproject activities that are implemented are in accordance with the best practices and guidelines set out in the site specific ESMP · Identify and liaise with all stakeholders involved in environment and social related issues in the project; and be responsible for the overall monitoring of mitigation measures and the impacts of the project during implementation. · Supervise safeguards' implementation on sites. · Social Safeguards · Develop and coordinate and ensure the implementation of the social aspects of the ESMP · Ensure that the project design and specifications adequately reflect environmental and social considerations · Co-ordinate application, follow up processing and obtain requisite E&S clearances required for the project · Identify and liaise with all stakeholders involved in social related issues in this subject · Liaise with various Government agencies on environmental and social regulatory matters · Establish dialogue with the affected communities and ensure that the environmental and social concerns and suggestions are incorporated in the various E&S instruments and implemented in the project. · Develop, organize and deliver training program for the PMU staff, the contractors and project beneficiaries, Prepare monthly environmental and social safeguards reports
5	Management of contractors	· contractors shall provide monthly monitoring reports to the RUSLP PMU. Such reports will be consolidated and submitted to the Bank as part of the project's semi-annual reports. However, upon request, such monthly reports would be submitted to the Bank · Immediately report to the Supervision Consultant in case of accidents, spills or other events which have health, safety or environmental implications. · Manage contractors and subcontractors through ESHS specification into contracts and thereafter, supervise compliance. These shall include but not limited to: · Relevant requirements are included in contracts and subcontracts (reflecting ESSs and ESCP); · Codes of conduct (CoC) are required of contractors and subcontractors and their workers to prohibit sexual harassment and exploitation and training of workers on their obligations under the CoC. · Preparation of a contractor ESMP (C-ESMP) that is costed, with · sufficient budget to mitigate E&S risks · Monitor Contractor commitment and compliance · Ensure contractors provide details on the contractor's oversight on environmental, social, health and safety (ESHS) performance · Contractor to develop a grievance redress mechanism to handle concerns of their employees · The project has developed a Labor Management Procedure Which Contractors shall update into a plan and comply with during Implementation. ·

5	Contractor	· Ensure all subcontractors meet the requirements of the ESMP. · Provide field EHS experts to ensure implementation of the CESMP. · Liaise with the supervision consultant and regularly report on implementation of CESMP. · Establish, maintain, and operate a grievance mechanism for Project workers, as described in the LMP and consistent with ESS2. · The contractor should prepare an LMP will include as part of the contract prior to contract signing and monitored through the contract period. · Recruit and maintain labour/workforce in line with the requirements of the project LMP (the contractor is expected to employ approximately 20 technical staff, 50 skilled technicians and 100 unskilled labourers of which 30% are women employees throughout the construction period) · In case of incidents, the contractor should fill an incident records form, including how the incident was addressed. · During construction, maintain traffic safety along access roads, with special emphasis on high traffic areas · Carry out waste management and adequate waste disposal in line with recommendations in the ESIA/ESMP · Prepare and maintain records and all required reporting data as stipulated by the ESMP, for submission to the Supervising Engineer Consultant · Ensure thorough supervision of implementation of all the measures and preparation of required monitoring report · Contractor should ensure that the safety officer conducts a Job Hazard Analysis (JHA) prior to the commencement of work to identify the hazards associated with the job activities
6	Supervision Engineer	· Preparation of the engineering designs and drawings for the construction works. · Provides supervision oversight ensuring contractors adheres strictly to the engineering specifications and provides progress reports on contractor compliance · Enforce strict implementation of the Environmental and Social Monitoring Plan during the construction works. · Thorough supervision of the mitigation of environmental and social impacts such as labour influx, HIV/AIDS, SAC and GBV · Reporting any incidents or non-compliance with the ESMP to the PMU · Ensuring adequate training and education of all staff involved in safeguards supervision · Making recommendations to the PMU regarding ESMP performance as part of an overall commitment to continuous improvement
7	Relevant MDAs	· Relevant MDAs shall come in as and when relevant areas or resources under their jurisdiction or management are likely to be affected by or implicated projects. · These institutions require to issue consent or approval for an aspect of a project relevant to their statutory functions · Carry out statutory responsibility or supervisory oversight as relevant to the project
8	Affected Community/ CDC	· Attend public meetings organized by the PMU and Contractors to disseminate information and receive feedback. · Provide support to resolve conflicts and grievances
9	World Bank	· Provide supervision and technical support and guidance. · Ensure that borrowers adhere to the policies and guidelines set forth in their Environmental and Social Framework and other relevant EHS guidelines · Responsible for the final review and clearance of the safeguard reports during project implementation.

8.6 Environmental and Social Awareness Training Plan

The PMU E&S team shall provide refresher awareness raising training sessions for the Community Development Committees, FCC and Ward Committees in environmental and social impact management programs, plans and procedures. The training shall educate participants on the community and environmental, health and safety hazards associated with the work as highlighted in the matrix presented in Table 8.10.

The contractors shall train their employees in the following:

- Environmental and social management
- Specific job roles and procedures

- Occupational as well as community health and safety; and
- Contingency plans and emergency procedures.

In addition, special environmental and social training will be given to the contractors' E&S Safeguards personnel. They will receive training in the following:

- Day-to-day monitoring activities.
- Use of monitoring equipment, operation, and maintenance.
- Occupational health and safety; and emergency and contingency procedures.

Below is the minimum coverage required for the contractor's environmental and social awareness training program proposed for the workforce before commencement of construction works:

Key Coverage Aspects

- World Bank (ESF – ESS) environmental and social awareness
- Key environmental and social issues associated with the project and subprojects ESMP and findings
- Subproject monitoring and reporting
- Occupational Health and Safety management
- Safety issues associated with Construction.
- Grievance Redress Mechanism implementation
- Gender-Based Violence (GBV)/SEA/SH)
- Child Labor
- Communicable Disease Management and Monitoring
- Water conservation and optimal resource use,
- Awareness regarding open defecation and better WASH practices for relevant community
- Identifications, conservation and precautionary measures of wildlife
- Principles and procedures in Stakeholder identification and Engagement
- Solid and hazardous waste management
- Control of leakages and spill response and emergency plan

Table 8.10: ESMP Implementation Training Plan Roads, Drainages and Retaining Structures, Bridges and Solar Lighting Interventions

Training Course & Content	Responsibility	Participants	Proposed Schedule	Training Cost ($)
World Bank (ESF – ESS) environmental and social awareness	PMU Safeguard Team	MDAs, Community, NGOs CDCs	Once before project implementation	2,000
General environmental and health awareness for all employees. ESIA study key findings and recommendations. – Implementation of the proposed CESMP.	PMU Safeguard Team	Supervising Engineer, MDAs, Community, NGOs	Once before project implementation	2,000
Occupational health and safety – Health and safety training	Contractor	Contractor	Once before project implementation and	3000

– Awareness on communicable diseases and prevention – Emergency preparedness – Fire-fighting training – Basic induction training for all employees		Workers	monthly throughout construction duration	
– Emergency Preparedness and Response – Waste Management – Traffic Management –	Contractor	Contractor Workers	Once before project implementation	2,500
Environmental and social and auditing inspection – Environmental and social monitoring and reporting – Environmental and social monitoring technique – E&S monitoring checklists – E&S monitoring reports	PMU Safeguard Team	MDAs, Community, NGOs	Once before implementation,	3,000
Stakeholder Engagement – Code of Conduct – Stakeholder identification, engagement and understanding their roles in the project – Gender-Based Violence (GBV)/SEA/SH awareness and prevention – GRM implementation	Contractor	Contractor Workers	Once before project implementation and thrice during construction	12,000
Operator training for truck operators and flagmen	Contractor	Contractor workers	Once before project implementation and as required	2000
Training for inspection and rehabilitation of Toilets operators	FCC Experts	CDC members	After completion of construction	5,000
Total		**31,500/Community = 94,500**		

Table 8.10.1: ESMP Implementation Training Plan Water and Sanitation Interventions

Training Course & Content	Responsibility	Participants	Proposed Schedule	Training Cost ($)
World Bank (ESF – ESS) environmental and social awareness	PMU Safeguard Team	Contractor, Supervising Engineer, MDAs, Community, NGOs	Once before project implementation	2,000
General environmental and health awareness for all employees. ESIA study key findings and recommendations. – Implementation of the proposed CESMP.	Contractor	Contractor , Workers	Once before project implementation	2,000
Occupational health and safety – Health and safety training – Awareness on communicable diseases and prevention – Emergency preparedness – Fire-fighting training – Basic induction training for all employees	Contractor	Contractor Workers	Once before project implementation and monthly throughout construction duration	2000

– Preparedness and Response – Waste Management – Traffic Management – –	Contractor	Contractor Workers	Once before project implementation	2,000
Environmental and social and auditing inspection – Environmental and social monitoring and reporting – Environmental and social monitoring technique – E&S monitoring checklists – E&S monitoring reports	PMU Safeguard Team	MDAs, Community, NGOs	Once before implementation,	2,000
Stakeholder Engagement – Code of Conduct – Stakeholder identification, engagement and understanding their roles in the project – Gender-Based Violence (GBV)/SEA/SH awareness and prevention – GRM implementation	Contractor	Contractor Workers	Once before project implementation and thrice during construction	1,000
Operator training for truck operators and flagmen	Contractor	Contractor workers	Once before project implementation and as required	2000
Training for inspection and rehabilitation of Toilets operators	FCC Experts	CDC members	After completion of construction	2,000
Total		**15,000/Community = 45,000**		

8.7 GBV Issues due to Influx of Migrant Labours

Projects involving construction works often require a labor force and associated goods and services that cannot be fully met by local supply. Where this occurs, a labor force may be brought in from outside of the project area which may increase the risks of GBV. Construction workers are predominantly younger males who are away from home on the construction job and are typically separated from their family and act outside their normal sphere of social control. This can lead to inappropriate and criminal behaviour, such as sexual harassment of women and girls, exploitative sexual relations, and illicit sexual relations with minors from the local community. A large influx of male labour may also lead to an increase in exploitative sexual relationships and human trafficking whereby women and girls are forced into sex work.

The table below gives and indication of the expected number of key experts, skilled and unskilled workforce anticipated at the period of work execution in the three communities:

Table 8.11 Anticipated Workforce – Peak Period

Package	Key Experts	Skilled Labour	Un Skilled Labour	Total
Roads	20	50	150	220
WASH	10	20	50	80
Total				300

GBV/SEA/SH requires timely access to quality, multi-sectoral services and involves confidentiality and informed consent of the GBV survivor. To address the project has recruited a specialized NGO

to raise awareness on issues related to GBV, they have developed guidelines and the GBV Action Plan which will be implemented. The document details the Accountability and Response Framework, identifies the service providers with minimum package of services (health, psychosocial, legal/security, safe house/shelter, and livelihood). The successful bidder will prepare the Contractor's Environmental and Social Management Plan (CESMP) that will integrate provision from the GBV Action Plan, with enough details of handling GBV cases. Chapter 10 gives some provisions which should form part of the bidding documents.

In line with the project GAP, the mitigation measures are as follows:

- Mandatory and regular training for workers on required lawful conduct in host communities and legal consequences for failure to comply with laws
- Commitment / policy to cooperate with law enforcement agencies investigating perpetrators of gender-based violence
- Enhancement of existing partnership with local NGO to report workers" misconduct and complaints/reports on gender-based violence or harassment through the GRM
- Provision of opportunities for workers to regularly return to their families
- Provision of opportunities for workers to take advantage of entertainment opportunities away from rural host communities.

8.7.1 GBV Training for Contractors, Consultants and Clients

To properly address GBV, the training and sensitizing of workers is essential. Training will be provided for all workers including construction works contractors employees (including sub-contractors and suppliers), supervision consultants, and other consultants who may have a presence in the project adjoining communities. GBV training should be incorporated into the regular Occupational Health and Safety (OHS) 'toolbox' meetings with workers, official training and/or standalone training efforts. Training on GBV should be thorough and proportional to the GBV risk, such training should be executed by the NGO recruited to monitor GBV related issues throughout the RUSLP.

At a minimum, the training should include:

- What GBV, particularly SEA and SH, is and how the project can exacerbate GBV risks
- Roles and responsibilities of actors involved in the project
- GBV incident reporting mechanism, accountability structures
- Services channels available for survivors of GBV; and,
- Follow-up activities to reinforce training content.

Training and awareness raising is a strong step toward behavior change. As projects are implemented, training on GBV should be made available to the project-affected communities as much as practicable so they can learn about the roles and responsibilities of actors involved in the project, processes for reporting incidents of project-related GBV, and the corresponding accountability structures.

Training of both project-affected communities and project implementers allows all stakeholders to understand the risks of GBV, as well as appropriate mitigation and response measures, putting everyone on the same page. Training IAs will also help us to better understand the potential for GBV that can be exacerbated in the context of a project.

Strengthening RUSLP Staff Capacity

The implementation unit at RUSLP has an individual cell for the Environment and Social team. Based on the assessment and in discussion with the PMU, the following measures are suggested

- The team should conduct orientation and sensitizations workshops for all construction supervision consultants, contractors, and all other project stakeholders once they are mobilized
- Close monitoring by the PMU GBV specialist to ensure adherence to and implementation of the GBV and the project Gender Action Plan.

8.7.2 Redressal Mechanism

In addition to the GRM, an integrative mechanism to address GBV incidents in the project is expected in line with the GAP. This would be carried out through the establishment of a GBV Committee (GBVC). The responsibility of the GVBC includes:

- Assurance that no victimization will result from making a complaint
- The procedure is well documented, available and in accessible formats
- Members who manage complaints are well trained
- Assistance is provided in the form of language interpreters as needed for parties to a complaint
- Ensuring the process is confidential, independent and based on principles of natural justice
- Ensuring the process has clear timelines
- All conflicts of interest are managed appropriately

GBV Monitoring: Monitoring and Evaluation plays a key role in assessing the effectiveness of mitigation measures. As part of the M&E process, indicators need to be selected for inclusion and reporting in the project Quarterly Project Reports (QPRs). The QPRs should include indicators related to: (i) the GBV activities on the project; and (ii) the GRM.

GBV indicators shall include:

- Successful implementation of the GBV Action Plan
- Number of training courses and/or sensitization modules related to GBV delivered
- Percentage of workers that have signed a CoC; and/or,
- Percentage of workers that have attended the CoC training.

Budget: Appropriate budgetary allocations need to be made to support the process to prevent and respond to GBV in the project. The budget shall include costing for the following items:

- Staff development and training programs at PMU and divisional levels
- Guidance notes and continuous learning
- RUSLP capacity-building on SEA and,
- To partner with GBV Service Providers to facilitate access to timely, safe and confidential services for survivors (including money for transportation, documentation fees, and lodging if needed),
- Community awareness and stakeholder engagement,
- Hiring of the GBV/gender specialist/consultant at PMU, and
- Functioning of GBVC for awareness raising and redressal and reporting of GBV incidents

8.8 Grievance Mechanism

A key strategy for a successful project implementation is stakeholder engagement with consistent communication of project activities to stakeholders and institutionalization of Grievance Mechanism as part key planning process. Since the inception of the project, several community engagements have been carried out with various stakeholders with a view to informing them about the project and

its objectives as well as holding discussions on the prevailing needs of their communities. The project Grievance Redress Mechanism (GRM) has been considered as part of the Stakeholder Engagement Plan (SEP). sThe existing project GRM is designed to address grievances of Project Affected Persons (PAPs). The mechanism for the grievance redress includes a provision for the establishment of an inclusive Grievance Redress Committee (GRC) for resolving disputes at the earliest possible time. Currently as practiced within the project, a Community Development Committee (CDC) is in place to enhance representation of the community people in overseeing the development of the project. The CDC serves as a communication channel for project activities, ensuring that all communities are regularly informed of progress on the project and consulted on various aspects of the project.

8.8.1 Objective of RUSLP GRM

The main objective of the GRM is to provide a process for resolving complaints and grievances in a timely, efficient, and fair manner. The goal of this mechanism is to satisfy all project stakeholders and create a transparent and credible process for lasting outcomes for the successful completion of the project. The GRM's specific objectives include:

- **Handling grievances:** Implementing and maintaining a procedure for handling all types of grievances and concerns from project stakeholders
- **Providing a robust system:** Creating a system of procedures and processes for quickly and transparently resolving complaints
- **Scaling project risks:** Scaling the redressal mechanism to the project's identified risks and adverse impacts
- **Providing feedback:** To help the project affected persons provide feedback and resolve their issues
- **Reaching consensus:** Reaching consensus with the relevant parties through a process of mutual understanding

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

8.8.2 RUSLP Grievance Mechanism Procedural Steps

The project GRM, as currently operated, is designed to offer efficient, timely and affordable solutions to grievances that are reported due to project activities. In other words, the grievance redress mechanism provides a way to reduce risk for the project and offers PAPs an appropriate and effective avenue for expressing concerns and achieving remedies and promotes a mutually constructive relationship. In the interest of all parties concerned, the grievance redress mechanism is designed to resolve disputes at the earliest possible time with the following objectives:

- Provides a predictable, transparent, timely and trusted process and procedure to all parties to address complaints related to project activities, resulting in outcomes that are seen by all project stakeholders as fair, effective, and lasting
- Ensures proper documentation and disclosure of complaints and any resulting corrective actions and pre-emptive engagement
- Enables more systematic identification of emerging issues and trends.
- Build trust as an integral component of broader community relations activities; and
- This contributes to the credibility and performance of the project by incorporating lessons learned from complaints received.

As presented in Figure 8.1, the implementation process also outlines the process for registering and addressing grievances and provides specific information regarding registering complaints, response time, and communication mode.

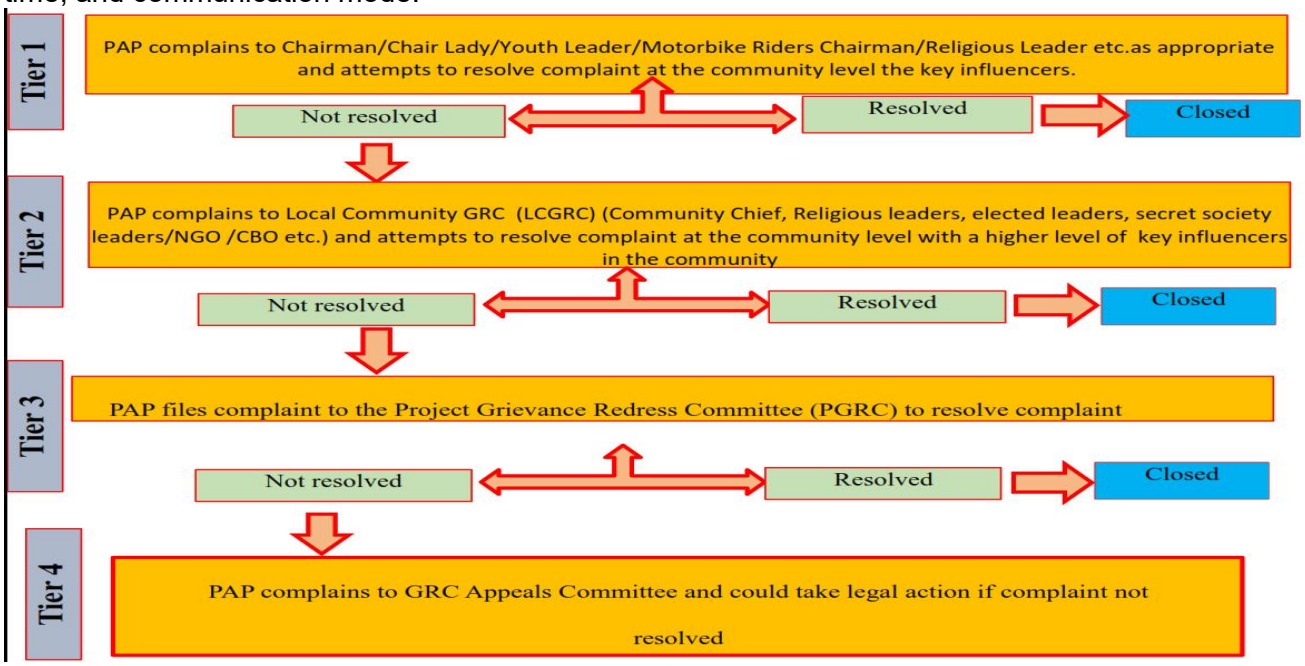

Figure 8.1: RUSLP Grievance Redress Mechanism

8.8.3 GRM Structure

Project Level GRC Composition

To manage the complaint and grievances associated with the siting of the investment intervention subprojects at the current project preparation stage, under listed are the composition of the project level GRC members

- Project Feasibility Consultant (CEMMAT) representative
- Representative of FCC
- Representative of RUSLP
- Representative of Rainbo Initiative
- Elected representative- Councilors (As required)
- Representative of the Ministry of Environment/ EPA (As required)
- Representative of SLRA (As required)

Grievance Appeal Committee (GAC) Composition

The project offers the right to appeal to dissatisfied PAPs. The project has a GAC set up to review a decision that's been made by the project to ensure complaints raised by PAPs are satisfactory addressed for the smooth running of the project with the under listed composition:

- Minister of Finance
- Minister of Local Government
- Attorney General
- Permanent Secretary Ministry of Finance

- Permanent Secretary Ministry of Local Government

Grievance Redress Committee (GRC)

The project operates a GRC to provide transparent, timely and trusted process and procedure to all parties in addressing complaints related to project activities resulting in outcomes that are seen by all project stakeholders as fair, effective, and lasting.

Current Community Level GRC Composition

The local GRC as presently composed are selected from the Local Authorities, Traders, religious leaders (pastors, Imams, Secret Society), Elders, Youth Leaders, Association Leaders, relevant CBO and Health Workers as presented in Table 8.11.

Table 8.12: Current Community GRC Composition

No	Name	Community Designation	GRC Designation	Contac
Moyiba Community				
1	Chief Santigie	Local Authority	Chairman	078-200278
2	Chief Yaraba Conteh	Local Authority	Vice Chairman	077-272392
3	Usif Koroma	Youth Leader	Secretary	
4	Suad Kamara	Chair Lady	Member	077-922663
5	Alusine Kanneh	Bike Rider	Member	
6	Zainab Kabia	Trader	Member	030-624700
7	Mammy Nafat Sesay	Secret Society Leader	Secret Society Leader	030-712981
Coconut Farm				
1	Chief Alimamy Kabia	Local Authority	Chairman	077-208825
2	Alie B. Bangura	Councilor	Member	079-76916
3	Rev. James Kanu	Clergy Man	Member	076-362092
4	Alimamy S. Kamara	Youth Leader	General Secretary	
5	Nawoh Mansaray	Secret Society	Member	077-349987
6	Mabinty Kamara	Women's Leader	Member	075-385777
7	Isatu S. Bangura	Chair Lady/Trader	Member	077-258160
Portee - Rokupa				
1	Pa Alimamy Bongo	Local Authority	Chairman	076-603796
2	Alimamy N'Peace	Local Authority	Vice Chairman	080-322804
3	Alhaji Fuad Koroma	Imam	Member	
4	Jamiel Conteh	Youth Leader	Member	077-226103
5	Lamin Kargbo	Elder	Member	077-323483
6	Kadiatu Mansaray	Chair Lady	Member	080-066506
7	Chernor Kamara	Trader	Member	088-451479

Source: CEMMAT GRC & CDC Report - Volume No. 1

8.6.4 GRM Monitoring

To ensure smooth operation of GRM, the PMU shall conduct frequent supervisions and monitoring on grievances handling system to ensure the mechanism is functioning and included in regular reporting mechanism. The status of grievances submitted, and grievance redress will be reported by Social Safeguards Specialist to the project management team and World Bank task team during project review meetings and through monthly reports. The grievance process monitoring shall follow the underlisted approach:

- Tracking of complaints registered in the database to monitor complaints.
- Regularly review of feedback, resolved cases, and complaint rends.
- Measuring GRM implementation success based on the following metrics

- Number of complaints/ grievances registered
- Percentage of grievances resolved
- Percentage of grievances redressed within stipulated time or time required to resolve complaints
- Percentage of complainants satisfied with response and grievance redress process
- Percentage of project beneficiaries that have access to GRM

8.6.5 Institutional Arrangement and Capacity Building

GRM Institutional Arrangement

To implement the GRM the PMU Safeguard Specialist is responsible for overseeing and supervising the grievances reporting and GRM database. At subproject level GRC members with the guidance of the Safeguards Specialist through the Supervision Consultant will be responsible for managing the GRM.

GRM Implementation Training for GRC and Stakeholders

Based on the GRM, the Project Staff, contractors, GRC members, project stakeholders and beneficiaries should be trained accordingly. In order to have proper implementation of GRM, first of all GRC members would be familiarized with the best ways of collecting, redressing, and referring of some critical cases to referral points, reporting plus giving feedback in a proper way.

Awareness Trainings of Staff Members

Awareness and training shall be conducted for the RUSLP, Construction Supervision Consultant and Contractor staff which include engineers and M& E staff on procedure and mechanisms of GRM implementation within the neighborhood upgrade project.

8.6.6 Recommendations for Existing GRM

Currently, there is an element of grievance about the representation of the GRC composition across the communities. The following recommendations are made thereof:

- The Project level GRC should be recomposed to reflect relevant parties during project implementation stage.
- A Gender based Violence (GBV) grievance mechanism should be designed for the project in preparation for the project implementation period.
- The mechanism should be updated with Significance Rating Criteria for proper responses alignment and responsible party.
- Step 1 of the GRM process should be revised with a Stakeholder Grievance Log prepared to capture the minimum log in detail to include the following information:
  - Case 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

World Bank Group (WBG) Grievance Redress Service

Communities and individuals who believe that they are adversely affected by a WB supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit, http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service. For information on how to submit complaints to the World Bank Inspection Panel, please visit, www.inspectionpanel.org.

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Annex

Annex

ANNEX 1: ESIA and RAP Terms OF Reference

ESIA Terms of Reference

(I) Non-technical Summary

The non-technical summary will provide a description of the project comprising information on the site, design and size of the project, a description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects, the data required and used to identify and assess the main effects which the project is likely to have on the natural and human environment, and an outline of the main alternatives studied and an indication of the main reasons for this choice, taking into account the environmental and social effects.

(ii) Policy, legal and administrative framework - identify and describe all pertinent legislation, regulations and standards governing the environmental quality, solid waste management, health and safety, protection of sensitive areas, land use control at national and local levels and ecological and socio-economic issues, gender and labour management. This includes national and local policies, legislations World Bank Environmental and Social Framework, World Bank Group Environmental, Health and Safety (EHS) Guidelines and Industry Sector EHS Guidelines for Waste Management Facilities, along with other relevant international environmental agreements and available best practices; identify discrepancies and gaps between national and the World Bank ESF and suggest possible ways of addressing these gaps, as well as the most stringent applicable standards. This section should also include a similar analysis of legislation on labour and working conditions, as well as any regulations on public consultation and dissemination of information;

(iii) Project description – Describe the proposed infrastructure interventions (roads, paths, pedestrian walkways, street and security lighting, sewerage improvement, solid waste management, storm water drainage, water and sanitation systems, electrification, public parks and green space) including locations and distances to “nearest sensitive receptors”, beyond residences, such institutions as schools, hospitals, houses of worship, etc.; scope and activities associated with its construction and operation. In particular, the description shall include: Surrounding topography and land use characteristics layouts, cross-sections, and construction details.

The description shall also include associated facilities like existing borrow pits, quarries and access roads.

(iv) Baseline data – Before collecting baseline data and necessary field surveys it is necessary to conduct an audit of the current situation at the project area of influence {within the neighbourhood (entire community) and out of the neighbourhood (such as, drainage outlets, haulage routes to existing quarries, borrow pits, sand mines etc) then collecting baseline and assessing impacts of the proposed investment. For this, the Consultant is encouraged to coordinate with engineering consultant to collect and share baseline data, whenever possible and relevant, in order to avoid overlap.

Within the baseline analysis specific attention is necessary to clearly identify the project impact area, ancillary and temporary facilities such as construction areas, access roads; collate existing data, evaluate and present baseline data on the relevant environmental and social characteristics of the study area including *a minima* the following headings;

- Climate and Bioclimatic characteristics
- Morphological and Topological characteristics
- Geological and Tectonic characteristics
- Freshwater and Seawater environment
- Air environment (noise and vibration)

- Acoustic environment
- Biotic environment
- Hydrology: hydrological models. Consultant should assess the risks of flooding based on the drain design and capacity.
- Manmade environment
- Socioeconomic environment
- Technical infrastructures
- Existing pressures on the human and natural environment

Additional requirements for baseline data: Baseline data shall cover the entire area of influence of the project for purposes of aesthetic, terrestrial, and atmospheric pollution issues, health as well as the aquifer areas from the upgrades to any down gradient receiving waters (shallow and deep ground waters). These data should also include associated facilities, if any, within the area of influence (viz; existing borrow pits, existing quarries, storage platforms, etc.), community health and safety impacts related to construction machinery and/or other impacts to nearest sensitive receptors that may occur beyond this range where applicable to the specific activity and aspect generating the impact, e.g. ambient air quality. Similarly, when needed, the proposed geographic scoping of the proposed project boundaries should be extended.

The baseline analysis should also include;

- the geological and hydrogeological surveys
- the receiving waters of the discharge from the wastewater. The study should include
- Meteorological data such as wind directions, precipitation and water balance.

The study area will include the transport routes from the beneficiary localities as well as the potential impact on neighboring communities. The baseline should also cover soil conditions, seismicity, vulnerable species, habitat classification, noise and ambient air quality at nearest sensitive receptors, other natural features, as needed.

In terms of biological environment, the baseline analysis should include the following:

- survey of all major terrestrial flora and fauna species;
- collect any information on sensitive habitats in the area and any rare, endangered or commercially important species; and
- Identify any nearby-protected areas.

The data on socio-cultural environment should include the following: community structure including pattern of social interactions, household conditions, social network and support systems, local organizations, community development initiatives, gender dimensions and vulnerability; demographic information of population (i.e., ethnicity, gender, age, education and literacy, religion, poverty ranking etc), inventory of community activities and production systems (e.g., fishing, industry, farming, small businesses etc).; level of income, consumption and expenditure patterns any existing public infrastructure (water, schools, health facilities and energy) and social services (goods and services); and a description of any direct, indirect and induced impacts on livelihoods. Description of past and present use of the surrounding land, including markets, community play grounds, parks and reserved spaces as well as any historical, religious or cultural significance of the area; demographic and livelihood characteristics of the surrounding neighborhoods.

(v) Analysis of social diversity, exclusion and overall gender analysis. Describe the most significant social and cultural features that differentiate social groups in the project area. Describe

their different roles, needs and interests in the project, and their levels of influence. In particular identify the groups or individual or neighborhood who are excluded from basic services, explain any effects or impacts the project may have on groups identified as vulnerable including women, low-income households, persons with disabilities etc. Assessment of GBV related risk factors will be conducted considering GBV context and project related risks. The Consultant shall draw additional information from the project's GBV Action Plan.

(vi) Stakeholder analysis. Identify the various groups who can be directly affected by the project and those that have an interest or a stake in the project. Examine opportunities and conditions for participation by stakeholders – particularly the poor and vulnerable – in the development process (e.g. contributing to project design, implementation and/or monitoring; influencing public choices and decision-making; etc;). Conduct an assessment of potential social conflict/tensions associated with the construction of the various facilities. Propose stakeholder plan to facilitate engagements before, during and after project implementation.;

Note that this activity requires coordination with the engineering consultant, to prevent gaps or overlaps in stakeholder interviews.

(vii) Analysis of alternatives -The consultant shall review feasible alternatives to the proposed project site, technology, design, and operation, including "no project option" - in terms of their potential environmental and social impacts. This analysis should also provide a description of the location alternatives that were considered and the reasons for selecting proposed site.

This section will be informed by the pre-design work conducted in parallel by the engineering consultant.

(viii) Environmental and social impacts – Present a methodology for assessing impacts and that the assessment should assess the significance of impacts. Based on that methodology, determine and quantify where possible the significant positive and negative impacts, direct and indirect impacts, cumulative impacts and immediate and long-term impacts associated with construction and operation; identify those that are unavoidable or irreversible; identify mitigation measures and explore opportunities for environmental and social enhancement and make specific recommendations to be incorporated in the final engineering design. This analysis should cover the potential impacts for full lifecycle of the upgrade investment, including pre-construction, construction and operation phases.

The consideration of potential adverse impacts should include, inter alia:

Environmental impacts including

- Noise and Vibration: Assess noise impacts at the nearest sensitive receptors, applying modelling based on projected emissions from expected sources if needed. Identify areas where noise mitigation measures will be required, with specifying the current level and providing the forecasts for the level of noise and vibration for the post-project period; identify the locations and design for noise mitigation measures and indicate the noise and vibration reduction level against the standards applicable for the project (as per the national regulations);
- Natural Habitats: determine the location of natural habitats in the project area, and assess the natural habitats in terms of their ecological and biological value; determine whether any of those natural habitats can be classified as critical as per the definition of the World Bank ESS 6; identify any potential impacts and mitigation measures to be implemented, including any compensatory measures and those of seasonal character, and arrangements which contractor should have in place to ensure the proper implementation of the mitigation plan; should any vegetation clearance be required in the course of civil works, identify clearly the locations of anticipated vegetation clearance, and propose mitigation and/or compensatory

measures to be implemented; identify any wetlands located in the project area, and define their status as per the ecological value, assess impacts on the wetlands and propose specific mitigation measures to protect;

- Impact on water resources: identify any impacts on the water resources in the project area, and propose adequate mitigation measures and monitoring mechanisms. The ESIA should also, in particular, pay attention to the potential impacts and the consequences to groundwater and receiving surface water;
- Purchase of construction materials and equipment: ensure that potential suppliers possess all relevant licenses and permits, and that the purchased materials meet technical, safety and environmental and social requirements to be specified in Technical Specifications as part of the design;
- Impact on soil: identify any impacts on soil, including those caused by accidental spillage of oils and chemicals, and excavation works; assess results of the hydrological studies undertaken by engineering consultant, and conclude on the feasibility and implications of the proposed construction works; Any additional impact on nearby resident areas (if any). This would include the following issues: (a) impact to neighbourhoods along direct haul routes from increased traffic (primarily noise, dust, litter, odour, and vibrations), and including economic development due to improvements in roadways; (b) estimate impacts to surrounding neighbourhoods from noise, odour, gaseous emissions, dust, air-borne pathogenic micro-organisms; and (c) creation of direct and secondary jobs related to the upgrade development
- Impacts generated by pest management during the construction. This will cover all aspects of chemicals use, including transportation, storage and handling.
- If relevant, based on the project design, other important impacts to be assessed would include waste, works yards , natural hazards, labour influx, air emissions & fugitive dust, nuisance (odor, pests), livelihood impacts to the homeless, where relevant, etc. This section should elaborate, and, if necessary, provide an assessment of potential cumulative impacts.

Social impacts including

- loss of land, assets and livelihoods, change in land use and landscape, social reaction/ tension in relation to land ownership, siting and change in land use

  labour impacts including assessing the different type of workers and estimated number of labour force, risk of labour influx and the nature of potential impact on surrounding communities, assessment of existing labour management practices including child labour and risks that may be specific to female and other vulnerable workers such as persons with disabilities. The consultant will prepare labour management plan to set out the systematic approach to the management of labour issues during construction
- disproportionate impacts on low-income neighborhood, homeless, persons with disabilities impact due to access of existing services and fee payment arrangements.
- examine gender equity in relation to women's voices/rights, decision making in the project design, gender-balanced employment and economic benefits from the construction works, adverse impacts from the project on women and men. The consultant shall develop a mainstreaming strategy that will ensure that the enhancement and protection of women, children and other vulnerable groups need to be identified and considered integral part of facility design.
- assess the potential for the project activities and workers to increase the exposure of young girls and women and children to SEA/SH risks and recommend measures to prevent or

mitigate the risks. In undertaking this task, the firm shall invite the views of NGOs and local community organizations with physical presence in the selected project areas (e.g., women and child advocates, social workers, health teams) and the project GBV action plan to inform project communities about SEA/SH risks, as a part of the stakeholder consultations; understand groups that are most vulnerable to harm and how they currently deal with SEA/SH incidences; inquire about existing channels of reporting SEA/SH complaints and identify if these channels follow a survivor-centered approach (e.g., respect for survivors' choices and confidentiality).

- The consultant shall develop a GBV (SEA/SH) Action Plan as an annex with consideration such as GBV service providers and a clear referral pathway, GBV complaints mechanism, sample SEA/SH code of conduct (CoC) for potential contractor and workers, an accountability Framework that outlines how the PIU/contractor will handle allegations, including related to investigation (in alignment with national processes) and sanctions for potential perpetrators, awareness raising/ training strategy etc.
- Stakeholder analysis - Identify, analyses and map stakeholders to facilitate consultations with such stakeholders and entities, to factor their views, needs and priorities into project design. Conduct extensive and continuous consultations with local women's and disability groups/organizations so that the benefits of the project could be inclusive of them.

The potential impacts must relate to the project cycle, which includes the following:

- Project planning - determination of project site and proposed activities, land acquisition, resettlement of people in the project area, compensation and housing of displaced people, etc.
- Project construction works- land clearing, earth moving, COVID 19 and HIV/AIDS preventive planning, access roads, waste disposal and management systems, drainage systems, dust, loss of scenic values of land scape, threat to cultural and historical sites or artefacts.
- Project operation-generation and removal of waste, emission of pollutants from vehicles, access routes, interaction between migrant workers and local community, accidents, COVID 19, HIV and AIDS, traffic management, etc.
- Project decommissioning- allowing productive use of the land for example works yard, reconstruction of damaged environment including occupational and community safety.

(ix). Analyse and describe occupational and health concerns; describe and analyse all occupational health and safety concerns likely to arise as a result of construction and operations of the proposed project. Critically analyse the impacts of quarries, borrow pits, and make recommendations on corrective and remedial measures to be implemented under the environmental and social management plan. Identification of, and requirements to implement, COVID-19 specific measures will be done in this section.

(**x) GHG emission estimation;** estimate gross GHG emissions resulting from the upgrade and associated facilities based on international accepted methods. The World Bank team will provide assistance on estimating the GHG in particular on identifying the method for estimating the GHG emission. As part of the GHG estimation assignment, the contractor will characterize and estimate sources of and options for reducing the GHG emission. Options for reducing GHG emissions may include alternative project design; alternatives to auxiliary facilities, the reduction of fugitive emissions and gas flaring; carbon sequestration and storage; sustainable waste transport alternatives; and proper waste management practices.

(xi) Environmental and Social Management Plan. develop a comprehensive ESMP that sets up mitigation, monitoring and institutional measures to eliminate, minimize or reduce to acceptable levels of the adverse environmental and social impacts and or minimize socio-economic benefits of

the proposed project. Note that specific attention shall be placed on COVID considerations throughout the document. Additional Guidance may be found in WHO and WBG documentation. The ESMP will also provide a cost outlay for the proposed measures as well as their institutional and financial support mechanisms. Some of these major elements of the ESMP are described further here:

Mitigation plan – identify feasible and cost-effective measures to reduce potentially significant adverse environmental and social impacts to acceptable levels. This also should include identification/assessment of expected residual impacts following application of proposed mitigation measures. Review the institutional capacity to implement, manage and monitor (in the short term as well as in the long-term) the proposed ESMP. Institutional arrangements for the implementation of this plan should be defined including roles and responsibilities of all parties involved in implementation of ESMP, along with the budget estimate, staffing requirements and institutional capacity building if needed. For the operational phase, this section should specify EHS requirements and include a Pest Management Plan that provides the procedures for ensuring the safe handling, storage and use of pesticides. As annexes, the ESMP should include GBV Action Plan, Gender mainstreaming strategy and a Labour Management Plan (LMP).

Monitoring plan – identify and describe the monitoring measures that will be employed to track the effectiveness of the mitigation Plan. Describe environmental and social parameters to be monitored, monitoring methods, sampling locations, frequency, costs, detection limits and thresholds that will signal necessity of corrective actions. Outline monitoring and reporting procedures. Institutional arrangements for the implementation of this plan should be defined. The monitoring plan, in particular has to provide the following: (a) leachate quality and quantity; (b) groundwater quality and level; (c) gas quality on-site and off-site (and utilization, if any); (d) construction-related issues (liner quality, drainage sand, pipes, concrete quality, etc.); (e) use of chemicals for pest management and ensuring safety in this process (f) community health and safety monitoring.

Occupational, health and safety plan - Analyze and describe occupational and health concerns, per the WBG EHS General Guidelines, based on findings from (ix) above, and make adequate recommendations on preventative, protective, corrective and remedial measures to be implemented in the work environment, including COVID – related measures.

Implementation schedule and cost estimates – for (a) and (b) above, provide an implementation schedule and a cost estimate (including the source of funding) and show the integration of these elements with overall project financial plans.

Resettlement Action Plans (RAP) Terms of Reference

Activities of the sub component shall be implemented in line with the Environmental and Social Standard on Land Acquisition, Restrictions on Land Use and Involuntary Resettlement, ESS 5 of the World Bank and relevant national laws and regulations. The objective is to ensure that;

- Activities leading to land acquisition and resettlement should be avoided where feasible, or minimized, exploring all viable alternative subproject designs;
- Where it is not feasible to avoid land acquisition and resettlement, activities of land acquisition and resettlement should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the project affected persons (PAPs) to share the subproject benefits.
- The PAPs should be meaningfully consulted and should have opportunities to participate in planning and implementing the land acquisition and resettlement programs.
- PAPs should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-land acquisition and resettlement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.

The RAP should be developed as a standalone document and should include livelihood restoration enhancement measures, which will enable;

the adverse impacts resulting from physical and or economic displacement being adequately mitigated and the livelihoods of PAPs are restored. The RAP will include detailed information on PAPs whose livelihoods are likely to be adversely affected by the project activities.

The Consultants will be required to develop a separate RAP for each neighborhood (Coconut Farm, Moyiba/Mamba Ridge and Portee/Rokupa) in line with the principles, procedures and processes outlined in the RUSLP RPF using the most recent and accurate information on: (i) the proposed resettlement and its impacts on displaced persons and other adversely affected groups; and (ii) legal issues affecting resettlement. The RAPs will cover elements that are specific to the selected locations as described in the project document.

The RAP shall cover the following key areas. Other areas considered relevant may be considered by the consulting firm so far as they add value to the outlined areas below: Project Description

(i) Potential Resettlement Impacts

(ii) Objectives of the resettlement program

(iii) Census survey and baseline socio-economic studies

(iv) Legal framework covering the scope of resettlement

(v) Institutional Framework covering the scope of resettlement

(vi) Eligibility: Definition of displaced persons and criteria for determining their eligibility for compensation and other resettlement assistance, including relevant cut-off dates.

(vii) Valuation Method and compensation for losses.

(viii) Stakeholder engagement and community participation

(ix) Implementation Schedule

(x) Costs and budget

(xi) Grievance Redress Mechanisms

(xii) Monitoring and evaluation Arrangements

For the purposes of potential physical displacement in the slum communities, the RAP will include additional planning and livelihood restoration measures. Transitional assistance for household members and their possessions during relocation, alternative temporal relocation sites or arrangements, Consideration for livelihood and economic enhancement opportunities.

(xiii) Grievance Redress Mechanism. Assess the current project GRM and other existing formal and informal grievance mechanisms in the project areas and provide description and recommendations for Grievance Redress. Identify and describe the roles of institutions that will be responsible for establishing and maintaining a grievance redress mechanism for grievances that may arise from members of the communities who are dissatisfied with the project activities.

(xiv) ESIA and ESMP disclosure and public consultation - For projects of such complexity, the borrower should consult affected population, stakeholders, NGOs and other interested groups at least twice: (a) shortly after environmental and social screening and disclose the terms of reference for the ESIA and (b) once a draft ESIA, RAP report and ESMP are prepared. Stakeholder consultation should be conducted on the basis of the national and World Bank consultation guidelines during pandemic. Disclosure and consultations should be carried out in compliance with the requirements of the World Bank policy ESS 1, ESS 10 and WB Policy on Access to Information,

After public consultation the consultant should revise the ESIA, ESMP and RAP taking into account inputs from the consultations as appropriate, or provide justification if certain issues are not taken into account. Project proponent should make the final versions of the documents publicly available.

(xv) Appendices – (a) supporting tables, maps, sketches, calculations etc.; (b) list of documents and reports consulted during preparation of ESIA; (c) reports on public consultation meetings; and, (d) references.

4.3.4 Community Facilitation and Planning

The ESIA study should provide guidance on the issues to consider when planning and designing community engagement. It should focus on quality and effectiveness, process planning and designing engagement tailored to the particular issue, level of participation to be achieved, timeframe and range of stakeholders affected.
The community engagement process must address the following questions and issues;

- What level of participation is it hoped will be achieved?
- How to identify the stakeholders?
- Communications methods.
- Stages of the engagement process.
- Resources
- Highlight limitations
- Timely feedback and next steps
- Tools to help choose a method

Public consultations should be carried out throughout the course of the assignment. The consultations between the consultant and the beneficiary communities should be documented in the Community Consultations Report. These consultations are key to the overall planning process, as they provide the consultant with an opportunity to hear directly from residents of the neighbourhoods of their priorities for infrastructure investments and to better understand the reasons behind these choices. The consultations are also important because it provides the consultant the opportunity to share technical knowledge with the communities and guide their choices (without shifting the underlying justification for their choice) and explaining the environmental and social implications of each infrastructure selected. For example, if the consultant found that in one settlement flooding is a major problem but the community seemed to be prioritizing sewerage over storm water drainage. The consultant should enlighten the community that sewerage is for wastewater at the household level – and storm water drainage is for rainwater. Following this explanation, the community then decided to shift its priority from sewerage to storm water drainage.

This back-and-forth exchange between the consultant and beneficiary communities is an important part of the participatory planning process and staff of the PMU and Freetown City Council must always be present in such engagements.

Engagement and Communication Methods

In line with local governance structure, the most organize unit at each ward is the Ward Development Committee (WDC), therefore these committees have been heavily relied on by a lot of projects to mobilize as many residents of the beneficiary settlements as possible for engagement meetings. However, for the purpose of this study, the ESIA consultants is required to identify other existing community structures and communication methods which will be more effective in reaching

a wide network of residents within the shortest notice and to avoid potential gatekeeping by the powerful WDC members.

Community-wide engagement meetings should be organized in each of the three settlements at the beginning of the socio-economic data collection in order to present the project, explain the data collection process and to answer initial questions.

By the end of stage 1 of the feasibility studies and design assignment, both the design and ESIA consultants should hold different consultations in each of the three settlements to discuss their infrastructure priorities in detail with the ESIA consultant's input in highlighting the environmental and social implications of each selected investment activity. The design consultant to prepare would use the information from these consultations;

- the initial design briefs
- the preliminary Community Upgrade Plans (CUPs)
- determine implementation arrangements
- Prepare preliminary engineering designs and draft bid documents.

The design consultant to prepare would use the information from the other rounds of consultations by both consultants;

- prepare Final Community Upgrading Plans
- detailed engineering designs
- Contract packaging and bidding documents for each of the three selected communities.

Finally, the preparation of the Resettlement Action Plan (with livelihood enhancement measures) should be carried out for each settlement, through the organisation of community consultations, which had the aim of:

- assessment of project impacts;
- resettlement strategy if any needed;
- compensation rates and eligibility for entitlements if any;
- choice of resettlement site and timing of relocation;
- development opportunities and initiatives;
- development of procedures for redressing grievances and resolving disputes; and
- Mechanisms for monitoring and evaluation and for implementing corrective actions.

This process is fully documented in the RAP report, which is presented in addition to the ESIA report.

ANNEX 2: ESIA Methodology

The approach followed for conducting ESIA study

The ESIA was executed to identify the environmental and social issues arising out of the current practices adopted for planning, design, construction, and the environmental and social conditions within the project proposed footprint area were assessed adopting the procedure outlined in ESMF. During the visits, consultations through group discussions with local communities' leaders, road users and community resident members were engaged to understand their perceptions and needs. A standard methodology in line with those in ESMF was adopted for fulfilling the ESIA requirements; key features/tasks of the methodology are detailed as follows:

Task 1: Literature Review

Relevant literature involved review of studies and reports concerning the proposed project which includes:

- The Sierra Leone District Development Factsheet (Government of Sierra Leone, 2019)
- 2015 Population and Housing Census (Statistics Sierra Leone, 2016)
- Sierra Leone's Medium-Term National Development Plan (GoSL, 2019)
- Mid Term Population and Housing Census (Statistics Sierra Leone, 2021)
- Resettlement Policy Framework (RPF),
- Environment and Social Management Framework (ESMF),
- Stakeholders Engagement Framework (SEP),
- Labour Management Framework (LMF).
- Community Upgrade Plan (CUP),
- Environment Assessment Scoping Report, and
- Environmental and Social Impact Assessment (ESIA) Report,

Task 2: Field Reconnaissance Survey and Review of Earlier Studies

The field reconnaissance surveys / walk through surveys has been carried out using structured formats for data collection. Reconnaissance field visit was initially carried out during the project scoping from May 4 – 6, 2023 by a team comprising representatives of Citseo/Dalan; (the Soil, Air Quality & Noise, and Land Use/GIS Consultants); and the representatives of the Proponent, and the FCC, local representative. The team first visited the three communities to explain the need for the proposed ESIA and requested for their cooperation. During the visit, arrangements was made for local hands (field guides and assistants) to support each of the thematic group during the detailed field investigation. Meetings were held with several stakeholders (the community leaders, women leaders and youth representatives) wherein details of the proposed ESIA were carefully explained before the actual field investigations and sampling started.

Task 3: Review and Assessment of Applicable Environmental and Social Regulations

Various rules/regulations and guidelines applicable to the project. The review covered relevant national policies, legislations pertaining to land acquisition, displacement and compensation as well as the World Bank Environment and Social Standards (ESS).

Task 4: Delineation of Study Area for Assessment

While the neighborhood upgrade project comprise various subprojects with various area of influence area due to nature and footprint size. The ESIA study has considered two critical impact zones, namely;

- **Core Impact Zone**

This include the area immediately bordering each subproject footprint areas. This depends on the type of subprojects and therefore differs from subproject to another. For the road and drainage project the core impact zone can spin to 500m while the construction zone can be within 15m from the centerline of the road.

- **Zone of Influence**

The zone of influence includes the wider geographical areas of the subprojects in this case Moyiba, Coconut Farm and Portee - Rukupa communities. Given the extent of the proposed activities for the neighbouhood upgrade project, there will be less to no negative social and environmental impacts on the zone of influence.

Task 5: Assessment of Baseline Environmental and Social Conditions

The information source is based on a combination of literature review, field studies, and laboratory analyses. The literature review encompassed background information on the climatic condition of the area including recent environmental and socioeconomic studies around the project area. Literature was sourced from the project proponent, Sierra Leone Meteorological Agency and other reports submitted to EPA. Additional data sources include published articles in journals, gazettes, and technical reports, maps, internet amongst others.

Detailed field investigation was conducted from May 28 - June 4, 2023 to characterize relevant parameters of the environments within the project area in order to provide an analytical basis for the impact assessment (IA). The data acquired during the field investigation was used to emphasize the environmental and social parameters that are of particular significance to the subprojects potential impacts.

Field sampling efforts covered the three Communities. The field survey conducted covers ground and surface water, air quality, noise levels, soil, and socioeconomic assessment including land use.

All sample containers requiring preservatives were pre-preserved from the laboratory. Samples collected on the field were transported under standard preservation methods to the laboratory by applying adequate QA/QC measures following the corresponding standard operating procedure (SOP) for sampling, handling and analyzing each environmental media.

Field Sampling Methods

Air Quality

Gravimetric approach was employed for the study to assess particulates by using Leland Legacy Active Sampling Pumps (SKC Inc, USA) with mass transfer flow of 10 L/min that was battery operated for 10 hours on a Glass Fiber Filter 47mm in diameter (Advantec Japan). Pre-weighted filters including field blanks were determined and applied for the sampling. The HoldPeak 5800F PM2.5/PM10 formaldehyde monitor was used during the assessment as well. The monitor has a resolution of 1µg/m3 with a recording range of 1µg/m^3 to 999 µg/m^3 with a minute-by-minute reading potential. This process was done each time a set of measurement was made each day. The Drager X- am 5000 (www.drager.com) was used for monitoring NO_2, SO_2 and CO (Ribble -Enviro Ltd UK).

Quality assurance approaches were observed to ensure that data collected were representative of the location. Field blank filters were taken for correction during the gravimetric mass determination. Prior to the commencement of monitoring each time, the HoldPeak 5800F was calibrated with TES 5322 Air Quality Monitor for PM2.5 by observing parallel readings which did not drift. The zero-point accuracy of the gaseous sensors was reached by carrying out the fresh air calibration in an area away from the monitoring location using the calibration procedure of Drager XAM 5000 each time measurement was made to correct instrument drift.

Noise Level

Noise assessment was carried out at the communities of Moyiba, Coconut Farm and Rokupa using a TekcoPlus Datalogging Sound Pressure Level Meter from May 28 – June 4, 2023. The daytime (at least 8 hours) period sound level was carried continuously over the monitoring period at different locations. The coordinates of all noise sampling points were the same with the air quality sampling points. The values obtained were compared with the WBG EHSG and SLSB standards for daytime noise levels in residential areas.

Soil

Soil sampling was carried out within different soil habitats encountered at each of the three communities from May 24 – June 5, 2023. The coordinates of the sampling location for each community are presented in Table 4.1. In-situ observations of changes in natural vegetation were made to determine the different soil forms. Composite soil samples were collected at soil depth from 0-20cm, 20-50 cm and thoroughly mixed to provide a laboratory test sample. The samples were packaged and sent to the Sierra Leone Agricultural Institute (SLARI) Laboratory for testing.

Surface Water and Groundwater Quality

The water quality assessment was carried out at Moyiba, Coconut Farm and Rokupa from May 25 – June 4, 2023. Surface water samples were collected at different locations upstream and downstream of streams encountered and groundwater samples were collected from hand-dug wells within the communities. The coordinates of the sample collected is presented in Table 4.1. The monitoring locations were established based on their relative proximity to the households their usage by residents of the communities. In-situ water quality monitoring was undertaken Hach portable field meters for Temperature, Dissolved Oxygen (DO), pH, Electrical Conductivity (EC), Total Dissolved Solids (TDS), Turbidity and Salinity. Visual observations of the water colour and activities within and around these water points were undertaken. Bacteriology samples collection kit was autoclaved at 121oC for 15 mins and then transported in sterile containers to the field. The Samples were collected ad transported to the laboratory for analysis.

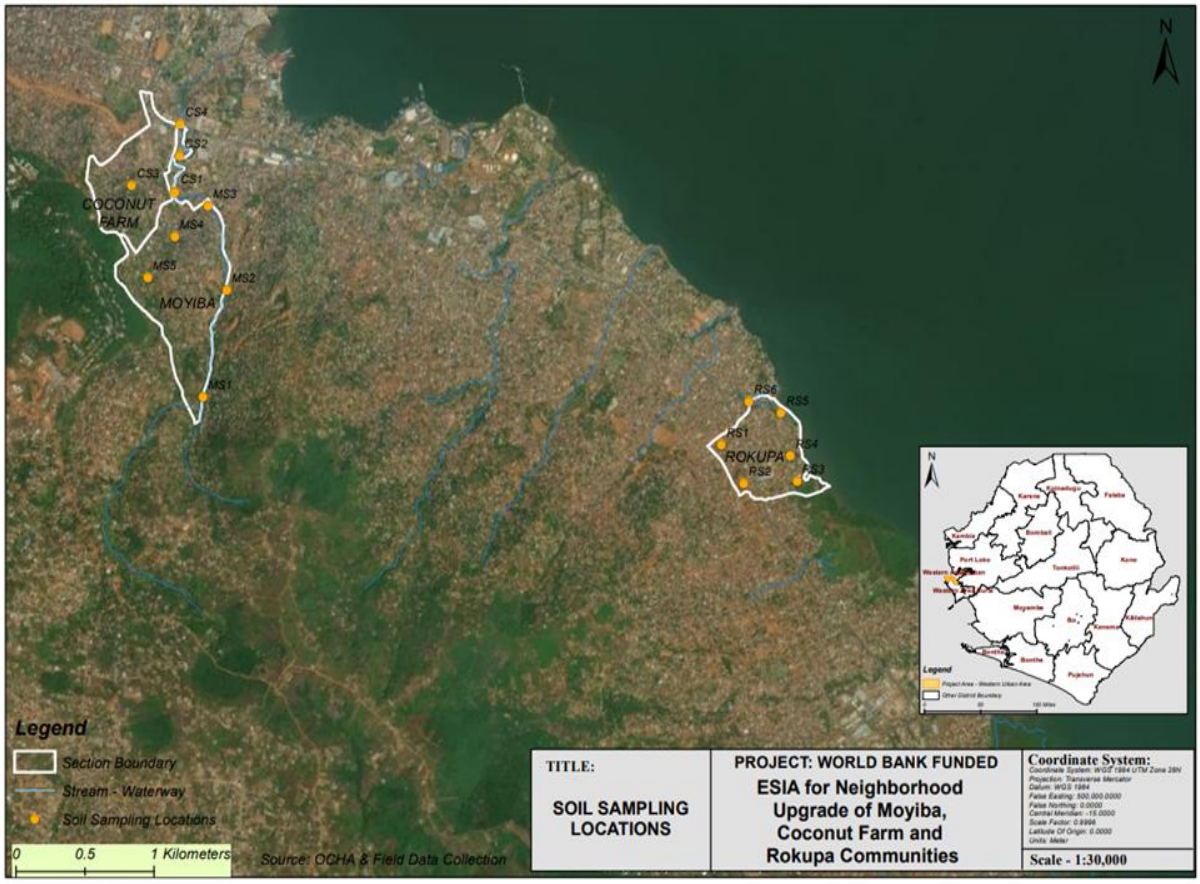
Vegetation

At each sampling point, the floral diversity and population density of key economic species composition were obtained using 50 m transects and 10 m quadrats as much as practicable within the assessed project footprint AoI across the 3 communities. Where counting of individual species was not possible, such as where creeping plants were present, cover was measured using the Braun-Blanquet scale (Sutherland, 2006). Rare, exotic, invasive and endangered species were listed. Samples of plants that could not be identified in the field were collected, pressed and carried to the herbarium for further identification. The health status of the vegetation was visually determined.

Air Quality, Noise Level and Soil Sampling Points

Air Quality/Noise Level			Soil Quality		
Code	**Easting**	**Northing**	**Code**	**Easting**	**Northing**
Moyiba					
MNM1	696777	936753	MS1	697223	936046
MNM2	697378	936166	MS2	697394	936789
MNM3	697527	936881	MS3	697259	937367
MNM4	698144	937341	MS4	697785	936573
MNM5	697296	937420	MS5	696821	936875
Coconut Farm					
CNM1	696640	937238	CS1	697021	937467
CNM2	696759	937612	CS2	697051	937713
CNM3	696849	938002	CS3	696705	937509
			CS4	697056	937937
Rokupa					
RNM1	700956	935664	RS1	700977	935720
RNM2	701369	935591	RS2	701138	935455

RNM3	701340	935988	RS3	701525	935469
RNM4	700856	935663	RS4	701477	935644
			RS5	701410	935940
			RS6	701177	936017



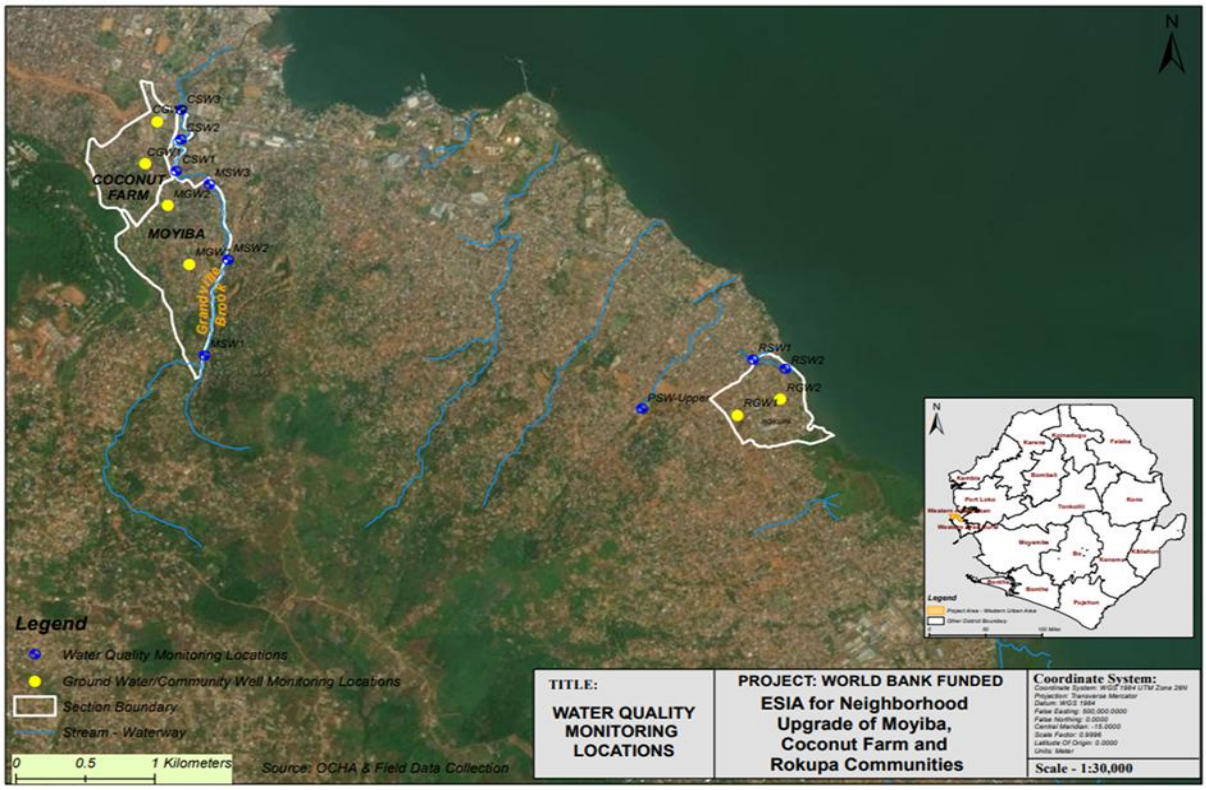


Figure 8.4: Water Quality Sampling Location

Figure 8.5: Water Quality Sampling Location

Figure 8.7: Air Quality and Noise Sampling Points

Plate 1: Coconut Farm Air Quality and Noise Level MeasurementFigure 8.8: Air Quality and Noise Sampling Points

Task 5: Public Consultations/ Focus Group Discussions

A site visit was conducted by various social experts in May/June 2023 and July 2024, to verify information obtained through literature reviews and collect primary data for this report. During these visits, the following activities were undertaken:

- Consultative meetings with local community authorities
- Focus group discussions
- Household surveys

To cover a wide range of stakeholders in the study area, one-on-one interaction with potential affected people during social survey, meetings were conducted at selected places with women groups, men and road users to understand the people‟s perception about the project as well as their issues and concerns. Overall project features, social safeguards, issues related to women's safety and security, environmental and social safeguards, and enhancement measures would be implemented in the project like providing noise barrier, road safety measures etc. were also discussed with the public.

Consultative Meetings

Consultative meetings were held with local community Chiefs and elders, including women and youths, to inform them about the project, as well as Consultant's planned activities in the three project area communities. The consultative meetings also served as opportunities to hear their views on the project. The Consultant's representative presented the background of the project and described the purpose of the team's visit as part of the ESIA process, informing that team members would be working in the three communities collecting environmental and socio-economic data. This provided an opportunity to learn and share the salient information about the proposed project. In addition, the team obtained important socio-economic secondary data about the project area. This was followed by open, semi structured discussions. It should be noted that separate teams were raised to facilitate consultations with each target group simultaneously as highlighted in Table 4.3.

Table 8.12: Details of Consultations held with Community Authorities/Stakeholders

Stakeholder Consultations	Details and Time	Meeting Venue
ESIA Scoping Phase		
Coconut Farm	19th May, 2023. Time: from 11am to 12 pm Target Participants: Local authorities No. of Participant 15 (Male = 10 , Female = 5)	Coconut Farm, Chairman's Residence
Rokupa/Portee	21st May, 2023 Time: from 10am to 12 pm Target Participants: Local Authorities, Youth, Women, Traders, Fisherfolks No. of Participant 20 (Male = 13, Female = 7)	Rokupa Community Health Center
Moyiba	21st May, 2023 Time: from 10am to 12 pm Target Participants: Local Authorities, Youth, Women, Traders, Sand miners No. of Participant 20 (Male = 12, Female = 8)	Load man Center
Baseline Study		
Rokupa/Portee	20th June, 2023 Time: from 11am to 12 pm Target Participants: Local authorities No. of Participant 9 (Male = 7 , Female = 2)	Rokupa Community Health Center

Stakeholder Consultations	Details and Time	Meeting Venue
Rokupa/Portee	20th June, 2023 Time: from 11am to 12 pm Target Participants: Youth, Women, Traders, Fisherfolks No. of Participant 20 (Male = 9 , Female = 11)	Rokupa Community Health Center
Moyiba	20th June, 2023 Time: from 11am to 12 pm Target Participants: Local authorities No. of Participant 9 (Male = 5 , Female = 4)	Load Man Center
Moyiba	20th June, 2023 Time: from 11am to 12 pm Target Participants: Youth, Women, Traders, Stone miners No. of Participant 12 (Male = 5 , Female = 7)	Load Man Center
Coconut Farm (Baseline Study)	20th June, 2023 Time: from 11am to 12 pm Target Participants: Local authorities No. of Participant 9 (Male = 6 , Female = 3)	Coconut Farm
Coconut Farm	25th June, 2023 Time: from 11am to 12 pm Target Participants: Youth, Women, Traders, Stone miners No. of Participant 12 (Male = 6 , Female = 6)	Coconut Farm

Focus Group Discussions

Focus Group Discussions were held in each of the communities to solicit local socioeconomic information, as well as participants' views and perspectives on the proposed project. FGDs were held with men, women and youth in each of the communities with a total of 122 participants (Male = 71, Female = 51). Participants were also allowed to ask questions and/or comment on the project.

Task 6: Prediction of Environmental and Social Impacts

The task identified likely impacts that would arise due to the construction of NUP subprojects, through changes in the physical, biological or socio-economic environment. The assessment considered both positive and negative impacts at different stages of project implementation, i.e. pre-construction, construction and operation stages.

Task 7: Preparation of Environment and Social Management Plan (ESMP)

A comprehensive Environmental and Social Management Plan (ESMP) is prepared which included mitigation measures for all the negative impacts of NUP and enhancement measures for positive impacts across all project execution phases.

Task 8: Preparation of Resettlement Action Plan (RAP)

Based on the impacts a suitable RAP will be prepared to specify the procedures it will follow and the actions it will take to suitably resettle/compensate affected people as presented in the ToR (Annex 1). The objective of the RAP is to assist the affected people in their efforts to improve their living standards or at least regain their living standards to their pre-displacement levels.

Task 9: Preparation of Environmental and Social Management Budget

Based on the impact assessment for the environmental and social components, budget has been estimated to compensate for the temporary and permanent impacts that are likely during the project implementation that also include mitigation and management cost. As part of the project implementation monitoring, budgetary provision has been allotted for RP implementation and environmental and social monitoring.

Task 10: Environmental and Social Safeguard Clauses in the Bid Document

As presented in Annex 16, suitable safeguard clauses have been prepared based on the ESIA, the prepared clauses shall form part of the bid document either in the General condition or Specific conditions of the contract agreement/ bid document. The prepared ESMP shall also be part of the bid document.

ANNEX 3: ESIA Report Outline

Executive Summary

- Concisely discusses significant findings and recommended actions.

Introduction

- Provides the introduction and background of the Project, introduces the purpose of the ESIA Scoping Report, Proponent and Environmental and social Practitioner.

Legal and Institutional Framework

- Analyzes the legal and institutional framework for the project, within which the environmental and social assessment is carried out, including the issues set out in ESS1, paragraph 26.
- Compares the Borrower's existing environmental and social framework and the ESSs and identify the gaps between them.
- Identifies and assesses the environmental and social requirements of any cofinanciers.

Project Description

- Concisely describes the proposed project and its geographic, environmental, social, and temporal context, including any offsite investments that may be required (e.g., dedicated pipelines, access roads, power supply, water supply, housing, and raw material and product storage facilities), as well as the project's primary suppliers.
- Through consideration of the details of the project, indicates the need for any plan to meet the requirements of ESS 1 through 10.
- Includes a map of sufficient detail, showing the project site and the area that may be affected by the project's direct, indirect, and cumulative impacts.

Baseline Data

- Sets out in detail the baseline data that is relevant to decisions about project location, design, operation, or mitigation measures. This should include a discussion of the accuracy, reliability, and sources of the data as well as information about dates surrounding project identification, planning and implementation.
- Identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions.
- Based on current information, assesses the scope of the area to be studied and describes relevant physical, biological, demographic, and socioeconomic conditions, including any changes anticipated before the project commences.
- Takes into account current and proposed development activities within the project area but not directly connected to the project.
- Provides detail on stakeholder engagement conducted.

Environmental and Social Risks and Impacts

- Takes into account all relevant environmental and social risks and impacts of the project. This will include the environmental and social risks and impacts specifically identified in ESS2 – 8,

and any other environmental and social risks and impacts arising as a consequence of the specific nature and context of the project, including the risks and impacts identified in ESS1

Mitigation Measures

- Identifies mitigation measures and significant residual negative impacts that cannot be mitigated and, to the extent possible, assesses the acceptability of those residual negative impacts.
- Identifies differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable.
- Assesses the feasibility of mitigating the environmental and social impacts; the capital and recurrent costs of proposed mitigation measures, and their suitability under local conditions; the institutional, training, and monitoring requirements for the proposed mitigation measures.
- Specifies issues that do not require further attention, providing the basis for this determination.

Analysis of Alternatives

- Systematically compares feasible alternatives to the proposed project site, technology, design, and operation -including the "without project" situation- in terms of their potential environmental and social impacts.
- Assesses the alternatives' feasibility of mitigating the environmental and social impacts; the capital and recurrent costs of alternative mitigation measures, and their suitability under local conditions; the institutional, training, and monitoring requirements for the alternative mitigation measures.
- For each of the alternatives, quantifies the environmental and social impacts to the extent possible, and attaches economic values where feasible.

Design Measures

- Sets out the basis for selecting the particular project design proposed and specifies the applicable EHSGs or if the ESHGs are determined to be inapplicable, justifies recommended emission levels and approaches to pollution prevention and abatement that are consistent with GIIP.

Environmental and Social Management Plan (ESMP)

Appendices

- List of the individuals or organizations that prepared or contributed to the environmental and social assessment.
- References-setting out the written materials both published and unpublished, that have been used.
- Record of meetings, consultations and surveys with stakeholders, including those with affected people and other interested parties. The record specifies the means of such stakeholder engagement that were used to obtain the views of affected people and other interested parties.
- Tables presenting the relevant data referred to or summarized in the main text.
- List of associated reports or plans.

ANNEX 3: Stakeholder Identification and Analysis

Stakeholder group	Interest in the project	Level	Influence of Stakeholder	Importance of Stakeholder
GOSL Ministries	About compliance on national regulations	Central government	Very Influential	Very Important
International financial institution	Shares and Profit	Donor agencies.	Very Influential	Very Important
NGOs	Collaboration for project implementation	• Non-governmental organisations • Neutral and non-political • Development oriented • Civil society entities.	Moderate Influence	Moderate Importance
Local Government	About compliance on law government regulations	• Local government structure.	Moderate Influence	Moderate Importance
MPs	About compliance on national regulations	• Members of parliament	Significant Influence	Significant Importance
Sub-chiefs	Local administration	• In-charge in Community • Landowners.	Significant Influence	Significant Importance
CBOs Women's groups • Youth groups • Potential for others (disability groups)	Development and empowerment		Some Influence	Moderate Importance
Religious leaders	Opinion leaders	Religious institutions	Little/No Influence	Little/No Importance
Youth	Development and employment	Community level	Moderate Influence	Significant Importance
The Aged	Empowerment	Community level	Little/No Influence	Little/No Importance
Women	Empowerment	Community level	Little/No Influence	Little/No Importance
Traditional Societies • Bondo society heads • Men's society heads	Support and continuation of practice	Community level	Some Influence	Moderate Importance
Traders Union	Collaboration	Community Level	Little/No Influence	Little/No Importance
Motor Drivers union	Collaboration	Community Level	Little/No Influence	Little/No Importance

A.01. Stakeholder Consultation - Rokupa

Generic Questions - ESIA for Proposed Upgrade (Moyiba, Coconut Farm, and Rokupa)

PROFILE AND TOPIC GUIDE / RESPONSE SHEET – GROUP DISCUSSIONS

Scoping Socio economic Checklist

Participant Information Form -

The following information is to be completed by the facilitator before each engagement with group of community leaders
DATE 04.05.23 .....

Community Name -_**ROKUPA**_____

1. Demographic information_____

To be completed privately upon enrolment into study and kept separate from all tape recordings, notes and transcriptions)

No.	Respondent initials	Gender (M/F)	Age (Years)	Relationship status	Employment	Religion	Highest level of Education Completed	Position in Community	Consent to take part (YES/NO)	Consent to Record (YES/NO)	Disability Status	Received T/port ALLOWANCE
1	A.B.B.	M	56	M	0	2	O	Chief	Yes	Yes	No	Yes
2	A.P.K.	M	50	M	0	2	B	Chief	Yes	Yes	No	Yes
3	I.K.	F	43	W	0	2	B	Chairlady	Yes	Yes	No	Yes
4	I.F.	M	75	M	0	2	A	Adviser 1	Yes	Yes	No	Yes
5	G.C.	M	53	M	0	2	O	Organizer	Yes	Yes	No	Yes
6	M.B.K.	M	66	M	0	2	C	Adviser 2	Yes	Yes	No	Yes
7	L.K.	M	67	M	0	2	A	Master	Yes	Yes	No	Yes
8	Z.S.B.	F	29	S	0	2	D	Teacher	Yes	Yes	No	Yes
9	M.K.	M	48	M	0	2	O		Yes	Yes	No	Yes
10	P.C.	F	31	S	0	2	O	Physically challenged female head	Yes	Yes	Yes	Yes
11	A.S.	M	40	M	0	2	A		Yes	Yes	No	Yes

KEY

Relationship status	Employment	Highest Level Education Completed	Religion	Reference number
S = Single C = Cohabiting M = Married W = Widowed O = Other_____ specify	0 = Unemployed, not working 1 = Professional/ technical/managerial 2 = Clerical 3 = Sales and services 4 = Skilled manual 5 = Unskilled manual 6 = Domestic service, paid 7 = Agriculture 8 = Other (specify) _____	O = None A = Started primary but did not complete B = Completedprimary C = Completed secondary D = Completed Tertiary E = Other (specify) _____ (eg. Vocational training, Qu'ranic, adult literacy)	1 = Christianity 2 = Islam 3 = Other (specify) _____ _____	Each focus group will be assigned a unique number

Present at the meeting were11 key stakeholder from the Rokupa community as shown in the Demographic information above.

After the opening courtesies of Muslim and Christian prayers and self-introductions, the head of the Dalan Social team informed participants that the meeting had been called to inform stakeholders that the Government of Sierra Leone through the World Bank has secure funds for the upgrade of three communities, these communities are Moyiba, Coconut farm and Rokupa. The proponent of the project is the Resilient Urban Sierra Leone Project (RUSLP) of the Ministry of Finance, Government of Sierra Leone. The proposed neighborhood upgrade of Moyiba, Coconut farm and Rokupa communities will support the comprehensive upgrading and flood risk mitigation in these neighborhoods. The project will promote better integration of these neighborhoods into the urban fabric and ensure that all the infrastructure investments that would be carried out will improve mobility and access to basic services to excluded groups such as persons with disabilities, the elderly, children, and women.

The social consultant continued that another important aspect of the project is the preparation of a Resettlement Action Plan (RAP). The purpose of a resettlement action plan is to specify all resettlement arrangements and the measures for avoiding, minimizing or compensating losses or other negative social impacts resulting from resettlement.

According to the laws of Sierra Leone, the project proponent must first conduct an ESIA Study before they can be given a licence to commence the construction project. Consequently, DALAN had been contracted to carry out an ESIA Study of the project areas which involves consultations with stakeholders and project affected persons in order to elicit information from the people on various matters associated with their socio-economic status and living conditions. Accordingly, DALAN team is in their community for a scoping visit to carry out a Social Impact Assessment of their community which involves the conduct of a Focus Group Discussion Meeting with key stakeholders in the affected communities.

Statement by the Community Chief of Rokupa (Chief Pa Alimamy Bongo Bangura)

The Chief of Rokupa Community (**Chief Pa Alimamy Bongo Bangura**) thanked the DALAN Team for the opportunity given to them as stakeholders to add their voice to the project. He, expressed optimism that their community will be finally selected for such proposed upgrade, as their community people has suffered a lot for certain basic amenities like pipe borne water, toilet facility, drainage, road to name but a few.

However, the women Leader of Rokupa Community was not convinced that the proposed project will come to fruition, as she mentioned that many organizations including NGOs have visited their community and promised providing some form of assistance in but has never come to actualization after they had collected information/data from them.

The chief however assured that, that will not deter them in giving the necessary support and corporation to any organization that comes to their community with the aim of upgrading their community and their livelihood, as they have suffered for far too long and feel neglected and abandoned by the central government.

They therefore promised their support and corporation in providing the necessary information needed so that their community can be finally selected for the proposed upgrade.

Following these remarks, the meeting went into an open forum in which DALAN Team asked stakeholders prepared set of questions on their perceptions and concerns about the proposed neighborhood upgrade project. The answers given by the participants were documented by DALAN staff and formed the basis of this minutes.

Group Discussion Checklist (Community Chiefs, Youth leader, Women's Leader and Fishermen rep)

Checklist Question	Response(s)
Are you aware of the community upgrade project?	Yes we are aware of the project
What are your thought on the proposed project in your community?	Participants welcomed the project and hoped that its starts as soon as possible
What is the approximate number of houses in your community?	1,500 (One thousand five hundred)
What are the housing types (e.g. Number of storey buildings, one flat, pan body etc)	• Six-storey • Five-storey • Four-storey • Pan body • Handmade Mud brick • Mud Houses plastered with cement
On average, how many people live in a house in the community?	12 (twelve)
What is the main source of income for most residence in the community	• Fishing • Petty Trading
What is the main source of water in the community (pipe borne water, public wells, private wells, water tanks etc)	• Packet water (grafton) • Private hand dug water wells
How many educational institutions are there in your community (number and names of primary, JSS, SSS and Tech Voc institutions)	• Primary – 11: Lonpthy, SLMB-Portee, Church of God, Pentecost, Rokupa Wharf, Salafia, Genesis, Mission, Sewa, Congress, Cecilia • Secondary – 2: Genesis, Rahim • Tech Voc Institutions – None

What are the main community infrastructure in your community (Eg. Market,public toilet, community football field etc)	• Market • Approved Field
How many health centre are there in your community (names and location)	• 1(one): ✓ Rokupa Government Hospital - Satellite (Bai Bureh Road)
Has many entertainment centres are there in your community?	• 2 (two) ✓ Backa Yard ✓ Solar City ✓ Worldwide, ✓ Plax
What are the most common diseases in your community (children, Adults)?	Children: ✓ Measles ✓ Cold ✓ Malaria Adults: ✓ Malaria ✓ Typhoid ✓ Cholera
How can you describe the security situation in your community?	• Not Good at night ✓ Phone snatching during late hours ✓ Bag snatching from women during early hours when going to buy goods from the market
Are there any cultural and/or archaeological properties in your community, locations and use of them?	• Ojeh (initiation of men) • Bondo (for female genital mutilation)

Questions from stakeholder and responses from Consultant

Questions from Stakeholders	**Response(s) By DALAN Social Consultant**
How many people will the proposed project employ from this community	We do not know at this stage.
After the project had been implemented, will flooding stop in the community?	Flooding will either stop or be greatly minimized
Are people going to be resettled?	Feasibility studies is ongoing, the study will inform us of any resettlement
Will affected structures be compensated for?	Every structure that will be impacted by the project will be compensated for at present market value.

Stakeholder Engagement; Coconut Farm

Generic Questions: ESIA for Proposed Upgrade (Moyiba, Coconut Farm, and Rokupa)

PROFILE AND TOPIC GUIDE /RESPONSE SHEET – GROUP DISCUSSIONS

Scoping Socio economic Checklist

Participant Information Form -

The following information is to be completed by the facilitator before each engagement with group of community leaders

STAKEHOLDER

DATE 06.05.23 ……

Community Name -_COCONUT FARM_____

1. **Demographic** information_____

To be completed privately upon enrolment into study and kept separate from all tape recordings, notes and transcriptions)

No.	Respondent initials	Gender (M/F)	Age (Years)	**Relationship status**	**Employment**	**Religion**	Highest level of Education Completed	**Position in Community**	**Consent to take part (YES/NO)**	**Consent to Record (YES/NO)**	**Disability Status**	**Received T/port ALLOWANCE**
1	Y. K.	M	58	M	1	2	D	Chief	Yes	Yes	None	Yes
2	A. B.	M	61	M	5	2	C	Chairman	Yes	Yes	None	Yes
3	A. K.	M	59	M	1	2	B	Police Officer	Yes	Yes	None	Yes
4	U.S.K	M	29	S	4	2	C	BRA Head	Yes	Yes	None	Yes
5	R.C.	M	65	M	1	1	D	Adviser	Yes	Yes	None	Yes
6	A.K.K	M	29	M	1	2	D	Volunteer	Yes	Yes	None	Yes
7	A.B.B	M	31	S	1	2	D	Councilor	Yes	Yes	None	Yes
8	M.K.	M	21	S	2	2	C	Secretary	Yes	Yes	None	Yes

KEY

Relationship status	**Employment**	**Highest Level Education Completed**	**Religion**	**Reference number**
S = Single C = Cohabiting M = Married W = Widowed O = Other_____ specify	0 = Unemployed, not working 1 = Professional/ technical/managerial 2 = Clerical 3 = Sales and services 4 = Skilled manual 5 = Unskilled manual 6 = Domestic service, paid 7 = Agriculture 8 = Other (specify) _____	O = None A = Started primary but did not complete B = Completedprimary C = Completed secondary D = Completed Tertiary E = Other (specify) _____ (eg. Vocational training, Qu'ranic, adult literacy)	1 = Christianity 2 = Islam 3 = Other (specify) _____	Each focus group will be assigned a unique number

Chief Pa Alimamy Kabia said there is no proper facility for disposal of waste in his community, hence most of the residents, particularly those at the hill top of the community dispose their wastes in the tiny drainages they have during rains and this has caused flooding in the community that has accounted for some lives, especially children. He furthered that some people have also built structures on the waterways, making it tinier and causing flooding, especially during heavy downpour of rain.

The Chief Pa Alimamy Kabia, on his behalf and on behalf of his community people, expressed hope and optimism and pledged his community's fullest support and corporation with all the project teams, to ensure that they take full advantage of this opportunity.

However, he also expressed pessimism over the actualization of the proposed upgrade of the community, as he mentioned that similar activities has happened in their community in the past years but nothing tangible came out of it and the people who come to their communities with such beautiful proposals will just disappear into thin air at the end of the day.

Chief Pa Alimamy Kabia and his fellow stakeholders were so happy and thankful to the government of Sierra Leone and the World Bank for the proposed project that they even asked for the timeline of the project implementation. They expressed hope and optimism, that the proposed project, if implemented in their community, will provide not only job opportunities for their abled youths that are willing to work but couldn't find

one, but also help save lives and properties of their community members, especially vulnerable women and children

Stakeholder Consultation (Community Chiefs, Community Chairman, Women's and youth leaders)

Checklist Question	Response(s)
Are you aware of the community upgrade project?	Yes we are aware of the project
What are your thought on the proposed project in your community?	Participants welcomed the project and expressed their pleasure about its implementation within their community. We are happy for such a project in your community
What is the approximate number of houses in your community?	7,500 (Seven thousand five hundred)
What are the housing types (eg. Number of storey buildings, one flat, pan body etc)	• Three-storey • Two-storey • One-storey • Pan body • Handmade Mud brick
On average, how many people live in a house in the community?	15 (Fifteen)
What is the main source of income for most residence in the community	• Petty Trading
What is the main source of water in the community (pipe borne water, public wells, private wells, water tanks etc)	• Pipe borne • Private water tanks • Private hand dug water wells
How many educational institutions are there in your community (number and names of primary, JSS, SSS and Tech Voc institutions)	• Primary – 7: Thawoba, Islamic, Quary Community, Young Muslim, Kings International, SLMB, Mountain of Hope • Secondary – 2: Science World (SSS), SLMB (JSS & SSS) • No Tech Voc Institutions
What are the main community infrastructure in your community (Eg. Market, public toilet, community football field etc)	• None
Has many health centre are there in your community (names and location)	• Three (3): ✓ Julifa Health Center ✓ Coconut Farm Community Health Center ✓ Amta Health Center
Has many entertainment centres are there in your community?	• None
What are the most common diseases in your community (children, Adults)?	Children: ✓ Cold ✓ Malaria Adults: ✓ Malaria ✓ Typhoid
How can you describe the security situation in your community?	• Good (no security threat even during late hours)
Are there any cultural and/or archaeological properties in your community, locations and use of them?	• Ojeh (initiation of men) • Bondo (for female genital mutilation)

Questions from Stakeholders and Responses by Consultant

Questions from Stakeholders	Response(s) By DALAN
When will the project start?	The project will start when the ESIA license is acquired and funding is secured
Will the contractor employ women and youth?	The contractor will be encouraged to employ from the community as long as the requisite qualification is available
How long will the construction last?	At this stage we do not know how long the construction phase last.

Stakeholder Engagement: Moyiba

Generic Questions: ESIA Scoping for Proposed Upgrade (Moyiba, Coconut Farm, and Rokupa)

PROFILE AND TOPIC GUIDE / RESPONSE SHEET – GROUP DISCUSSIONS
Scoping Socio economic Checklist
Participant Information Form -

The following information is to be completed by the facilitator before each engagement with group of community leaders
DATE 05.05.23 ……

Community Name -**_MOYIBA**_____

1. Demographic information_____

To be completed privately upon enrolment into study and kept separate from all tape recordings, notes and transcriptions)

No.	Respondent initials	Gender (M/F)	Age (Years)	Relationship status	Employment	Religion	Highest level of Education Completed	Position in Community	Consent to take part (YES/NO)	Consent to Record (YES/NO)	Disability Status	Received T/port ALLOWANCE
1	Y.B	M	69	M	0	1	B	Chief	Yes	Yes	None	Yes
2	A.K	M	57	M	0	1	O	Chief	Yes	Yes	None	Yes
3	S.K	F	50	M	0	2	C	Chairlady	Yes	Yes	None	Yes
4	M.B	M	22	S	0	2	D	Teacher	Yes	Yes	None	Yes
5	A.K	M	40	W	0	2	B	Pres. Little people	Yes	Yes	Yes	Yes
6	A.B.S	M	25	S	0	2	D	BRA Chairman	Yes	Yes	None	Yes

Relationship status	Employment	Highest Level Education Completed	Religion	Reference number
S = Single C = Cohabiting M = Married W = Widowed O = Other_____ specify	0 = Unemployed, not working 1 = Professional/ technical/managerial 2 = Clerical 3 = Sales and services 4 = Skilled manual 5 = Unskilled manual 6 = Domestic service, paid 7 = Agriculture 8 = Other (specify) _____	O = None A = Started primary but did not complete B = Completed primary C = Completed secondary D = Completed Tertiary E = Other (specify) _____ (eg. Vocational training, Qu'ranic, adult literacy)	1 = Christianity 2 = Islam 3 = Other (specify) _____	Each focus group will be assigned a unique number

Present at the meeting were 6 key stakeholders from the Moyiba community as shown in the Demographic information above.

After the opening courtesies of Muslim and Christian prayers and self-introductions, the head of the Dalan Social team informed participants that the meeting had been called to inform stakeholders that the Government of Sierra Leone through the World Bank has secure funds for the upgrade of three communities, these communities are Moyiba, Coconut farm and Rokupa. The proponent of the project is the Resilient Urban Sierra Leone Project (RUSLP) of the Ministry of Finance, Government of Sierra Leone. The proposed neighborhood upgrade of Moyiba, Coconut farm and Rokupa communities will support the comprehensive upgrading and flood risk mitigation in these neighborhoods. The project will promote better integration of these neighborhoods into the urban fabric and ensure that all the infrastructure investments that would be carried out will improve mobility and access to basic services to excluded groups such as persons with disabilities, the elderly, children, and women.

The social consultant continued that another important aspect of the project is the preparation of a Resettlement Action Plan (RAP). The purpose of a resettlement action plan is to specify all resettlement

arrangements and the measures for avoiding, minimizing or compensating losses or other negative social impacts resulting from resettlement.

According to the laws of Sierra Leone, the project proponent must first conduct an ESIA Study before they can be given a licence to commence the construction project. Consequently, DALAN had been contracted to carry out an ESIA Study of the project areas which involves consultations with stakeholders and project affected persons in order to elicit information from the people on various matters associated with their socio-economic status and living conditions. Accordingly, DALAN team is in their community for a scoping visit to carry out a Social Impact Assessment of their community which involves the conduct of a Focus Group Discussion Meeting with key stakeholders in the affected communities.

Statement by the Community Chief of Moyiba (Chief Pa Yaraba Bangura**)**

Chief Pa Yaraba Bangura started by admitted having knowledge of the proposed community upgrade project and expressed joy over the study that will lead to the realisation of the project.

The Chief prayed and hoped that Moyiba community will be finally selected after the ESIA and the feasibility study as he and his community people have suffered a lot for certain basic amenities like pipe borne water, good roads, drainages etc. Chief Pa Yaraba Bangura expressed that their children spend over six hours every day to fetch water that runs through stones from the hill top that is not even drinkable. He said the water is only used for other domestic purposes, like laundering, cooking etc.

Chief Yaraba continued that most of their children have fallen out of school through pregnancy by the boys in the community who will offer to go to those rocky areas to fetch water for the girls in exchange for sex. he said the boys have coined a slogan in the community for such menace called “wata 4 wata” (water for water). Chief Yaraba however, expressed pessimism over the actualization of the proposed upgrade of their community, as he mentioned that similar activities has happened in their community over the past years but nothing tangible came out of it and the people who had come to their communities with such beautiful proposals had just disappeared into thin air at the end of the day.

He therefore assured the consultants that his community people will lend their fullest support and corporation at every stage of the project life cycle.

Following these remarks, the meeting went into an open forum in which DALAN Team asked stakeholders prepared set of questions on their perceptions and concerns about the proposed neighborhood upgrade project. The answers given by the participants were documented by DALAN staff and formed the basis of this minutes.

Group Discussion Checklist (Community Chiefs, Youth leader, womens’ leader and Sand/stone miners’ rep)

Checklist Question	Response(s)
Are you aware of the community upgrade project?	Yes we are aware of the project
What are your thought on the proposed project in your community?	Participants welcomed the project and hoped that its starts as soon as possible
What is the approximate number of houses in your community?	1,500 (One thousand five hundred)
What are the housing types (eg. Number of storey buildings, one flat, pan body etc)	• Three-storey • Two-storey • One-storey • Pan body • Handmade Mud brick
On average, how many people live in a house in the community?	14 (fourteen)
What is the main source of income for most residence in the community	• Stone mining (men) • Petty Trading (women)
What is the main source of water in the community (pipe borne water, public wells, private wells, water tanks etc)	• Spring water • Packet water (grafton) • Private hand dug water wells • Water Tanks (public)
How many educational institutions are there in your community (number and names of primary, JSS, SSS and Tech Voc institutions)	• Primary – 13: Moyiba Pri. Sch., Pentecostal, All Nation, Blessing, Kurafai Rashideen, Mother Esther, Nac Fos, Face 2 Community, Gtan, Global Leaders, Water Na Life, Open Door, UMC • Secondary – 5: Vision Academy, Haldarie, Imam Sadaque, Mother Esther, Grace High Sch. • Tech Voc Institutions - 1: Moeba Community Education

	Center
What are the main community infrastructure in your community (Eg? Market, public toilet, community football field etc)	• Borrow Pitch Field
Has many health centre are there in your community (names and location)	• 1 (one): Moyiba Community Health center (Main Moyiba Road)
Has many entertainment centres are there in your community?	• 2 (two) ✓ GEM Entertainment Center ✓ Gibitel Entertainment Center
What are the most common diseases in your community (children, Adults)?	Children: ✓ Cough ✓ Cold ✓ Malaria Adults: ✓ Malaria ✓ Typhoid ✓ Cough ✓ Body ach
How can you describe the security situation in your community?	• Not Good ✓ Arm robbery (using cutlasses, knife, scissors, Acid etc) ✓ Phone snatching during late hours ✓ Bag snatching from women during early hours when going to buy goods from the market
Are there any cultural and/or archaeological properties in your community, locations and use of them?	• Ojeh (initiation of men) • Bondo (for female genital mutilation)

Questions from Stakeholders and Responses by Dalan Consultants

Questions from Stakeholders	Response(s) By DALAN
When will the project start?	The project will start when the ESIA license is acquired and feasibility studies completed
Are people going to be resettled	Feasibility studies is ongoing, the study will inform us of any resettlement
Which areas of the community will be greatly impacted by the project	We do not know at the stage, a lot of studies are ongoing, these studies will inform us of the exact project locations.
Will those without legal document be compensated?	Yes, everybody will be compensated irrespective of your legal status
How long will the construction last?	At this stage we do not know how long the construction phase last.

ANNEX 4: Stakeholder Engagement Attendance Record

Coconut Farm Attendance

Coconut - Farm

Dalan Development Consultants
Upgrading Neighborhood Communities
Venue: Coconut Farm
Training Date: 6th May 2023
Attendance sheet

No	Name	Contact No.	Signature
1	Hassem Turay	076-833666	
2	Mohamed Kolleh Kargbo	076-391399	
3	Sulaimatu Kamara	077498107	
4	Yeaba Conteh		
5	Kadiatu Fofanah	088 95 89 74	
6	Marbintay Conteh		
7	FATMATA SESAY	077 282835	
8	Sallay Sulaiman Kamara	077-52 22 37	
9	Zainab Kamara	077733916	
10	Isha Sesay	077 72 5577	
11	Florence M. Allie	081 011 4477	
12	Isatu S Bangura	077 258 166	
13	Aussinatu A Sesay	034 33 52 86	
14	Kadiatu Kamara	077 86 77 97	

Verified by: Approved by:

Coconut Farm

Dalan Development Consultants
Upgrading Neighborhood Communities
Venue: Coconut Farm
Training Date: 6th May 2023
Attendance sheet

No	Name	Contact No.	Signature
1	Alie B. Bangura	079-76 91 16	
2	REX CAREW	088-210724	
3	JOHN BUSCO SESAY	078 669269	
4	ABU K KARGBO	088-45 49 70	
5	Alhaji Amadu Koroma	088 363842	
6	Abubakarr Fred Kamara	073 400070	
7	Mayeni Kargbo	030 277780	
8	Osman Bangura	076290009	
9	Abu Bangura	076-62 96 32	
10	Abdulai Kabia	078-13-26-98	
11	Mohamed Sanoh	078 591885	
12	Lovell Sureno Kpawulie	077 700837	
13	Ibrahim Kamara	078 604000	
14	Abdul R. Sesay	076-447-882	

Verified by: Approved by:

Coconut Farm

Dalan Development Consultants
Upgrading Neighborhood Communities
Venue: Coconut Farm
Training Date: 6th May 2023
Attendance sheet

No	Name	Contact No.	Signature	organization
1	Ibrahim Kamara	076 764734		DALAN
2	Kenneth Lahai	076-635025		DALAN
3	Rashidu Sinnah	076708642		Dalan
4	Amara T. Ansumana	078300860		Dalan

Continue of Attendance

Name	Contact No	Signature
Umar S. Kamara	088-878989	
Adama F. Bangura	077. 266-256	
Chief Pa-Alimamy	077-20-87-25	
Mohamed Kosia	078-42-22-15	
Abdul R. Deen-Jalloh	088 369930	
Mabinty Kamara	075 385777	
Aminata Kanu	077-597616	
Mariatu S. Kamara	088-025 280	
Mariatu Kamara	075-95 54 41 85	
Isata R. Kamara	077.36 01 28	
Kadija Kargbo	077.816 277	
Isatu Dumbuya	099-59-17-33	
Yainkain Kamara	030-503658	
Isatu Sankoh	030-631133	

Moyiba Attendance

Moyiba

Dalan Development Consultants
Upgrading Neighborhood Communities
Venue: Moyiba
Training Date: 5th May 2023
Attendance sheet

No	Name	Contact No.	Signature	Organization
1	Ibrahim Kamara	076 764734		Dalan
2	Glessay ES Momoh	076653048		ESIA Consultant
3	Amara J. Ansumana	078300860		Dalan
4	Rashidu Sinnah	076708642		Dalan
5	Jenneh Lahai	076-635025		Dalan
6	Hannah Senesie	078-216742		RUSLG-PMU
7	Patrica Kafoe	073487098		RUSLP/PMU

Dalan Development Consultants
Upgrading Neighborhood Communities
Venue: Moyiba
Training Date: 5th May 2023
Attendance sheet

No	Name	Contact No.	Signature
1	pa Alhumay Koroma	078 200278	Ckoroma
2	pst Alusine Mansaray	079 867779	
3	Mohamed Bangura	080-91-35-81	
4	Momoh Koroma	088-25-13-49	
5	Ruth. F. mansaray	0776 3-4716	
6	Malainty conteh	099-388-322	
7	Mariatu A.J. Kargbo	033487944	
8	Bilkisu Kamara	077452975	
9	Suad Kamara	077926763	
10	Fatmata B. Sesay	030450944	
11	Abubakarr Sesay	033 00 90 96	
12	Daniel Conteh	077831071	
13	Rohanatu Sesay	080980010	
14	Jamestina Sia Bayoh	079427526	

Verified by: Approved by:

Moyiba

Dalan Development Consultants

Upgrading Neighborhood Communities

Venue: Moyiba

Training Date: 5th May 2023

Attendance sheet

No	Name	Contact No.	Signature
1	~~Florence~~ Zainab Kabia	030 62 47 00	
2	Abdul Karim	088-75 35 74	
3	YA POBANGURA	077 46 78 62	
4	Yeraba Bangura Chief	077 27 23 92	
5	Adama Kabia	–	A.K

Rokupa Attendance

Rokupa

Dalan Development Consultants
Upgrading Neighborhood Communities
Venue: Rokupa
Training Date: 4th May 2023
Attendance sheet

No	Name	Contact No.	Signature	Organisation
1	Jenneh Lahai	076-635025		Dalan (Social Assess)
2	Dr Glessy E S Momoh	076653048		ESIA Consultant
3	Ibrahim Kamara	076764734		Dalan-ASS. Consultant
4	Fatu Kamara	076 627 878		Dalan
5	Rashid u Sinnah	076708642		Dalan.
6	Amara T. Assumana	078300860		Dalan
7	Sheku M. Kamara	078-923541		FCC
8	Patrick Kafoe	078488098		RUSLP/PMU
9	Hannah Senesie	078-216742		RUSLP/PMU

Rokupa

Dalan Development Consultants
Upgrading Neighborhood Communities
Venue: Rokupa
Training Date: 4th May 2023
Attendance sheet

No	Name	Contact No.	Signature
1	Saffiu Kamara	099722443	
2	Alimamy S Bangura	099258249	
3	Chief PA Alimamy Bangura	076 603796	
4	Chief PA Alimamy Kamara	080 322 804	
5	Abu A macfoy	076-786388	
6	Sorie Fullah	099-020765	
7	PA Lamin Kargbo	077 323483	
8	Isata J Conteh	030.200147	
9	Fatmata Summa		
10	Kadiatu Kargbo	033 16 09 00	
11	Zainab Saidu Bangura	088 06 15 82	
12	Mabinty Summa		
13	Fatmata M. Jillah	030 77 40 87	
14	Sallay Kargbo	030 7740 87	

Verified by: Approved by:

Rokupa

Dalan Development Consultants
Upgrading Neighborhood Communities
Venue: Rokupa
Training Date: 4th May 2023
Attendance sheet

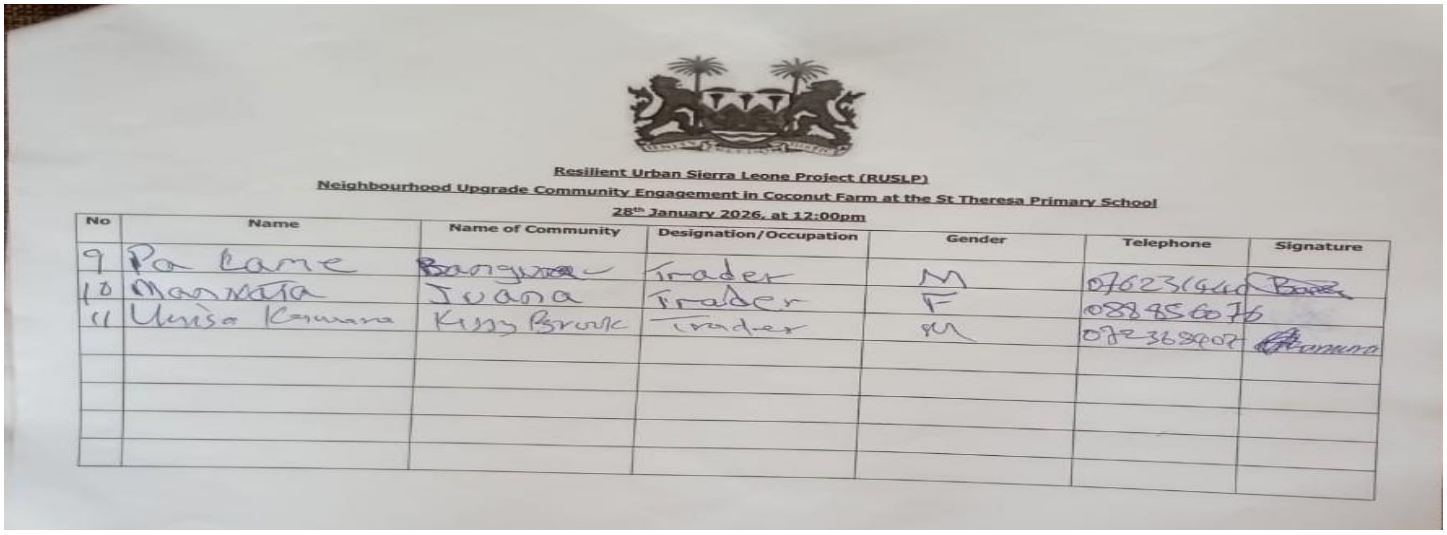
No	Name	Contact No.	Signature
1	Alimamy F. Bangura	078 80 35 05	
2	Marie B. Kamara	072571196	
3	Alimamy Bangura	030 4116 10	
4	Khadiaja Kanu	032 32 06 67	
5	Santigie Bangura	077 71 57 29	
6	Mohamed B. Kamara	077 955 951	
7	Aminata Koroma	077 99 75 63	
8	Kadiatu Kargbo	077 46 08 96	
9	Alimamy B. Bangura	078 80 35 05	
10	Foday Bangura	076 62 01 58	
11	Hawa Mansaray	080 03 61 24	
12	Lamin Bangura	088 18 95 86	
13	Abdul Sesay	030 44 64 58	
14	Ibrahim Turay	077403862	

Verified by: Approved by:

Bai Bureh

Resilient Urban Sierra Leone Project (RUSLP)
Neighbourhood Upgrade Community Engagement in Coconut Farm at the St Theresa Primary School
28th January 2026, at 12:00pm

No	Name	Name of Community	Designation/Occupation	Gender	Telephone	Signature
1	Osman S. Kamara	Kissy Brook	trader	M	07725148	
2	Lamin Koroma	✓ ✓	Plumber	M	03662 5095	
3	Sorie S Kamara	Newsnight Road	Trader	M	079148 10 25	
4	Saidu Kargbo	Opposite	Trader	M	099083576	
5	Alusine Sesay	Akram	Trader	M	030272428	
6	Umu Kamara	Akram	Trader	F	088917577	
7	Alpha M. Bangura	Akram	Trader	M	076998600	
8	Abdul Aziz	✓✓	Trader	M	077223122	



Resilient Urban Sierra Leone Project (RUSLP)

Neighbourhood Upgrade Community Engagement in Coconut Farm at the St Theresa Primary School

28th January 2026, at 12:00pm

No	Name	Name of Community	Designation/Occupation	Gender	Telephone	Signature
9	Pa Lame	Bangura	Trader	M	076231440	Bangura
10	Mamata	Juana	Trader	F	088 956076	
11	Unisa Kamara	Kissy Brook	Trader	M	072 363407	Kamara

Group discussion at Coconut farm

Group discussion at Rokupa

Group discussion with women at Moyiba

Group discussion with youth at Moyiba

Photograph with community people at Moyiba

Blocked drainage path at Coconut Farm

Engagment meeting with young adult at

Fishing boat at Rokupa

Dock area at Rokupa

Blocked drainage channel at Moyiba

Water collection point at Moyiba - for household use

Water collection point at Coconut Farm - for household use

ANNEX 5: General Environmental and Social Management Conditions for Construction Contracts

A1.1 General

1. In addition to these general conditions, the Contractor shall comply with any specific Environmental Management Plan (EMP) or Environmental and Social Management Plan (ESMP) for the works he is responsible for. The Contractor shall inform himself about such an EMP, and prepare his work strategy and plan to fully take into account relevant provisions of that EMP. If the Contractor fails to implement the approved EMP after written instruction by the Supervising Engineer (SE) to fulfil his obligation within the requested time, the Owner reserves the right to arrange through the SE for execution of the missing action by a third party on account of the Contractor.

2. Notwithstanding the Contractor's obligation under the above clause, the Contractor shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental and social performance requirements specified in an ESMP. In general these measures shall include but not be limited to:

(a) Minimize the effect of dust on the surrounding environment resulting from earth mixing sites, asphalt mixing sites, dispersing coal ashes, vibrating equipment, temporary access roads, etc. to ensure safety, health and the protection of workers and communities living in the vicinity dust producing activities.

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

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

(d) Prevent bitumen, oils, lubricants and waste water used or produced during the execution of works from entering into rivers, streams, irrigation channels and other natural water bodies/reservoirs, and also ensure that stagnant water in uncovered borrow pits is treated in the best way to avoid creating possible breeding grounds for mosquitoes.

(e) Prevent and minimize the impacts of quarrying, earth borrowing, piling and building of temporary construction sites and access roads on the biophysical environment including protected areas and arable lands; local communities and their settlements. In as much as possible restore/rehabilitate all sites to acceptable standards.

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

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

(h) Implement soil erosion control measures in order to avoid surface run off and prevents siltation, etc.(i) Ensure that garbage, sanitation and drinking water facilities are provided in construction works yards .

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

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

3. The Contractor shall indicate the period within which he/she shall maintain status on site after completion of civil works to ensure that significant adverse impacts arising from such works have been appropriately addressed.

4. The Contractor shall adhere to the proposed activity implementation schedule and the monitoring plan / strategy to ensure effective feedback of monitoring information to project management so that impact management can be implemented properly, and if necessary, adapt to changing and unforeseen conditions.

5. Besides the regular inspection of the sites by the consortium for adherence to the contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance with these environmental and

social conditions and any proposed mitigation measures. State E&S authorities may carry out similar inspection duties. In all cases, as directed by the SE, the Contractor shall comply with directives from such inspectors to implement measures required to ensure the adequacy rehabilitation measures carried out on the bio-physical environment and compensation for socio-economic disruption resulting from implementation of any works.

A1.2 Worksite Waste Management

6. All vessels (drums, containers, bags, etc.) containing oil/fuel/surfacing materials and other hazardous chemicals shall be bunded in order to contain spillage. All waste containers, litter and any other waste generated during the construction shall be collected and disposed off at designated disposal sites in line with applicable government waste management regulations.

7. All drainage and effluent from storage areas, workshops shall be captured and treated before being discharged into the drainage system in line with applicable government water pollution control regulations.

8. Used oil from maintenance shall be collected and disposed off appropriately at designated sites or be re-used or sold for re-use locally.

9. Entry of runoff to the site shall be restricted by constructing diversion channels or holding structures such as banks, drains, dams, etc. to reduce the potential of soil erosion and water pollution.

10. Construction waste shall not be left in stockpiles along the road, but removed and reused or disposed of on a daily basis.

11. If disposal sites for clean spoil are necessary, they shall be located in areas, approved by the SE, of low land use value and where they will not result in material being easily washed into drainage channels. Whenever possible, spoil materials should be placed in low-lying areas and should be compacted and planted with species indigenous to the locality.

A1.3 Material Excavation and Deposit

12. The Contractor shall obtain appropriate licenses/permits from relevant authorities to operate quarries or borrow areas.

13. The location of quarries and borrow areas shall be subject to approval by relevant local and national authorities, including traditional authorities if the land on which the quarry or borrow areas fall in traditional land.

14. New extraction sites:

a) Shall not be located in the vicinity of settlement areas, cultural sites, wetlands or any other valued ecosystem component, or on on high or steep ground or in areas of high scenic value, and shall not be located less than 1km from such areas.

b) Shall not be located adjacent to stream channels wherever possible to avoid siltation of river channels. Where they are located near water sources, borrow pits and perimeter drains shall surround quarry sites.

c) Shall not be located in archaeological areas. Excavations in the vicinity of such areas shall proceed with great care and shall be done in the presence of government authorities having a mandate for their protection.

d) Shall not be located in forest reserves. However, where there are no other alternatives, permission shall be obtained from the appropriate authorities and an environmental and social impact study shall be conducted.

e) Shall be easily rehabilitated. Areas with minimal vegetation cover such as flat and bare ground, or areas covered with grass only or covered with shrubs less than 1.5m in height, are preferred.

f) Shall have clearly demarcated and marked boundaries to minimize vegetation clearing.

15. Vegetation clearing shall be restricted to the area required for safe operation of construction work. Vegetation clearing shall not be done more than two months in advance of operations.

16. Stockpile areas shall be located in areas where trees can act as buffers to prevent dust pollution. Perimeter drains shall be built around stockpile areas. Sediment and other pollutant traps shall be located at drainage exits from workings.

17. The Contractor shall deposit any excess material in accordance with the principles of the general conditions, and any applicable EMP, in areas approved by local authorities and/or the consortium.

18. Areas for depositing hazardous materials such as contaminated liquid and solid materials shall be approved by the SE and appropriate local and/or national authorities before the commencement of work. Use of existing, approved sites shall be preferred over the establishment of new sites.

A1.4 Rehabilitation and Soil Erosion Prevention

19. To the extent practicable, the Contractor shall rehabilitate the site progressively so that the rate of rehabilitation is similar to the rate of construction.

20. Always remove and retain topsoil for subsequent rehabilitation. Soils shall not be stripped when they are wet as this can lead to soil compaction and loss of structure.

21. Topsoil shall not be stored in large heaps. Low mounds of no more than 1 to 2m high are recommended.

22. Re-vegetate stockpiles to protect the soil from erosion, discourage weeds and maintain an active population of beneficial soil microbes.

23. Locate stockpiles where they will not be disturbed by future construction activities.

24. To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.

25. Remove toxic materials and dispose of them in designated sites. Backfill excavated areas with soils or overburden that is free of foreign material that could pollute groundwater and soil.

26. Identify potentially toxic overburden and screen with suitable material to prevent mobilization of toxins.

27. Ensure reshaped land is formed so as to be inherently stable, adequately drained and suitable for the desired long-term land use, and allow natural regeneration of vegetation.

28. Minimize the long-term visual impact by creating landforms that are compatible with the adjacent landscape.

29. Minimize erosion by wind and water both during and after the process of reinstatement.

30. Compacted surfaces shall be deep ripped to relieve compaction unless subsurface conditions dictate otherwise.

31. Revegetate with plant species that will control erosion, provide vegetative diversity and, through succession, contribute to a resilient ecosystem. The choice of plant species for rehabilitation shall be done in consultation with local research institutions, forest department and the local people.

A1.5 Water Resources Management

32. The Contractor shall at all costs avoid conflicting with water demands of local communities.

33. Abstraction of both surface and underground water shall only be done with the consultation of the local community and after obtaining a permit from the relevant Water Authority.

34. Abstraction of water from wetlands shall be avoided. Where necessary, authority has to be obtained from relevant authorities.

35. Temporary damming of streams and rivers shall be done in such a way avoids disrupting water supplies to communities downstream, and maintains the ecological balance of the river system.

36. No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses.

37. Wash water from washing out of equipment shall not be discharged into water courses or road drains.

38. Site spoils and temporary stockpiles shall be located away from the drainage system, and surface run off shall be directed away from stockpiles to prevent erosion.

A1.6 Traffic Management

39. Location of access roads/detours shall be done in consultation with the local community especially in important or sensitive environments. Access roads shall not traverse wetland areas.

40. Upon the completion of civil works, all access roads shall be ripped and rehabilitated.

41. Access roads shall be sprinkled with water at least five times a day in settled areas, and three times in unsettled areas, to suppress dust emissions.

A1.7 Disposal of Unusable Elements

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

47. AC-pipes as well as broken parts thereof have to be treated as hazardous material and disposed of as specified above.

48. Unsuitable and demolished elements shall be dismantled to a size fitting on ordinary trucks for transport.

A1.8 Health and Safety

49. In advance of the construction work, the Contractor shall mount an awareness and hygiene campaign. Workers and local residents shall be sensitized on health risks particularly of AIDS.

50. Adequate Road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points.

51. Construction vehicles shall not exceed maximum speed limit of 40km per hour.

A1.9 Repair of Private Property

52. Should the Contractor, deliberately or accidentally, damage private property, he shall repair the property to the owner's satisfaction and at his own cost. For each repair, the Contractor shall obtain from the owner a certificate that the damage has been made good satisfactorily in order to indemnify the Client from subsequent claims.

53. In cases where compensation for inconveniences, damage of crops etc. are claimed by the owner, the Client has to be informed by the Contractor through the SE. This compensation is in general settled under the responsibility of the Client before signing the Contract. In unforeseeable cases, the respective administrative entities of the Client will take care of compensation.

A1.10 Contractor's Environment, Health and Safety Management Plan (EHS-MP)

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

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

55. The Contractor's EHS-MP shall provide at least:

- a description of procedures and methods for complying with these general environmental and social management conditions, and any specific conditions specified in an ESMP;
- a description of specific mitigation measures that will be implemented in order to minimize adverse impacts;
- a description of all planned monitoring activities (e.g. sediment discharges from borrow areas) and the reporting thereof; and
- the internal organizational, management and reporting mechanisms put in place for such.

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

A1.11 EHS Reporting

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

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

58. It is advisable that reporting of significant EHS incidents be done "as soon as practicable". Such incident reporting shall therefore be done individually. Also, it is advisable that the Contractor keep his own records on health, safety and welfare of persons, and damage to property. It is advisable to include such records, as well as copies of incident reports, as appendixes to the bi-weekly reports. A sample format for an incident notification is shown below. Details of EHS performance will be reported to the Client through the SE's reports to the Client.

A1.12 Training of Contractor's Personnel

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

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

A1.13 Cost of Compliance

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

EHS Report Format

Contract: **Period of reporting:**

EHS management actions/measures:

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

EHS incidents:

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

EHS compliance:

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

Changes:

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

Concerns and observations:

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

Signature (Name, Title Date):

Contractor Representative

Example Format: EHS Incident Notification

EHS Incident Notification
Provide within 24 hrs to the Supervising Engineer
Originators Reference No:.....

Date of Incident:..... **Time:**.....
Location of incident:.....
Name of Person(s) involved:.....
Employing Company:.....
Type of Incident:.....
Description of Incident:
Where, when, what, how, who, operation in progress at the time (only factual)
Immediate Action:
Immediate remedial action and actions taken to prevent reoccurrence or escalation
Signature (Name, Title, Date):.....
Contractor Representative

ANNEX 6: Project Occupational Health and Safety (OHS) Plan

1.0 INTRODUCTION

Every project poses its HSE risks. This plan was necessitated to meet up with OHS standards and to achieve the objectives set for the proposed project. The project team shall undertake to ensure high performance standards and conformity with contract requirements by managing the works in a systematic and thorough manner.

2.0 PROJECT DESCRIPTION

The project will involve the construction of Neighbourhood upgrade.

2.1 Purpose

The purpose of this document is to describe the Project Occupational Health and Safety (OHS) plan for the proposed renovation and construction and the specific management controls, risk control systems and workplace precautions required to ensure compliance with Occupational Health and Safety Laws and Standards.

2.2 HSE Objectives

The Objectives for this plan are to:

- Adopt a positive Health & Safety Culture.
- Adopt the principles of prevention to avoid risk.
- Complete the project without incident (Zero fatalities, Zero Lost Time Injury (LTI) or occupational illness).

2.3 Scope of Work

The Project Occupational Health and Safety (OHS) plan covers the scope of works defined in the contract. This includes Preconstruction, Construction and Operation & Maintenance

2.4 Policy Statement

In addition to the existing HSE policy, other policies shall be developed which includes:

- Substance Abuse Policy – Prohibiting the consumption or possession of narcotics, drugs, alcohol and other banned substances
- Emergency Response Policy – Stating commitment to ensure adequate resources and arrangement are in place in the case an emergency.
- Community Affairs Policy – Stating commitment to foster healthy relationships with communities through observance of the highest standard of conduct.

3.0 KEY RESPONSIBILITIES

Involvement of all in implementing, maintaining and continually improving OHS processes is the key to successful completion and achievement of quality objectives set by the management. All project personnel shall therefore be required to be familiar with the content of this OHS plan and shall participate in implementing, maintaining and improving the management system.

It is the responsibility of the project manager and all key personnel to ensure that the requirements for quality are fulfilled for works under their responsibility.

All staff are to be inducted into the requirements set out in this plan in general and into their function and responsibilities in particular.

3.1 Project Manager Responsibilities

- Set good example in HSE issues.
- Ensure the availability of resources essential to establish, implement, maintain and improve the OHS Management System.
- Define, document and communicate roles, allocate responsibilities and accountabilities, delegating authorities, to facilitate effective OHS management.

- Ensure that all of the activities undertaken in the Project conform to Nigerian legislation, client requirements or international standards when applicable.
- Review objectives achievements throughout the year.

3.2 Project Supervisors Responsibilities

- Enforcing all phases of the established HSE plan.
- Set good example in HSE issues.
- Preparing Job Hazard Analysis when required.
- Ensuring the safety of all workers associated with the site.
- Conducting HSE inspections.
- Ensuring workers are competent for their allocated tasks.
- Attending and participating in HSE meetings.
- Participating in accident investigations.

3.3 HSE Manager/Supervisor Responsibilities

- Prepare relevant OHS documentation and procedures.
- Monitor the efficient implementation of OHS requirements.
- Participate and organize the OHS risk assessments.
- Advise management of compliance and of conditions requiring attention.
- Conduct regular HSE inspections.
- Make thorough analysis of statistical data and inspections; delineates problem areas; and makes recommendation for solutions.
- Take part in the review of all OHS incidents and assist in investigating incident.
- Monitor the efficient implementation of the Project's OHS requirements.
- Organize the Project's OHS risk assessment exercises.
- Check on the use of all types of personal protective equipment specifies the use of appropriate PPE for the various work activities. Evaluates their effectiveness and suggests improvements where indicated.

3.4 HSE Advisor Responsibilities

- Check on the use of all types of personal protective equipment specifies the use of appropriate PPE for the various work activities. Evaluates their effectiveness and suggests improvements.
- Conduct independent inspections to observe conformance with established OHS Plan and determines the effectiveness of individual elements of the plan (pre-task briefing, weekly toolbox talk, etc)
- Establish contact with Subcontractors with the objective of maintaining good relations and coordination of accident prevention activities and compliance with the established OHS plan.
- Correct unsafe acts and unsafe conditions.
- Deliver HSE induction/orientation course to all employees, including subcontractors.
- Deliver HSE awareness course and toolbox talk.
- Advise employees on OHS matters.

3.5 All employees Responsibilities

- Take all reasonable and practical steps to care for their own health and safety and avoid affecting the health and safety of co-workers and the general public.
- Follow all instructions and use the equipment properly
- Not interfere with any safety arrangements.

- Report any circumstances which may not comply with the project's OHS management system.

4.0 Competency

All personnel required to operate or work with any equipment or machine must be competent, be tested for each equipment that he/she shall be operating. All personnel who as part of their profession require licensing or certification must obtain the necessary certification before he/she shall be allowed to work on the site.

5.0 Fitness

All personnel working on site shall be required to be certified medically fit to do so by an approved medical facility or Medical Doctor (pre-employment medical examination)

6.0 HSE Training

6.1 Induction/Orientation

Every new or rehired employee and Subcontractors employees must undergo mandatory OHS orientation / induction. The purpose of the Induction is to educate workers and make them aware of the major potential hazards he or she shall come into contact with while working on the site; also, it is one more opportunity to stress the importance of HSE being the first priority in the operations.

The content of the HSE orientation / induction shall cover the following subjects:

- Site safety rules.
- Personnel protective equipment requirements (PPE).
- Environmental sensitivity and protection.
- Preparation and planning of the job (Daily Pre-task talk).
- Emergency plan and muster points.

6.2 Project Specific HSE Training

In addition to the HSE orientation /induction, there shall be specific site HSE trainings which shall cover the following topics:

- Manual handling.
- Electrical Safety
- Emergency Prevention, Preparedness and Response
- Work at height training
- First Aid training (for site First Aiders)
- Lifting and Rigging
- Safe Driving techniques (for drivers)

7.0 Hazard identification & HSE risk assessment

7.1 Project HSE Risk Assessment

The project HSE risk assessment shall be developed and recorded. The Project's HSE risk assessment shall be conducted by a team consisting of HSE Manager/ Supervisor and technical managers/supervisors. It must be approved by the Project manager.

7.2 Fire Risk Assessment

A fire risk assessment shall be developed and recorded. A fire safety plan shall be in place in the site.

7.3 Job Hazard Analysis

Job hazard analysis is required when the hazards and risks associated with a specific task is to be identified so as to implement control measures. The HSE department together with the technical managers/supervisors shall develop a job hazard analysis when applicable.

8.0 EMERGENCY PREPAREDNESS AND RESPONSE

Anticipated incident in the construction site could be classified as:

- Medical Emergencies/First Aid
- Fatality
- Fire
- Electrocution
- Chemical/Fuel Spill
- Security Breach

The emergency response procedure for managing anticipated incidents during the construction works is highlighted below:

8.1 Medical Emergencies/First Aid

The project shall have an established protocol with **Emergency Medical Services** as well as a Medical Doctor, which will include 24-hour access to assist with patient care in serious medical emergencies as presented in Section 8.0in addition to Site Nurses that are available at to provide First Aid services in the event of an Emergency. A medical emergency can arise because of a number of factors, which include:

- A person suffering a medical condition.
- A person involved in an isolated incident.
- Group of personnel receiving injuries due to a natural event.
- Group of personnel receiving injuries due to a man-made event (structural collapse, hazardous material exposure etc.)

Serious Injury

Upon the occurrence of a serious injury, the first person on the scene must immediately assess the scene and ensure there is no danger to themselves or others. Once the scene is safe, they should raise alarm, call for help and then administer first aid if qualified. Expected actions upon becoming aware of a medical emergency:

- Raise alarm and notify the site manager who will activate Medical Evacuation (MEDIVAC) process if emergency services are required.
- If safe to do so, remain at the scene until assistance arrives.
- Do not move the injured person unless there is a life-threatening situation.
- Keep the injured person warm.
- Reassure the injured person.
- Give first aid to the extent of your level of knowledge and/or training.

DRSABCD First Aid measure should be activated to save a Non-Breathing Casualty:

- **DANGER** – Check for any danger to self and others before doing anything.
- **RESPONSE** – Check for response from casualty.
- **SEND** – Send for Help.
- **AIRWAY** – Check, clear and open airway.
- **BREATHING** – look, listen and feel for normal breathing.
- **CPR** – commence compressions, 30 compressions to two breaths, 100 compressions/min.
- **DEFIBRILLATE** – apply automatic external defibrillator if available.
- **Continue CPR** until qualified personnel arrive or signs of life return.

Non-Serious Injury

Upon occurrence of non-serious injury, the first person on the scene must immediately assess the scene and ensure there is no danger to themselves or others. Once the scene is safe, first aid should be applied if

qualified and contact the onsite First Aider. The Retainership Clinic (MECURE) must be contacted on the injury and the condition of the patient to determine the victim's stability.

8.2 Fatality

A fatality on site from an accident or disease is a tragedy. One of the most important things to do is to prevent this from happening by conducting **Health Fitness Test** for all workers and to ensure safe operation at site. If a fatality does occur, sensitive support shall be provided to co-workers, victim's family and friends.

Each circumstance will be different and the following shall apply as a guideline:

a. The first individual at the scene shall immediately raise alarm and remain at the scene until the Emergency Response Team (ERT) comprising the Project Manager, Site Manager, First Aider, HSE Officer and MEDIVAC team arrives.

b. The individual shall not put himself or herself at risk, but secure the scene as much as possible.

c. The Emergency Response Coordinator (Site Manager) will proceed to the scene.

d. Once a fatality has been confirmed by the MEDIVAC team, the Incident Commander (Project Manager) will issue a directive to all workers to restrain premature external communication.

e. The Incident Commander shall contact Medivac team from the Retainership Clinic, Client and other relevant authorities.

f. If there is no further threat to the health and safety of other personnel, the area shall be cordoned off to maintain the integrity of the site for further investigation and the scene shall not be disturbed without the approval of the authorities.

g. Once the scene has been secured, it is the responsibility of the Project Manager to determine if an "All Clear "can be signalled and if work can resume.

h. Upon arrival of the authorities, Senior Management will work cooperatively to ensure that the next of kin of the victim is notified.

i. Arrangements will be made to transfer the body to the appropriate location if authorized to do so by Coroner.

j. A proper briefing communicating the circumstances of the tragedy with reassurance of safety measures on site shall be communicated by the Project Manager.

k. Grief counsellors will be brought to site to assist individuals.

8.3 Fire

Fires can occur in any location within the site, but a fire with serious consequences would be one involving the project, fuel and chemical storage areas or tanks at the site. Evacuation procedures, emergency exit routes and muster points for the site, shall be posted throughout the site. Fire drills shall be conducted quarterly or based on site realities at the discretion of the Site Manager.

l. In the event of a fire, individual on scene should raise the alarm and follow emergency procedures in to extinguish the fire provided there is no risk to themselves or others.

m. The nearest fire pull station should be activated to alert all those in the area to proceed to the designated Muster point.

n. Accounting for all personnel needs to be organized quickly so that any individual who may be at risk can be identified quickly and rescue efforts put forth.

o. Upon hearing the alarm, all individuals must immediately evacuate the work location through the closest safe exit; shouting "fire" and checking the worksite, (no one should wait for a response to the knocking).

p. Individuals will not be permitted to return to the work location until an "All Clear" has been issued.

q. The Fire Service Rescue team who shall be call on by the Project Manager will attend the scene, depending on the degree of the fire.

r. All woks or movement on the site will stop to ensure safe and efficient management of the emergency.

s. A sweep must be conducted on all rooms and entire site by the security team to ensure complete evacuation.

t. The Site Manager shall take a head count at the Muster Station. First aid will be conducted at the nearest health facility if required.

u. If the fire is uncontrollable and further assistance may be required, the Incident Commander may request support from nearest Fire Station or other agencies to avoid the spread of fire.

v. The Project Manager will initiate planning for site evacuation.

Fire Equipment

w. Fire fighting equipment shall be located in every work vehicle and in the site office(s).

x. Fire fighting equipment shall be easily accessible at all times.

y. Fire fighting equipment locations, trained fire personnel, and contact numbers shall be displayed on site notice boards.

z. Fire fighting equipment shall be tested and tagged by a competent person every six months.

aa. Used fire extinguishers shall be promptly removed from service and replaced immediately with a full replacement.

ab. All personnel shall b trained in the use of fire equipment.

8.4 Electrocution

In the event of an electrocution case, the first person at the scene must establish a safe area prior taking any step.

ac. If the victim is still in contact with the electrical current, do not touch the person and immediately turn off the electrical power source; then raise alarm.

ad. If you cannot disconnect the power source, try to separate the victim from the power source with a nonconductive object, such as a wood-handled broom.

ae. Have someone call for emergency medical assistance immediately.

af. Site is to be secured to prevent injury to other persons.

ag. Assess condition and stabilise person.

ah. Assess worker and give necessary first aid treatment, apply basic life support if required:

ai. Site Manager to ensure evacuation of victim to a medical facility.

aj. Site Manager should obtain and record relevant information relating to the electric shock incident, and send it with the injured person to the medical facility.

ak. Site Manager to contact the medical facility and advise them of the incident with details of incident.

al. Where the person is released from the medical facility for return to work, the Site Manager shall arrange transportation.

am. Upon arrival back at the workplace, the Project Manager will review the results of the medical assessment; then, the Site Manager shall commence an investigation.

8.5 Chemical/Fuel Spill

This plan shall be used in conjunction with the site's Spill Response Procedure in the event of a spill. Spill response drills shall be conducted quarterly or based on site realities at the discretion of the Site Manager. The following action plan shall be implement in the event of a spill:

a. The Store Supervisor, Store Keeper, HSE Officer, Mechanical technicians who trained in spill response management or any first person at the scene of the spill shall identify the Spill or release.

b. The safety of workers and of others and environment shall be assessed.

c. The spill shall be stopped if safely possible.

d. Contain spill to limit entering water bodies and surrounding areas through drainage channel.

e. Quantify spill (under or over guideline/threshold levels).

f. Notify Site Manager and emergency response crew and authorities (in event of major spill).

g. Clean up spill using spill kit.

h. Record spill incident and conduct investigation Spill report form.

i. Conduct investigation in line with Section 12 (Accident / Incident Reporting & Investigation) of the project HSE Plan.

Transferring, storing, and managing spill related wastes:

Used sorbent materials are to be placed in plastic bags for future disposal. Following clean up, any tools or equipment used must be properly washed and decontaminated, or replaced if this is not possible.

Spilled substances and materials used for containment must be placed into empty waste oil containers and sealed for proper disposal at an approved disposal facility.

Restoring affected areas:

Criteria that may be considered include natural biodegradation of oil, replacement of soil and revegetation.

8.6 Security Breach

Security drills shall be conducted quarterly or based on site realities at the discretion of the Site Manager to assess the attitude and alertness of the workers.

Civil Disturbance

a. All workers are to keep clear of the disturbance and do not say or do anything that may encourage irrational behaviour.

b. The site shall be locked down to prevent unauthorised entry.

c. All workers are to follow closely the instructions of Security Supervisor and Site Manager.

d. The Site Management team shall make effort to engage those responsible for the civil unrest.

e. The police shall be called for intervention if the site management team could not convince those responsible for the civil unrest.

f. The site shall be evacuated under the guidance of the police or based on best discretionary approach decided by the site management; led by the project manager.

Attack or Armed Threat

a. All workers should keep clear of the intruder and do not say or do anything that may encourage irrational behaviour.

b. The police shall be contacted as highlighted in Section 8.0.

c. As many as possible details shall be noted and present to the police.

d. The instruction of the police through the Project Manager shall be followed closely by all workers.

e. The site shall only be evacuated under the guidance of the police or based on best discretionary approach decided by the site management; led by the project manager.

EVACUATION PROCEDURE

a. On hearing an evacuation alarm, or on instruction of emergency control personnel, immediately cease all activity.

b. Assist any person in immediate danger, but only if safe to do so.

c. If practical, and only if safe to do so, secure any activity or process that may become hazardous or suffer damage if left unattended as a consequence of evacuation.

d. Act in accordance with directions given by emergency control personnel and evacuate the site immediately.

e. Move calmly to the muster assembly area and do not leave the evacuation assembly area until the all clear has been given.

f. Follow the instructions of relevant emergency services personnel.

9.0 HSE IMPLEMENTATION AND PERFORMANCE MONITORING

9.1 HSE Meetings

HSE management meetings shall be held once a month. The meeting is to help identify safety problems, develop solutions, review incident reports, provide training and evaluate the effectiveness of our safety program. Some of the meetings shall be:

- Project/Site Management HSE Meeting for management and supervision (Monthly).
- Tool box talk meetings for all workforce (Weekly).
- Pre-task briefing for all workforces (Daily).
- Special situation meeting (As required).

9.2 HSE Reporting

All incidents and illnesses must be reported to site supervisor after which investigation shall commence and recorded so that appropriate corrective actions shall be implemented to prevent any re-occurrence and report findings shall be forwarded to management for review. Reporting requirements shall include notification of incident, investigation report, and monthly report. Notification of Incident form shall be developed which shall be filled and submitted to HSE department for investigation.

9.3 HSE Inspection and Audits

For continual improvement of HSE management system, HSE inspection and audit shall be conducted. An inspection checklist shall be developed. This is to ensure that the HSE management system is being adhered to. The inspection shall be conducted by the HSE department together with site management.

9.4 Corrective and Preventive Actions and Non Conformities

During the cause of inspections, concerns raised shall be addressed and closed out. It is expected that in a period of two weeks, a close out inspection shall take place to verify that the corrective actions have been closed.

10.0 Project HSE Rules

The project HSE rules shall be developed and supervision shall develop specific rules and procedures when necessary.

The following site rules shall be implemented at all times. The Site Manager shall draw these rules to the attention of their own workmen or staff. All sub-contractors must ensure that these rules are drawn to the attention of their workmen and staff.

The Principal Contractor may implement additional site rules during the contract programme. Any such additional rules shall be notified to all personnel engaged on the project prior to their implementation. The HSE rules shall include but not limited to:

1. Personal Protective Equipment must be worn at all times.
2. All instructions issued by the Site Manager regarding the storage, handling or cleaning of materials, plant and equipment must be followed.
3. All vehicles must be parked in the designated areas.
4. Any workman suffering from a medical condition that might affect his work and/or that could require specific Medical treatment must inform the supervisor before commencing work.
5. All site tools shall either be battery operated or 110 volts.
6. No one shall be permitted on site if it is believed that they are under the influence of alcohol or drugs.
7. Vehicles must not reverse without a banksman in attendance.

8. All visitors to site must undergo a site-specific induction and operative Identity badges must be worn at all times.
9. All excavations must be secured.
10. Smoking and eating shall only be permitted in the designated area. This area shall be identified during induction.
11. No hot works operations are permitted without a hot work permit in place.
12. There shall be no radios or other music playing devices on site.
13. Good housekeeping practices to be adopted**.**
14. Compliance with all Ethical Power Permit to Work systems
15. The site keyed access procedure must be strictly adhered to.
16. All Contractors must comply with Site Health & Safety Guidelines / Site Safety Method Statement
17. No untrained worker shall be permitted to operate heavy machineries.

11.0 SAFE WORK PRACTICES

Implementing safe work practices is one of the keys to achieving our HSE objectives and some of these safe work practices include:

11.1 Personal Protective Equipment (PPE)

The basic PPE required for the project shall be Safety Glasses, Safety Boots, Hand Gloves, Hard Hat and Coverall. Any other PPE shall be used as applicable. Management is responsible for the provision of PPE and usage shall be enforced at all time.

PPE shall be provided in circumstances where exposure to hazards cannot be avoided by other means or to supplement existing control measures identified by a risk assessment. An assessment shall be made to ensure that the PPE is suitable for purpose and is appropriate to the risk involved.

Information, instruction & training shall be given to all employees on safe use, maintenance and storage of PPE.

Employees shall, in accordance with instructions given, make full use of all PPE provided and maintain it in a serviceable condition and report its loss or defect immediately to the maintenance department where it shall be replaced.

PPE shall be replaced when it is no longer serviceable and returned on a new for old basis. Employees shall sign to state that they have received PPE when issued.

12.0 WELFARE FACILITIES

The provision of welfare facilities on the site shall be communicated to all operatives at site induction.

A cleaning regime shall be implemented and maintained for the duration of the construction phase to ensure the site welfare facilities remain in a clean and tidy condition.

If mains drinking water becomes unavailable during the construction phase bottled water shall be brought to site for all operatives for the necessary period.

13.0 SIGNAGE

Adequate provision for warning and directional signs shall be made.

14.0 PROJECT HSE PROCEDURES

OHS procedures shall be developed. Project activities shall generally be controlled in accordance with OHS Procedures. These procedures shall include:

- Lifting and Rigging Procedure
- HSE Reporting Procedure
- Working at Height Procedure.

- Emergency Procedure.

Annex 7: Workers' Code Of Conduct Preventing Gender Based Violence and Violence Against Children

The company/contractor is committed to creating and maintaining an environment in which gender based violence (GBV) and violence against children (VAC) have no place, and where they will not be tolerated by any employee, associate, or representative of the company/contractor. Therefore, in order to ensure that all those engaged in the project are aware of this commitment, and in order to prevent, be aware of, and respond to any allegations of GBV and VAC, the company/contractor commits to the following core principles and minimum standards of behavior that will apply to all company/contractor employees, associates, and representatives including sub-contractors, without exception:

1. The company/contractor —and therefore all employees, associates, and representatives—commit to treating women, children (persons under the age of 18), and men with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status. Acts of GBV and VAC are in violation of this commitment.
2. Demeaning, threatening, harassing, abusive, culturally inappropriate, or sexually provocative language and behavior are prohibited among all company/contractor employees, associates, and its representatives.
3. Acts of GBV or VAC constitute gross misconduct and are therefore grounds for sanctions, which may include penalties and/or termination of employment. All forms of GBV and VAC, including grooming are unacceptable, regardless of whether they take place on the work site, the work site surroundings, at works yards or at worker's homes.
4. In addition to company/contractor sanctions, legal prosecution of those who commit acts of GBV or VAC will be pursued if appropriate.
5. Sexual contact or activity with children under 18—including through digital media—is prohibited. Mistaken belief regarding the age of a child is not a defense. Consent from the child is also not a defense or excuse.
6. Sexual favors—for instance, making promises or favorable treatment dependent on sexual acts—or other forms of humiliating, degrading or exploitative behavior are prohibited.
7. Unless there is full consent[18] by all parties involved in the sexual act, sexual interactions between the company/contractor employees (at any level) and members of the communities surrounding the work place are prohibited. This includes relationships involving the withholding/promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex—such sexual activity is considered "non-consensual" within the scope of this Code.
8. All employees, including volunteers and sub-contractors are highly encouraged to report suspected or actual acts of GBV and/or VAC by a fellow worker, whether in the same company or not. Reports must be made in accordance with GBV and VAC Allegation Procedures.
9. Managers are required to report suspected or actual acts of GBV and/or VAC as they have a responsibility to uphold company commitments and hold their direct reports responsible.

To ensure that the above principles are implemented effectively the company/contractor commits to ensuring that:

10. All managers sign the 'Manager's Code of Conduct' detailing their responsibilities for implementing the company/contractor commitments and enforcing the responsibilities in the 'Individual Code of Conduct'.
11. All employees sign the project's 'Individual Code of Conduct' confirming their agreement not to engage in activities resulting in GBV or VAC.

[18] **Consent** is defined as the informed choice underlying an individual's free and voluntary intention, acceptance or agreement to do something. No consent can be found when such acceptance or agreement is obtained through the use of threats, force or other forms of coercion, abduction, fraud, deception, or misrepresentation. In accordance with the United Nations Convention on the Rights of the Child, the World Bank considers that consent cannot be given by children under the age of 18, even in the event that national legislation of the country into which the Code of Conduct is introduced has a lower age. Mistaken belief regarding the age of the child and consent from the child is not a defense.

12. Displaying the company/contractor and Individual Codes of Conduct prominently and in clear view at work offices, and in in public areas of the work space. Examples of areas include waiting, rest and lobby areas of sites, canteen areas, health clinics.
13. Ensure that posted and distributed copies of the company/contractor and Individual Codes of Conduct are translated into the appropriate language of use in the work site areas as well as for any international staff in their native language.
14. An appropriate person is nominated as the company/contractor 'Focal Point' for addressing GBV and VAC issues, including representing the company/contractor on the GBV and VAC Compliance Team (GCCT) which is comprised of representatives from the client, contractor(s), the supervision consultant, and local service provider(s).
15. Ensuring that an effective Action Plan is developed in consultation with the GCCT which includes as a minimum:
    a. **GBV and VAC Allegation Procedure** to report GBV and VAC issues through the project Grievance Redress Mechanism (GRM);
    b. **Accountability Measures** to protect confidentiality of all involved; and,
    c. **Response Protocol** applicable to GBV and VAC survivors and perpetrators.
16. That the company effectively implements the Action Plan, providing feedback to the GCCT for improvements and updates as appropriate.
17. All employees attend an induction training course prior to commencing work on site to ensure they are familiar with the company/contractor commitments and the project's GBV and VAC Codes of Conduct.
18. All employees attend a mandatory training course once a month for the duration of the contract starting from the first induction training prior to commencement of work to reinforce the understanding of the project's GBV and VAC Code of Conduct.

I do hereby acknowledge that I have read the foregoing company/contractor *Code of Conduct, and on behalf of the* company/contractor *agree to comply with the standards contained therein. I understand my role and responsibilities to prevent and respond to GBV and VAC. I understand that any action inconsistent with this* company/contractor *Code of Conduct or failure to take action mandated by this* company/contractor *Code of Conduct may result in disciplinary action.*

Company name: _____

Signature: _____

Printed Name: _____

Title: _____

Date: _____

ANNEX 8: Manager's Code of Conduct On Preventing Gender Based Violence and Violence Against Children

Managers at all levels have particular responsibilities to uphold the company/contractor commitment to preventing and addressing GBV and VAC. This means that managers have an acute responsibility to create and maintain an environment that prevents GBV and VAC. Managers need to support and promote the implementation of the Company Code of Conduct. To that end, managers must adhere to this Manager's Code of Conduct and also sign the Individual Code of Conduct. This commits them to supporting and developing systems that facilitate the implementation of the Action Plan and maintain a GBV-free and VAC-free environment at the workplace and in the local community. These responsibilities include but are not limited to:

Implementation

1. To ensure maximum effectiveness of the company/contractor and Individual Codes of Conduct:
    a. Prominently displaying the company/contractor and Individual Codes of Conduct in clear view at works offices, and in in public areas of the work space. Examples of areas include waiting, rest and lobby areas of sites, canteen areas, health clinics.
    b. Ensuring all posted and distributed copies of the company and Individual Codes of Conduct are translated into the appropriate language of use in the work site areas as well as for any international staff in their native language.
2. Verbally and in writing explain the company and Individual Codes of Conduct to all staff.
3. Ensure that:
    a. All direct reports sign the 'Individual Code of Conduct', including acknowledgment that they have read and agree with the Code of Conduct.
    b. Staff lists and signed copies of the Individual Code of Conduct are provided to the GCCT and the client.
    c. Participate in training and ensure that staffs also participate as outlined below.
    d. Staffs are familiar with the Grievance Redress Mechanism (GRM) and that they can use it to anonymously report concerns of GBV or VAC incidents.
    e. Staffs are encouraged to report suspected or actual GBV or VAC through the GRM by raising awareness about GBV and VAC issues, emphasizing the staff's responsibility to the company/contractor and the country hosting their employment, and emphasizing the respect for confidentiality.
4. In compliance with applicable laws and to the best of your abilities, prevent perpetrators of sexual exploitation and abuse from being hired, re-hired or deployed. Use background and criminal reference checks for all employees.
5. Ensure that when engaging in partnership, sub-contractor or similar agreements, these agreements:
    a. Incorporate the GBV and VAC Codes of Conduct as an attachment.
    b. Include the appropriate language requiring such contracting entities and individuals, and their employees and volunteers, to comply with the Individual Codes of Conduct.
    c. expressly state that the failure of those entities or individuals, as appropriate, to take preventive measures against GBV and VAC, to investigate allegations thereof, or to take corrective actions when GBV or VAC has occurred, shall constitute grounds for sanctions and penalties in accordance with the Individual Codes of Conduct.
6. Provide support and resources to the GCCT to create and disseminate internal sensitization initiatives through the awareness-raising strategy under the Action Plan.
7. Ensure that any GBV or VAC issue warranting police action is reported to the client and the World Bank immediately.

Training

8. All managers are required to attend an induction manager training course prior to commencing work on site to ensure that they are familiar with their roles and responsibilities in upholding the GBV and VAC Codes of Conduct. This training will be separate from the induction training course required of all employees and will provide managers with the necessary understanding and technical support needed to begin to develop the Action Plan for addressing GBV and VAC issues.
9. Ensure that time is provided during work hours and that staff attend the mandatory project facilitated induction training on GBV and VAC required of all employees prior to commencing work on site.
10. Ensure that staff attend the monthly mandatory refresher training course required of all employees to combat increased risk of GBV and VAC during civil works.
11. Managers are required to attend and assist with the project facilitated monthly training courses for all employees. Managers will be required to introduce the trainings and announce the self-evaluations.
12. Collect satisfaction surveys to evaluate training experiences and provide advice on improving the effectiveness of training.

Response

13. Managers will be required to provide input to the GBV and VAC Allegation Procedures and Response Protocol developed by the GCCT as part of the final cleared Action Plan.
14. Once adopted by the company/contractor, managers will uphold the Accountability Measures set forth in the Action Plan to maintain the confidentiality of all employees who report or (allegedly) perpetrate incidences of GBV and VAC (unless a breach of confidentiality is required to protect persons or property from serious harm or where required by law).
15. If a manager develops concerns or suspicions regarding any form of GBV or VAC by one of his/her direct reports, or by an employee working for another contractor on the same work site, s/he is required to report the case using the GRM.
16. Once a sanction has been determined, the relevant manager(s) is/are expected to be personally responsible for ensuring that the measure is effectively enforced, within a maximum timeframe of 14-days from the date on which the decision to sanction was made.
17. Managers failing to report or comply with such provision can in turn be subject to disciplinary measures, to be determined and enacted by the company's CEO, Managing Director or equivalent highest-ranking manager. Those measures may include:
    a. Informal warning.
    b. Formal warning.
    c. Additional Training.
    d. Loss of up to one week's salary.
    e. Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.
    f. Termination of employment.
18. Ultimately, failure to effectively respond to GBV and VAC cases on the work site by the company/contractor managers or CEO may provide grounds for legal actions by authorities.

I do hereby acknowledge that I have read the foregoing Manager's Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to GBV and VAC. I understand that any action inconsistent with this Manager's Code of Conduct or failure to take action mandated by this Manager's Code of Conduct may result in disciplinary action.

Signature: _____

Printed Name: _____

Title: _____

Date: _____

ANNEX 9: Individual Code of Conduct Preventing Gender Based Violence and Violence Against Children

I, _____, acknowledge that preventing gender based violence (GBV) and violence against children (VAC) is important. The company/contractor considers that GBV or VAC activities constitute acts of gross misconduct and are therefore grounds for sanctions, penalties or potential termination of employment. All forms of GBV or VAC are unacceptable, be it on the work site, the work site surroundings, or at worker's camps. Prosecution of those who commit GBV or VAC may be pursued if appropriate.

I agree that while working on the project I will:

- Consent to police background check.
- Treat women, children (persons under the age of 18), and men with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
- Not use language or behavior towards women, children or men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
- Not participate in sexual contact or activity with children—including grooming, or contact through digital media. Mistaken belief regarding the age of a child is not a defence. Consent from the child is also not a defence or excuse.
- Not engage in sexual favors—for instance, making promises or favorable treatment dependent on sexual acts—or other forms of humiliating, degrading or exploitative behavior.
- Unless there is the full consent19 by all parties involved, I will not have sexual interactions with members of the surrounding communities. This includes relationships involving the withholding or promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex—such sexual activity is considered "non-consensual" within the scope of this Code.
- Attend and actively partake in training courses related to HIV/AIDS, GBV and VAC as requested by my employer.
- Consider reporting through the GRM or to my manager any suspected or actual GBV or VAC by a fellow worker, whether employed by my company or not, or any breaches of this Code of Conduct.

With regard to children under the age of 18:

- Wherever possible, ensure that another adult is present when working in the proximity of children.
- Not invite unaccompanied children unrelated to my family into my home, unless they are at immediate risk of injury or in physical danger.
- Not sleep close to unsupervised children unless absolutely necessary, in which case I must obtain my supervisor's permission, and ensure that another adult is present if possible.
- Use any computers, mobile phones, or video and digital cameras appropriately, and never to exploit or harass children or to access child pornography through any medium (see also "Use of children's images for work related purposes" below).
- Refrain from physical punishment or discipline of children.
- Refrain from hiring children for domestic or other labor which is inappropriate given their age or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.
- Comply with all relevant local legislation, including labor laws in relation to child labor.

[19] **Consent** is defined as the informed choice underlying an individual's free and voluntary intention, acceptance or agreement to do something. No consent can be found when such acceptance or agreement is obtained through the use of threats, force or other forms of coercion, abduction, fraud, deception, or misrepresentation. In accordance with the United Nations Convention on the Rights of the Child, the World Bank considers that consent cannot be given by children under the age of 18, even in the event that national legislation of the country into which the Code of Conduct is introduced has a lower age. Mistaken belief regarding the age of the child and consent from the child is not a defense.

Use of children's images for work related purposes

When photographing or filming a child for work related purposes, I must:

- Before photographing or filming a child, assess and endeavor to comply with local traditions or restrictions for reproducing personal images.
- Before photographing or filming a child, obtain informed consent from the child and a parent or guardian of the child. As part of this I must explain how the photograph or film will be used.
- Ensure photographs, films, videos and DVDs present children in a dignified and respectful manner and not in a vulnerable or submissive manner. Children should be adequately clothed and not in poses that could be seen as sexually suggestive.
- Ensure images are honest representations of the context and the facts.
- Ensure file labels do not reveal identifying information about a child when sending images electronically.

Sanctions

I understand that if I breach this Individual Code of Conduct, my employer will take disciplinary action which could include:

- Informal warning.
- Formal warning.
- Additional Training.
- Loss of up to one week's salary.
- Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.
- Termination of employment.
- Report to the police if warranted.

I understand that it is my responsibility to avoid actions or behaviors that could be construed as GBV or VAC or breach this Individual Code of Conduct. I do hereby acknowledge that I have read the foregoing Individual Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to GBV and VAC. I understand that any action inconsistent with this Individual Code of Conduct or failure to take action mandated by this Individual Code of Conduct may result in disciplinary action and may affect my ongoing employment.

Signature: _____

Printed Name: _____

Title: _____

Date: _____

ANNEX 10: Sample Waste Management Plan

1.0 INTRODUCTION

The following Waste Management Plan (WMP) presents a framework outlining the general requirements essential for effective management of waste generated onsite during the construction works. The WMP outlines measures required to manage and mitigate the impact of waste generation and resource consumption during the construction works of the project. The plan includes details on the following:

- The types waste generated during construction activities;
- Procedures to collect and dispose of waste;
- Measures that will be implemented to minimize waste generation associated with the development; and program for monitoring the effectiveness of these measures.

This Plan also considers other aspects to waste management such as waste reduction, segregation of waste, disposal of waste.

2.0 ROLES AND RESPONSIBILITIES

The relevant roles and responsibilities to this plan are as outlined:

Project Manager

- Coordinate the implementation of this Construction Waste Management Plan.
- Coordinate site team to ensure site inspections and audits are conducted.
- Ensure environmental inspections are undertaken and records are kept.
- Coordinate the implementation of corrective and preventative action and incident response.
- Activate resources to ensure technical advice regarding environmental obligations, measures and protection is available.

Site Manager

- Ensure adequate waste management infrastructure, equipment (bins and trucks) and services are provided as required.
- Ensure that any incidents or observations that may occur during waste storage and/or handling events are properly managed.
- Implement approved waste management and minimization strategies as highlighted in this plan.
- Ensure that this plan is implemented and conduct Monthly Audit in coordination with the HSE Officer.
- Shall maintain the record of audits and trainings conducted.

HSE Officer

- Ensure that appointed waste transport vendor completes waste certificates prior to transporting.
- Ensure all waste bins are correctly labelled and stored in the appropriate designated area.
- Verify that all personnel, including contractors have received the appropriate training in waste management practices and keep records of training as per Section 5 of this plan.
- Ensure Waste Inspections are being carried out on a weekly basis and Waste Inventories are being maintained.

All Personnel

- Implement the requirements of this Waste Management Plan in all aspects of the construction works.
- Ensure that the site is kept tidy, free from litter and that waste is put in the correct bins.
- Ensure that all incidents and observations relevant to waste are reported to Project Manager.

3.0 AWARENESS AND TRAINING

The Project will implement an awareness and training program that will be delivered to all construction workers. This training will include, but not be limited to:

- The application of the waste management hierarchy;
- Common waste streams produced in the construction site. ;
- Dangerous materials segregation and hazard classification codes;
- Efficient waste segregation;
- Spill Response; and
- Community impacts of poor waste management.

4.0 WASTE MANAGEMENT REQUIREMENTS

4.1 Waste Elimination and Minimization

The Project shall meet or exceed the requirements of this plan by implementing and maintaining a waste minimization strategy, as a minimum standard. The waste minimization strategy shall eliminate, minimize and manage waste during the construction activities through the following:

- Identification of waste streams and quantities;
- Implementation of management strategies for each waste stream;
- Defined roles and responsibilities;
- Training and awareness;
- Monitoring of waste streams and management activities;
- Encouraging sustainable waste management practices in the supply chain;
- Minimizing wastes from excess materials including but not limited to using surplus materials prior to re-ordering and reducing packaging waste;

4.2 Types of Waste, Classification and Handling Method

Construction site waste can be categorized as general (non-hazardous) or regulated (hazardous) waste. Regulated wastes are hazardous waste such as waste containing asbestos, oil or chemicals substances. All other waste streams are considered general waste, unless contaminated with a regulated waste.

In the event that an unknown material is discovered (e.g. liquid in a drum), it will be the responsibility of the site HSE Officer to identify the waste in coordination with the Site Manager and Store Supervisor. The person accountable in the event that the waste is not identified correctly and disposed of in the appropriate manner is the Site Manager.

Table 1 presents the waste types, classification and proposed handling methods to be implemented during the construction works.

Types of Wastes, Classification and Handling Method

Waste Type	Classification	Handling Method
Aluminum cans	General	Recycling
Batteries (cadmium andnickel/cadmium (NiCad), leadacid, lithium and other)	Regulated	Recycling
Paper	General	Recycling
Cardboard	General	Recycling
Printer cartridges	Regulated	Recycling
Plastics – bottles, drums and othercontainers	General (drums, depends on contaminant)	Recycle
General municipal waste	General	Treatment/Landfill
Organic waste	General	Recycle
Concrete	General	Recycle
Spent chemicals, Solvent, Paint	Regulated	Recycle

Oily waste	Regulated	Recycle
Scrap Metal (steel, aluminium, brass, copper, lead, other nonferrous metal, stainless steel and zinc)	General	Recycle
Used Filters – Oily filters	Regulated	Recycle
Septic/Effluent	Regulated	Regulated Site
Contaminated Soil	Not a waste	Treated*
High density polyethylene (HDPE) waste	General	Recycle
Rubber	Regulated	Recycle
Tyres	Regulated	Recycle
Textiles and rags	General (unless contaminated with a regulated waste)	Reuse/ Recycle
Other solid regulated waste	Regulated	Regulated Landfill
Concrete –solid form left over	General	Recycled
Spent spill Clean Up	Regulated	Regulated Landfill

Note: General – Non Hazardous Wasted, Regulated – Hazardous Waste

5.0 WASTE STORAGE REQUIREMENTS

5.1 General Waste

The following must be considered as minimum requirement for general waste storage areas:

1. General waste bins and containers (e.g. food scrap bins, recyclable bins, recyclable paper bins) are to be placed in easily accessible locations around the worksite. Recyclable waste shall be stored separately from general waste; ensuring maximized segregation potential has been met to minimize waste sent to landfill.
2. Liquid and solid wastes shall be segregated to allow for maximized recycling, bins will be colour coded for the waste stream, where practicable.
3. Where a waste material or product does not have a specific bin, the bin used must be compatible with the waste and must then be labelled.
4. Spare bins shall be made available to accommodate for unforese**e**able events.
5. Waste bins shall be maintained in good condition to prevent leaks or spills. Defective containers hall not be used for waste storage or transport.
6. Containers used for waste storage (such as waste oil drums) shall not be opened, handled, transported or stored in a manner that may rupture the container, cause it to leak or subject it to overpressure.
7. The waste storage area shall be of an adequate capacity to handle the volume of waste stored there without a risk to the environment.
8. The waste storage area shall be located in an easily accessible area to provide vehicle access to materials and waste storage areas for the collection and transport of wastes.
9. Waste storage areas shall have adequate firefighting equipment suitable for the type of waste stored at site.
10. The location of the waste storage area shall also consider the proximity to neighbors and environmentally sensitive areas to minimize impacts on people and the surrounding environment (e.g. impacts due to dust, windblown rubbish, pests, odour, visual amenity, noise and light).
11. Suitably sized spill kits and spill containment systems relevant to the activities within the site shall be available in the vicinity of the waste storage areas. Maintenance of spill kits shall be kept up to date, ensuring that no equipment is missing from the kit. Spills shall not be cleaned by hosing or activities resulting in the further spread of the contaminant to land or water.
12. All waste storage bins shall have secure lids and if required, clasps.
13. All waste containers shall be appropriately identified and clearly labelled.

14. All lids and if applicable clasps shall be maintained on waste storage bins to ensure that the waste does not cause an odour nuisance.
15. Lids on general waste bins containing food scraps shall be suitable to prevent access by birds.
16. Maximum retention times for wastes that may produce odours shall not exceed 7 days.
17. Waste shall not be burned.

5.2 Regulated (Hazardous) Waste

Regulated wastes shall be stored in the designated waste storage area. The area shall be clearly marked and records of the waste streams stored at site shall be held by the Site Manager. An assessment of the regulated waste storage area shall be undertaken by the HSE Officer on a regular basis to ensure that incompatible wastes are segregated.

To assist in the collection and transfer of regulated wastes, designated regulated waste bins, drums and skips shall be used where applicable. The following measures shall be implemented:

1. There will be dedicated regulated waste storage areas, to prevent the mixing of regulated wastes with other stored material.
2. An inventory will be kept and maintained of all regulated waste stored.
3. Loading and unloading procedures shall be undertaken in a manner that ensures wastes will not spill or containers break.
4. Containers storing regulated wastes shall be securely closed where practical.
5. Waste storage areas shall be clearly signed designating what wastes are to be deposited at storage location and any specific directions/hazards.
6. All containers shall be labelled at all times for clear interpretation of the contents.
7. There will be adequate containment measures to prevent off-site migration of spills.
8. Sufficient and appropriate clean-up equipment (spill kit) shall be provided together with appropriate instructions and training.
9. Spills shall not be cleaned by hosing or activities resulting in the further spread of the contaminant to land or water through the drainage channel.
10. No liquid wastes, wash down waters or storm water waste contaminated with hazardous waste will be disposed of via the storm water drainage system.
11. As soon as practicable, all regulated waste shall be removed to an approved waste disposal facility or recycling facility.
12. Waste shall not be burned or allowed to burn.

6.0 WASTE LABELLING

All wastes shall be labelled in accordance with examples provided in line with the following guidelines:

- Ensure that there are no other labels on the waste container except a label that refers to the current contents of the specific storage vessel or container.
- Containers shall be labelled as soon as the waste is added.
- Labels shall not be placed on a waste storage vessel or container prior to the addition of the waste as any spills may destroy such labels.
- Labels shall be of a reasonable size and clarity so that the waste material is easily identified.
- Labels shall be placed on the side of the containers; however in the event a label cannot be placed on the side it shall be placed on the top of the container.
- Label shall be positioned such that it can be easily read.
- Do not cover the manufacturer‘s product label (should the original drum be used) with waste labels.

7.0 WASTE DISPOSAL

All waste generated on site shall be disposed of in accordance with the S.I.15 National Environmental Protection (Management of Solid and Hazardous Wastes) Regulations 1999. Waste management options shall be done in accordance with the waste hierarchy. All other disposal options shall be considered first before sending waste to landfill and all opportunities to reduce waste volumes generated shall be explored.

7.1 Surplus Materials Identification, Classification and Declaration

- **Identification**

The Site Manager in coordination with Store Supervisor shall identify materials that are surplus on an ongoing basis during the construction works to avoid unnecessary purchase that may lead to waste generation.

- **Classification**

Surplus Materials shall be classified by the Project as:

a. **Obsolete:** Where a design change has rendered materials no longer required for incorporation into the construction works.

b. **Damaged:** Where rectification of the damaged Material is not cost effective.

c. **Scrap and waste materials:** Scrap are waste Materials that have no intended Project use which include but are not limited to:

- Off cuts of pipe;
- Off cuts of cable;
- General recyclable waste (copper, steel, aluminium, timber, concrete);
- Consumables; and
- Excess tools and consumable Materials used in the construction phase.

8.0 WASTE TRANSPORT AND DISPOSAL

Waste shall be segregated accordingly until collection and off site processing or disposal occurs. All waste volumes shall be transported by a licensed contractor and must be recorded on the Site Waste Report Register.

The following procedure shall be followed when waste collection occurs:

1. The waste collector must complete a Waste Consignment note by ensuring that:
   a. The register has been filled out correctly.
   b. The type of waste is identified in detail.
   c. The area where the waste is to be collected from is identified.
   d. Amount of waste to be transported is identified.
   e. Site contact for the collection of the waste is noted.
   f. Handling requirements of waste have been identified from the MSDS where applicable or another relevant reference.
   g. A contact for the waste destination has been identified and notified, where required.
2. During the loading of waste, spill kits and firefighting equipment must be made available as applicable.
3. If at any time during the load out and transporting event, it is considered unsafe to proceed or there is an increased potential that a waste material may be released to the environment, the activity shall cease, the Site Manager must be informed of the event and an assessment of the situation must be undertaken.
4. All reasonable and practical measures shall be taken to ensure that wastes are adequately secured prior to the waste being transported.
5. The appointed waste vendor shall ensure that vehicles and equipment used for the transfer and transportation of wastes are not overloaded or loaded in a manner which could lead to a loss of containment during transportation. This shall be stated as a contract requirement.

6. The handling and management of wastes during transport shall be closely monitored to ensure there is no risk of a release to the environment.

9.0 INSPECTION CHECKLIST AND INVENTORY MANAGEMENT

Weekly visual inspections shall be performed. Evidence of inspection shall be retained and provided as may be required. The inspection checklist and inventory to be applied shall include but not be limited to:

- Labeling
- Bin condition
- House keeping
- Waste Segregation
- Availability of Spill kits
- Materials and Waste Inventory

ANNEX 11: Sample Traffic Management Plan (TMP)

1.0 INTRODUCTION

This Construction Traffic Management Plan (CTMP) has been prepared for the construction works in the 3 communities to ensure application of good environmental and social practices, according to World Bank E&S Standards which mandates the need for compliance monitoring and reporting of environmental and social impact mitigation of the development projects which are categorized as causing environmental and social impacts, through institutionalizing a set of procedures and organizational structures.

During the construction phase of the Project, construction materials, Infrastructure, including support structures and machinery will be transported to and from the site using road transport. The purpose of the Traffic Management Plan (TMP) is to minimize the potential traffic related incidents on the project site, as well as impact of project related traffic on other road users and people living along transport routes.

The objectives of the CTMP are to:

- Provide a framework description and plan of the traffic and transport management elements involved with the construction project;
- Ensure the health and safety of workers, the public and those who may be impacted by the work;
- Ensure that road users are not inconvenienced and that site operations are kept at a satisfactory level of performance;
- Serve as key management and mitigation measures implementation framework.

2.0 ROLES AND RESPONSIBILITIES

Project Manager

- Provide adequate resources for the implementation of this management plan.
- Interface for construction traffic matters between government authorities, private industry, subcontractors, community groups and the wider community.

Site Manager

- Ensure implementation of this management plan.
- Report information relating to construction traffic management to the site management.
- Coordinate reviews of this management plan.
- Provide oversight for Inspections in the project.

Banksman

- Clearly direct vehicles and mobile plant at all times ensuring they are kept separate.
- Minimise the amount of reversing where possible and be aware of the dangers caused when reversing cannot be avoided.
- Use practical techniques and agreed system of signaling and hand signals to assist drivers and operatives in all maneuvers.
- Be visible to drivers at all times whilst directing vehicles and plant.
- Stand in a safe position, from which to guide all vehicles without being on the line of fire.
- Keep traffic areas free of pedestrians.
- Be fully compliant with PPE requirements of the site to ease sighting by drivers and operators.
- Report any near miss incidents involving vehicle movements with the site.

Driver

- Adhere to posted speed limits and road signs.
- Use of the horn only as a warning device.

- Ensure all vehicles to be wholly contained on site before being required to stop
- Ensure all loads are to be covered when coming to or leaving the site.
- Ensure all vehicles are to loaded and unloaded within site
- Allow enough room between vehicles.
- Respect and be watchful for pedestrians and other drivers on the dedicated transport routes,
- Follow instructions given by Police, Road and Traffic Authority (RTA), other authorities and Banksman.

All personnel (Workers, subcontractors & third party suppliers)

- Comply with all requirements of this management plan.

3.0 SITE OPERATIONS

3.1 Reversing of Vehicles

Considering the space constraint within the work area, one-way road and turning circles systems cannot be implemented, hence reversing of vehicles cannot be avoided. The following measures shall be implemented to avoid incidents associated with vehicle reversing:

- using mirrors and reversing warning alarms;
- ensuring a signal person (banksman) wearing high visibility clothing assists the driver who cannot see clearly behind their vehicle – the driver should always be able to see the signaller;
- ensuring workers and other people are familiar with reversing areas and these areas are clearly marked, and
- ensuring plant operators are aware of workers who may be in the vicinity of the swing radius, articulation points and overhead load movement of their vehicle
- Signs, warning devices and visibility

3.2 Signage and Pedestrian Control

Signs shall be used to alert workers and pedestrians to potential hazards from vehicles entering and exiting the construction workplace. Pedestrian exclusion zones shall be clearly marked and barricaded. Pedestrian access shall be through the gatehouse to ensure controlled access to the worksite.

Traffic routes shall be clearly signed to indicate restricted parking, visitor parking, headroom, speed limits, vehicle movement, key site areas and other route hazards within the site and local routes while drivers will be advised to follow signs and traffic rules on the highway. Standard road signs shall be used where possible and speed limits shall be implemented and enforced.

3.3 Deliveries and Collections

Deliveries and collections would in general be restricted to between 09:30am and 4:30pm; this is to ensure that during peak times construction traffic will be restricted from causing obstructions to the highway. Vehicle speed limit shall not exceed 30 kmph within the adjoining construction site traffic.

3.4 Vehicle Wheel Washing

Due to the existing state of the site, there is no expected impact of site mud/detritus originating from the construction site on the public highway. In consideration of this, wheel washing shall not be carried out.

3.5 Vehicle Coordination

The site manager in conjunction with security supervisor and storekeeper shall have overall responsibility for the management of Construction deliveries and will advise what times supplies are expected to arrive on site. Specific “NO DELIVERY” times are expected to be adhered to strictly. In order to prevent a build up of traffic on the public highway staggering of delivery times will be implemented.

The Site Manager shall have overall responsibility and will be the person supervising and monitoring vehicle movements to/from the site.

During busy delivery, periods when a large number of construction traffic could be expected the delivery suppliers will be asked to contact the Site Manager 20 – 30minutes prior to the agreed delivery time to ascertain the set down area is clear.

4.0 TRAFFIC IMPACT AND TRANSPORT MANAGEMENT MITIGATION

4.1 Hours of Work and Noise

In order to minimize the impact of noise generated by the operational activities at the worksite, all work and activities in the vicinity of the site generating noise (e.g. loading and unloading of goods, transferring of tools etc.) shall only be carried out between the hours of 7.30am and 5.30pm on Mondays to Fridays. While on Saturdays, works shall be carried out between 7.30am and 3.30pm, with daily safety inspections conducted by 7.00am. No work shall be carried out on Sundays or public holidays.

4.2 Parking of Vehicle and Storing of Materials on Public Road

It is not envisaged to store any equipment or Materials on the public road. All equipment and materials will be stored within the site boundary.

4.3 Protection of Pedestrians

Signage, fencing, overhead protection, safety barriers and line marking details, as required, will be provided and maintained on-site at all times. Signage to identify the Construction site shall be erected at the main entrance of the site to ensure vulnerable pedestrians are made aware of the site traffic using this entrance/exit.

Signage details, the control of pedestrians near the site, and the control of trucks to and from the site will be the responsibility of the Banksman.

4.4 Public Highway License

The use of the Public highway for Construction activity or storage of materials is not intended in the project, therefore application for licenses is not required.

4.5 Traffic Diversions

Traffic diversion will not be required during the construction period as haulages is expected to align with regular traffic.

4.6 Spoil Removal

Spoil removal will be carried out throughout the construction period. At no time, will skips or temporary structures be required to be stored on the adjoining roads. All methods of spoil removal will be carried out within the site boundary and waste removed by vehicle as per the above traffic routes.

4.7 Risk Identification

Table 1 present the Project Traffic Management Risk Register.

Table 1: Project Traffic Management Risk Register

Hazard	Risk	Risk Ranking	Control Measures - to be implemented by site manager and site team
Contact Injuries	Site vehicles and pedestrians not properly segregated	H	Signs to be set up to clearly indicate safe routes. Banksman to attend. If children are playing next to the site - any loading or unloading must stop until they are moved to a safe distance away.
	Hit by site vehicles	H	All operatives to wear high-visibility jackets if they work near where vehicles are operating. Signs to be set up directing traffic and pedestrians. If vehicle has to reverse, use a banksman.
Deliveries	Vehicles block highway or other pedestrian routes	H	Agree delivery schedule with suppliers - make sure that vehicles can load and unload safely.
Driving Vehicles	Drivers not competent	M	Make sure that all drivers are competent and able to drive their vehicles - get certificates and keep a copy for reference.
Speeding	Speeding causing	M	Skip loader to be restricted to 5 km/h – zero

	accidents		tolerance to speeding.
Vehicle malfunction	Excessive noise, possible contact injury	M	All vehicles to be maintained in accordance with manufactures requirements – skip loader to be regularly inspected.
Handling materials	Operative injury	M	Detailed handling assessments required for any loads over 25kg that must be lifted by hand.
Noise	Nuisance to others nearby	M	May need to consider installation of acoustic sheets when loading into skip loader if noise levels too high.
Dust	Nuisance to others nearby	M	Skips to be covered to prevent spillage.
Waste	Spillage into public roads and pathways	M	Site team to keep road and paths clean at all times.
Emergency vehicles	Unable to access required area	M	No fire escapes to be blocked. Site access to be kept clear at all times.
Emergency response	Unable to contact contractors	M	Contact phone numbers to be displayed on site hoarding.
First aid injuries	Operative minor injury	M	Site manager and HSE Officer to be trained first aider.
Oil/Fuel	Spillage	M	Site manager to keep spill kit available.
Pollution to controlled waters	Harm to environment	M	Site manager to ensure local drains are protected against potential spillage of concrete or other detritus materials.
Damage to local roads	During offload of machine	M	Temporary protection blocks or mats to be placed during machine operations.

Note: H – High, M – Medium

5.0 MEASUREMENT, EVALUATION AND IMPROVEMENT

5.1 Monitoring

The HSE Officer and Security Supervisor under the guidance of the Site Manager shall be responsible for ensuring this (CTMP) is monitored and updated based on changes within the construction area and worksite area. Any divergence from the plan shall be amended and the plan re-issued to the Project Team.

Table 2: Monitoring Programme

Parameter	Monitoring Required	Frequency	Criteria/Performance Measure/Trigger	Response
Onsite Truck routes	Spot Monitoring	Weekly	Onsite blockages or disturbance.	Follow up with driver. Review of procedures.
Traffic Flow	Congestion	As Required	Complaints Detection	Respond according to result.
Driver Management	Spot Monitoring	Ongoing on a case by case basis.	Complaints Detection	Review of procedures and operations. Follow up with driver.

5.2 Incidents

Traffic incidents to be reported shall include:

- HSE Hazards;
- Near misses;
- Injury, illness or disease;
- Environmental incidents;

- Equipment damage or loss;
- Community complaints, issues or concerns;
- Impact to corporate image or reputation; and
- Non-compliance issues.

The following information shall be collated as part of incident reporting:

- Time, date, location and name of person who identified the incident;
- Description of the incident and investigation;
- How and why the incident occurred;
- What were the actual and potential impacts;
- Corrective actions to reduce recurrence and risk.

5.3 Domestic and Commercial Waste Collections

It shall be the responsibility of the Site Manager to ensure the times of Construction deliveries do not interfere with any domestic and commercial waste collections services. Times shall be sought from the local authority and suppliers advised to avoid large deliveries within these periods, where practical.

5.4 Complaints Management

Traffic related complaints shall be managed in line with the project Grievance Management Plan. The Project Manager shall deal with any complaints from the local who shall be informed of any complaints. All complaints received shall be recorded and lodged in the complaint register. Information recorded shall include the following:

- date and time the complaint was logged;
- personal details provided by the complainant;
- nature of the complaint;
- action taken regarding the complaint, or if no action was taken, the reason why; and
- follow-up contact with the complainant.

5.5 Performance Measurement

The implementation of this CTMP will be guided by the performance measures in Table 3.

Table 3: Performance Measures

Objective	Performance Indicator	Target
Minimize traffic impacts during construction of surface infrastructure and new access road	Number of traffic complaints received regarding the construction activities	Zero
	Mitigation measures implemented	All mitigation measures in place
Traffic impacts not to exceed Environmental Assessment (EA) predictions	Comparison to EA prediction	Negligible traffic impact
Utilize safest route when entering and exiting major highway from local roads	Number of traffic incidents related to Integral Underground construction activities	Zero
	Number of traffic complaints received regarding the construction activities	Zero

6.0 TRAINING AND AWARENESS

6.1 Training, Awareness and Competency

All project personnel, subcontractors and visitors will be inducted and/or trained to a level appropriate to the level of risk their works are likely to entail, prior to commencing on site. The specific elements of training that relate to an individual understanding and applying their environmental, health and safety responsibilities may include:

- Environmental, health and Safety policies and the requirements of the Project Environmental and Social Management Plans and associated documents including HSE Plan, specific roles and responsibilities;
- Significant environmental and social impacts which may be caused by their activities;
- Incident management and notification; and
- Potential consequences of non-conformance.

6.2 Inductions

6.2.1 Project Inductions

All project personnel and subcontractors will be inducted into the key requirements of this CTMP and associated management documents as part of the Project Induction.

The Project Induction has been developed to induct personnel into the broad aspects of the project including safety, environment, community and the Project overview. The induction will reinforce that it is the responsibility of all personnel to adhere to the safety and traffic requirements of the Project. The Induction will include but not be limited to the following:

- Overview of the requirements of this CTMP.
- PPE requirements.
- Project contact details.
- Incident management and notification.
- Hours of work.
- Safety policy.
- Key traffic safety issues relating moving trucks and crane.
- Designated Parking Areas
- Speed Limits
- Community Interface Protocol

6.2.2 Visitor Inductions

All visitors will undergo a visitor’s induction and their host will be responsible for the actions and conduct of their visitors and will ensure that all requirements of the site are obeyed. All visitors will be accompanied around the site by project personnel at all times.

ANNEX 12: Grievance Uptake Channels Information Sheet

In spite of all the care planned for implementing this project, it is possible that some people may be affected, and will wish to complain. In such a case, a Grievance Redress Mechanism (GRM) will be provided. See Chapter 5. The GRM complaints form that will be provided for those who may wish to formally write in their grievances is provided below.

<table>
<tr><th colspan="3">GRIEVANCE FORM</th></tr>
<tr><td colspan="3">Information About the Person Submitting the Grievance</td></tr>
<tr><td colspan="3">We would like you to provide your name, address and email if possible, so we can keep you informed about future developments with the Project. However, if you wish to remain anonymous this is not a problem - please just enter ANONYMOUS in the box below– your grievance will still be considered by the consortium.</td></tr>
<tr><td colspan="2">Name:</td><td rowspan="4">Internal use only: how was the grievance lodged:
□ In person
□ By Phone
□ At reading room
□ By Mail
□ By email
□ Other (please describe)
……</td></tr>
<tr><td colspan="2">Date lodged:</td></tr>
<tr><td colspan="2">Recorded by:
□ Person submitting grievance □ Other (please specify who)
……</td></tr>
<tr><td colspan="2">Address:</td></tr>
<tr><td colspan="2">Email address:</td><td>Do you wish to be kept informed of Project developments? □ Yes □ No</td></tr>
<tr><td colspan="2">Neighbourhood/Locality:</td><td rowspan="2">Internal use only: Confirm that the Grievance has been acknowledged and a copy of this form provided to the complainant?
□ Yes. Date: ……</td></tr>
<tr><td colspan="2">Signature of Complainant confirming receipt of completed Grievance Form copy:</td></tr>
<tr><td colspan="3">Information About Grievance</td></tr>
<tr><td colspan="3">Describe the Grievance:</td></tr>
<tr><td colspan="3">Internal Use Only: Recording and Response</td></tr>
<tr><td colspan="2">Grievance Reference Number:</td><td>Date logged in Grievance Log</td></tr>
<tr><td colspan="2">Name of staff member recording the grievance:</td><td rowspan="2">Copies provided to:
□ Responsible party's office, (Original)
□ Person lodging grievance/ Complainant (Copy 1)
□ consortium (Copy 2)</td></tr>
<tr><td colspan="2">Action required (to be updated as needed as the grievance is progressed):</td></tr>
<tr><td colspan="3">Deadline for reporting back to Complainant on progress (to be updated as necessary):
Date: ……</td></tr>
<tr><td colspan="3">Internal Use Only: Status of Grievance</td></tr>
<tr><td>Date:</td><td colspan="2">Status of Grievance (add further rows as needed):</td></tr>
<tr><td>Grievance Closed:</td><td>Date:</td><td>Signed off:</td></tr>
</table>

Annex 13: Emergency Response Plan

Emergency situations may arise from various activities and conditions which may occur during project implementation. These could have potentially severe consequences for the project if no Emergency Response Plan (ERP) has been put in place.

1. Objective

The ERP is designed to enable all relevant parties associated with the project to act quickly, decisively and cooperatively in any crisis or emergency. This ensures an appropriately measured level of response and recovery actions, depending on the nature, location and potential gravity of any given incident.
To be effective, the ERP will be clearly communicated to all contractors through the following process:

- Review the ERP with the construction contractors and their employees to ensure that it adequately covers their activities
- Review the ERP on a regular basis to address new hazards or significant changes in site conditions, and incorporate lessons learned from previous incidents and exercises
- Post the procedures in a location easily accessible to workers
- Ensure personnel are competent and understand their roles and responsibilities during an emergency response situation.

2. Hazard Identification

The ability to identify hazards will go a long way towards preventing the occurrence of emergencies. Construction workers will be trained in hazard identification. To identify and assess hazards, contractors should be able to:

- Collect and review information about the hazards present or likely to be present at the project site.
- Conduct initial and periodic workplace inspections to identify new or recurring hazards
- Investigate injuries, illnesses, incidents, and close calls / near misses to identify the hazards, understand their causes, and find any weaknesses in the OHS program.
- Determine the severity and likelihood of incidents that could result in each hazard identification and use this information to prioritize corrective actions.

3. Incident Classification

Typical emergency types and severity that characterize construction projects are highlighted in Table 13.1 below.

Table 13.1 Severity of some incidents that characterize construction projects

Level I Minor Incident	Level II Moderate Incident	Level III Major Incident
Accidents, cuts and abrasions	Release of flammable or toxic substance into air, land or sea Natural Disaster Road Accidents Civil Unrest/Disturbances Medical Health Cases	Fire or explosion Falling from heights

Source: WB/SLMoF, 2020

4. Emergency Response Procedure

Emergencies that can occur during the construction of the new market are illustrated within the response procedures in Table 13.2 . The following steps should generally be followed in addressing any emergency:

- Stay calm - prevent panic and thereby aid the emergency response.
- Assess the situation - Assess what has happened to whom and what will continue to happen if no action is taken. Identify the cause that must be controlled to eliminate immediate, ongoing, or further danger.

- Take command – Contact the required person(s), internal or external depending on the crisis and protocol and explain the situation. Take any action that can be safely taken to eliminate or reduce the potential severity of the incident until professional help arrives.
- Provide protection - Protect victims, equipment, materials, environment, and accident scene from continuing damage or further hazards. Divert traffic, suppress fire, prevent objects from falling, shut down equipment or utilities, and take other necessary measures.
- Aid and manage – Provide or arrange for the provision of first aid. Organize the workforce for both a headcount and emergency assignments. Direct all workers to a safe location or command post. This makes it easier to identify the missing, control panic, and assign people to emergency duties.
- Maintain contacts – Keep emergency services and the project management unit informed of the situation.
- Guide emergency services – Meet services on site. Lead them to an emergency scene. Explain ongoing and potential hazards and cause(s), if known.

Following an emergency, detailed activities must be undertaken:

- Report incident information to statutory authorities.
- Conduct an incident investigation.
- Assess damage incurred.
- Implement rescue, de-contamination, clean-up, and restoration processes.
- Compile a comprehensive report detailing the entire incident experience, including restoration efforts, limitations, and lessons learned.

Table 13.2 Common Emergencies and Response Procedures during the Project Implementation

Emergency	Response Procedures
Fuel/Oil Spillage	• Avoid danger to yourself and others (i.e. stop working, shut off power sources and any moving machinery and equipment, alert others in danger). • Stay upwind of the emergency scene. • Identify the product that has been spilled, as well as immediate potential hazards. • If the identification of the substance cannot be determined, assistance should be requested, and the identification of the substance should be determined by qualified personnel. • Assess spill quantity and characteristics. • Notify the EHS Officer (during construction and decommissioning) / MCC (during operation) with as much information as possible. • Arrange for a timely clean-up of spilled material by contacting the EHS Officer / MCC.
Fire / Explosion	• Assess the location and severity of the situation. • Extinguish the fire if it can be accomplished without being exposed to potential hazard. • Restrict access to the area. • Do not take health or safety risks by entering unstable or fire engulfed areas. • Notify the EHS Officer/MCC.
Natural Disaster (Land Slide, Flooding)	During a regional / national level natural disaster, information on nature, scale, location or direction of the emergency will be obtained from national disaster management services either through public media or direct communication. Emergency response teams under the supervision of the EHS Officer/MCC will organize headcounts and evacuation as may be necessary
Road Accidents	• The EHS Officer/MCC will be contacted immediately with details of the location and nature of the incident. • SL Police will be contacted immediately with details of the location and nature of the incident. • Vehicles/machinery involved in the accident are not to be moved until the police arrive. • Victims will be moved to a government hospital if required. • If members of the public are involved in a project-related road accident, the injured person(s) will be assessed, administered with first aid and taken to

	the Government Hospital for treatment, depending on their injuries. • Details of the accident including how it was caused, the number of people involved, police reports, etc. will be recorded by the EHS Officer.
Falling from Heights (mainly during construction)	Falls from heights may occur where workers are involved in the construction of the new market and other project features involving working at heights. Where necessary, rescue from heights procedures will be followed to retrieve the person. Fall victims will be treated with first aid in the location of their fall until possible injuries are identified and safely moved to the Government Hospital for further treatment.
Minor accidents (scrapes, cuts, abrasions etc.)	• Minor accidents will be treated through first aid. • Small injuries like cuts and abrasions may become worse if they are exposed to external elements such as dust, oil, fuel, heat, etc. and may become infected leading to bigger health problems. • First aid boxes will be provided in all work areas.
Medical Health Cases	First medical attention to accidents or emergency health cases will be provided through first aid. Where advanced medical attention is required, the victim will be transferred to the Government Hospital for further treatment. In the event of a medical emergency or fatality, the following procedures will be followed: • The EHS expert/MCC will be informed of the incident resulting in the medical emergency. • The location and severity of the situation will be assessed. • Further health or safety risks like entering a dangerous or unstable area will be prevented. • The victim will be accompanied by another worker to the Government Hospital to give pertinent information about the incident. • In the event of death, only a qualified medical professional can confirm the death. Immediate notification of PMU is required after the death of any worker from a project-related incident.
Civil Unrest and Disturbance	A Stakeholder Engagement and Disclosure Process has been developed that includes procedures for dissemination of information to the public and project stakeholders. Despite this proactive approach, social unrest could occur for several reasons outside of the Project management's control. Subversive activities by workers or non-workers could develop and may result in violent or non-violent protests, attacks on Project personnel, property damage, etc. PMU is to be notified immediately by contractors/MCC of any social unrest that may present a threat to themselves and/or the project

5. Resources and Responsibilities

Resources for the emergency control systems within the project site must be maintained and clearly identified and should include:

- Fire detection system
- Fire protection and firefighting system
- In-house ambulance facility or an on-call service if not available on-site
- Rescue facilities and PPEs
- First aid facilities
- In-house or nearby hospital/health center for medical assistance
- Internal and external communication facilities with an alerting system
- Designated assembly points
- Clearly marked escape routes and evacuation zones

The EHS expert and MCC will maintain internal and external emergency contact numbers for police, fire stations, hospitals, etc. and will ensure that contractors and workers are well-versed in emergency response procedures. This includes familiarizing them with the use of emergency equipment and response methods such as firefighting, spill control, first aid, and basic personnel rescue techniques.

In the event of an incident, the EHS officer during construction and decommissioning phases and MCC during operation, will handle all communications with the public. This includes describing the event, identifying affected populations, detailing any injuries and the status of those involved, outlining existing hazards, and explaining the precautions and mitigation measures taken to prevent future risks. Contact information will also be provided.

Annex 14: Labor Management Procedures

The Labor Management Procedures (LMP) for the market upgrade project, specifically focusing on the construction phase, are developed in alignment with the RUSLP project requirements to ensure the well-being and fair treatment of workers involved in the respective subcomponent (construction works at the market and relocation site).
Aligned with the requirements of the World Bank's ESS2 on Labor and Working Conditions, the LMP serves as a crucial tool to identify and address the main labor requirements and associated risks within the project. It facilitates a clear understanding among various project-related stakeholders, including the project implementing unit staff, contractors, sub-contractors, and project workers, regarding specific labor-related expectations.

1. Objectives

The LMP aims to:

- Ensure clear understanding of labor rights and working conditions among employees.
- Facilitate employees in exercising their rights to freedom of association and collective bargaining.
- Guarantee compliance with all pertinent national employment and labor laws and regulations.
- Establish accessible avenues for project workers to voice concerns, seek redress, and receive timely feedback along with corrective measures.
- Champion equal opportunities for all workers, preventing discrimination based on factors such as race, nationality, social origin, birth, religion, disability, gender, age, sexual orientation, union membership, and political opinions.
- Handle disciplinary practices and grievances in a manner that upholds the dignity and respect of affected individuals, free from threats, abuse, or ill-treatment.
- Prohibit the use of child, forced, or compulsory labor in all project activities.
- Prevent instances of Sexual Exploitation and Abuse (SEA), Sexual Harassment (SH), and GBV that may arise during the implementation of activities or sub-projects under the Sierra Leone Markets Upgrade Project.

2. Overview of Labor Use

The labor requirements for the project during the construction phase at the market and relocation site will involve a diverse workforce, including direct hires, contractor personnel, suppliers, primary workers, and community labor.
Direct Workers: The total number of PMU staff in charge of coordination, financial management, procurement safeguards, M&E, reporting, etc. is 12. The staff is responsible for the day-to-day management and monitoring of the project and sub-projects, will hire consultants, contractors, and support staff under contractual agreements compliant with the National Labor Law. These individuals will be engaged for specific tasks in design, studies, and construction supervision, with clearly defined roles.
Contracted Workers: The PMU will engage contracting firms, specializing in engineering and environmental consulting, to recruit skilled workers based on project needs. Small works contracts will be initiated for tasks such as maintenance, flood control, and cleaning. Consultants and/or workers engaged for short-term periods will have their labor requirements, time schedules, and deliverables clearly outlined in their respective contracts.
Primary Supply Workers: Suppliers will recruit primary supply workers as per project needs, with strict monitoring by the PMU to prevent child labor and forced labor practices. The PMU will take corrective action if any deviations from standards are identified. These workers will be engaged based on specific project needs.
Migrant Workers: While foreign migrants are not anticipated for civil work, international consultants may be hired for specialized services if local expertise is lacking. Sub-project contractors may source skilled labor from various locations or outside project communities as needed. They will be engaged based on specific project needs.

3. Key Potential Labor Risks

The common potential labor risks associated with the execution of the market upgrade and relocation site preparation activities are outlined below in Table 14,1.

Table 14.1 Common Potential Labor Risks

Potential Risks	Risk Description
Risks Related to Hazardous Work	• Manual tasks such as lifting, lowering, pushing, pulling, and carrying involve sudden force application, repetitive movements, and awkward postures. • Additional tasks, such as handling cement, sand, and other construction materials, concrete mixing, and lifting heavy equipment like generators, doors, and windows, may subject site workers to undue stress on the waist, central spine, and other body parts. • Workers utilizing heavy hammers and power drillers might also face hazards (noise and vibration) due to the repeated and prolonged execution of their tasks. • Specific roles like sprayers, painters, laborers, and steel benders at the construction and rehabilitation sites may encounter exposure to emissions, dust, and open oxy-acetylene flames during wood treatment, painting, and cutting and welding activities for the project facilities. • The mixing and carting of concrete and masonry pose risks of concrete splashing into workers' eyes during these activities, potentially causing immediate or long-term visual impairment and even blindness.
Work-Related Incidents and OHS Risks	Common accidents in civil and rehabilitation works include burns, cuts, slips, and falls, often resulting from inadequate housekeeping, poor signage on-site, and improper operation of equipment. Work-related accidents can also stem from non-compliance with equipment manufacturers' specifications and the neglect of using PPE.
Challenges in Conditions of Service	Unfair and discriminatory recruitment practices such as gender-based or other forms of discrimination may contribute to poor conditions of service. This includes practices like paying wages below the national minimum wage, compelling workers to perform unpaid overtime, denying maternity leave and corresponding allowances for women, and engaging individuals without formal contracts.
Risk of Child and Forced Labor	Measures will be implemented to prohibit the employment of individuals below 18 years of age. Verification of age will involve scrutinizing national identification cards, birth certificates, or other relevant documents. In cases where these documents are unavailable, community verification processes will be conducted to establish age. Regular awareness sessions will be organized to educate and sensitize stakeholders about the prohibition and negative impacts of children and forced labor. Signed written employment contracts from all workers hired by sub-project contractors will be requested to ensure consents to the terms and conditions of employment before commencing work.
Incidence of GBV / SH / SEA	SEA/SH could occur during construction work or other project-related activities. The project has conducted a comprehensive SEA/SH risk assessment and developed a GBV Action Plan. The action plan includes service provider mapping, GBV-sensitive channels in the GRM, a contractor code of conduct, worker training, community sensitization, and an Accountability and Response Framework.
Accidents involving Contractors and Suppliers' Trucks and Equipment	Haulage trucks and equipment belonging to Project Suppliers, Sub-Project Contractors, and Sub-Contractors may be involved in accidents leading to the loss of life and property, injuries, and spillage of materials within project communities and along haulage routes.
Other Risks	The project will face potential risks associated with labor influx, especially if there is a need to bring in foreign workers due to specific skill requirements. This influx

	may introduce challenges related to managing a diverse workforce, ensuring fair treatment, and preventing any adverse impacts on the local labor market. Additionally, exposure to infectious diseases becomes a heightened concern due to the increased movement of people. The project also faces risks related to unclear or unfair contract terms, irregular salary payments, and the absence of a robust grievance mechanism (GM). These risks underscore the importance of implementing tailored measures to address unique circumstances, safeguard the well-being of the workforce, and mitigate the potential negative impacts associated with labor influx. Women may be excluded from the workforce or being recruited on a conditional basis such as sex for work etc.

4. Responsibility for the LMP

Effective management of labor is crucial to the success of the market upgrade project, ensuring the well-being and safety of workers, preventing child and forced labor, and upholding occupational health standards. The responsibilities assigned to various stakeholders involved in the project are presented in Table 14.3. Additionally, the plan emphasizes the importance of monitoring and reporting potential risks, reinforcing the commitment to responsible labor practices throughout the project's duration.

Table 12 10 Responsibilities Distribution Among Relevant Parties

Responsible Party	Responsibilities
Contractors	• Developing and implementing project-specific labor management procedures and occupational health and safety plans • Employing or appointing a qualified EHS expert and officer • Supervising subcontractors' implementation of labor management procedures and occupational health and safety plans • Maintaining records of recruitment and employment processes • Communicating job descriptions and employment conditions to workers • Developing and implementing workers' grievance mechanisms • Regular review and reporting on labor and OHS performance • Delivering regular induction and OHS training to employees • Ensuring understanding and signing of the Code of Conduct by all workers prior to commencement of works.
Construction/Project Manager	• Overall management of project workers and subcontractors • Conducting training on the Code of Conduct with assistance from the Safeguards Officer
EHS expert	• Responsibility for OHS including training and monitoring • Development and implementation of a Code of Conduct for workers • Engagement and management of sub-contractors
EHS Officer	• Liaising with sub-contractors OHS representatives for capacity building • Training workers in environmental and social standards and OHS • Overseeing risks involving child labor, forced labor, and safety for primary supply workers. • Reporting labor and safety performance, promptly notifying the PMU of any project-related fatality or serious accident.
Project Management Unit (PMU)	• Direct supervision on behalf of the World Bank • Overseeing implementation of labor management procedures • Monitoring contractors' implementation of labor management procedures • Coordinating awareness campaigns and capacity building • Establishing and implementing the project grievance redress mechanism • Responding to monitoring visits and inspections • Monitoring the implementation of the Worker Code of Conduct
Supervision	• Ensuring compliance with labor management procedures and

Consultant	occupational health and safety plans • Monitoring contractors' implementation of LMP and OHS standards • Implementing training on LMP and OHS for contractors and subcontractors • Monitoring the establishment and implementation of the grievance redress mechanism • Monitoring and reporting on labor and OHS performance • Oversight of daily labor and safety performance on behalf of PMU

5. Policies and Procedures

5.1. General Principles

Decisions regarding the engagement and terms of employment for project workers in the market upgrade project will be made solely based on job-related criteria, without any discrimination based on personal characteristics unrelated to the job requirements. The project is committed to ensuring equal opportunities and fair treatment for all workers throughout their employment, encompassing aspects such as recruitment, compensation, working conditions, training, job assignments, promotions, termination, and disciplinary practices. Contractual arrangements with each project worker will be clearly defined in accordance with national and international laws and the World Bank Guidelines.

5.2. Contractor's Responsibility for Labor Management

Contractors will bear primary responsibility for addressing labor-related impacts resulting from activities within their control. Standardized labor clauses will be integrated into tender and contract documents to inform potential bidders about project expectations, foster awareness of labor requirements, and hold contractors accountable for compliance. Bidders must demonstrate their capacity to meet these requirements in their proposals and commit to implementing these clauses throughout the contract's duration. The World Bank will enforce compliance with these clauses, ensuring that all documentation related to labor management is accessible for inspection at any time. Similar obligations will be imposed on third-party labor suppliers, and all labor-related requirements will be clearly stipulated in bidding documents and contracts.

5.3. No Forced, Bonded Labor and conditional employment

The market upgrade project prohibits forced and child labor, encompassing practices such as bonded labor, restriction of freedom of movement, imposition of unreasonable notice periods, retention of identity documents or personal belongings, recruitment or employment fees, wage-related hindrances, fines, physical punishment, or any coercive measures compelling involuntary work, in addition, the project will ensure that at least 30% of women are employed without any conditions (such as sex for work etc.) . Robust implementation and monitoring mechanisms, in collaboration with the City Council, will identify and report any instances of child and forced labor. Grievances related to labor conditions will be monitored through the Workers' GRM.

5.4. Labor and Working Conditions

Contractors are mandated to maintain meticulous records as outlined in the LMP. The World Bank reserves the right to request records from contractors to ensure adherence to labor conditions, conducting periodic reviews against actuals and requiring prompt corrective actions when necessary. Quarterly reports submitted to the World Bank will include a summary of identified issues and remedial actions taken to address them.

5.5. Code of Conduct

The Code of Conduct (CoC) places a crucial obligation on all individuals involved to uphold acceptable standards of behavior. It is vital that the CoC includes measures for non-compliance, specifying repercussions for violations of policies addressing gender-based violence, sexual exploitation, and sexual harassment, potentially leading to termination. During the induction process, the CoC is explained, and workers acknowledge that compliance is a mandatory condition of employment. Furthermore, they understand that breaches may result in severe consequences, including dismissal or referral to legal authorities.

5.6. Age of Employment

To ensure the avoidance of hiring underage labor (child labor), contractual agreements with work contractors must incorporate provisions mandating compliance with minimum age requirements, accompanied by penalties and sanctions for any breaches. This commitment will be effectively communicated to all relevant

stakeholders, including the local community from which the unskilled workforce is recruited. It is imperative for the contractor to establish and uphold a comprehensive labor registry for all contracted workers, inclusive of age-related information. The framework outlined below encompasses the minimum age for labor, restrictions on hazardous work based on age, methods for age verification, and the necessary corrective measures in case of non-compliance.

In adherence to the Sierra Leone Employment Act of 2023, laborers for market construction must meet a minimum age requirement of 18 years for hiring. The legislation explicitly prohibits the employment of children below this age threshold. Moreover, specific occupations deemed hazardous to the health, safety, or well-being of a child, such as sea-related work, mining, quarrying, and porterage, are strictly prohibited. Additionally, the minimum age for engaging in lighter work during operation is set at 14 years within the country.

Before engaging a laborer, the project will conduct age verification and maintain documented evidence, such as birth certificates or citizenship documents, to demonstrate the age and other details of the laborer. The Project authority is advised to keep logbooks at working sites, containing information like name, gender, age, attendance, and worked hours, to facilitate age verification. Contractors will be responsible for providing necessary evidence, ensuring compliance with legal obligations.

6. Terms and Conditions

6.1. Contracts

The labor and employment terms and conditions within this project adhere to the Sierra Leone Employment Act, 2023, and World Bank requirements. Contractors are obliged to furnish their employees with written contracts, as mandated by the Act, ensuring both parties' signatures. Compliance with government-regulated wage regulations, including minimum wage, is imperative, and contractors must provide documentation reflecting key terms and conditions such as working hours, overtime pay, leave entitlements, travel and subsistence allowances, and the provision of protective gear and clothing.

The standard work week is set at 40 hours, with a maximum of 48 hours per week as per the Sierra Leone Employment Act, 2023. According to this Act, contractors seeking public contracts must certify in writing that their wages align with the latest regulations. Failure to comply may result in contract termination. Contractors must submit copies of employment contracts for all workforce members to the Office of the Project Director before deployment to the project site.

As part of monitoring mechanisms, contractors should only receive payment upon providing a certificate with their payment claim, affirming that employee wages are up to date, and all employment conditions are being met. Worker’s Organization

The Employment Act, 2023, effectively enforces collective bargaining, enabling workers to collectively negotiate the terms and conditions of their employment. In alignment with this legislation, project workers reserve the right to establish and join organizations dedicated to labor representation, empowering them to advocate for favorable terms and conditions. It is crucial to note that while workers have the freedom to form or join such organizations, any attempts to intimidate or disrupt employers' business during collective agreement negotiations constitute unfair labor practices, leading to potential legal consequences, including fines equivalent to not less than six months of the national minimum wage.

The contractors should provide for severance payments, sick leave, maternity leave for workers. They should also practice non-discrimination and health and safety measures in the contractors LMP. The contractors should attach the codes of conduct and workers’ GRM should be attached to the LMP.

6.2. Provisions on Termination

In accordance with project regulations, project workers are entitled to receive written notice of employment termination, outlining the details of severance payments promptly. All earned wages, social security benefits, pension contributions, and any other entitlements must be disbursed on or before the termination of the employment relationship. Payments will be made directly to the project workers or, when applicable, for their benefit. In cases where payments are directed to the benefit of project workers, proper documentation will be provided as evidence of these transactions.

6.3. Injuries and Death

Ensuring the safety and well-being of all workers, including temporary and daily laborers, is the responsibility of both contractors and subcontractors. Adequate insurance coverage against injuries and fatalities must be in place to protect the workforce, with a commitment to promptly address and report any incidents that may occur.

Annex 15: Laboratory Data Statement of Result

Physico–chemical Properties of Soil

NATIONAL WATER QUALITY LABORATORY

Chemical properties (mg/l) of Soil Samples in the communities

Parameters	Moyiba					Coconut Farm				Rukupa					
Mg/l	MS1	MS2	MS3	MS4	MS5	CS1	CS2	CS3	CS4	RS 1	RS2	RS3	RS4	RS5	RS6
pH	7.5	7.54	7.6	7.51	7.56	8.2	7.8	7.4	8.1	7.51	7.54	7.7	7.52	7.56	7.5
Sodium	0.48	0.48	0.62	0.5	0.71	4.32	1.26	2.2	1.54	0.48	0.48	0.62	0.5	0.71	0.52
Potassium	0.65	3	0.5	0.48	1.2	8	5	3	5	0.65	3	0.5	0.48	1.2	3
Magnesium	13.1	12.4	9	3	5	13.1	12.4	9	3	13.1	12.4	9	7	9	12.8
Calcium	5	8	6.9	3.2	1.6	8.6	5.4	6.9	3.2	5	8	6.9	3.2	1.6	8
Copper	2.91	0.36	0.67	0.54	0.62	2.93	0.48	0.67	0.54	2.91	0.36	0.67	0.54	0.62	0.36
Iron	0.1	0.06	0.22	0.2	0.018	0.1	0.09	0.22	0.2	0.1	0.09	0.22	0.2	0.018	0.09
Phosphate	0.6	0.4	0.5	0.5	0.50	0.6	0.4	0.5	0.5	0.6	0.4	0.5	0.5	0.5	0.4
Chromium	0.13	0.1	0.22	0.11	0.2	0.13	0.62	0.11	0.51	0.13	0.1	0.22	0.11	0.2	0.1
Lead	0	0	0	00	0	0	0	0	0	1	0	0	0	1	0
zinc	0	0	0	0	0	20.7	12.6	8.4	8.1	10	9	5	3	2	7
Arsenic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Faecal coliforms (MPN/100mi)	101	101	101	101	101	Nil	Nil	Nil	Nil	120	120	105	105	110	120

Signed.....

WATER QUALITY ANALYSIS LABORATORY

Date 29/2/24

Sign: B. Fadiki

Physico–chemical Properties of Surface Water

NATIONAL WATER QUALITY LABORATORY

Physiochemical properties of surface water

Parameters	Moyiba			Coconut farm			Rukupa			WHO Standard
	WSW1	WSW2	WSW3	CSW1	CSW2	CSW3	RSW1	RSW2	RSW3	
Conductivity	110	112	114	292	863	572	226	430	580	<420mg/l
T D S	55	56	57	146	431.5	286	133	215	290	<248ppm
pH	7.5	7.2	7.4	6.9	6.8	6.8	7.3	6.7	6.8	6.5-85
DO	5.1	5.3	5.16	10.4	9.2	11.6	5.8	5.42	6.1	NA mg/l
Turbidity	80	63	50	29	20	16	15	9	0	<5.0NTU
Temperature °C	28.1	28.1	28	20.1	28	28.3	28	28.2	28.3	No. value
Chlorine	0	0	0	0	0	0	0	0	0	0.03-0.5
Aluminum	0	0	0.02	0.02	0.09	0.04	0.02	0.09	0.04	<0.2mg/l
Ammonia	0.01	0	0.02	0.01	0	0.02	0.04	0.07	0.05	No. Value
Calcium	6.4	4.5	5.5	17	3	60	46	50	110	<250mg/l
Copper	0.49	0.54	0.42	0.49	0.54	0.42	0.49	0.54	0.42	<1.0mg/l
Iron	0.06	0.09	0.05	0.06	0.09	0.05	0.06	0.09	0.05	<0.3mg/l
Manganese	0.33	0.61	0.2	0.06	0.06	0	0.36	015	0.26	<0.4mg/l
Magnesium	0.01	0.02	0.02	0.01	0.01	0.01	0.1	0.3	0.2	<200mg/l
Nitrite	0.05	0.04	0.06	0.01	0.05	0.1	0.01	0.05	0.1	<3.0mg/l
Nitrate	6.00	6.00	8.00	1.00	1.00	8.00	1.00	1.00	8.00	<10mg/l
Potassium	1.00	1.00	0	1.00	1.00	0	1.00	1.00	0	<6.0mg/l
Phosphate	1.3	0.9	0.7	1.3	0.9	0.7	1.3	0.9	0.7	<20mg/l
Silica	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	<15mg/l
Sulphate	6.6	8.1	9.8	0	46.2	25.6	6	46.1	5.1	<400Mg/l
Sulphite	0.4	0.4	0.4	0.2	0.3	0.3	0.2	0.4	0.3	No. value
Chloride	5	4	5	5	4	5	40	40	50	<250mg/l
Arsenic	0	0	00	0	0	0	0	0	0	<0.01mg/l
Chromium	0.13	0.12	0.11	0.13	0.12	0.11	0.09	0.06	0.02	<0.05mg/l
Bicarbonate	0	0	0	0	0	0	0	0	0	No. value
Zinc	0	0	0.84	0	0.3	0	0	0	0	<5.0Mg/l
e-coli	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Zero
Faecal coliform	100	100	100	80	60	90	100	100	100	Zero

Signed :.....

WATER QUALITY ANALYSIS LABORATORY
DATE 9/2/24
SIGN

Physico-chemical Properties of Groundwater

NATIONAL WATER QUALITY LABORATORY

Physiochemical properties of Groundwater

Parameters	Moyiba		Coconut farm		Rukupa		WHO Standard
	MSW1	MSW2	CSW1	CSW2	RSW1	ESW2	
Conductivity	20	130	65	80	150.50	60	<420mg/l
T D S	9.8	40.3	28.6	30.10	31.20	38.40	<248ppm
pH	5.25	5.00	5.20	4.90	5.68	4.60	6.5-85
DO	55	10.4	48.2	56.1	48.2	46.5	NA
Turbidity	0	14.0	0	0	8.8	0	<5.0NTU
Temperature	28.2	28.2	28.1	27.9	28.3	28.1	No. value
Chlorine	0	0	0	0	0	0	0.03-0.5
Aluminum	0	0	0	0.03	0	0.09	<0.2mg/l
Ammonia	0.01	0	0.01	0	0.04	0.07	No. Value
Calcium	4.4	4.5	6.50	54.3	44.0	50	<250mg/l
Copper	0.05	0.45	0.49	0.50	0.40	0.54	<1.0mg/l
Iron	0.03	0.07	0.05	0.06	0.07	0.09	<0.3mg/l
Manganese	0.3	0.1	0.3	0.06	0.2	0.15	<0.4mg/l
Magnesium	0.01	0.01	0.01	0.01	0.01	0.3	<200
Nitrite	0.02	0.05	0.04	0.04	0.01	0.05	<3.0mg/l
Nitrate	0.10	0.30	1.00	2.00	1.00	1.00	<10mg/l
Potassium	0.10	1.00	1.00	0.1	1.00	1.00	<6.0mg/l
Phosphate	0.7	0.2	0.1	0.1	0.3	0.7	<20mg/l
Silica	0.12	0.01	0.13	0.01	0.01	0.01	<15mg/l
Sulphate	2.03	5.1	6.0	6.2	36.7	43.1	<400Mg/l
Sulphite	0.01	0.02	0.00	0.00	0.02	0.01	No. value
Chloride	3	4	2	5	45	45	<250mg/l
Arsenic	0	0	0	0	0	0	<0.01mg/l
Chromium	0.01	0.01	0.01	0.01	0.01	0.01	<0.05mg/l
Bicarbonate	0	0	0	0	0	00	No. value
Zinc	0	0	0	0	0	0	<5.0 mg/l
e-coli	Nil	Nil	Nil	Nil	Nil	Nil	Zero
Faecal coliform	Nil	Nil	Nil	Nil	20	Nil	Zero

Signed.....

WATER QUALITY ANALYSIS LABORATORY

DATE 29/2/24

SIGN K. Tank

Annex 16: Air Quality and Noise Monitoring

Plate 1: Coconut Farm Air Quality and Noise Level Measurement

Plate 2: Moyiba Air Quality and Noise Level MeasurementPlate 1: Coconut Farm Air Quality and Noise

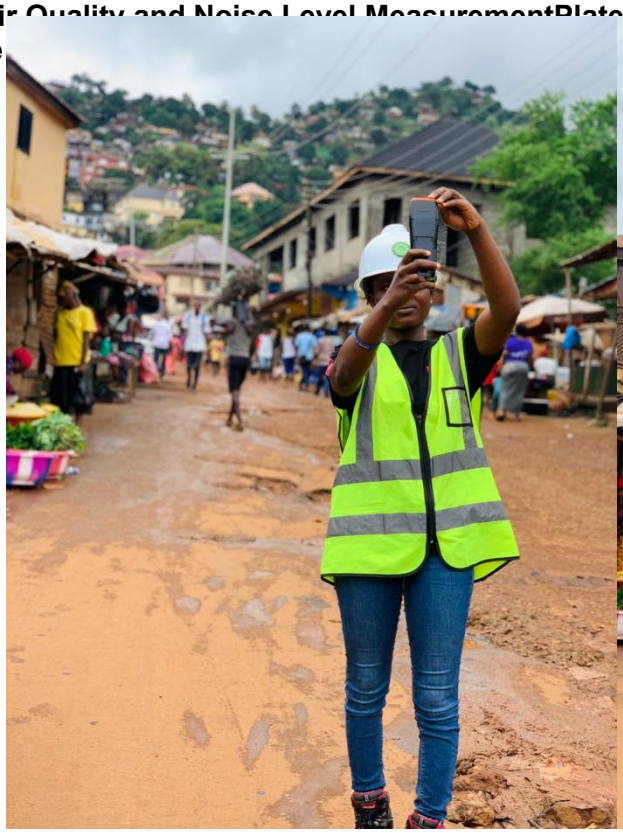


Plate 2: Moyiba Air Quality and Noise Level Measurement

Plate 3: Portee – Rokupa Air Quality and Noise Level MeasurementPlate 2: Moyiba Air Quality and Noise Level Measurement

Plate 3: Portee – Rokupa Air Quality and Noise Level Measurement

Plate 3: Portee – Rokupa Air Quality and Noise Level Measurement

Annex 17: Environmental and Social Technical Clauses (ESTCs)

Most environmental and social impacts of the neighborhood upgrade project will result from activities directly under the control of contractors and will be mitigated directly by the same contractors. As a consequence, ensuring that contractors effectively mitigate programs activities related impacts is the core of the Program's mitigation strategy. This will be done by ensuring that the environmental and social management of programs activities are mandatory parts of activities works contracts. The client will incorporate standardized environmental and social clauses in tender documentation and contract documents, so that potential bidders are aware of environmental and social performance requirements expected from them, are able to reflect that in their bids, and required to implement the clauses for the duration of the contract.

Prior to start implementing the project, the contractor must prepare and submit a Contractor Environmental and Social Management Plan (CESMP) to the supervision firm and client for approval. The CESMP will provide a detailed explanation of how the contractor will comply with the project EHS clauses for contractors and demonstrate that sufficient funds are budgeted for that purpose and sufficient capacity is in place to oversee, monitor and report on CESMP performance. The client will enforce compliance by contractors with clauses covering issues related to Environment, Health and Safety (EHS). Table 9.1 presents the environmental and social technical clauses (ESTCs) to be incorporated in the Tender Document.

Table 8.13: Environmental and Social Technical Clauses (ESTCs)

S/N	ESHS ISSUES/NON COMPLIANCE	PROCEDURE FOR INVOKING PENALTIES
1	Dust Control/Suppression: When road surfaces are opened up during construction, they tend to be sources for suspension of particulates either by wind or vehicular movement across the sites. There is therefore a need to periodically sprinkle water on the road surface, to reduce dust generation	Step 1: Where dust issue is found to be due to no sprinkling by contractor, a written instruction will be issued to immediately commence sprinkling on a daily basis. Where sprinkling is being done once a day but found to be inadequate, then contractor will be required to increase the frequency of sprinkling to twice a day Step 2: Where non-compliance continues, an ultimatum (72hrs) is issued to effect compliance, with notification of intention to bring in a third party to effect compliance Step 3: Bring in a third party to effect sprinkling and contractor and consultant is surcharged for the costs
2	Provision of adequate temporary accesses: When drain works/excavations debar people from easily accessing their properties, safe temporary accesses have to be provided. This is usually in form of wooden planking, which must be wide enough to allow 2 people to walk across, side-by-side. To this end, a minimum of one such crossings must be provided for every building. Where it is a set of shops, a minimum of 1 crossing must be provided for every 3 shops. In some cases, drain works are very deep, and falls from the temporary crossings could cause grave injuries, if not death. Therefore, in addition to providing wooden crossings, guard/hand rails must be provided.	Step 1: Contractor shall be notified of inadequacy of temporary accesses (number, and safety), in writing. A 72hr ultimatum shall be issued to the contractor to this effect. Step 2: Where non-compliance persists at the effluxion of the ultimatum, a written 24hr notice of intent to invoke the introduction of a third party to fix the non-compliance, and surcharge contractor and consultant will be issued Step 3: Introduce third party to fix non-compliance, and surcharge contractor and consultant
3	Unnecessarily long delay in backfilling and covering open trenches: Sometimes, drain works are left open for months, without backfilling and covering up, constituting safety risks. Therefore speed of restoration of opened trenches	Step 1: Generally, Trenches shall not be left open beyond 3 weeks of opening them up, except in extreme cases. Where trenches are observed to have been open beyond this length of time, a written notification to restore the sites will be written. A 7 day limit will be given Step 2: Upon expiry of the 7-day notice, a written 72hr

S/N	ESHS ISSUES/NON COMPLIANCE	PROCEDURE FOR INVOKING PENALTIES
	is very critical, especially where they are adjacent to residences and/or commercial structures	notice of intention to invoke penal clause shall be sent to contractor. The clause will include closure of site (if more than 50% of site is affected) Step 3: If compliance is still not effected, then a Stop Work Order is issued, with instruction to effect compliance within 72hrs Step 4: Where this is still not heeded, then a third party is invited to effect compliance and contractor and consultant are surcharged for the cost of effecting compliance
4	Protruding reinforcements and inadequately cordoned off excavations for culverts and bridges	Step 1: Contractor shall be notified through the supervising consultant of the need to bend over protruding reinforcements, or cover them, in writing. A 72hr ultimatum shall be issued to the contractor to this effect. Step 2: Where non-compliance persists at the effluxion of the ultimatum, a written 24hr notice of intent to invoke the introduction of a third party to fix the non-compliance, and surcharge contractor and consultant will be issued Step 3: Introduce third party to fix non-compliance, and surcharge contractor and consultant
5	Ponding and puddling: Where ponding and puddling occurs on site, contractor is required to evacuate the water by using centrifugal pumps, to prevent breeding and proliferation of disease vectors such as mosquitoes	Step 1: Contractor shall be notified of need to evacuate the ponds/puddles, in writing. A 72hr ultimatum shall be issued to the contractor to this effect. Step 2: Where non-compliance persists at the effluxion of the ultimatum, a written 24hr notice of intent to invoke the introduction of a third party to fix the non-compliance, and surcharge contractor and consultant will be issued Step 3: Introduce third party to fix non-compliance, and surcharge contractor and consultant
6	Poor/inadequate use of PPEs by personnel: Quite often, contractor personnel work on site without adequate PPEs. Most important are: safety boots, hand gloves, and face covers (in dusty areas).	Step 1: Erring personnel will be asked to stop work and must not work until properly kitted Step 2: Contractor will be notified and issued a written warning to ensure that workers comply, henceforth Step 3: Where continued default is observed, contractor will be notified of intention to fine them for non-compliance. A surcharge will be fixed per non-complying personnel, and proceeds of such fines will be used for community support.
7	Non-gender sensitivity of facilities on site: Among others, contractor is required to provide separate sanitary facilities, especially toilets for male and female. Female toilets shall not be used by males, and vise versa.	Step 1: Contractor shall be notified of non-compliance, in writing. A 7day ultimatum shall be issued to the contractor to this effect. Step 2: Where non-compliance persists at the effluxion of the ultimatum, a written 72hr notice of intent to invoke the introduction of a third party to fix the non-compliance, and surcharge contractor and consultant will be issued Step 3: Introduce third party to fix non-compliance, and surcharge contractor and consultant
8	Local Content Requirement Fulfilment: Nigeria has a local content law, which specifies that 100% of non-skilled labor shall be from the host communities and immediate environ. Contractors must	Step 1: Contractor shall be notified of non-compliance in writing. A 72hr ultimatum shall be issued to the contractor to this effect. Step 2: Where non-compliance persists at the effluxion of the ultimatum, a written 24hr notice of intent to issue stop

S/N	ESHS ISSUES/NON COMPLIANCE	PROCEDURE FOR INVOKING PENALTIES
	therefore comply with this.	work order shall be issued Step 3: Issue stop work order, and maintain closure until compliance is achieved. Lost time shall be at contractor's costs
9	works yards and working conditions: works yards are expected to meet some certain minimum requirements, including: • Adequate security (fence and gate) • Adequate space (no congestion, and not more than 4-6 people to a room, depending on the size of the room) • Adequate facilities, including kitchen, power, and steady water supply	Step 1: Contractor shall be notified of non-compliance in writing. A 72hr ultimatum shall be issued to the contractor to this effect. Step 2: Where non-compliance persists at the effluxion of the ultimatum, a written 24hr notice of intent to issue stop work order shall be issued Step 3: Issue stop work order, and maintain closure until compliance is achieved. Lost time shall be at contractor's costs
10	Site security and proper cordoning off of sites: Sites and work areas shall be properly cordoned off and secured, to prevent unauthorized access. To this end, adequate caution tapes and concrete cones shall be used for access control. In cases where the extent of work is major and risks are high (exposed excavations, reinforcements, and other injury risks), the site shall be fenced off using corrugated sheets	Step 1: Contractor shall be notified of non-compliance in writing. A 72hr ultimatum shall be issued to the contractor to this effect. Step 2: Where non-compliance persists at the effluxion of the ultimatum, a written 24hr notice of intent to issue stop work order shall be issued Step 3: Issue stop work order, and maintain closure until compliance is achieved. Lost time shall be at contractor's costs Step 4: Where non-compliances persists, invite third party to effect compliance, and surcharge contractor and consultant for the associated costs
11	Traffic Management: For project activities that have likelihood of interfering with routine traffic, a traffic management plan (TMP) shall be prepared by contractor, and approved by the Safeguards Unit, prior to commencement of works. The adequacy of the TMP in mitigating traffic impacts shall be regularly monitored.	Step 1: Contractor shall be notified of non-compliance in writing. A 72hr ultimatum shall be issued to the contractor to this effect. Step 2: Where non-compliance persists at the effluxion of the ultimatum, a written 24hr notice of intent to issue stop work order shall be issued Step 3: Issue stops work order and maintain closure until compliance is achieved. Lost time shall be at contractor's costs
12	Temporary Land Acquisition: Contractors are expected land for construction purposes including but not limited to construction management and sourcing of materials in line with the Resettlement Policy Framework (RPF) of the project. This means that legitimate legal or communal title holders must agree with such use and must be properly compensated	Step 1: If in the course of ESHS monitoring or through a complaint, the PIU becomes aware of the forced acquisition of any piece of land by the contactor, a 1-week notice will be issued for the contractor to ensure propriety in the terms of use of such land. The agreed terms of use shall be transmitted to the PIU within that period. Step 2: If and when, the notice expires and the contractor fails to submit an acceptable proof of a proper agreement for temporary land use, the PIU shall issue a 48 hour notice to comply upon which the client will charge the applicable land rate for rent/lease of land plus applicable restoration charges in the project area as a deductible from the contractors next payment certificate to be paid in favour of the land/property owner. Step 3: If in the judgement of the PIU, the contractor will not be due for payment for a period of 3 months or more, a stop work order on the project site affected by such

S/N	ESHS ISSUES/NON COMPLIANCE	PROCEDURE FOR INVOKING PENALTIES
		forced ;land acquisition shall be issued.
13	Reporting: Periodic reporting is expected from contractors. Contractually, as a minimum, weekly, monthly and quarterly HSE reports are expected from the contractor. The weekly reports are to come in on the next working day after the week ends while the monthly reports are to come in within the first week after the end of the month Also, it is mandatory to report accidents/incidents on site to the PIU within 3hours of its occurrence. Failure to do so will attract sanctions	Step 1: In the event of late reports, send warning to contractor through consultant Step two: In the event of continued non-compliance, issue 48-hour notice of intention to stop work Step 3: Issue Stop Work until compliance is achieved. If this order is not obeyed, escalate to the World Bank The World Bank is very concerned about transparency and full disclosure. Therefore, accidents and incidents must be promptly reported. Failure to report incidents will attract IMMEDIATE Stop work order, while investigations are going on. If the contractor is found culpable, he will be sternly sanctioned, and it could include monetary sanctions and/or recommendation for contract termination
P.S.	The supervising consultant is expected to effect compliance by contractor. Thus, when a third party has to be brought in, the consultant shall be deemed to be equally culpable, as the contractor. Unless consultant is able to prove that he has noticed, and taken steps (which did not yield results), he will be penalized as well. Thus, costs of third-party interventions shall be borne by contractor and consultant at a ratio of 70%: 30%, unless consultant can convince the Safeguards Unit otherwise.	

Annex 18: Draft Scope of Work for Preparation of the Contractor's Environmental and Social Management Plan (C-ESMP)

The Contractor shall develop a comprehensive Contractor's Environmental and Social Management Plan (C-ESMP) that is fully aligned with the Employer's Environmental and Social Management Plan (ESMP), and applicable national laws and regulations.

The C-ESMP shall be submitted for review and approval by the Engineer/Supervision Consultant and must address all project phases: pre-construction, construction, and post-construction/defects liability. The scope of the C-ESMP shall include, but is not limited to, the following elements:

1. Site Establishment and Mobilization Plan

- Procedures for site clearing, fencing, and access control.
- Construction Works Yards - Site Layout Plan: Contractors must submit a detailed site layout plan for approval, including access routes, storage areas, and security measures
- Environmental measures for mobilization and demobilization, including soil protection and runoff management.
- Measures for post-construction site restoration, including removal of temporary structures were required.

2. Traffic and Public Safety Management Plan

- Development of site-specific Traffic Management Plans (TMPs) in consultation with traffic authorities.
- Temporary traffic rerouting, barricading, detour signage, and provision of flagmen during critical operations.
- Pedestrian and vulnerable road users safety measures.
- Ensuring emergency vehicle access at all times.
- Notification procedures for the public regarding road closures or service disruptions.

3. Air Quality, Noise, and Dust Management Plan

- Measures for dust suppression during excavation, material transport, and roadworks (e.g., water spraying, covers on trucks).
- Use of low-emission machinery and maintenance protocols to control air pollution.
- Noise mitigation strategies include use of noise barriers, work-hour restrictions, and low-noise equipment.
- Monitoring plan for dust and noise levels with reference to national ambient standards.

4. Soil, Water, and Waste Management Plan

- Protocols for spoil and excavated material management, including temporary storage and final disposal.
- Erosion and sediment control measures at cut/fill zones and spoil piles.
- Pollution prevention measures for fuel storage, refueling, and equipment washing.
- Stormwater and runoff management to avoid waterlogging and downstream impacts.
- Plan for collection, segregation, and disposal of solid waste, wastewater, construction debris, and hazardous materials, in accordance with local laws.

6. Occupational Health and Safety (OHS) Plan

- Provision and enforcement of Personal Protective Equipment (PPE) for all workers.
- Induction training and toolbox talks covering safe work procedures and hazard communication.
- Risk assessments and safe operating procedures for all critical activities.
- Task specific assessment and EHS measures such as trenching and pipe laying, working in confined spaces, handling concrete and chemicals, road/culvert crossings, use of heavy equipment and machinery
- First aid arrangements, incident reporting, and emergency response plan (fire, injury, chemical spills).
- Measures to ensure safe and hygienic accommodation and welfare facilities in worker camps.
- Prevention of communicable diseases, including community health and gender-based violence (GBV) safeguards.

7. Utility Protection and Coordination Plan

- Identification and mapping of all underground and above-ground utilities prior to excavation.
- Coordination with utility owners for safe relocation or protection of assets.
- Emergency response plan in case of accidental utility damage.
- Measures to minimize service disruptions to local communities.

9. Commissioning and Decommissioning Environmental Plan

- Procedures for hydrotesting, disinfection, flushing, and pressure testing of pipelines.
- Management of testing effluent, ensuring safe discharge or treatment.
- Temporary reinstatement and final restoration of disturbed areas.
- Handover protocols with compliance checklists and environmental close-out documentation.

10. Stakeholder Communication and Grievance Management Plan

- Strategy for community engagement, including prior notification of works, public consultations, and signage at work fronts.
- Mechanism for receiving, documenting, and resolving grievances, both from the community and workers.
- Assignment of Community Liaison Officer (CLO) to manage stakeholder interface.

11. Monitoring, Reporting, and Compliance Assurance Plan

- Daily, weekly, and monthly EHS inspection checklists and site records.
- Establishment of corrective and preventive action tracking system (CAPA).
- Regular environmental and social performance reports to be submitted to the Engineer/Employer.
- Third-party or independent E&S compliance audits (if applicable).

12. As-Built Environmental Records and Handover

- Integration of E&S safeguards into as-built drawings and GIS data.

- Documentation of any design modifications with environmental implications.
- Submission of environmental completion certificates and post-construction audits.
- Support for operator training, and inclusion of environmental maintenance protocols in O&M manuals.
- Provision for post-trial operational feedback mechanisms to identify any unforeseen E&S issues.

General Requirements

- The C-ESMP must be prepared by qualified E&S professionals.
- All sub-plans should include objectives, roles and responsibilities, methods and tools, timing, indicators, and responsible personnel.
- The C-ESMP must be updated as needed to reflect changing site conditions, new risks, or updates to Employer's ESMP.
- No construction activity shall commence until the C-ESMP has been reviewed and approved by the Engineer/Employer.

Annex 19: Pictures of the Project Areas

Moyiba		

Students using the proposed road for intervention in Moyiba Neighbourhood

Cross section of the primary drainage outfall culvert at Granville Brooke

Cross section of the primary drainage outfall culvert at Granville Brooke

Coconut Farm

Areas prone to erosion	Unstable slopes and areas prone to erosion	
Portee - Rokupa		
	Blocked drains with soild waste in Portee-Rokupa for intervention	Solid waste in Portee-Rokupa to the ocean
Flood and erosion prone areas along proposed road corridor		

Annex 20: Workers Camp Site Management Plan

The Worker's Camp Site Management Plan for proposed intervention should address specific activities that will be undertaken to minimize the impacts resulting from siting a worker's camp within the local project communities.

Elements for managing risks associated with the Workers Campsite under the proposed project include:

The Contractor shall ensure site workers camp is sited at a designated and approved location by the PMU

On-site Social and Health Care Facilities: Provision of basic on-site social and medical facilities such as first aid, basic health care center, recreational center, food service, etc. to reduce pressure on community facility.

Campsite Safety and Security: Provision of 24 hours security stationed at the Campsite to ensure the security and safety of construction workforce and construction equipment.

Campsite Waste Management: Adequate waste management of sewage and other forms of waste within the campsite. The Campsite shall be equipped with independent toilet facilities for male and female workers respectively, to discourage irregular waste disposal. Furthermore, standards must be instituted for personal and public hygiene among project workers. Additionally, project workers shall be properly trained on personal hygiene.

Establishment of and Training on Workers on Code of Conduct: The Supervising Engineer and PMU ES Unit shall ensure that Contractors establish a workers' Code of Conduct (CoC). The CoC will help mitigate some of the social and environmental impacts of labour influx such as risk of social conflict, Increased risk of illicit behaviour and crime, Increased burden on and competition for public service provision, wastewater discharges, increased demand on freshwater resources, and inadequate waste disposal and illegal waste disposal sites etc. and will help keep workers (local/foreign) in check on the rules and regulations binding their engagement. Contractors to ensure provision of training to workforce on code of conduct and ensure strict compliance. Measures provided for in the ESMP to deter illicit behaviour and other social vices are adequately enforced.

Training programs: Conduct and ensure key staff, including contractors, receive training regarding the likelihood, significance and management of influx-related issues such as HIV/AIDS, GBV, SEA, VAC etc.

Carry out Regular Monitoring: The PIU shall monitor for change throughout the project cycle to ensure compliance and on mitigation effectiveness from projects/contractors. Ensure a documented monitoring program that tracks key social outcomes, changes and issues at regular intervals throughout the project lifecycle.

Annex 21: Sample Sludge Management Plan

1. Introduction

Purpose: To establish a comprehensive sludge management strategy for the construction and operation of public and communal toilets in Moyiba, Coconut Farm, and Portee Rokupa.

Scope: Focus on Pour Flush Toilets with Septic Tanks and VIP Toilets, 2. Background Information

Current Sanitation Infrastructure: Overview of existing sanitation facilities and the need for new construction in the targeted areas.

Challenges: Identify challenges such as inadequate treatment facilities, poor sludge disposal practices, and environmental impacts.

3. Objectives

Improve Sanitation Facilities: Construct and maintain toilet facilities to ensure proper functioning and hygiene.

Efficient Sludge Management: Develop systems for effective sludge collection, treatment, and disposal.

Environmental Protection: Minimize environmental impact through sustainable sludge management practices.

4. Sludge Collection and Transport

Pour Flush Toilets with Septic Tanks:

Collection: Regularly scheduled emptying of septic tanks using vacuum trucks.

Transport: Transport sludge to off-site treatment facilities or designated landfills.

VIP Toilets:

Collection: Manual or mechanical extraction of sludge.

Transport: Transport to off-site treatment facilities or landfills.

5. Sludge Treatment

Off-site Treatment:

Facilities: Utilize existing Fecal Sludge Treatment Plants (FSTPs) for processing sludge from Pour Flush and VIP Toilets.

Processes: Employ anaerobic digestion, composting, or other suitable methods.

On-site Treatment:

6. Disposal and Reuse

Landfill Disposal: Ensure safe disposal of treated sludge in designated landfills.

Soil Composting: Utilize composted sludge for soil improvement in agricultural areas.

7. Monitoring and Evaluation

Performance Indicators: Establish indicators to monitor the effectiveness of sludge management practices.

Regular Assessments: Conduct periodic evaluations to ensure compliance with environmental standards.

8. Community Engagement and Education

Awareness Campaigns: Educate the community on the importance of proper sanitation and sludge management.

Stakeholder Involvement: Engage local stakeholders in planning and implementation.

9. Budget and Resources

Funding Sources: Identify potential funding sources, including government, NGOs, and international organizations.

Resource Allocation: Detail the allocation of resources, including personnel, equipment, and materials.

10. Implementation Timeline

Phased Approach: Outline a timeline for implementing the plan, with specific milestones and deadlines.

11. Risk Management

Identify Risks: List potential risks, such as funding shortages or technical challenges.

Mitigation Strategies: Develop strategies to mitigate identified risks.

Annex 22: Minimum Requirement and Technical Specification of Hazardous Waste Management

Objectives

- To collect, transport, process and treat the Hazardous Waste collected from the project works.
- To safely dispose of treated hazardous waste in an environmentally sound manner.
- To ensure the environment, the public and workers are protected from harm or injury in the process

Minimum Requirement

Offerors must demonstrate that they have the resources and capability to provide the materials and services as described herein. *All offerors must submit the documentation indicated below with their proposal. Failure to provide any of the required documentation will be cause for proposal to be deemed non-responsible and rejected.*

The following criteria shall be met in order to be eligible for this Contract:

Debarment: By signing and submitting a proposal, Offerors certify that they are not currently debarred by any regulatory authorities. Offerors shall provide in their proposal documentation related to all debarments that occurred within the last ten (10) years.

The minimum requirement, technical specification and roles and responsibilities of such a firm are elaborated below:

1. Licenses and certifications: The firm must have the relevant licenses and accreditations from regulatory agencies
2. Prior Experience/Track Record: The firm must have a minimum of ten years' experience and must have acquired a formidable track record in managing hazardous wastes
3. Technical staff: The firm must have, as a minimum and as part of the team, the following experts:
    a. Hazardous Waste Manager: Expert in solid hazardous waste management with a minimum of a Master's degree, with at least fifteen (15) years of work experience and a minimum of ten (10) years of experience in hazardous waste management planning activities. The expert shall have participated in hazardous waste management planning studies for dredging works in his/her home country.
    b. HW technical and engineering staff: expert with a minimum of master's degree in chemical/environmental engineering, with at least ten (10) years of related technical experience including knowledge of innovative and sustainable hazardous waste management practices
    c. Environmental/Waste Management Specialist: Environmental expert with a minimum of master's degree in natural/environmental sciences and over (ten) 10 years of related experience.
    d. Social/Community engagement expert with a minimum of master's degree in related field and at least five (5) years of relevant experience including behavioral assessment and actions.
4. Tools and Equipment: The firm must be equipped with the appropriate tools and equipment such as forklifts, dump trucks, front loaders, PPEs etc.

Scope of Work/Technical Specification

The hazardous waste management firm will be responsible for safe handling, collection, transportation, treatment, and subsequent disposal of the hazardous waste (HW)

Handling

- The firm must obtain license for handling HW from relevant regulatory agencies. The handling license requires the firm to provide of detailed description for all HW management procedures and practices intended to be carried out for ensuring proper management of such waste.

- Describe in detail the procedures and practices for handling HW according to the national hazardous waste management.
- Keep a register of the generated waste, and hazardous waste stockpiles with details of types and quantities of this waste.

Transport

Before transporting HW by land, the firm shall adhere to the following transportation guidelines:

- obtain transportation permits from EPA and relevant agencies for hazardous waste transportation.
- follow standard safety procedures prescribed by the relevant government authorities in loading and unloading hazardous waste
- ensure vehicles for transportation of the HW meet the national transportation safety standards prescribed by the traffic authorities.
- have a copy of the relevant Material Safety Data Sheet (MSDS) on board the vehicle transporting HW.
- ensure all drivers are trained on emergency procedures and must be kitted with the appropriate protective apparels
- affix signage or mark of hazard on the cargo or transport media
- affix to every package or container a label, with the following information:
    - Name, address, and telephone number of the contractor/source of HW
    - Description of the HW
    - Signal word such as “Hazardous materials”, “Danger”, “Warning” and/or pictograms, in accordance with international regulations.
- The capacity of the vehicles must be adequate for the quantities of the waste to be transported.
- The vehicles must be equipped with the necessary safety equipment, such as fire extinguishers, protective clothing, and absorbing materials in case of spills, as well as first aid equipment, etc.
- the vehicles should be regularly washed and cleaned after each use according to the instructions set by the appropriate Governemnt authorities.
- ensure that the transport vehicles carrying HW should not pass through populated areas through daytime
- Drivers of these vehicles must be trained to take the necessary action in case of emergencies and accidents

Storage

An adequate storage space to temporarily store the waste as it is collected prior to treatment must be provided. Storage requirements include:

- The firm should keep a record of the quantity of the HW being stored in in such form as approved by the appropriate Governemnt authorities.
- Every container or package for storing such waste is secured, marked and labelled
- Personnel handling HW shall use appropriate Personal Protective Equipment (PPE)
- Store the HW in appropriate, sealed and leak free containers
- The storage area should be located away from public places to prevent any harm to the public or those people exposed to the waste.
- The storage area must be located away from similar HW storage areas
- There must be loading and unloading facilities and facilities for emergency situations
- The area should be of adequate size for the waste quantities to be stored.

- The storage area should be clearly designated and equipped with the necessary safety and protection equipment such as fire extinguishers, protective clothing, absorbing materials and first aid equipment.
- Hazardous waste storage containers must be of inert materials which do not react to the waste.
- The storage containers must be properly sealed to avoid any leakages or spills during storage or movement.
- The hazardous waste containers should be labelled with clear signs indicating their content, the handling requirements and the associated hazards if improperly handled.
- The containers must always be kept clean and washed after use.
- A time schedule should be set for collecting waste so that the waste is not kept for long periods in the storage containers.

Treatment

- The firm will treat HW and convert it into non-hazardous substances or to stabilize or encapsulate the waste so that it will not migrate and present a hazard when released into the environment.
- The firm will treat HW by any of the following methods: chemical, physical, biological, thermal or landfilling methods.

Disposal

- The final products, after treatment, are disposed of in a land fill.

Terms and Conditions

This scope of work is conditional and is triggered under the scenario where a contractor

Working at the project sites discovers hazardous materials (e.g. contaminated

sediments) within the project area.

Deliverables and Timing

The Hazardous Waste Managing Firm shall provide the following deliverables to the supervision consultant within the timeline:

- Two (2) Weeks Before operation:
  - Up-To-Date hazardous waste management plans (including Health & Safety, Spill & Emergency Response, and Site Contingency plans)
  - Changes in Disposal Facilities/Processes (TSDFs)
- During Operations
  - Carry out Hazardous Material Safety Meeting
  - Submit relevant documentation, including Contractor Sign-in Sheet (provided by the Supervision Consultant), equipment information etc.
  - Consignment information, including tonnage, composition etc.
- After Collection Operations
  - Receipt for Contractor following Collection (Electronic copy preferred in PDF form)
  - Submission of documentation, with pictorial evidence, of Hazardous Waste Management processes, including collection, transport, storage, treatment and final discharge (or reuse if applicable) for every consignment, in soft and hard copies, to the supervision consultant.

Inspection of Hazardous Waste Management Firm

Industrial inspection of hazardous waste management is carried out with two main objectives. The first objective entails the verification that this type of waste (contaminated dredged sediment) is properly managed within the establishments it is generated (i.e. verify the handling of Hazardous Waste in the establishments). The proper management of Hazardous Waste would ensure that adverse impacts of this type of waste on

public health and the environment are minimized. The second objective is to verify the effectiveness of Hazardous Waste management (i.e. verifying that all Hazardous Waste generated within an establishment is captured by the management system, and thus properly handled). Management is considered effective when no HW generated escapes from the management system.

The following is an inspection checklist[20] recommended for use during the assessment of hazardous waste managers and during their regular on-site inspections:

Requirement			Compliance status		Comments
			Yes	No	
1	**Generation of HW**				
1.1	From the gathered background information, is the establishment likely to generate HW?				
Note 1: Before carrying out the inspection visit, it is recommended that the team prepares a brief information summary about the industry, using the background information collected. The summary should include a short description of the process, the hazardous input material used, and the expected types of generated HW.					
2	**Document Review**				
2.1	***Licenses***				
2.1.1*	Does the establishment have the necessary HW licenses? Unless the HW license is covered under the ESIA?				
2.1.2*	Are these valid?				
2.2	***On-site HW treatment***				
2.2.1*	In case of HW treatment on-site, does the establishment have a HW handling license form the competent national authority?				
2.2.2	Does the establishment have an approval from Environment Protection Agency on the treatment operation(s)?				
2.2.3	Is the treatment approval valid?				
2.3	***HW transport***				
2.3.1	If the establishment is transporting its own HW off-site				
	2.3.1.a*	Does the establishment have a HW transport license? ***(Copy of permit should be made available)***			
	2.3.1.b*	Is the license valid?			
	2.3.1.c	Are delivery documents to the receiving facility (recycling/ treatment /disposal) available?			
	2.3.1.d*	Is the receiving facility permitted to receive HW? ***(Details of permit should be made available)***			

[20] Egyptian Pollution Abatement Project, Manual of Hazardous Waste Inspection, October 2002

	2.3.1.e	Is routing of transport vehicles determined?			

2.3.2	If the establishment is not transporting its HW off-site, but delivering to a transporter				
	2.3.2.a	Are agreements/ delivery documents to HW transporters available?			
	2.3.2.b*	Is the transporter permitted to transport HW? ***(Details of license should be made available)***			
2.4	***HW Disposal***				
2.4.1*	In case of on-site disposal of HW, does the establishment have a HW disposal license?				
2.4.2*	Is the license valid?				
2.5	***HW Register***				
2.5.1	Is the HW register available?				
2.5.2	Is it consistent with the requirements of the environment protection laws?				
2.5.3	Do the contents of the HW Register describe the situation in the establishment accurately? ***(Answer after field inspection)***				
2.6	***Emergency plan***				
2.6.1	Is the emergency plan for dealing with accidents available?				
2.7	***Training records***				
2.7.1	Are the training records for concerned personnel available?				
3	**HW generating Units**				
3.1	Is the generated HW identified and quantified?				
3.2	Are the quantities of generated HW consistent with quantities stated in the HW register?				
3.3	Is HW segregated from one another as well as from other non-HW?				
3.4	Are the HW collection containers of adequate capacity?				
3.5	Does the establishment ensure that **no** HW is accumulated/ stored at the generating units for long periods?				
3.6	Is the generated HW transferred to the main HW storage area?				
3.7	Are the employees aware of proper HW handling and trained to act in emergency cases?				

4.	**Utilities for HW management**			
4.1	***On-site Treatment of HW***			
4.1.1	Is the treatment process consistent with provisions of EPA approval?			
4.1.2	If HW is generated from the treatment process, is the waste properly identified and quantified?			
4.1.3	Is the HW from the treatment process separated from one another as well as from other non-HW?			
4.1.4	Are the employees aware of proper HW handling and trained to act in emergency cases?			
4.2	***On-site storage of HW***			
4.2.1	Is there a specifically designated HW storage area?			
4.2.2	Is the storage area meeting the legal requirements?			
4.2.3	Are the storage containers meeting the legal requirements?			
4.2.4	Are there clear labels inscribed with the required information on the containers?			
4.2.5	Is the storage area suitable for the types and quantities of waste stored?			
4.2.6	Are the types and quantities of stored HW consistent with the information in the register?			
4.2.7	Are the employees aware of proper HW handling and trained to act in emergency cases?			
4.3	***On-site disposal of HW*** ***If a specifically designated HW disposal area is available on-site:***			
4.3.1	Is this area meeting the legal requirements?			
4.3.2	Is disposal taking place in accordance to EPA environmental laws and regulations?			
4.3.3	Are the quantities and types of HW disposed of consistent with the information in the register?			
4.4	***HW transport vehicles*** ***If the establishment transports HW:***			
4.4.1	Are the vehicles meeting the legal requirements?			
4.4.2	Are the transport vehicles properly signed indicating the type of waste transported?			
4.4.3	Are the drivers properly trained to act in emergency cases?			

Table 1: Background Levels of Heavy Metals in Sediment

Metals	USEPA Pollution Levels (mg/kg)		
	Not at all	Slightly	Heavily
As	<9.8	9.8-21.4	>21.4
Cd	<0.99	0.99-3.0	>3.0
Cr	<43	43-76	>76
Cu	<25	25-75	>75
Hg	<0.18	0.18-0.64	>0.64
Pb	<40	43-70	>70
Zn	<90	90-200	>200

Annex 23: Chance Find Procedures

1. INTRODUCTION

Both national regulations and World Bank Environment and Social Standards especially, ESS8: Cultural Heritage, recognize the importance of cultural heritage for current and future generations. Though project sites are not yet known, the project design suggests that there will be no impacts on cultural resources. No works is expected to be carried out in cultural heritage areas. Nevertheless, this ESS is conservatively deemed relevant.

Therefore, the purpose of this chance find procedures is to provide MIC and other parties to the project with the appropriate response guidelines to be applied if previously unknown cultural heritage is encountered. This Chance Find Procedure considers international best practices such WB ESS8, 1972 UNESCO Convention on the Protection of World Cultural and Natural Heritage (World Heritage Convention) and Sierra Leonean policies and laws for cultural resources protection. Thus, Chance Find Procedures (CFPs) are part of the E&S instruments that may have relevance during Project implementation. The Procedure applies to potential cultural heritage objects features or sites identified because of construction activities in the project area and its surroundings.

2. DEFINITIONS

A chance find procedure is a project-specific procedure that outlines actions to be taken if previously unknown cultural heritage is encountered. It is also defined as potential cultural heritage (or paleontological) whether movable or immovable objects, sites, structures, group of structures and natural features and landscapes that have archaeological, historical, religious, and other cultural significance. Cultural heritage recourses may include:

- Artefacts, whole or partial, such as ceramic sherds, stone items, glass fragments, bone, shell, metal, textiles, and plant and animal remains.
- Feature associated with human occupation such as trash dumps, middens, hearths, structural remains.
- Prehistoric or human remains found in formal graves, cemeteries, or as an isolated occurrence.

Non- Cultural Heritage Chance Finds many include modern objects, features, and burials and the decision about whether a Chance Find is a cultural heritage resource requiring additional treatment will be made by the PCU in consultation with the Ministry of Tourism and Cultural Affairs where necessary.

3. PROCEDURES

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

1. If the Contractor discovers archaeological sites, historical sites, remains and objects, including graveyard and /or individual graves during excavation or construction, the Contractor shall:
    - Stop the construction activities in area of the chance find.
    - Delineate the discovered site or area.
    - Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities or National Museum takes over.
    - Notify the Environmental and Social Safeguard Specialist (ESSS) who in turn will notify responsible local or national authorities in charge of the Cultural Property i.e. the National Monuments and Relics Commision-NMRC (within 24 hours or less).
    - Relevant local or national authorities would oversee protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage, those include the aesthetic, historic, scientific or research, social and economic values.

- Decision on how to handle the finding shall be taken by the responsible authorities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration, and salvage.
- If the cultural sites and /or relics are of high value and site preservation is recommended by the professionals and required design changes to accommodate the request and preserve the site.
- Decisions concerning the management of the finding shall be communicated in writing to relevant authorities.

2. Construction works could resume only after permission is granted from the responsible local authorities concerning safeguarding of the heritage.

3. DOCUMENTATION

The ESSS will ensure that contractors and sub-contractors staff maintain records of monitoring, Chance Finds, and it will include:

- Daily monitoring records indicating areas and activities monitored, report Chance finds and the results of any evaluations.
- Weekly reports summarising reporting period activities including Chance Finds, assessment and evaluations, internal and external communications and instructions and supporting photographic documentation (or other reference material as appropriate). An additional report aimed at fulfilling any specific Ministry requirements is also anticipated.
- Monthly reports summarising monitoring and evaluation results, status of any site treatment measure requiring instructions to contractor(s) sub-contractor(s), and other internal and external communication. Additional monthly reporting may be required by the respective MDA.

5.CULTURAL HERITAGE TRAINGING

All proposed project personnel are required to receive and comply with the Code of Conduct and receive training and demonstrate competency in (1) the identification of Chance Finds cultural heritage sites, objects, or features and (2) Chance Finds Management Procedure, that is those actions that are required in the case of suspected Chance Find. This training will be incorporated into the overall induction process for firms, contractor (s), and sub-contractor (s) personnel and will include a quick reference hand-out. All employees must be aware of the Sierra Leonean Policies and Laws on cultural heritage and WB ESS 8 that forbids disturbance or removal of cultural heritage objects offsite for personal gain. Disciplinary action should be taken against any personnel who violate this requirement.

6.REPORTING AND COMMUNICATION

Monitoring, review and reporting will be along with the conduct of ESIA/ESMP/ESMF and RAP/ARAP for the proposed project. Contractor (s); Sub-contractor (s) shall report all records on observational monitoring, protection measures, complaints, and damages to the ESSS on monthly and quarterly basis. The ESSS shall report their monitoring records and the Contractor's records to MIC which will in turn inform relevant authorities e.g., NMRC on case-to-case basis and on a quarterly basis.

7.IMPLEMNETATION ARRANGEMENTS

The implementation arrangement and responsibilities of the Chance Find Procedures shall be as follows:

No.	STAKEHOLDER	RESPONSIBILITY	RESPONSIBLE PERSON
1	PMU	-Overall coordination - Lead consultation with relevant authorities and local communities -Implement the procedure and provide required funds. - Monitoring the implementation of chance finds procedures and - Prepared required reports.	ESSS

2	Contractors and Sub-Contractors	-Stop the construction activities in the chance find -Install temporary site protection measures; and -Inform the client and document chance finds.	Site engineer/Site foreman
3	MTCA/NMRC	-Verification of chance finds -Approval of the treatment measures; in consultation with stakeholders. -provide the authorisation to resume works in the chance find area	In charge of tourism, culture, relics and monuments
4	Local Communities	-To attend consultation meetings. -To provide required information. -Participate in treatment measures	Local Population

8. BUDGET

The budget will depend on the chance finds and the proposed treatment measures. However, a provisional sum has been provided in the main ESMF implementation budget.jjjn

9. CONCLUSION

The present Chance Find Procedures serve as international best practice policy for the accidental discovery of heritage resources and provide the framework to handle them. Based on the definitions provided within this document and the proposed procedures of communication and handling chance finds, MTCA will be able to deal properly with the accidental discovery of heritage resources throughout the various phase of the project implementation especially during the construction phase.

Annex 24: Granville Brook Flood Control Recommendation

The Granville Brook outfall, near the "Culvert" community and Bai Bureh Road, is one of Freetown's most critical flood-risk zones. The primary engineering challenge is the combination of steep mountainous runoff, a massive upstream catchment, and the constriction caused by the **Granville Brook Dumpsite**, which has narrowed the natural channel and frequently causes "backwater effects" that flood surrounding houses.

The following engineering solutions focus on managing peak discharge and preventing the blockages that turn the outfall into a hazard.

1. Construction-Phase Mitigation (Immediate Actions)

These measures are designed to be implemented during the dry season to prepare the infrastructure for the high-intensity rainfall typical of Freetown.

- **Mechanical De-silting and Dredging:** Utilizing long-reach excavators to remove accumulated silt and solid waste from the main Granville Brook channel. This restores the hydraulic "carrying capacity" of the stream before it hits the Bai Bureh Road culverts.
- **Culvert Retrofitting and Widening:** The existing culverts under Bai Bureh Road are often undersized for 1-in-25-year flood events. Construction should focus on replacing pipe culverts with larger **RC (Reinforced Concrete) Box Culverts** to reduce the risk of debris snagging.
- **Bank Stabilization (Rip-Rap and Gabions):** To prevent soil erosion from adding to the sediment load, vulnerable banks along the brook should be reinforced with **gabion baskets** or **rip-rap (stone pitching)**. This provides immediate structural integrity while allowing for some water infiltration.
- **Temporary Sediment Traps:** Construction of upstream "check dams" (low-tech weirs) to catch heavy mountain sediment before it reaches the urbanized outfall area at Bai Bureh Road.

2. Permanent Engineering & Mitigation Measures

For long-term protection of the houses along the outfall, a transition from "cleaning" to "structural management" is required.

A. Hydraulic and Structural Solutions

- **Concrete Channelization:** Lining the Granville Brook with reinforced concrete (U-shaped or trapezoidal channels). This increases the flow velocity (v), ensuring that water moves quickly to the sea rather than pooling in the Culvert community.
- **Retaining Walls:** High-strength RC retaining walls are necessary where houses are in close proximity to the brook. These prevent lateral bank failure and provide a vertical barrier against overtopping during flash floods.
- **Flood Attenuation Ponds:** If land is available upstream, creating small detention basins to temporarily hold mountain runoff, "shaving" the peak of the flood hydrograph and reducing the volume of water hitting the outfall at once.

B. Integrated Waste-Drainage Management

- **Self-Cleaning Trash Racks:** Installing heavy-duty, angled steel trash racks at the entrance of the Bai Bureh Road culverts. These prevent large debris (tyres, plastics) from entering and choking the underground sections, with a dedicated access platform for regular mechanical clearing.
- **Dumpsite Perimeter Bunding:** A permanent, engineered **levee or bund wall** must be constructed between the Granville Brook Dumpsite and the water channel. This prevents waste from "slumping" into the brook, which is currently a primary cause of outfall blockage.

C. Watershed-Scale Mitigation

- **Nature-Based Solutions (NbS):** Reforestation of the upper Kissy and Racecourse hills. Restoring the tree canopy increases the "Time of Concentration" (Tc), allowing the soil to absorb more water and reducing the "flashy" nature of the Granville Brook.

- **Permeable Paving in Upstream Settlements:** Encouraging the use of porous materials for yards and small roads upstream to reduce the total volume of surface runoff (Q) entering the drainage system.

Summary Table of Solutions

Measure Type	Specific Action	Primary Benefit
Hydraulic	Widening to RC Box Culverts	Prevents "bottleneck" flooding at Bai Bureh Rd.
Structural	RC Channel Lining	Increases flow speed and reduces silting.
Environmental	Dumpsite Levee Wall	Stops solid waste from blocking the outfall.
Bio-Engineering	Upper Catchment Reforestation	Reduces the speed and volume of mountain runoff.