CENTRE OF EXCELLENCE FOR REPRODUCTIVE HEALTH INNOVATION (CERHI)

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) FOR THE CERHI BUILDING EXTENSION, UNIVERSITY OF BENIN, BENIN CITY, EDO STATE, NIGERIA.

DRAFT FINAL REPORT

January 2023

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LIST OF ACRONYMS AND THEIR DEFINITIONS

^{o}C	Degree Celsius
<	Less than
ACE	Africa Higher Education Centers for Excellence
ALARP	As Low As Reasonably Practicable
BOD	Biological Oxygen Demand
CEC	Cation Exchange Capacity
CERHI	Centre for Excellence in Reproductive Health Innovation
CoC	Code of Conduct
COD	Chemical Oxygen Demand
CO	Carbon Monoxide
CRF	Complaint register form
CSW	Commercial Sex Workers
DO	Dissolved Oxygen
EDMES	Edo State Ministry of Environment and Sustainability
EIA	Environmental Impact Assessment
ESMP	Environmental and Social Management Plan
EWMB	Edo State Waste Management Board
FMEnv	Federal Ministry of Environment
FMU	Facility Management Unit
GBV	Gender Based Violence
GPS	Geographical Positioning System
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HSE	Health Safety and Environment
MDAs	Ministry Department Agency
MOU	Memorandum of Understanding
HSE	Safety, Health and Environmental
ISO	International Standard Organization
LGA	Local Government Area
m/s	meter per second
mm	millimeters
NOx	Oxides of Nitrogen
OHS	Occupational Health and Safety
pH	Hydrogen ion concentration
PPE	Personal Protective Equipment
PWD	People With Disabilities
RAM	Risk Assessment Matrix
SH	Sexual Harassment
SEA	Sexual Exploitation & Abuse
STD	Sexually Transmitted Disease
Sox	Oxides of Sulphur
SPM	Suspended Particulate Matter
STIs	Sexually Transmitted Diseases
UBTH	University of Benin Teaching Hospital
UNIBEN	University of Benin
VOC	Volatile Organic Compounds

EXECUTIVE SUMMARY

ES1 Background information

The Centre for Excellence in Reproductive Health Innovation (CERHI), University of Benin (Uniben) is one of the 43 Africa Higher Education Centers for Excellence (ACE) spread across 19 countries in Africa. CERHI intends to build and extension complex to facilitate multi-professional obstetric training of birth and treatment for neonates which is the core mandate of the center. . Therefore, in compliance with World Bank, Safeguard Polices and the Environmental Laws of Nigeria, CERHI is conducting an Environmental and Social Management Plan (ESMP) which will provide an overview of the environmental and social baseline conditions of the proposed project site, identify and analyses the potential impacts (positive and negative) of the project and provide practical plans to manage the potential environmental and social unintended negative impacts associated with the project's activities, as well as to allow for meaningful and inclusive multi-stakeholder consultations and engagement throughout the lifecycle of the project.

The ESMP was prepared in line with the applicable national and state environmental and social regulations including the Environmental Impact Assessment (EIA) Act, Edo State Environmental and waste management laws and the World Bank Operational Safeguards Policies (OP 4.01 Environmental Assessment and OP4.11 Cultural Physical Resources).

ES2 Project description

The proposed project is the construction of an extension building beside the existing CERHI building on a 900sqm piece of land within the University of Benin, Benin City, Edo State. The complex will have two floors, two modern theatre halls, four offices, one molecular laboratory, one simulation laboratory, one innovation hub, one business center and a kitchen.

ES3 Description of Project Environment

The project site is located within the University of Benin, Ugbowo campus with geo-coordinates 06°23'46.8, 005°37'18.3. It is about 2km from the University's main gate. The University is located within the Ovia North-East Local Government Area of Benin City, the capital of Edo State. Data were acquired from a detailed research and field survey of both the physical and socio-economic environment of the Study Area between the 10th and 13th of May, 2022 providing an environmental baseline of the University of Benin, Ugbowo campus.

Climatic data, noise levels and air quality were determined through fieldwork onsite and via desktop review. Groundwater and soil (top and sub soils) were sampled and analyzed to determine its quality. Socio-economics of the area was also determined through the use of questionnaires, interviews and focus group discussions of stakeholders including members of the nearest community to the project site (Ekosodin)
The study area is located within the tropical region characterized by two seasons, the dry and rainy (wet) seasons. The wet season spans from April to October/December while the dry season is from December to March.
30 year (1991-2021) climatic data derived from the Nigerian Metrological Agency indicate that the mean relative humidity of the study area ranges between 75 and 90% with the mean monthly level indicating June through September as wettest and December through March as driest.

Air quality analysis of the project site revealed that air pollutants such as Carbon Monoxide (CO), Oxides of Sulphur (SOx), Oxides of Nitrogen (NOx), Volatile Organic Compounds, Methane and ammonia were not detected within the project site. Noise levels and particulate matter were within the stipulated limit by NAAQS.

All physico-chemical parameters analyzed for fell within permissible limits except for pH which was slightly acidic. Heavy metal concentrations were low and also within permissible levels. Microbiological analysis showed

the presence of heterotrophic bacteria and the presence of coliforms. Therefore, a mini treatment plant composed of a dosing tank for pH correction and disinfection of the water is recommended before use.

Soil analysis showed that the soils were fine grained ranging from sand to loamy sand. They were found to be slightly acidic. Concentration of nutrients; potassium, magnesium, phosphorus, calcium and nitrogen were quite low but adequate for non-agricultural purposes. Heavy metal concentration was also low suggesting minimal pollution. Bacteria and fungi counts of the soils were quite high indicating high levels of organic matter. Ecology of the project area has greatly been altered through Deforestation, land reclamation and expansion of built environment within the school perimeter hence producing a nascent sub- urban ecological landscape with lots of buildings and roads. The project area is currently a fallow land with secondary regrowth of plants and shrubs. , there is no distinct ecosystem or flora and fauna of importance in the area.

The respondents for socio economic survey were all adults from 18 years to 65 years. Significantly, the largest percentage (75%) of respondents aged from 21-50 years old. The sampling of respondents was randomly drawn from households across the proposed project area. It was gathered from the field survey that majority of the respondents (about 63%) are Male while Female are 37%. This illustrates representation of both genders in the survey.

The assessment shows that the study area has a large population of individuals from different ethnic background. However, majority of the students and staff are from the ethnic groups located in Southern Nigeria with Bini, Ishan, Afemai, Urhobo, Yoruba and Itsekiri as the dominant tribes. The project will be entirely powered by electricity supplied from Benin Electricity Distribution Company (BEDC) and generator sets located within the University.

The project site is not close to any stream or river. The nearest river is located more than 20km which is outside the area of impact. Water for use within the project site will be via the existing borehole located at the CERHI building. Plastic storage tanks will be used for storing water for domestic and laboratory use.

The university has a functional health center with doctors and nurses who take care of emergency cases. However, serious cases are referred to the University of Benin Teaching Hospital (UBTH) which is about 2km away from the project site.

The nearest community to the project site; Ekosodin is governed by an Enogie elected king whom all grievances are channeled to for resolution. Average household size is between 5-7 persons. The major occupations of the people include trading, civil servants, business and artisans (carpentry, welding, painting, plumbing etc.) with many people engaged in more than one of the skills. The study area has no site of historical importance such as shrines or monuments. There are also no sites of archeological importance within the study area. The result of the survey shows that malaria is more frequent in the community and university followed by typhoid fever. cough and catarrh. This could be due to presence of untreated domestic water and poor sanitation/hygiene.

ES4 Assessment of potential adverse environmental and social impacts

The project's environmental and social impacts were screened using a modified Leopold matrix. The identified associated and potential impacts of the proposed building project were quantified using risk assessment matrix and the ISO 14001 procedure for evaluation of significant environmental aspects/impacts.

The assessment showed that most of the negative impacts were either scored low or medium except work site accidents. However, the increased opportunity for business and employment was identified as a potential positive impact with high impact rating.

Positive/Beneficial Impacts

The proposed project is expected to be largely beneficial to the adjoining community, students and staff of the University and Edo state, as it is envisaged to:

- enhance the quality of post graduate education
- Increase opportunities for employment/contracting, services and income.
- Provide additional facilities will help to bridge the gap in infrastructure in the education sector amongst others

Negative/Adverse Impacts

. Some of the potential adverse impacts include:

- pollution of ground water resources
- Occupational health & safety risks from civil works and operation of machinery could lead to injuries, accidents for workers.
- Poor labour and working conditions could lead to ill-health, grievances, discrimination etc.
- Waste generated from construction activities such as cement, wood, iron rods etc. could lead to environmental pollution if poorly managed. This could also lead to public health concerns especially for the students
- Risk of increased air and noise pollution,
- Poor labour and working conditions could lead to ill-health, grievances, discrimination etc.

Positive impacts can be enhanced by continuous stakeholder engagements to provide adequate and timely information and ensure involvement and inclusion.

ES 5 Environmental and Social Monitoring Plan

The Environmental and Social Monitoring Plan (ESMP) for the construction and operation activities of the proposed CERHI building extension site has been designed. The ESMP matrix presents site-specific mitigation measures for potential negative impacts of the project. The matrix also presents the plan for monitoring compliance, defines the costs for mitigation and monitoring, frequency of monitoring, parameters to be monitored, and responsibilities for mitigation and monitoring. Additionally, training programmes to enhance capacity as well as budget estimates to ensure implementation are included. Consequently, CERHI is obliged to implement the ESMP with adequate and qualified personnel in line with project standards and stakeholder participation and also to ensure that contractors and subcontractors adopt management controls.

The estimated cost for the implementation of the recommended ESMP is ₦4,070,000.

ES 6 Grievance Redress Mechanism

A grievance redress mechanism has already been formulated by CERHI to handle concerns, conflicts, disturbances, accidents etc arising from the project implementation and operation. Specifically, complaint form is provided on the UNIBEN-CERHI website http://cerhiuniben.edu.ng, designated phone number will be provided by the project, Grievance Redress Committees at the project and management level. Ultimately, the project will ensure all grievances received are addressed timely and efficiently.

A standalone procedure for responding to allegations of GBV/sexual exploitation and abuse (SEA)/ sexual harassment (SH) has been established which adopts the Survivor's centered approach and confidentiality and relies on the existing UNIBEN sexual harassment policy 2019 and a Centre for Response and Prevention of Sexual and Gender- Based Violence (CRPSGBV).

ES7 Consultation with Stakeholders.

The Engagement and consultations which was held on the 12th and 13th of May, 2022 was performed with all stakeholders to address their concerns and expectations which were captured in the ESMP. All consultations

were preceded by disclosure of adequate project information and environmental and social information to ensure that participants are fully informed. Continuous consultations should be held with project stakeholders throughout the lifecycle of the project to keep them informed and provide an avenue to receive suggestions and complaints

ES8 Conclusion and Recommendations

The proposed building project will bring economic and social benefits to the host University community and Edo State, However, the negative social and environmental impacts that have been identified and are associated with the implementation of this project are minimal and could be addressed by implementing the mitigation measures proposed to ensure that they pose no threat to the environment and to the immediate community.

It is therefore recommended that the contractors and the project proponents should take into consideration the following:

i. The building designs should consider using solar panels as a renewable energy source
ii. Green areas should be provided in the site plan
iii. Ensure toilets are well lit, ventilated and properly labeled for male, female and disabled
iv. The positions of the labs should be identified at the design stage to allow for effective safety and propeor waste management of chemicals and other bio-hazard materials. In addition, all labs should be fitted with smoke detectors, fire extinguishers, fire resistant ceiling etc.
v. In addition to provision of access ramps to allow for inclusion of People with Disabilities;
   - ✓ the ramps should be of low slope
   - ✓ pathways should be of limited slope and include sufficient turning radius
   - ✓ doors should be light in weight and easy to turn
   - ✓ entrances should be sufficiently wide to allow for wheelchair access
   - ✓ furniture, counters, equipment, power sockets, and plugs should be placed at suitable heights reachable by persons who use wheelchairs.
   - ✓ handrails should be easy to grasp
vi. CERHI project team to ensure continuous stakeholder engagements to provide adequate and timely information and ensure involvement and inclusion
vii. Ensure timely implementation of actions stipulated in this ESMP
viii. The contractors and the project proponents should take into consideration all mitigation measures recommended and they should be followed judiciously so as to address the environmental issues and social that may arise in the course of the implementation of this building project.

CHAPTER ONE
INTRODUCTION

1.1 Background Information

The Centre for Excellence in Reproductive Health Innovation (CERHI), University of Benin (Uniben) is one of the 43 Africa Higher Education Centers for Excellence (ACE) spread across 19 countries in Africa. The ACEs are an initiative of the World Bank in collaboration with governments of the participating countries to support Higher Education institutions in specializing in Science, Technology, Engineering, Mathematics, Environment, Agriculture, health, and applied Social Sciences/Education. The ACEs were set up with the aim of promoting reginal specialization among participating universities in areas that address specific common reginal development challenges and also to strengthen the capacities of these universities to deliver high quality training and applied research as well as meet the demand for skills required for Africa's development.

1.2 Project Development Objective (PDO)

The PDO of the project is to improve the quality, quantity, and development impact of postgraduate education in selected universities through regional specialization and collaboration.

1.3 Project Components

Component 1: Establishing new Africa Centers of Excellence and scaling up well-performing existing Africa Centers of Excellence (ACE) for development impact. This component aims to build and strengthen the capacity of competitively selected ACE Impact centers based in higher education institutions across West and Central Africa.

- Sub-component 1.1: Establishing new centers of excellence for skills and knowledge for development challenges. About 30 centers were competitively selected based on pre-established selection criteria to receive funding from ACE Impact Project.
- Sub-component 1.2: Scaling up well-performing ACEs that will provide additional funding and support to approximately 12 existing ACEs (currently supported through ACE I) to enable them to scale-up their activities.
- Sub-component 1.3: Additional support to the best Engineering and Technology ACE institutions. Institutions were selected to host Engineering and Technology focused ACE Impact Centers with capacity/potentials in other Engineering and Technology disciplines.

Component 2: Regional Partnerships and Scholarships. This will seek to expand the regional scope of impact of the ACEs funded under Component 1, by providing demand-side funding for partnering institutions and regional students to buy the training and services from the ACEs that are most relevant.

- Sub-component 2.1: Providing Support for regional institutional partnerships between Higher Education Institutions and the ACEs (under component 1 of the proposed project) to strengthen the capacity of the Higher Education Institutions.
- Sub-component 2.2: Financing two types of regional scholarships to support primarily the training of the next generation of Faculty for Higher Education Institutions in the region.

Component 3: Enhancing regional policy making, monitoring and facilitation. This will afford supporting regional policy making for higher education, regional project monitoring and facilitation. A regional IDA grant of USD10 million will be provided to the Association of African Universities (AAU), the facilitation of the ACE Impact project's regional activities and support to centers under the project.

1.4 Scope of proposed construction works

The proposed works is for the construction of the CERHI extension building complex. The proposed extension building will be hosted within the CERHI premises at the University of Benin (UNIBEN), Ugbowo campus, Benin City, Edo State. The proposed construction works includes civil, electrical and plumbing works. Specific project works include:

- Clearing and land scraping/leveling.
- Construction of drainage system.
- Sinking of Boreholes.
- Temporary electrical fittings and connections (in case of working hour extending beyond day light period).
- Temporary structures such as cabins (possibly to serve as storage facility) and mini canteen.

The sub-project activities would precede the design and construction of CERHI extension building. This would be designed to accommodate the following functions:
2 modern theatre halls,
4 offices
1 molecular laboratory
1 simulation laboratory
1 innovation hub
1 business centre and a kitchen

1.5 Rational for ESMP study

The proposed project will involve construction of a new building to accommodate laboratories. Activities associated with the project such as foundation, excavation, cement works, revegetation, waste generation etc will pose negative impacts that would arise during the construction works will include: generation of hazardous, non-hazardous waste, noise/air pollution. Vibrations accidents from movement of equipment and materials to site, occupational health and safety risks, risks associated with labour influx (security threat, gender based violence in particular sexual exploitation and abuse to laour influx, increase in sexually transmitted infections and diseases, grievance and disturbance to physical and cultural resources among others. All these trigger the World Bank's Operational Policy on Environmental Assessment and Physical Cultural and Resources. In addition, the Nigeria EIA Act mandates that any construction that would have significant impact on the environment must be subjected to an environmental assessment prior to commencement of the civil works.

1.6 Objective of the ESMP

The ESMP is required to guide CERHI in ensuring that project implementation is in line with the Nigerian Environmental Protection laws and the World Bank Operational Safeguard Policies enhance the positive environmental and social impacts of the project, and avoid negative environmental and social impacts, reduce or mitigate them to acceptable levels. The ESMP includes a detailed plan with

identified impacts and implementable actions, including responsibilities and costs, as well as a defined monitoring plan with monitoring responsibilities and costs.

1.7 ESMP Methodology

This study involves site identification, literature review, field data gathering, impact identification and evaluation, proffering of mitigation measures and development of ESMP.

1.7.1 Reconnaissance survey and site identification

i) Reconnaissance survey

A reconnaissance survey was undertaken to familiarize the ESMP Team with the proposed project area.

ii) Site identification

Maps, photographs, GPS locations were used to generate relevant information on the proposed projects site's location. This information generated enabled the delineation of the area studied.

1.7.2 Fieldwork data gathering /research

Fieldwork data gathering/research was used to complement and verify information gathered from desk studies/research. It was carried out in line with methods specified in FMEnv EIA procedural guidelines. This was used to determine the specific baseline ecological, Social and health conditions of the project environment. The field work data gathering exercise entailed visual observation and on site measurements. It was carried out between the 10th to 13th of May, 2022

1.7.3 Literature review

This involved studying existing literature particularly of the previously submitted ESMP report of the current CERHI building. EIA study reports by FMenv and other relevant studies on the environmental characteristics of the study area. Materials reviewed include textbooks, reports, survey maps, Ariel photographs, articles and other international journals. These were used to establish environmental database for the ESMP.

1.7.4 Impact Identification and Evaluation

The environmental aspects of the project that may interact positively and negatively with the environment at the construction, operation and decommissioning phases were identified. This identification was based on knowledge of the project, The Nigerian Federal Ministry of Environment (FMENV) EIA sectoral guidelines and World Bank environmental guidelines. Standards and recommended environmental assessment methodologies were also used. To identify potential impacts and evaluate such impacts Leopold matrix and Peterson matrix were used respectively. ISO 14001 procedures were also used to identify significant impacts associated with project activities. Other impact evaluation methodologies that are applicable, verifiable, specific and quantifiable were used while the overall assessment was carried out through the use of the 'strength of relationship approach' method and other methods that define numerically the degree of interdependence of the various environmental parameters.

1.7.5 Mitigation/ameliorative measures

The identified adverse impacts had mitigation proffered based on scientific conclusions and professional judgements in line with Safety, Health and Environmental (SHE) standards and codes

(for design, operation and decommissioning/abandonment) as well as the recommended practices by the FMEnv, United Nations (UN) guidelines and standards etc.

1.8 Administrative and Regulatory Framework

This section outlines the specific environmental and social frameworks that guide the implementation of this ESMP.

1.8.1 Applicable Laws and Regulations

Table 1: Applicable Laws & Regulations

Regulatory Framework	Description
National Policy on the Environment, 1989 (Revised 2016)	The policy identifies key sectors requiring integration of environmental concerns and sustainability with development and presents their specific guidelines. This includes regulations for the construction sector which governs the proposed CERHI extension building construction. This ESMP contains measures aimed to comply with this policy by protecting the environment and social components including air, water, soil, flora, fauna, people.
Environmental Impact Assessment (EIA) Act CAP E12 LFN 2004	The Environmental Impact Assessment (EIA) Act CAP E12 LFN 2004 provides guidelines for activities of development projects for which EIA is mandatory in Nigeria. According to the act, category II projects such as the CERHI Project may require only a partial EIA/EMP, such as the preparation of this ESMP, which will focus on mitigation measures for negative impacts.
Federal Ministry of Environment	The Ministry of Environment is the highest policy making body responsible for addressing environmental issues in Nigeria. The act establishing the Ministry places on it the responsibility of ensuring that all development and industry activities, operations and emissions are within limits prescribed in National Guidelines and Standards and comply with relevant regulations for environmental protection management in Nigeria
National Environmental Standards and Regulations Enforcement Agency (NESREA)Act, 2007	NESREA was established by NESREA Act No 25 of 2007 as a parastatal of the FMEnv. The Act was reviewed in 2018 to strengthen limiting gaps and enable effective operations. The Agency has developed several regulations and guidelines for environmental protection for various sectors including noise, waste, sanitation, construction which all apply to the CERHI project
National Environmental (Sanitation and Wastes Control) Regulations (2009)	The purpose of the Regulation is the adoption of sustainable and environment friendly practices in environmental sanitation and waste management to minimize pollution. The Instrument amongst others makes provisions for the control of solid wastes and hazardous wastes. This ESMP contains a Waste Management Plan which will ensure compliance with this regulation.
National Environmental (Noise Standards and Control) Regulations, 2009.	The objective of the Regulations is to ensure maintenance of a healthy environment for all people in Nigeria, the tranquillity of their surroundings and their psychological wellbeing by regulating noise levels. The Instrument prescribes maximum permissible noise levels for construction as 60dB (A) and 40 dB (A) for day and night respectively. Measures to achieve this has been adequately captured in the ESMP

Regulatory Framework	Description
National Environmental (Construction Sector) Regulations (S.I No. 19), 2011	The purpose of these regulations is to prevent and minimize pollution from construction, decommissioning and demolition activities in the Nigerian environment. It stipulates that new projects in the construction sector shall apply cost-effective, up-to-date, efficient, best available technology, to minimize pollution to the barest degree practicable. In addition, every operator or facility shall carry out an EIA and submit an EMP/ESMP for new projects or modification including expansion of existing ones before commencement of activity.
National Policy on Occupational Safety and Health, revised 2020	This policy was approved by the Federal Executive Council (FEC) in September 2020. It serves as a basis for ooccupational health and safety (OHS) programs for workers even under such development projects. An OHS Plan has been provided in the ESMP.
Nigeria Labour Law (2004)	The Labour Act of 2004 set the standard for the minimum amount of naira a worker in Nigeria is supposed to make. In 2020, the National Minimum Wage was set to ₦30,000.00 per month. A Labour Management Plan (LMP) is provided in this ESMP
The Violence Against Persons Prohibition (VAPP) ACT2015)	This act prohibits all forms of violence against private and public life and provides maximum protection and effective remedies for victims and punishment of offenders. Nigeria's national government has taken steps to penalize and address GBV and SEA. This law, in addition to the UNIBEN Policy on Sexual Harassment as discussed above will guide CERHI on prevention and response to cases of GBV/SEA/SH.
National Gender Policy (2006)	Provides a framework for ensuring gender inclusion and sensitivity in developmental plans and programs at the national and sub-national levels. CERHI through the environmental and safeguard officer will ensure that there is gender consideration in every phase of the project, and also ensure the implementation of Gender Based Violence prevention & response procedures
Child Rights Act (2003)	The Child's right Act provides a platform for protection of children against child labour, exploitation and other forms of social vices. It codifies the rights of children in Nigeria (a person below the age of 18 years). The project will strictly adhere to this legislation in line with mitigation measures in this ESMP
Edo State Environmental (Sanitation and Waste Control) Regulations 2010	Facilitate protection, restoration, conservation, development and management of the environment and natural resources for equitable, sustainable socio-economic development. Including waste and sanitation management. The project will be guided by these laws especially with respect to pollution prevention, protecting vegetation and waste management.
UNIBEN-CERHI Policy on Sexual Harassment, 2019	This policy buttresses CERHI's commitment to providing a learning environment devoid of sexual harassment among members of its community.

1.8.2 Applicable World Bank Operational Safeguards Policies

Two of the World Bank Operational Safeguards Policies are triggered under this Project as described in table 2 below

Table 2: WB Operational Safeguards

Triggered Policy	Reason for Application of Standard to the Project	How it will be addressed by the project
OP/BP4.01 Environmental Assessment	Proposed construction works will result in environmental and social impacts attributed to generation of waste, noise/air pollution, movement of heavy-duty vehicles & traffic issues, occupational health & safety risks, risks associated with labour influx, community health & safety risks amongst others. However, these impacts are limited, site specific and can be mitigated.	This ESMP contains measures to address the identified risks and includes other MSIPs like waste management plan, OHS plan, community health & safety plan amongst others.
OP/BP4.11 Cultural Physical Resources	During the excavation and earthworks, contractors may encounter physical and cultural resources such as artefacts, tombstones, historical/cultural landmarks	A Physical and Cultural Resources Management Plan has been included in annex 10 of this ESMP

CHAPTER TWO
PROJECT DESCRIPTION

2.1 DESCRIPTION OF THE PROPOSED PROJECT

The project is the construction a building extension adjacent to the existing CERHI building. The construction will be implemented on a 900sqm piece of land belonging to UNIBEN and there will be no involuntary resettlement, acquisition of land, relocation, compensation, loss of physical and economic assets, and/or loss of livelihoods. The map of the project location is shown below.

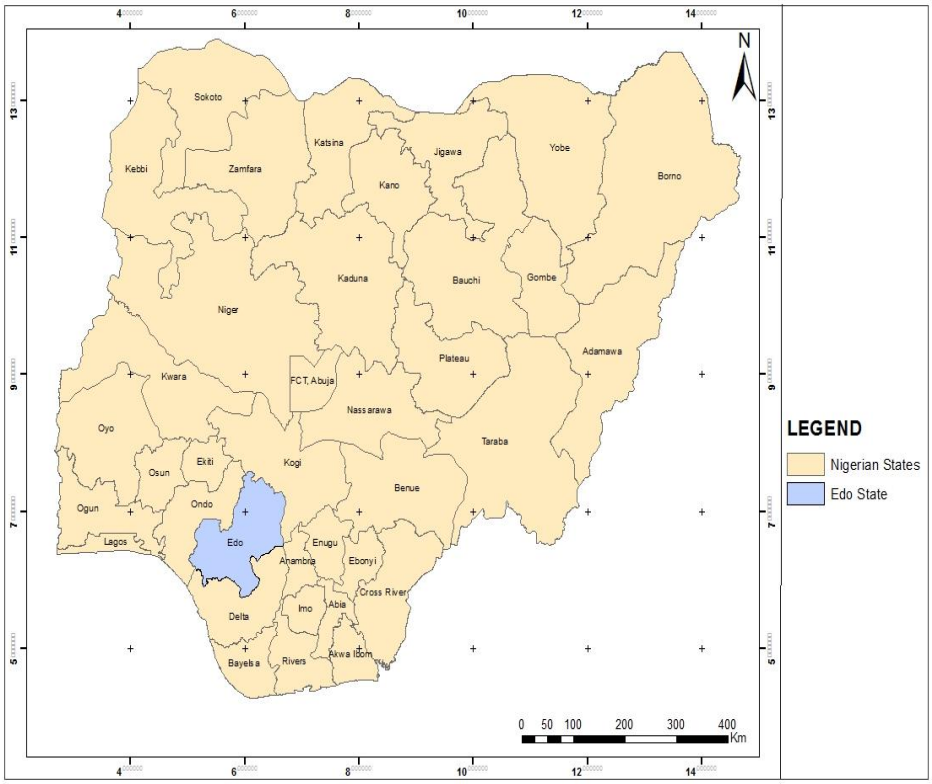

Figure 1: Map of Nigeria showing Edo state.

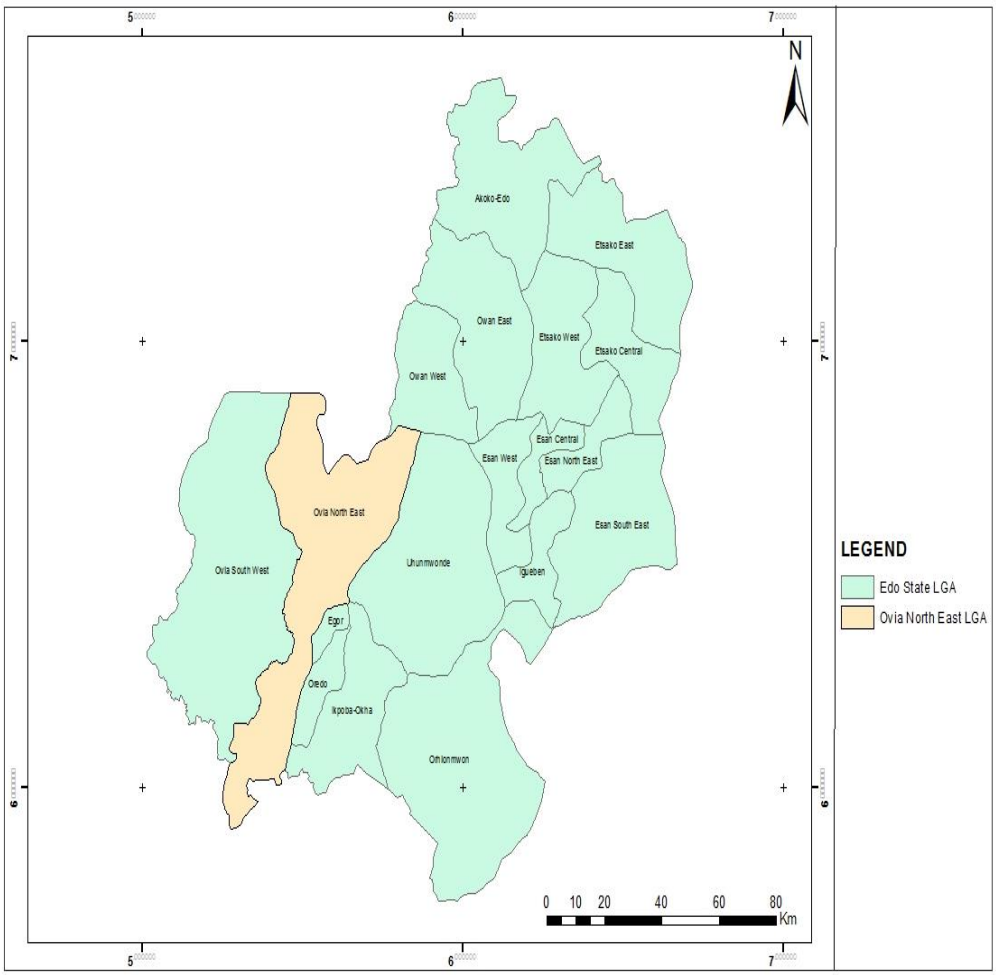

Figure 2: Map of Edo state showing the host Local Government Area (Ovia North east L.G.A)

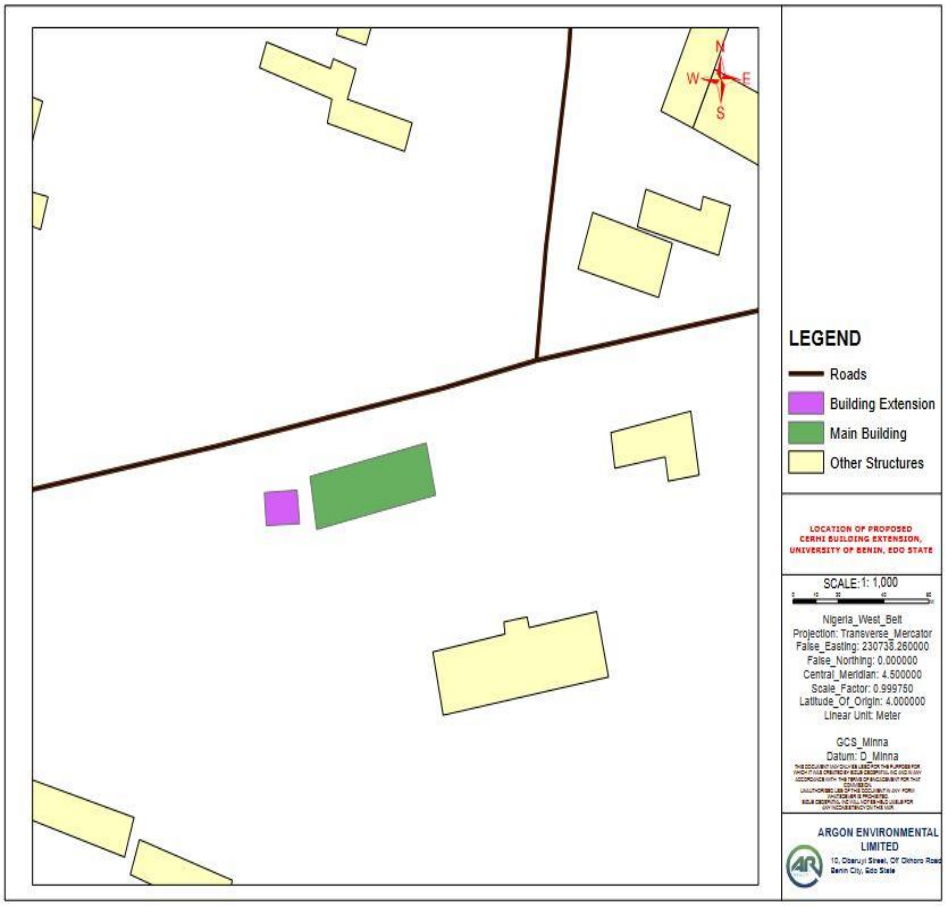

Figure 3: Location of CERHI building and CERHI building Extension within University of Benin.
Source: fieldwork, 2022

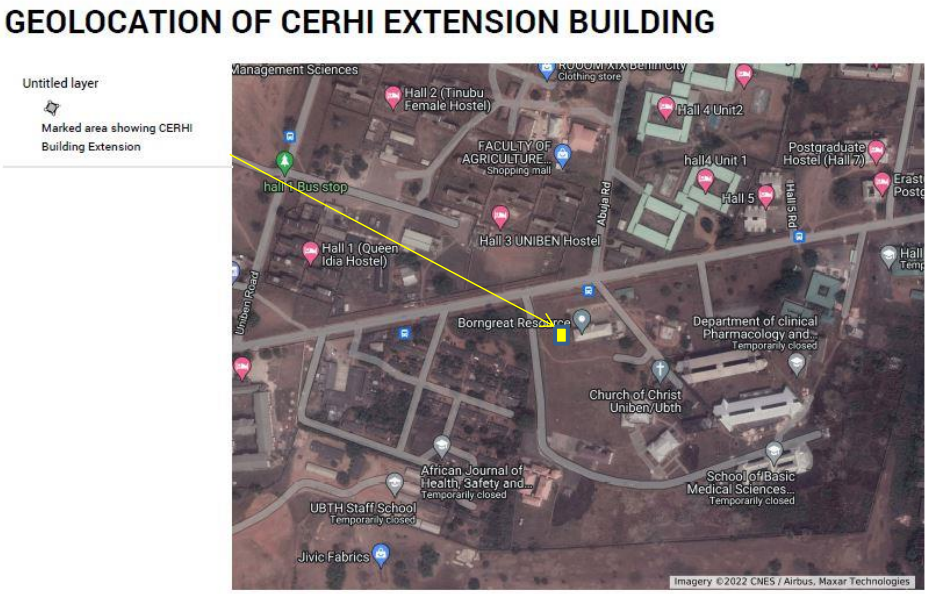

Figure 4: Google Map Imagery of CERHI building extension.
Source: googlemaps, 2022

2.2 PROJECT SCOPE OF WORK

The scope of works of the proposed project would involve the following project activities:

- Survey and design for proposed construction works
- Clearing of the proposed site and excavation works
- Site Mobilization of personnel, materials and equipment
- Creation of staging area for site office, materials and equipment
- Material Sourcing &Sourcing of Labour
- Construction of building
- Operations of equipment and machineries
- Installation of plumbing pipes, sewage system, electrical fittings
- Demobilization/de-commissioning

The design of the proposed CERHI building extension complex includes the following:

a. An administrative building with 4 offices
b. Male and female toilets
c. 2 modern theatre halls,
d. 1 molecular lab
e. 1 simulation lab
f. 1 innovation hub
g. 1 business centre

Associated structures and works for the building project include:

a. Foundation laying
b. Plumbing
c. Electrical fittings
d. Construction of underground septic tanks
e. Roofing
f. Landscaping

Site layout and design excerpts are shown below

Figure 5: project layout

2.3 Project Development Phases

The developmental phase of the project which also represents the project schedule will be in 3 phases: pre-construction (lasts for 1-2months), construction (lasts for 10-12months) and operation phases. This is explained in table 3 below

Table 3: Project Developmental Phases

No.	Project Phase	Activities	Labor / Staffing	Support Facilities
1.	Pre-Construction	• Site marking and pegging, • Site clearing • Mobilization of equipment and workers to site • Establishing of staging area • Material Sourcing	• Skilled labour • Unskilled Labor	• Staging Area for contractor equipment • Portable water and Sanitary Facilities including male and female toilets • Personal Protective Equipment (PPEs) • First Aid kits
2.	Construction	• Excavation • Installation of traffic & safety signage and cautions on site • Construction of facilities • Demobilisation from site ✓ Removal of construct equipment ✓ Disposal of construction waste & other waste ✓ Dismantling of staging area	• Skilled labour • Unskilled labour	• Staging area • First aid kits (1 kit would serve 10 staff) • Construction water and materials • Sanitary Facilities (male and female toilets) • PPEs • Portable water for workers, food and security
3.	Operation and Maintenance	• Academic and school activities • Building maintenance • Maintenance of WASH facilities and sewage management	• This will be handled by the CERHI	• Water for WASH facilities • Maintenance Workshop • Maintenance equipment

2.3.1 Site Clearing

This activity is to prepare the land for the construction work to commence and will involve site clearing, removal of vegetation, leveling and grading the land to foundation specification and architectural design using mechanical method by contractor workers.

2.3.2 Staging Area

The staging area for sighting of the project, parking equipment and other machinery for the project works will be set up on the site, and the site will be cordoned off using either barbwire or aluminum sheets, with restricted access.

The Contractor will ensure that all necessary facilities shall be provided for workers including:

- Conducive office space with tables, chairs, drinking water, good aeration, food etc.
- Separate toilets for male and female (mobile toilets or constructed units) with concrete and covered septic tanks
- Portable water with well-placed overhead tanks and Wash basins
- First aid kits, PPEs

2.3.3 Material Sourcing and Sourcing of Labour

Materials such as cement, sand, stone, gravels, roofing sheets, wood, iron rods, and aggregates shall be purchased by the contractors from existing materials markets in the state, these materials will be supplied only when needed to avoid damage/weathering, overcrowding the site. A mechanically powered borehole will be dug on site for water to be used for the construction and during the operation phase of the facility, this will follow the borehole specification & standards within UNIBEN (detailed geotechnical investigations, 18m away from sewage tank etc.).

It was indicated that the contractor that will execute this proposed project will make use of staff who are accustomed to working with construction company (both skilled and unskilled) and facilitate their transportation to and fro site from their various residences, as such no camp site will be established. A few unskilled workers may be sourced from the nearby communities in a bid to support socio-economic activities for the youths during the construction.

2.3.4 Construction/Civil Works

This phase of the project activity involves foundation works, super structure, basement casting, structural walls, plumbing, electrification, roofing, fittings, cladding/coating and landscaping and shall be carried out by qualified engineers/technicians using best available local technology.

2.3.5 Facility Operations

The operational phase of the facility shall render services such as technological trainings, skill acquisition, offices, rest rooms and laboratory for analysis amongst others.

CHAPTER THREE
BIOPHYSICAL AND SOCIO-ECONOMIC CHARACTERISITICS OF THE PROJECT AREA

3.1 Project location and area of influence

The project site is located within the University of Benin, Ugbowo campus with geo-coordinates 06°23'46.8" N, 005°37'18.3"E. It is about 2km from the University's main gate.

The University is located within the Ovia North-East Local Government Area of Benin City, the capital of Edo State. It has 8 faculties within its boundaries with a teeming student population of over 40,000 from all over Nigeria (University of Benin, 2022).

3.2 Environmental and social characteristics of the project environment

The project site is located inside the fenced perimeter of CERHI. It is opposite the postgraduate hall of residence (hall 3) and adjacent to the department of clinical pharmacology. Field visits were conducted between the 10th and 13th May 2022 to establish the environmental and social baseline conditions of the project area.

3.3 Baseline data acquisition

Data were acquired from a detailed research and field survey of both the physical and socio-economic environment of the Study Area, providing an environmental baseline of the University of Benin, Ugbowo campus. The status of the existing Environment will serve as a benchmark for comparison of future Environmental conditions throughout the life cycle of the project.

The Environmental components studied are climate and meteorology, noise/air quality, soil, vegetation, water quality and socio-economics in order to determine which environmental media or component(s) that could be likely affected by the various activities (construction, installation and operation) of the proposed CERHI building extension operations in the study area.

3.4 Environmental conditions of the project area

3.4.1 Climatic data

The study area is located within the tropical region characterized by two seasons, the dry and rainy (wet) seasons. The wet season spans from April to October/December while the dry season is from December to March.

This climatic pattern of Edo State is influenced by the usual climate factors of latitude, elevation, wind directions, sunshine and also, the nearness to the ocean. The climate of the Edo State is characteristic of the humid tropics with seasonal winds. According to the Koppen classification system, Edo State (and the study Area) is situated in the Tropical /Megathermal climate. More specifically the study area is primarily located in the Tropical Monsoon (AM) climate but straddles the Tropical wet and dry climate (AW), climate where rainfall is a key climatic variable. The two key air masses are the dry tropical continent air mass originating from Sahara in the north, and the moist tropical originating from the Atlantic ocean in the South. The two air masses are separated by an Inter Tropical Discontinuity (ITD) zone. This zone is characterized by high levels of rainfall which move north and South with the seasonal movements of the sun.

30 year (1991-2021) climatic data derived from the Nigerian Metrological Agency indicate that the mean relative humidity of the study area ranges between 75 and 90% with the mean monthly level indicating June through September as wettest and December through March as driest. The minimum air temperatures in the proposed project area also range from 22.2-24.0°C with a mean of 23.1°C while its maximum levels are 28.3-31.6°C with an average of 31.6°C.

- Air Temperature

The data further suggests that the highest air temperature occurs between January and March while the lowest is between June and August. The period of the highest air temperature falls in the dry season of the area and the lowest air temperature are observed to be in the wet season of the year. The lowest temperature during the wet season is attributed to the depletion of incoming solar radiation of greater cloud cover.

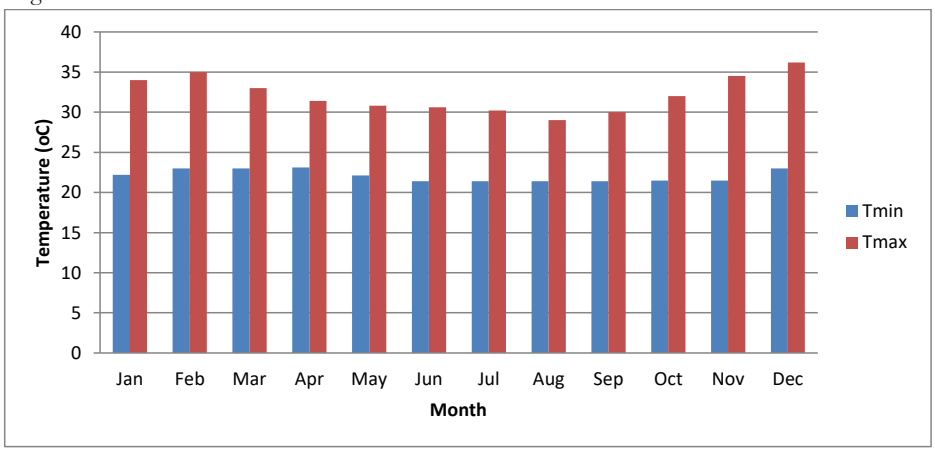

Figure 6: 30 year (1991-2021) mean air temperature in the Study Area

- Wind speed

The two major wind regimes in the project area are the northeast and the southeast Trade Winds. The mean monthly wind speed of the area can be described as light air (0.1 – 2.0m/s) followed by light breeze (2.1-3.0 m/s), gentle breeze (3.1 – 6.0 m/s), moderate breeze (6.1 – 8.0 m/s), and fresh breeze 8.0 -11.0 m/s). Winds above 11m/sec called the strong gale also occur but only during thunderstorms.

- Rainfall

The average maximum and minimum monthly rainfall was measured as 349.9mm and 16.8mm for September and January respectively with an average rainfall of 2247.6mm. There is a relative non-occurrence of rainstorms in January, February, November and December. The double maxima characteristic of the rainfall regime is also evidence showing the break in August. The frequencies rose to a peak in July, decline to a low in August and rose to another peak in September.

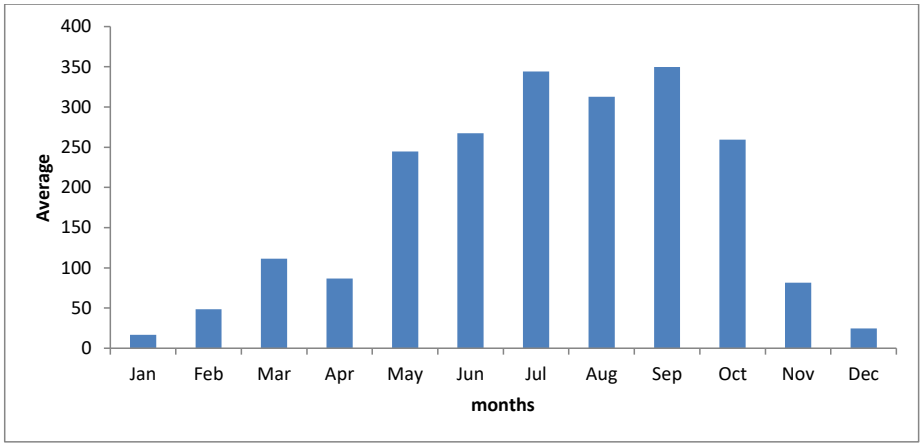

Figure 7: 30 year (1991-2021) average rainfall in the study area

3.5 Air quality status of the project area

Air quality parameters such as Carbon Monoxide (CO), Oxides of Sulphur (SOx), Oxides of Nitrogen (NOx), Volatile Organic Compounds, noise levels and particulates matter levels vary from location to location depending on the activities that occur within that specific location. The sources of these air emissions range from cars and generators exhausts to emissions from industries to environmental disasters such as bush burning and irresponsible dumping of refuse.

From the field survey conducted on the 11th of May, 2022, the results below were obtained from insitu sampling of air at the project site.

Table 4: air quality results from CERHI building extension site

Air quality parameters	Project site	NAAQS standard
	GPS:06°23'46.8" N, 005°37'18.4" E.	
RH(%)	68.40	-
W/Speed (m/s)	0.1	-
Temp (°C)	29.2	-
Noise (Db)	46.3	90
SPM(μg/m³)	3.6	250
CO (ppm)	Not Detected	10-20
NO_2 (ppm)	Not Detected	0.6
SO_2 (ppm)	Not Detected	0.1
NH_3 (ppm)	Not Detected	-
H_2S (ppm)	Not Detected	-
VOC (ppm)	Not Detected	-
CH_3 (ppm)	Not Detected	-

- **Discussion**

The results indicate that the air quality within the project location is relatively good as all parameters analyzed for fell with National ambient air quality standard (NAAQS). The values recorded for air quality parameters, noise levels and suspended particulate matter is expected as there are no industrial sources of these pollutants near the project area. Despite the proximity of the site to a road, vehicular emissions did not have any effect on the project site probably due to the fact that the road is not a very busy one.

3.6 Water quality

- **Groundwater sampling, preservation and storage**

Groundwater samples were taken from two (2) boreholes (including control) from the CERHI building borehole close to the site (N06º23'46.4" E005º37.18.3") and a borehole within UNIBEN, about 500m away from the site (N06º23'44.6" E005º37.13.1"). The water samples were collected in 2 litre polypropylene (pp) bottles with pp caps samples for the general parameters were preserved by cooling to 4^0C in ice chests, while samples for the determination of trace metals were preserved in 1ml, 1.1 nitric acid per litre of sample to pH <2. Biological oxygen demand (BOD) samples were collected in 250ml brown reagent bottles sealed to exclude air bubbles while the dissolved oxygen samples were fixed immediately with Winkler's A and B reagents. Apart from the sample for the determination of trace metals, all other samples were transported in ice chests to maintain a temperature of 4^0C. On arrival at the laboratory, samples were immediately transferred to a refrigerator to maintain their integrity.

- **Laboratory (analytical procedures)**

Laboratory analyses of the physio-chemical parameters were carried out in keeping with standard practice specified in FMENV environmental guidelines and standards (FEPA 1991). The procedures for the analysis of groundwater used are given in the annex of this report.

Result of Laboratory analysis

The result of the lab analysis of water samples collected from the project site and control are given below;

Table 5: physico-chemistry result of ground water samples collected at CERHI building extension site

Code	pH	EC	Salinity	Turbidity	TSS	TDS	DO	BOD_5	COD	Na	K	Ca	Mg	Hardness	Cl	P	NO_3
		µS/cm	g/l	NTU													
Cntrl	5.9	84.7	0.038	ND	ND	42.3	4.7	1.3	1.2	0.52	0.12	1.20	1.28	4.22	50.4	0.091	0.71
Project site	6.3	76.6	0.035	ND	ND	38.4	4.8	0.4	1.6	0.43	0.08	1.75	1.04	3.11	35.5	0.150	0.34
Fmenv Limit	6.5-7.5	NS	NS	1.0	5	500	7.5	NS	NS	NS	NS	NS	NS	500	NS	5	10

Code	Fe	Zn	Cu	Pb	Cr	Cd	Ni	TBC (10^1)	THF Counts (10^1)	TCC
	mg/l							Cfu/ml		(MPN/100ml)
Control	0.227	0.101	0.044	< DL	< DL	< DL	< DL	1.0	0.0	2
Project site	0.233	0.121	0.025	< DL	< DL	< DL	< DL	1.5	0.0	4
FMENV LIMIT	0.3	5.0	2.0	0.15	0.1	0.05	0.05	0.0	0.0	0.0

< DL= below detection limit

Discussion on water quality

All physico-chemical parameters analysed for fell within permissible limits except for pH which was slightly acidic. Heavy metal concentrations were low and also within permissible levels. Microbiological analysis showed the presence of heterotrophic bacteria and the presence of coliforms. Therefore, a mini treatment plant composed of a dosing tank for pH correction and disinfection of the water is recommended before use.

3.7 Soil quality

Two soil samples were collected with the aid of a soil auger from various depths from one sample location within the project site (N06^0 23'46.9" E005^{0}37'18.5"), while two control samples were collected at various depths from one sample location about 500m away from the site(N06^0 23'45.8" E005^{0}37'20.1"). The results of the laboratory analysis are given below:

Table 6: Physicochemical results of soil analysis of samples collected at CERHI Building Extension site

Code		pH	EC	Na	K	Ca	Mg	N	P	Fe	Mn	Zn	Pb	Cd	Cr	Ni
Sample	**Depth cm)**		**µS/cm**	**Meq/100g**				**Ppm**								
CNTRL	0-15	5.44	18.00	5.28	0.06	0.01	1.11	2.98	3.14	349.5	42.3	0.88	0.111	0.082	0.060	0.032
	15-30	5.56	26.00	5.98	0.01	0.01	0.92	2.36	0.91	305.0	40.1	0.72	0.087	0.065	0.043	0.021
SQ1	0-15	5.18	22.00	5.41	0.36	0.02	1.11	8.04	8.72	454.2	55.3	0.72	0.280	0.121	0.080	0.051
	15-30	5.26	46.00	4.21	0.32	0.02	0.92	6.34	4.76	449.5	50.0	1.12	0.211	0.094	0.067	0.033

Sampling points	Depth (cm)	Geo-coordinates	TOC (%)	Clay (%)	Silt (%)	Sand (%)	Bulk density	THB COUNTS (cfu/g x 10^3)	THF COUNTS (cfu/g x 10^3)
CNTRL	0-15	N06^0 23'45.8"	1.9	5.90	2.76	91.34	1.88	8.2	5.6
	15-30	E005^{0}37'20.1"	1.4	5.56	5.13	89.31	1.52	7.5	4.1
SQ1	0-15	N06^0 23'46.9"	2.2	3.84	6.71	89.45	2.72	8.8	5.3
	15-30	E005^{0}37'18.5"	1.6	5.86	6.90	87.24	1.91	8.2	5.0

Discussion on soil analysis

The soil samples were found to be fine grained with soil texture ranging from sand to loamy sand. The soils were all acidic ranging from 5.18-5.44. These values are typical of soils within the Benin geological formation. Cation exchange capacity which is the total content of basic cations like Potassium, calcium and magnesium levels of the soil samples was low indicating the presence of low nutrients in the soils. This may be due to leaching of the soil. Nitrogen and phosphorus levels were moderately adequate as compared with the acceptable range for non-agricultural purposes. The soils contained adequate concentration of microelements for health growth of plants. Iron had the highest concentration of all the metals while cadmium had the lowest. All heavy metals corresponded to levels that naturally occur in the soil and fall within the limits tolerated by plants and organisms. This indicates the low level of pollution in the soil. The total heterotrophic bacteria (THB) count and the total heterotrophic fungi (THF) count were quite high in the topsoil than sub soil indicating high levels of organic matter in the top layer. This may be due to the presence of more nutrients in the top soil as observed in this study.

3.8 Geology of the area

Edo State falls within the Niger Delta geological environment. The regional geological sequence is composed of the Quaternary to recent sediments (alluvium) and tertiary Formations. The tertiary Formations, from the bottom, are composed of the shaly Akata Formation, the Agbada Formation and the Benin Formation otherwise known as the Coastal Plain Sands. The project area is underlain by the Benin Formation (Coastal Plain Sands) which is composed of sands with shale/clay intercalations. The sands are fine-medium-coarse grained, poorly sorted, sub-angular to well rounded, clean and whitish and bears lignite streaks and wood fragments in places. The formation has a sequence of sediments about 2000m thick deposited in the continental facies of the Niger Delta.

3.9 Ecology of the project area.

The natural ecology of the project area has been altered greatly due to construction work within the University of Benin. Deforestation, land reclamation and expansion of built environment within the school perimeter produced a nascent sub- urban ecological landscape with lots of buildings and roads. Based on literature and field reviews, it can be asserted that the area was initially characterized by flora and fauna of a tropical rain forest. However, the entire landscape has been transformed into a fallow land with secondary regrowth of plants and shrubs. Similarly, the then existing wildlife and microfauna communities have been reduced due to aforementioned reasons. The project site is in the university which is a built up environment with buildings, there is no distinct ecosystem or flora and fauna of importance in the area.

3.10 Social-economic condition of the study area

A socio-economic questionnaire was designed and administered to project's immediate community (Ekosodin) and the University of Benin in order to establish socio-economic baseline, in addition to consultations and interviews with traditional leader, women leader and youth leader. A total of 40 questionnaires were administered to the different groups and households and supplemented with interviews/discussions with key community leaders. The community was surveyed because of the

potential of contractor to source unskilled workers from there, and to identify if there are any cultural practices/ taboos in the area that contractor workers may be exposed to.

3.10.1 Overview of socio-economic survey

The respondents were all adults from 18 years to 65 years. Significantly, the largest percentage (75%) of respondents aged from 21-50 years old, while the older age (51-65 years and above) were 15% of respondents and represent the age bracket that may be vulnerable. The age bracket 18-21 represented the lowest percentage of respondents (5%). Similarly, the composition of respondents from widespread age groups implies that varying views from younger to older respondents concerning the project activities were incorporated. The sampling of respondents was randomly drawn from households across the proposed project area. It was gathered from the field survey that majority of the respondents (about 63%) are Male while Female are 37%. This illustrates representation of both gender in the survey.

The study area is located with the University of Benin which has a large population of individuals from different ethnic background. However, majority of the students and staff are from the ethnic groups located in Southern Nigeria with Bini, Ishan, Afemai, Urhobo, Yoruba and Itsekiri as the dominant tribes. The University has good access roads that are tarred and motorable. The roads interlink the different faculties, lecture theaters and office complexes. The project will be entirely powered by electricity supplied from Benin Electricity Distribution Company (BEDC) and generator sets located within the University. The project site is not close to any stream or river. The nearest river is located more than 20km which is outside the area of impact. Water for use within the project site will be via the existing borehole located at the CERHI building. Plastic storage tanks will be used for storing water for domestic and laboratory use.

The university has a functional health center with doctors and nurses who take care of emergency cases. However, serious cases are referred to the University of Benin Teaching Hospital (UBTH) which is about 2km away from the project site. The result of the survey shows that malaria is more frequent in the community and university followed by typhoid fever. cough and catarrh. This could be due to presence of untreated domestic water and poor sanitation/hygiene.

The community (Ekosodin) is governed by an Enogie (an appointed ruler by the "Oba" King of Benin) whom all grievances are channeled to for resolution. Average household size is between 5-7 persons. The major occupations of the people include trading, civil servants, business and artisans (carpentry, welding, painting, plumbing etc.) with many people engaged in more than one of the skills. Typically, the project community is adherents of Islam, Christianity and their own traditional religion. There are special days set aside for festive periods which are according to the Benin tradition. The area has congested houses, presence of refuse dumps and open gutters with polluted waters which are also used as waste dumps.

The study area has no site of historical importance such as shrines or monuments. There are also no sites of archeological importance within the study area.

CHAPTER FOUR
ASSESSMENT OF POTENTIAL ADVERSE ENVIRONMENTAL AND SOCIAL IMPACTS

4.1 Impact prediction methodology

The project's environmental and social impacts were screened using a modified Leopold matrix. The modified Leopold impact matrix consist of a horizontal list of Biophysical, Socio-economic and health environmental components that could be affected by the proposed project activities, versus a vertical list of project activities, which represent Environmental aspects, or "source of impact, "associated with each project phase (Pre-construction phase, construction phase and operation phase). Environmental aspects are elements of an activity that can or will interact with the biophysical and socio-economic and health conditions within the area of influence of the project's construction activities.

From the scoping of the proposed project, the project activities that would impact the environment were identified as:

a) Bush clearing
b) Foundation laying
c) Construction of building
d) Fitting of electrical and plumbing works
e) Operation and use of the building

The following priority issues/impacts have been identified:

i) Potential effect of the project on the economic quality of life of the university of Benin community and environs.
ii) Potential effects of pollution incidents (water and air) as a result of construction.
iii) Potential effects of noise and vibration generated during construction of buildings and installation of equipment
iv) Potential influx of migrants and contract workers on capacity of community facilities/infrastructure, communicable disease and cultural values.
v) Potential conflict between community members and other stakeholders
vi) Possibility of fire and/or explosion and other accidents/incidents affecting community, workers and stakeholders.
vii) Potential effect of waste generation and management on community, water and soil quality and animals.

4.2 Determination of associated and potential impacts of the project

In discussing the impacts of the project therefore, an assessment of the effects of the various phase listed above on the various relevant Environmental components was undertaken. The impacts of the proposed construction activities of the CERHI building extension on the biophysical, social and health components of the environment were identified and appropriate mitigating measures proffered.

A checklist of the associated and potential impact assessment are presented in Table 7

Table 7: checklist of associated and potential impacts of the proposed project

Impacts	Phase		
	Mobilization	Construction	Operation
Acceleration of erosion		√	√
Alteration of soil profile		√	
Blockage of drainage systems		√	√
Blockage of roads/motorways	√	√	√
Change in water quality/Contamination of groundwater		√	√
Contamination of soil		√	√
Impairment of air quality	√	√	
Increased demand on social infrastructure	√	√	√
Increase in social vices		√	√
Increased opportunity for business and employment	√	√	√
Influx of migrant workers and camp-followers	√	√	√
Injuries and death from construction accidents		√	√
Interference with road transportation	√	√	√
Concerns and grievances concerning the project	√	√	√
Loss of biodiversity		√	√
Noise and vibration nuisance	√	√	
Road traffic accidents	√	√	
Work site accidents	√	√	√

4.3 Risk assessment

The identified associated and potential impacts of the proposed building project were quantified using risk assessment matrix and the ISO 14001 procedure for evaluation of significant environmental aspects/impacts.

Risk assessment was used for rapid assessment of the activities involved in the setup, operation of the CERHI building extension. This assessment will:

- Identify key impacts and their indicator parameters.
- Determine of the magnitude and significance of the impacts
- Evaluate of the importance of the Impacts for decision makers

- Incorporate concerns of the host community and environs during consultation initiatives and socio-economic/health studies.

The criteria and ratings for identifying significant environmental impacts of the projects are as follows:

I) Legal/Regulatory Requirements (L)

Is there a legal/regulatory requirement or a permit required? The scoring is as follows:

0 = There is no legal/regulatory requirement
3=There is legal/regulatory requirement
5=There is a legal/regulatory and permit required

The legal/regulatory requirements were identified based on national laws/guidelines/standards (FMEnv and EDMES) relating to the project activity.

II) Risk (R)

This uses a matrix based on the interaction of the probability of occurrence of the impact (Table 8) against consequences (Table 9). The matrix (figure 6) is referred to as the Risk Assessment Matric (RAM). Five probability categories were interacted against four groups of consequences. The resultant outcomes were given scores with colour-codes as follows:

1=Low risk (green)
3=Intermediate risk (yellow)
5=High risk (red)

Table 8: Probability of Occurrence

Probability Category	Definition
A	Possibility of Repeated Incidents
B	Possibility of Isolated Incidents
C	Possibility of Occurring Sometime
D	Not likely to occur
E	Practically Impossible

Table 9: Consequence Categories

Consequence Category	Consideration			
	Safety / Health	Public Disruption	Environmental Aspects	Financial Implications
I	Fatalities / serious impact on public	Large community	Major/extended duration/full scale response	High
II	Serious injury to personnel/limited impact on public	Small community	Serious/ significant resource commitment	Medium

III	Medical treatment for personnel / No impact on public	Minor	Moderate/ limited response of short duration	Low
IV	Minor impact on personnel	Minimal to None	Minor / little or No response needed	None

	A	B	C	D	E
I					
II					
III					
IV					

Figure 6: Risk Assessment matrix showing scores of the probability of occurrence of impacts related to the project against predicted consequences.

III) Frequency of Impact (F)

Frequency of impact refers to the number of occurrence of impact. The frequency of impact was determined using impacts historical records of occurrence and consultation with experts and local communities. The criteria for rating the frequency of impacts are outlined in Table 10.

Table 10: Frequency Rating and Criteria

Frequency	Rating	Criteria
Low	1	Rare, not likely to happen within project lifespan
Medium	3	Likely to happen ≥ 5 years
High	5	Very likely to happen throughout the project lifespan

IV) Importance of Affected Environmental Component and Impact (I)

The importance of the affected environmental components was determined through consultation and consensus of opinions. This was also further facilitated by information on experiences on the impacts of already existing facilities in the proposed project area. The rating of the importance of impacts is summarized in Table 11

Table 11: Importance Criteria

Importance	Rating	Criteria
Low	1	• Imperceptible outcome • Insignificant alteration in value, function or service of impacted resource • Within compliance, no controls required
Medium	3	• Negative outcome • Measurable reduction or disruption in value, function or service of impacted resource • Potential for non-compliance
High	5	• Highly desirable or undesirable outcome (e.g., impairment of endangered species, protected habitat or beneficial to community) • Detrimental, extended animal behavioral change (breeding, spawning, molting)

		• Major reduction or disruption in value, function or service of impacted valued ecosystem resource • Impact during environmentally sensitive period • Continuous non-compliance with existing statutes

V) Public Perception (P)

The consensus of opinions among the project stakeholders were used to determine the public perception on the potential impacts and the criteria applied are summarized in Table 12. The combination of the five impact rating weights forms the basis for judging the level of significance of each impact.

Table 12: Public Perception Criteria

Public perception	**Rating**	**Criteria**
Low	1	• No risk to human health, acute and/or chronic • No possibility of life endangerment for residents, associated communities • Minor reduction or increment in social, cultural, economic values • Unlikely adverse perception among population
Medium	3	• Limited incremental risk to human health, acute and/or chronic • Unlikely life endangerment for residents, communities • Some reduction or increment in social, cultural, economic value • Possibility of adverse perception among population • Potential for non-compliance
High	5	• Elevated incremental risk to human health, acute and/or chronic • Possibility of life endangerment for residents, abutting communities • Major reduction or increment in social, cultural, economic value • Continuous non-compliance with statutes • Any major public concern among population in study area

Table 13: Impact value and rating color code

Impact value	Cut off values	Impact Rating
L+R+F+I+P	<8	Low
L+R+F+I+P	≥8 but <15	Medium
L+R+F+I+P	≥15	High
F + I	>6	High
P	= 5	High
Positive		Positive

The final ratings of the identified impacts are presented in Tables 4.8 – 4.10. In this study, medium and high significant negative impacts were judge to require mitigation, and all positive impacts required enhancement such as provide adequate and timely information for all stakeholders and ensure involvement and inclusion during the project lifecycle, to provision of certificates to stakeholders trained.

Table 14: Potential, Associated and Residual Impacts of the CERHI building extension facility – pre-construction/construction phase

		Impact Qualification								Impact Quantification							
Project Activity	**Description of Impact**	Positive	Negative	Direct	Indirect	Short term	Long	Reversib	Irreversible	L	R	F	I	P	TOTAL	F + 1	Impact Rating
Clearing of bushes and site preparation	Increased demand on infrastructure		√	√		√		√		0	1	1	1	1	4	2	L
	Increase in incidence of GBV, SEA & STI		√	√		√		√		0	1	1	1	1	7	2	L
	Increased in social vices		√	√	√	√		√		0	1	1	1	1	4	2	L
	Increased business and employment	√		√			√	√		1	3	5	5	5	19	6	H
	Influx of migrant workers		√	√		√		√		0	1	1	1	1	4	2	L
Construction of buildings/ installation of equipment and furniture	Acceleration of erosion		√	√	√			√		0	1	3	3	3	10	4	M
	Alteration of local topography		√	√	√			√		0	1	1	1	1	4	2	L
	Alteration of soil profile		√	√	√			√		0	1	3	3	3	10	4	M
	Blockage of drainage pattern		√	√	√	√		√		0	1	1	1	1	4	2	L
	Contamination of ground water		√	√	√			√		3	1	3	3	1	11	6	L
	Contamination of soil		√	√	√			√		0	1	1	1	1	4	2	L
	Impairment of air quality		√	√	√			√		0	1	3	3	1	11	4	M
	Loss of biodiversity		√	√				√		3	1	1	1	1	7	2	L
	Noise and vibration nuisance		√	√		√		√		3	1	3	1	3	11	4	M
	Work site accidents		√		√	√			√	0	5	5	5	5	20	6	H
	Increased business and employment	√		√		√	√	√		1	3	5	5	5	19	6	H
Mobilization of equipment / personnel to site	Road traffic accidents		√	√					√	0	1	3	3	1	11	4	M
	Impairment of air quality		√	√		√		√		3	1	1	1	1	7	2	L
	Noise and vibration nuisance		√	√		√		√		3	1	1	1	1	7	2	L
	Armed robbers attack		√	√					√	3	1	3	1	3	11	4	L
	Interference with road transportation		√	√		√		√		3	1	3	1	3	11	4	L
	Increased business and employment	√		√		√	√	√		1	3	5	5	5	19	6	H

Table 15: Potential, Associated and Residual Impacts of the CERHI building extension – Operation Phase

Project Activity	**Description of Impact**	**Impact Qualification**								**Impact Quantification**							
		Positive	Negative	Direct	Indirect	Short term	Long term	Reversible	irreversible	L	R	F	I	P	TOTAL	F + 1	Impact Rating
Operation of the building and its facilities	Impairment of air quality		√	√	√			√		3	1	1	3	1	11	4	L
	Contamination of water		√	√		√		√		0	3	1	1	1	7	2	L
	Blockage of drainage pattern		√	√		√		√		0	3	1	1	1	7	2	L
	Change in water quality		√	√			√	√		3	1	3	1	3	11	4	L
	Noise and vibration nuisance		√	√			√	√		3	1	3	1	3	11	4	L
	Contamination of groundwater		√	√			√	√		3	3	1	1	1	7	2	L
	Contamination of soil		√	√			√	√		3	1	3	1	3	11	4	L
	Increased opportunity for business and employment	√		√			√	√		1	3	5	5	5	19	6	H
	Construction of toilets and WASH facilities	√		√			√	√		1	3	5	5	5	19	6	H
	Provision of additional facilities to promote the education sector	√		√			√	√		1	3	5	5	5	19	6	H

Based on the risk assessment matrix and ISO14001 criteria, the list of potential and associated impacts (positive and negative) for each phase of the CERHI building extension is as follows:

4.3.1 Pre-Construction/Construction Phase

Positive impact

- Enhanced opportunities for Employment, Contracting, Services and Income.

Negative impact

- Pressure on available water for domestic use and other water related activities.
- Increased pressure on available/existing infrastructure (health, housing, recreational, educational, transport and waste management facilities) due to increased population.
- Destruction of Vegetation
- Increased erosion of the cleared area/alteration of topography.
- Loss of Habitat for Wildlife.
- Increased Social vices, Drug abuse, Commercial Sex Workers (CSW) etc.
- Increased third party agitation.
- Increased Cost of living/inflation.
- Increased level of disease vectors.
- Nuisances (noise, emission, vibrations) from heavy machinery.
- Reduction of Soil quality.
- Impairment of air quality.
- Increased potential for accidents and injuries.

4.3.2 Operations phase

Positive impact

- Increased opportunities for employment/contracting, services and income.
- Provision of additional facilities will help to bridge the gap in infrastructure in the education sector
- Construction of toilets and WASH facilities will promote hygiene and sanitation in the school and thus better health status for students.
- Enhance the quality of postgraduate education

Negative impacts

- Pressure on available food and existing infrastructure (health, recreational, educational, waste management facilities).
- Increased social vices, (drug abuse, CSW and teenage pregnancies).
  Increased level of disease vectors (mosquitoes, rats, cockroaches, flies etc.).
- Increased potential for road accidents.
- Nuisance (noise and emissions).
- Contamination of groundwater and soil with hazardous chemicals

CHAPTER FIVE
ENVIRONMENTAL AND SOCIAL MONITORING PLAN

5.1 Mitigation measures

Environmental management and social plan is a tool for managing the predicted environmental impacts of a project. It provides the means whereby the mitigation measures developed reducing the effects of moderate and major impacts to As Low As Reasonably Practicable (ALARP). The ESMP ensure future compliance with legislation, good environmental performance and integration of Environmental issues into project decision.

The anticipated impacts of the proposed project, corresponding mitigation measures, costs for mitigation and monitoring, frequency of monitoring, parameters to be monitored, and responsibilities for mitigation and monitoring are provided in the Environmental and Social Management Plan for construction and operations activities of the proposed CERHI building extension site.

5.2 Environmental and Social Management Plan (ESMP) recommended for the CERHI building extension

The key components of the ESMP that is been developed for this project includes:

- Commitment by leadership at all levels to foster operational excellence by assuring alignment of vision, expectations resources and accountabilities.
- Comprehensive identification of high-level issues, risks, opportunities, and gaps in system and operating practice that can impact current or future ability to achieve the required level of performance.
- Establish clear yardsticks to measure statistically significant performance improvement toward goals and targets;
- Establish process to ensure documents and records that are critical to operational excellence are current, controlled, and accessible.
- Implement a process to ensure that contractors ("agents") authorized to act on behalf of the company understand and comply with relevant company policies and procedures.
- Establish and maintain appropriate processes for management to regularly monitor CERHI's HSE performance.

The mitigation measures suggested for the predicted Environmental impacts from the project took cognizance of:

_ Environmental Laws in Nigeria, with emphasis on permissible limits for waste streams FMEnv, (1991)

_ Best available technology for sustainable development

_ Feasibility of application of the measures in Nigeria

_ Social well being, etc.

Table 16: Mitigation Measures for the various phases of impact of the Project Area

Preconstruction Phase

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (NGN)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (NGN)
A. Environmental & OHS Impacts												
1A	Movement of materials, vehicles, and equipment to site	Air pollution from exhaust fumes of vehicles and equipment Worsen road condition	Ensure that all vehicles are serviced; undergo vehicle emission testing (VET) and vehicle exhaust screening (VES). Use fuel efficiency techniques, catalytic converters etc. on machinery Use road worthy vehicles/ maintain regularly	Contractor	100,000	SO_2, NO_X, CO, VOC, $PM_{2.5}$, PM_{10} Type of vehicles/sites Access route marked out	In-situ measurement. Site inspection	Air Quality Parameters are within permissible limits as documented by NESREA[1] Evidence of VET and VES Evidence of compliance	Project area and within 1km Project area	Bi-monthly Weekly Before movement of vehicles	CERHI E&S Team Dept of Works FRSC	200,000
2A	Land and site clearing, staging area	Minimal vegetation cover removal Vegetative waste	Limit land clearing to specific zone needed for the construction work. Collaborate with EWMB for onsite waste removal (see WMP in annex 4)	Contractor	40,000	Cleared area Vegetative waste onsite	Site inspection Received complaints	Contractor compliance Evidence of waste manifest	Project site & area	Before and during land clearing	CERHI E&S Team EDMES, EWMB	100,000
3A	Creation of Staging area for equipment	Temporary removal of topsoil, Oil leakages from stacked equipment and dis-colouration of topsoil	Segment a safe and specific area for equipment parking Service equipment and install a non-permeable membrane/ drip pans	Contractor	100,000	Soil Quality	Visual observation	Soil Quality parameters are within FMEnv permissible limits	Equipment Staging Area	Bi-monthly	CERHI E&S Team	Covered in 1A

[1] National Environmental (Air Quality Control) Regulations, 2014

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (NGN)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (NGN)
		Minimal noise impacts	Retrofit vehicle exhausts with sound-control or sound -proofing devices Maximize off-work hours, especially for activities with potentially high noise generation	Contractor	50,000	No. of complaints from nearby offices	Noise measurement	Evidence of Compliance	Project Area	Weekly	CERHI E&S Team	Covered in 1A
4A	Sourcing and mobilisation of construction materials to site	Debris may fall off from trucks or other lighter materials like sand may be blown into the environment causing dust and disturbance on roads and to other road users. Protruded metals, rods, woods, roofing sheets may constitute hazard and nuisance to other road users who may not notice the protrusion. Also, these materials may fall off from the vehicle and may lead to road accidents.	Use tarpaulin material to properly cover conveying truck. Ensure that materials are tightly packed and belted firmly to avoid rolling off the truck. Convey materials using most suitable trucks. Ensure caution tapes are attached to the ends of protruded rods /woods in transit to notify oncoming vehicles and road users.	Contractor	Part of contractor cost	Use of tarpaulin to cover truck conveying materials to site Use of belts to secure materials in position Use of caution tapes attached to protruded rods/woods.	Inspection	Contractor's compliance	Along access road to site	During mobilization	CERHI E&S Team Dept of works, UNIBEN	50,000
4A	Mobilisation to site and clearing activities	Risk of accidents and injuries to contractor workers Respiratory diseases to Workers due to	Submit and implement company HSE Manual/ Implement site specific Occupational Health and Safety Management Plan	Contractor	100,000	Compliance with OHSMP No of workers	Site inspection Consultation	HSE/OHS Training reports and list of attendees	Project area	Weekly	CERHI E&S Team, Dept of works, UNIBEN	Covered in 1A

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (NGN)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (NGN)
		inhalation of exhaust fumes and dusts Noise Pollution	(OHSMP) see annex 5 for sample The OHSMP will entail: - Provision of Hazard Communication Procedures (HAZCOM); Job Hazard Analysis (JHA); OHS Training program Provision of adequate first aid, first aiders, PPE, safety signages Ensure qualified HSE officer on every team Workers should get a daily induction/toolbox before work commences Use reflective tapes and signage integrated in all worksites for safety at night			Trained on HSE/OHS No of accidents, incidents or injuries Noise level Availability and use of appropriate PPEs First Aid Kits Security Management Plan		Evidence of Compliance to OHSMP Evidence of use of PPEs, caution signs onsite, well-stocked first aid kits Compliance with Security Management Plan				
	B. Social Impacts											
1B	Movement of materials and equipment to staging area	Obstruction to access route for staff and students of UNIBEN Disturbances from increased noise levels Grievance from poor recruitment of local	Limit movement to off-peak hours (peak hours are: 7:30AM – 10:00AM; and 4:00PM – 5:30PM; Mondays – Fridays) Liaise with the personnel at the security checkpoint for traffic management. Ensure collaboration with community	Contractor Project level GRC	100,000 for GRM	No of locals recruited GRCs established,	Site inspection Recruitment records	No of complaints received Contractor's compliance Documentation from consultations	Project vicinity	Weekly Monthly	CERHI E&S team GRC	100,000

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (NGN)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (NGN)
		labour for semi- & unskilled labour by contractor Grievance for women who may not be able to satisfy stringent recruitment requirements	leadership for recruitment of local labour. Establish effective GRM for receiving and resolution of complaints Special consideration and less stringent recruitment requirement for women and PWD to encourage women participation Ensure adequate sensitization of the GRM process and the Complaint form			compliant boxes on site No. of sensitizations held and No. of community members sensitized		Implementation of GRM and sensitization attendance sheet				
2B	Land and site clearing, staging area	Delay in removal of vegetative wastes from site, which may lead to pollution	Collaborate with FMU and EWMB for timely removal of waste materials from site	Contractor FMU	Same as 2A above	MoU with FMU /EWMB	Site inspection	Signed MoU Timely removal of vegetative waste from site	Cleared area and surrounding	Staging	CERHI E&S Team	Covered in 2A above
3B	Labor Influx	Potential for SEA/SH/GBV Potential for spread of STDs, sexual relations with community members, onsite vendors, female students and staff	Sourcing of local workforce from project community All contractors' workers to be trained/sensitized and sign Code of Conduct (CoC) (see annex 7 for sample CoC) and zero tolerance for sexual integration with students, staff, community	Contractor Contractor, CERHI GBV Officer, GBV Experts/ Service Providers	Same as 1B above 100,000	No. of local labour Number of trained/sensitized Personnel. Signed Code of Conducts	Attendance list /training report Observation/ review of CoCs	Compliance to SEA/SH measures Signed Code of Conducts	Project vicinity	Bi-weekly	CERHI Gender/GBV Officer CERHI GBV Officer	100,000

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (NGN)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (NGN)
			CERHI to establish a GRM equipped to handle GBV cases with reporting channels that are easily accessible and community members feels safe reporting to	CERHI GRM/GBV Officer	Captured as part of 1B above	Established GBV-GRM	List of GBV focal persons	Available GBV-GRM				
			CERHI establish collaboration with Federal Ministry of Women Affairs and local NGOs for responding to and managing GBV related grievances	CERHI		MoU	List of identified NGOs	MOU Signed				
			CERHI to sensitize school staff, Community leaders, women group, youth group on SEA/SH preventive measures and response plan	CERHI GBV Officer, GBV Experts/ Service Providers	30,000	Attendance List/ sensitization reports	Review sensitization report/ attendance list	Sensitization conducted				
			Signages against tolerance for SEA/SH/GBV to be installed along the project communities/corridor			Signages onsite	Observation	Evidence of signages onsite/ project communities				
			Use of minors (below 18) will be prohibited andstated in the CoC	Contractor / CERHI E&S Team								
			Ensure separate toilets for male and females workers with locks	Contractor	400,000	Designated toilets	Observation	Separate toilets available for male and female				

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (NGN)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (NGN)
4B	Labor Influx	Risk of social conflicts between the local community and the construction workers, which may be related to religious, cultural or ethnic differences, or based on competition for local resources	Provision of information regarding Worker Code of Conduct in English and local language(s), Provision of cultural sensitization training for workers regarding engagement with local community. Consultations with and involvement of local communities. Contractors to provide resources for workers including water, health, toilet (WASH)	Contractor GRCs	50,000	Reports/ Complaints Workers welfare	Review grievance logbook, interviews/ consultations Observation, workers GRM/ Complaints	Absence of complaints	Project vicinity	Weekly	CERHI E&S Team	Covered in 3B above
5B	Movement of vehicles and operations of equipment	Health & safety risks such as accidents	Ensure contractor drivers adhere strictly to traffic management plan (TMP) and road safety rules. see annex 5 for sample: Avoid night hours for fleet movement, use trained drivers, ensure drivers do not use substances, comply with fleet management standards, vehicles should not be overloaded with materials, use of flagmen and safety cautions in built up areas, limit movement during religious activities such as Fridays etc.	Contractor FRSC	50,000 (drivers training)	Training Records No of Complaints	Review of training records Accident/ incident reports Grievance records	Drivers trained by FRSC on road safety and fleet management Installed caution and safety signs in strategic places Absence of traffic incidents	Project site/ Communities	Weekly	CERHI E&S Team FRSC	50,000

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (NGN)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (NGN)
7B	Onsite storage / staging area	Theft of construction materials and equipment from staging area	Engage onsite security personnel Liaise with UNIBEN Chief security officer (CSO)	Contractor CERHI	100,000	Engaged security personnel Incidents of theft	Security/ incident reports	Letter of engagement for security personnel Absence of incidents	Staging area	During staging area	CERHI E&S Team UNIBEN CSO	30,000
	Total Preconstruction Phase (Environmental & OHS and Social)				**1,220,000**							**630,000**

Construction Phase

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility \for Mitigation	Mitigation Cost (NGN)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (NGN)
	C. Environmental & OHS Impacts											
1C	Movement of vehicles	Increase in particulate matter, vehicular emissions which could cause air pollution & eye /	Use road worthy vehicles and conduct routine maintenance	Contractor		Air Quality Vehicle quality	Site inspection / observation Vehicle inspection and	Compliance with air quality standards (see 1A)	Project vicinity	Bi-weekly Monthly Daily	CERHI E&S Team	200,000

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility \for Mitigation	Mitigation Cost (NGN)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (NGN)
		respiratory diseases for contractor workers	Provide PPEs including eye protectors, nose masks to be worn by workers		200,000 for PPEs	PPEs availability and usage by contractors' personnel	maintenance reports Use of PPEs	Vehicle Maintenance records Compliance to use of PPEs				
2C	Civil Works	Indiscriminate defecation or open defecation by construction workers	Provision of WASH & toilet facilities for workers	Contractor	Same as 3B	Evidence of useable toilets	Site Inspection	Contractor's compliance Absence of open defaecation by workers	Within and around Project site	Weekly	CERHI E&S Team, FMU	Covered in 3B
3C	Civil works, use of materials and machinery	Land degradation and increased susceptibility from sourcing of materials	Ensure sourcing of earth materials from registered quarries and licensed construction vendors/ building materials market nearby with appropriate quarry lease to prevent illegal sand mining.	Contractor	Part of contract cost	Primary supplier E&S checklist List of licensed vendors	Site inspection Completed E&S checklists and periodic compliance monitoring	Compliance to E&S requirements	Project site	Monthly	CERHI E&S Team	Covered in 1c above
5C	Civil works, Roofing, fixing of doors, Wall finishing and painting	Accidental spillage of lubricants and paints chemical	Buy only required quantity Collect slurry into labelled container Ensure workers use protective PPEs	Contractor	50,000 (labelled waste collection containers) Covered in 1C	Number of waste collection containers PPEs available	Site inspection Observation Incident reports	Contractor's Compliance Use of appropriate PPEs Absence of incidents	Project Site	Weekly	CERHI E&S Team Supervision Consultant	Covered in 1C
		Accumulation of solid wastes including construction waste and debris Generation of human waste (fecal waste) Burning of e-waste and debris as poses	Ensure proper sorting; storage and final disposal of waste, liaise with FMU to collaborate with EWMB Implement Waste Management Plan (see annex 4).	Contractor CERHI FMU	150,000	Waste Management on site Waste Manifest Manifest for waste reuse	Site inspection Verification of documents	Good waste management practices Evidence of waste disposal records	Project site	Weekly	CERHI E&S Team, FMU	Covered in 1C

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility \for Mitigation	Mitigation Cost (NGN)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (NGN)
		risks of air pollution leading to health diseases such as RTIs	Ensure recycling of removed materials from site through approved recycling facilities to conserve resources. Ensure no waste is left behind at project site after construction									
6C	Civil works, material handling, machinery usage	Workers accidents such as Injuries, explosions, electrical fires, leakages, falls from height, slips, release of hazardous energy, deaths etc.	OHS training and education, implementation of OHSMP: Provision of Hazard Communication Procedures (HAZCOM); Job Hazard Analysis (JHA); OHS Training program Provision of adequate first aid, first aiders, PPE, safety signages (Bini, Ishan and English languages). Ensure qualified HSE officer on every team Workers should get a daily induction/toolbox before work commences, use of hazard signs	Contractor	150,000	Compliance with OHSMP No of workers Trained on HSE/OHS/ Training reports No of accidents, incidents or injuries Availability and use of appropriate PPEs First Aid Kits	Consultation with workers Site Observation Incident Reports	HSE/OHS Training reports and list of attendees Evidence of Compliance to OHSMP Evidence of use of PPEs, caution signs onsite, well-stocked first aid kits Absence of incidents/ accidents	Project site	Weekly	CERHI E&S Team, Supervision Consultant	Covered in 1C
	D. Social Impacts											
1D	Civil works, material handling, machinery usage	Health & safety risks such as accidents	Limit movement to off-peak hours (peak hours are: 7:30AM – 10:00AM; and 4:00PM	Contractor	Same as 1 and 5B	Training Records	Review of training records	Drivers trained by FRSC on road safety and fleet management	Project site	Monthly	CERHI E&S Team,	Covered in 1c

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility \for Mitigation	Mitigation Cost (NGN)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (NGN)
			– 5:30PM; Mondays – Fridays) Ensure contractor drivers adhere strictly to road safety rules. Liaise with the personnel at the security along the route and in the school for traffic management. Avoid night hours for fleet movement, use trained drivers, ensure drivers do not use substances, comply with fleet management standards, vehicles should not be overloaded with materials, use of flagmen and safety cautions in built up areas, limit movement during religious activities such as Fridays etc.			No of Complaints Grievance records	Review of compliance to TMP Accident/ incident reports Review of Grievance records	Installed caution and safety signs in strategic places Absence of traffic incidents Absence of complaints				
2D	Civil works, material handling, machinery usage Movement of vehicles, materials, and equipment	Fugitive Dust may likely affect the UNIBEN immediate community health & safety especially during digging, excavation and drilling Noise: disturbance in a serene environment may affect their daily work schedule,	Construction should be maximised during off peak periods/ weekends/holiday Vehicles conveying materials should be covered with tarpaulin Ensure all vehicles and machines undergo service before being brought to site with	Contractor	-	Air quality Vehicles with tarpaulin Noise level Complaints/ Grievances	In-situ measurement Vehicle inspection Consultation with UNIBEN staff and workers	Air quality is within permissible limits Contractor's Compliance Absence of grievances/ resolved grievances	Project vicinity and its corridor	Weekly	Dept of works, UNIBEN	-

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility \for Mitigation	Mitigation Cost (NGN)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (NGN)
		psychology and peace of mind	continuous regular maintenance. Retrofit vehicles/ equipment with sound mufflers Ensure vehicles/ equipment not in use are turned off Ensure the GRM is effective to allow for associated complaints	CERHI/ GRCs	200,000 for GRM operations: complaint boxes, GRCs, toll free lines, sensitization on GRM							
3D	Recruitment of workers	Unfair and discriminatory recruitment practices which may be exploitative, cause conflicts, potential litigation. Poor terms and conditions of employment which could lead to poor wages, unsafe work conditions, suboptimal welfare etc.	Comply with and implement the Labor Management Plan in the ESMP including: inclusive recruitment especially for women and PWD, safe work conditions, provision of basic amenities etc. Workers will have freedom of association and should be sensitised on the available grievance redress channels	Contractor	-	Consultations with workers Recruitment records Complaints/ grievances Workers strike action Dismissal records	Review: Minutes of meetings, Grievance records, recruitment records Consultations/ interviews	Compliance to LMP Minimal complaints Resolved strike actions Workers are not victimized for association/ unions	Project site	Monthly	CERHI E&S Team	50,000
4D	Staging Area, equipment and material parking	Obstruction to free movement within the UNIBEN premises	Limit parking to selected zones	Contractor	-	Area selected In-school access route Grievance records	Site inspection Review of grievance logs	Contractor Compliance Absence of complaints/ resolved complaints	Project site	Monthly	CERHI E&S Team Works department, UNIBEN	-
6D	Continuous civil works	Risk of Child Labour which can lead to		Contractor	-	Categories of employees	Documentation	Contractor Compliance	Project vicinity	Bi-monthly	CERHI E&S Team	Covered in 1C

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility \for Mitigation	Mitigation Cost (NGN)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (NGN)
		Violence Against Children and litigation against existing child protection laws	Ensure that children and minors are not employed directly or indirectly on the project by requesting legal proof of age during recruitment process Implement sensitization campaign against child labour Regular stakeholders' meetings All employees and contractor must sign the code of conduct	CERHI		Number and reports of campaigns and meetings Signed Code of Conduct	Consultations	Absence of underaged children Number of complaints			Federal Ministry of Women Affairs	
7D	Civil works, movement of vehicles conveying materials and equipment	Labour Influx; which may lead to conflicts amongst locals and employees; competition for limited resources such as water, materials etc.	Engage local workforce especially as unskilled workers Provide basic amenities for workers like water, health, toilets etc. implement labor influx plan	Contractor	350,000	Number of local work-force Availability of basic amenities	Contract Verification Site inspection Document verification	Contractor compliance to E&S LMP Number of local employees	Project site	Monthly	CERHI E&S Team	Covered in 1C
8D	Labor Influx and presence of Followers	Occurrence of onsite/off-site, social vices (Fights, harassments, theft, vandalization, drug use etc.) Threat to health and safety of locals Increase in SH/SEA	Sourcing of local workforce from project communities All contractors' workers to be sensitized and sign Code of Conduct (CoC) and zero tolerance for sexual	Contractor Contractor in liaison with GBV Experts	Same as 3B	Number of trained Personnel Code of Conducts	Attendance list / training report Observation/ review of CoCs	Compliance to SEA/SH Action Plan Signed Code of Conducts	Project site	Monthly	CERHI E&S Team CERHI Gender/GBV Officer Ministry of Women Affairs	100,000

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility \for Mitigation	Mitigation Cost (NGN)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (NGN)
		Abuse of minors Abuse of cultural norms Potential for spread of STDs, sexual relations with community members, female students and staff Use of illicit drugs	integration with students, staff, community Prohibition of drug and alcohol use by workers while on the job through awareness & sensitization on side effects of drug abuse Provide cultural sensitization training to improve awareness of and sensitivity of workers to local cultures, traditions, and lifestyles. Ensure implementation of the GBV-GRM protocol and appoint GBV focal persons in the project sites Ensure effective services from GBV service providers in the project area to enable survivors access to quality care Sensitise staff, Community leaders, women group, youth group on SEA/SH preventive measures and response plan Signages against tolerance for	Contractor Gender Officer/ GBV Focal persons	100,000 (Training cost)	GBV-GRM Attendance List/ Training reports Monitoring Reports Signages onsite Reports/ complaints	Consultations with PAPs/ List of GBV focal persons review list of Service Providers Review training report/ attendance list observation	Available GBV-GRM sensitization conducted Evidence of signages onsite/ project communities				

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility \for Mitigation	Mitigation Cost (NGN)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (NGN)
			SEA/SH/GBV to be installed along the project communities/corridor									
9D	Onsite storage / staging area	Theft of construction materials and equipment from staging area	Engage onsite security personnel Liaise with UNIBEN chief security officer (CSO)	Contractor CERHI	150,000	Engaged security personnel Incidents of theft	Security/ incident reports	Letter of engagement for security personnel Absence of incidents	Staging area	During staging area	CERHI E&S Team UNIBEN CSO	30,000
	Total Construction Phase (Environmental & OHS and Social)				**1,350,000**							**380,000**

Operation Phase

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (NGN)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (NGN)
	E. Environmental & OHS Impacts											
1E	Continuous usage of WASH and other facilities	Generation of different types of wastes – solid waste, e-waste, sewage.	Provide colour coded waste bins that are immovable but can be easily tipped off from down or up FMU in collaboration with EMWB to ensure routine removal of waste E-waste to be sent to recycling centers	CERHI FMU	Part of operation cost	Waste management practices Waste Manifest	Document inspection Site inspection/ Observation	Good housekeeping	CERHI Centre	Monthly	CERHI E&S Team	Part of operational cost

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (NGN)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (NGN)
			Sewage evacuation as may be needed periodically									
		Poor maintenance of WASH Facilities may lead to damage of facilities & public health issues Water unavailability may impact cleaning & usage Sanitary pads may clog the sewage	Prepare a maintenance schedule Reticulate water to WASH Facilities. Provide covered waste bins for disposable of sanitary pads	CERHI Project officer FMU	Part of operational cost	Building Design Maintenance schedule Water points Waste disposal system	Physical inspection	Good waste management practices Good housekeeping Routine maintenance	WASH Facilities	Quarterly	CERHI E&S Team	Part of operational cost
2E	Use of Overhead Tanks	The tank could fall and cause accidents. The tank could also rust and pollute the water produced over time	The stand should be adequate and well installed. The tank should be galvanized to prevent rust and should be periodically washed out to remove sludge.	Contractor CERHI/FMU	Part of project installation costs FMU Budget	Reports of incidents Water quality	Review of reports In-situ/ laboratory water analysis	Tanks are well mounted and accidents avoided Absence of rust in tanks/ periodically maintained	CERHI Building`	Quarterly	CERHI	Part of operational cost
3E	Operation of the Laboratories	Discharge of wastewater into drainage which may lead to downstream contamination Poor management of Lab waste could end up in the environment/ stream and cause pollution	Provide treatment of wastewater before discharge Implement WMP Liaise with FMU for maintenance works and continuous waste removal; Ensure proper handling of hazardous wastes.	Contractor Engineering Design Consultant	Part of design cost CERHI/FMU routine maintenance budget	Erection of waste treatment plant Removed waste	Site inspection	Discharge points are terminated into sewage Timely removal of wastes	CERHI Centre	Monthly	CERHI	Part of operational cost
4E	Operations of facility	OHS risks such as electrical shocks,	Ensure proper termination of electrical points, and efficient insulation of cables.	FMU	FMU maintenance budget	Installations and cabling	Inspection QA/QC	Use of only approved	UNIBEN Centre	Routine (FMU routine	CERHI Centre	Covered in 3E

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (NGN)	Parameters to be measured	Method of measurement	Performance indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Costs (NGN)
		slips, and falls from stairs Generation of maintenance wastes such as cement, paint etc.	Ensure all electrical appliances are properly earthed. Installation of breakers Routine inspections and maintenance of electrical appliances Implement WMP	UNIBEN	UNIBEN/ FMU routine maintenance budget	Compliance with WMP		electrical materials Presence of designated waste bins		maintenance schedule)	UNIBEN FMU	
	F. Social Impacts											
1F	Operations of Facility	Theft of equipment and devices	Provide security for the CERHI Centre Login and Logout book for staff and visitors into the CERHI Centre and prior to entrance into the Lab Restrict access to Labs	CERHI	130,000	Security, log book register	Site inspection	Presence of security personnel on site	CERHI Centre	Routine monitoring	CERHI Centre	
	Total Construction Phase (Environmental & OHS and Social)				2,500,000							-
	Grand Total				**2,700,000**							**1,010,000**

5.4 Implementation of the mitigation measures for potential impacts

The ESMP will be implemented with an adaptive management approach to respond to changes occurring at different stages of the Project and, as a living document, will be updated to reflect the current status of the Project and site features and management requirements when necessary.

CERHI is obliged to implement the ESMP with adequate and qualified personnel working under an appropriate organizational structure, in line with Project standards, in line with stakeholder participation and information sharing requirements, and to ensure that contractors adopt management controls.

5.4.1 Roles and Responsibilities

As the project owner, it is the responsibility of CERHI to manage the environmental and social issues of the project and to ensure that the necessary mechanisms are developed and implemented by the Contractor, FMU and other responsible parties. A framework regarding the roles and responsibilities of CERHI and the Construction Contractor is presented below

Table 17: Roles and Responsibilities Regarding the Implementation of the ESMP

No	Category	Responsibilities
1	CERHI E&S Team (Environmental, social, GRM, gender officers)	• Assists the Centre to comply with and fully implement World Bank OPs and other relevant laws in Nigeria. • Ensure adequate review of all safeguard reports before sending to the World Bank. • Supervision of the contractors, training of contractors and workers, monitoring of the implementation of the ESMP, CESMP and other safeguard instruments. • Review of ESMP performance and implementation of correction actions if any. Specifically: **Environmental & Social Officer (ESO)** • Analyse potential environmental and social risks and impacts. • 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. • Ensure that the project design and specifications adequately reflect the recommendations of the ESMP • Ensure the operationalisation of Grievance Redress Mechanism (GRM) • Coordinate and ensure the implementation of the environmental and social aspects of the ESMP • Ensure project beneficiaries and host communities are sensitised about the available reporting channels and how to access them

No	Category	Responsibilities
		• Periodically monitor the GRM to ensure it is effective and fit for purpose • Lead the process of Disclosure of the ESMP **Gender/GBV Officer** • Plan and implement all GBV related activities for the project • Operationalisation of GBV Grievance Redress Protocol
2	CERHI Centre	• Overall responsibility for the implementation and monitoring of the implementation of the ESMP. • Monitoring of project/contractor performance and taking appropriate action to ensure ESMP provisions are met. • Inclusion of relevant provisions in the bidding document for contractors. • Liaise with other relevant Government MDAs such as Federal Ministry of Women Affairs, EDMES, EMWB, Non-Governmental Organizations, and community leadership/groups. • Disclosure of the ESMP
3	Contractor	• Compliance to BOQ specification in procurement including the provisions in the ESMP • Prepare and implement C-ESMP in line with the project ESMP • Ensure all contractor management and workers sign the Code of Conduct (CoC) and are routinely trained on the contents of the CoC • Prepare C-ESMP for approval of CERHI E&S Unit • Implement C-ESMP during project implementation • Ensure that all construction personnel and subcontractors are trained on the content of the CESMP and are made aware of the required measures for environmental and social compliance and performance • Provide adequate basic amenities and PPEs to workers and ensure that the PPEs are worn by workers during work. • Prepare and maintain records and all required reporting data as stipulated by the ESMP, for submission to the Supervising Consultant
4	Facility Management Unit (FMU), UNIBEN	The FMU have the primary responsibility for all maintenance works, waste management, electrical, plumbing, water supply, and lawn maintenance. They will also play key roles during the construction and operation phases of the project
6	Edo state waste management board (EWMB)	• Liaise with contractors to support the collection/evacuation of waste from the project sites

No	Category	Responsibilities
		• Ensure management of project waste in line with best environmental practices as not to degrade or pollute the environment. • Conduct periodic monitoring of environmental parameters to ensure compliance with environmental regulations
7	Federal Road Safety Corps (FRSC)	• Control and manage traffic and road safety throughout project implementation • Discourage counter road safety practices among road users • Support the contractors in training their drivers
8	Edo State Ministry of Environment and Sustainability	• Review of Draft ESMP report, provide disclosure letter, receive comments from stakeholders.
9	World Bank	• Overall supervision and provision of technical support and guidance. • Recommend additional measures for strengthening management framework and implementation performance.
10	Association of African Universities (AAU)	▪ Provide advisory and coordinating oversight to CERHI on the building project.

5.5 Monitoring, reporting and evaluation

In order to comply with regulatory requirements, monitoring programmes for biophysical, social and health aspects have been developed and these shall apply throughout the project's lifecycle. Separate monitoring plans have been prepared for the associated potential impacts and cumulative impacts.
The monitoring of the ESMP implementation shall involve the other key statutory regulators (Edo State Waste Management Board and the Edo state Ministry of Environment and Sustainability).
Regular internal audits and environmental and social monitoring will be carried out by CERHI and the Contractor in order to evaluate the performance of the ESMP. In line with the general framework of audits and monitoring, the following issues should be controlled:

- Implementation of environmental and social management plans and Contractor implementation plans by all personnel,
- Ensuring compliance with the national legislation, the World Bank Environmental and Social Framework and other relevant guidelines, which form the project standards, and
- Project activities are carried out in a way that meets ESMP objectives.

CERHI and the Contractor are obliged to carry out the relevant reporting by conducting the internal monitoring/audit activities required by the Project activities they perform. Weekly, monthly and quarterly follow-up reports, which will be prepared following daily inspection and monitoring activities in all project areas during the construction phase, will be submitted to CERHI. In addition,

Environmental and Social Monitoring reports should be prepared as required regarding the work carried out by the 3rd Party Environmental and Social Monitoring Consultant and relevant experts. These reports will be submitted to CERHI and relevant Government regulating agencies/ministries at regular intervals during the operations phase.

Table 18: Monitoring schedule for the ESMP

Monitoring	Action	Responsibility	Period	Performance Indicator
Internal Monitoring	Regular site visit to ensure that the mitigation measures and actions specified in the ESMP are implemented and as bound by the contract is satisfactorily implemented.	Environmental and Safeguard Officer, CERHI	During Preconstruction, Construction and Operation Phases	Monitoring Reports and documentation as described below
	Regular monitoring of the contractor performance and adherence to GBV/SEA/SH obligations	(ES) Officer, CERHI Centre for Response and Prevention of Sexual and Gender Based Violence (CRPSGBV)	During Preconstruction and Construction phases	Monitoring Reports presented to the CERHI team
External Monitoring	Periodic site visit to ensure project is implemented in an environmentally & socially sustainable manner using the monitoring indicators specified in the ESMP Matrix and other national and international environmental & social requirements	Environmental Management Unit, UNIBEN EDMES/ EWMB	During Preconstruction, Construction and Operation Phases	Monitoring reports from CERHI team Provide feedback on observations. Enforce corrective actions where necessary.
	Periodic monitoring of timely, mandatory and confidential reporting for E&S activities	Third Party Monitors/ World Bank	During Preconstruction, Construction and Operation Phases	Monitoring Reports presented to CERHI, AAU, WB

5.6 Estimated costs to implement the ESMP

The ESMP implementation budget refers to all costs that will be incurred to implement the requirements or recommendations in this Environmental and Social Management Plan (ESMP). In the ESMP the requirements are to ensure that implementation of the project integrates environmental and social issues for the sustainability of the project as well as its components and sub-components. Among other things the ESMP recommends the following key issues, namely; implementation and

management of this ESMP, training and capacity building, environmental screening, reviewing and monitoring mechanisms. These issues have been amplified and are clearly described in this ESMP.

5.7 Capacity Building

The staff who will be involved in the implementation of the project should be trained to enhance their skills on specific environmental and social issues. Building the capacity of staff from the implementing unit, division/departments/ sections especially those who will directly be involved in implementing the project and its sub-projects, value chain systems as well as management and finance will enable them to review and monitor environmental issues in the project to ensure compliance with requirements of the national policies, laws and regulations.

The capacity building plan is given below:

Table 19: Capacity building plan

	Training Content	Participants	Delivery	Cost (N)
1.	Specific training on Environmental & Social Mgt	Environmental & Social Safeguard Officer	E&S Firm/ World Bank	500,000
2.	Training on ESMP Implementation: mitigation, roles & responsibilities	CERHI Project Team	E&S Consultant	100,000
3.	Training for contractors on ESMP mitigation measures, Code of Conduct, OHS requirements	Contractors' management and workers	E&S Consultant	100,000
4.	Training of Contractor Drivers, fleet management, traffic control within UNIBEN etc.	Contractor, contractor drivers, HSE officer, CERHI Environmental safeguard officer	School Security Management	100,000
5.	World Bank GBV/SEA/SH Prevention and Response Mechanisms	CERHI Environmental Safeguard Officer	E&S Consultant/ World Bank	200,000
6.	Grievance Redress Mechanism	Grievance Redress Committees: project level and management level	E&S Consultant	200,000
			Total	**1,200,000**

5.82 ESMP Disclosure

After the ESMP review and clearance by the World Bank, the ESMP shall be disclosed in line with the Nigerian EIA laws. This will include a formal registration of the ESMP with the FMEnv and receipt of guidelines for the disclosure from them. Upon in-country disclosure, the World Bank will disclose the ESMP on its External Website. The Environmental Officer at the Project level is required to coordinate the disclosure process. The estimated cost for disclosure is One Million, Five Hundred Thousand Naira only.

5.9 ESMP Implementation Schedule

It is expected that the activities related to the ESMP Matrix as seen above should to be integrated into the overall construction schedule. The implementation schedule is presented in the Table 20 below.

Table 20: ESMP Implementation Schedule

S	Activity	Responsibility	Months											
			1	2	3	4	5	6	7	8	9	10	11	12-18
1	ESMP Disclosure	CERHI Team												
2	Develop Environmental/Social Requirements in Bid Documents	CERHI Team												
3	Finalization and Approval of Engineering Designs	Engineering Consultant, CERHI Team												
4	Allocate budget for ESMP Monitoring	CERHI Team												
5	Appoint Support Staff for ESMP	CERHI Team												
6	Review and Approval of Contractor's HSE, WMP, TMP	CERHI E&S Team												
7	Capacity building	CERHI Team												
8	Implementation of Environmental and Social Mitigation Measures	Contractor												
9	Supervision of pre-Construction and Construction activities	CERHI Team												
10	Supervision of ESMP Implementation	CERHI E&S Team, Engineering Consultant												
11	Environmental and Social Monitoring and Auditing	FMEnv, EDMES												
12	Reporting on ESMP Implementation	CERHI E&S Team												

The ESMP implementation estimates are provided below:

5.10 ESMP Implementation Cost

The summary of the cost for the implementation of the ESMP is presented in the Table 19 below. The total costs of the ESMP including costs for mitigation and monitoring and capacity building is estimated as Seven Million Fifty One Thousand Naira (₦7,051,000.00) only. See Table 21 below

Table 21: Estimated cost for implementation of ESMP

S/N	Item	Responsibility	Estimated Cost (NGN)
2.	Mitigation	Contractor / PIU (Project)	2,7000,000.00
3.	Monitoring	CERHI Project, MDAs	1,010,000.00
4.	Capacity Building	Environmental & Social Safeguard Officer, CERHI Project Team, Contractors' management and workers	1,200,000.00
5.	Disclosure Costs	PIU	1,500,000.00
6.	Sub Total		6,410,000.00
7.		Contingency 10%	641,000.00
		Total Budget	7,051,000.00

Commented [OOO1]: These figures are gotten from the Table 16 (ESMP table). I have included an estimated cost for disclosure not captured earlier

Commented [VO2R1]: Thank you very much.

CHAPTER SIX

GRIEVANCE REDRESS MECHANISM

6.1 Introduction to the GRM

The project is in an established institution which already has mechanisms in place for grievance redress, the following, this section has been fashioned in line with the existing system, to provide an accessible and inclusive system, process, or procedure that receives and acts on complaints and suggestions in a timely fashion and that facilitates resolution of concerns arising from the project. Specifically, it covers:

1. Types of grievances
2. Designated toll-free line
3. Grievance Redress Committees (GRCs)
4. Processing and resolution of grievances
5. Grievance register/Logbook
6. Sensitization of stakeholders on the GRM channels
   - ✓ Consultations
   - ✓ Placement of contact number and website on notice board
   - ✓ Install complaint box on site
7. Lodgement of complaints at the project office
8. Monitoring and Evaluation

6.2 Types of grievances/ concerns

- Concerns about the project from stakeholders within and outside UNIBEN
- Conflicts between contractor/contractor workers and stakeholders (students, staff, visitors, other campus users)
- Conflicts due to affected utilities – electric pole, water utility
- Sanctions from regulatory bodies such as Ministry of Environment and Edo State Ministry of Environment and Sustainability.
- Disturbance and accidents or injuries due to construction works and operation of heavy-duty vehicles
- Poor waste management practices
- Competition of existing water resources by contractors
- Conflict from labor management issues
- Non-compliance of the contractor to the agreement reached
- Dissatisfaction from project beneficiaries (students, staff, management etc.)

6.3 Complaint form on the CERHI website

A compliant form is available on the UNIBEN-CERHI website (http://www.cerhiuniben.edu.ng) to enable stakeholders file complaints easily. The website will be monitored daily by the Environmental & Safeguard Officer to ensure complaints are received and acknowledged within 24hrs. Upon receipt of grievance, it will follow the processing and resolution procedures as stated in section 6.6 below

6.4 Grievance Redress Committees (GRCs)

The project will operate a grievance committee for timely resolution of project-related complaints. (no special fees are assigned for members of the GRC, it is purely a requirement for the project. However, provisions for GRM operations such as phone bills, grievance investigation costs etc. have been included in the ESMP. The members of the grievance committee and their functions are given below:

Table 22: Grievance Redress Committee Members

Committee Level	Members	Function
1st Level – Project Level GRC	✓ CERHI Centre Coordinator – Chairperson ✓ Deputy Centre coordinator ✓ CERHI E&S Officer ✓ CERHI M&E Officer Adhoc members may be called in to serve on the committee depending on the case: ✓ Director, CRPSGBV ✓ Student Representative – ACETEL	✓ Receive, investigate and resolve complaints related to the project. ✓ Unresolved complaints at this level will be channeled to the Management level GRC
2nd Level– Management Level GRC	1. Vice Chancellor, UNIBEN(Chairperson) 2. Deputy Vice Chancellors 3. Dean, Student affairs 4. Centre Coordinator, CERHI	✓ Receive, investigate and resolve outstanding complaints from the project level GRC ✓ Directly receive, investigate and resolve complaints related to the project ✓ Unresolved complaints at this level will be channeled to the Governing Council
3rd Level – Governing Council	In line with existing protocol	✓ The highest level of grievance redress related to the project, within UNIBEN ✓ Where grievances remain unresolved, the complainant is advised of their right to seek judicial redress. ✓ In this instance, the Centre coordinator will inform the World Bank officially including all steps taken to resolve the issue
Judiciary	State Judiciary	Act on the case

6.5 Processing and resolution of grievances

The principal steps in grievance processing and resolution are stated in table 18 below:

Table 23: Steps in Grievance Handling

N	Steps	Responsibility	Timeline
1	Receipt of the grievance and acknowledgement to the complainant	Environmental and Safeguard Officer (ESO)	1 day
2	Entry of the complaint into the grievance database/ logbook	ESO/ Communication Officer	1 day
3	Preliminary assessment of grievance to ascertain	ESO	2 days

	whether it is project related. Where it is not project-related, the complainant should be duly informed and advised on the appropriate authority to report to. This is updated in the logbook and closed		
4	Convene project level committee meeting to investigate the grievance	Centre Leader/ ESO	2 days
5	Agree on a resolution strategy, timeline, costs in conjunction with all parties involved.	Complainant/ GRC/Accused	2 – 5 days
6	Response letter and register in the database/logbook if the solution is accepted, resolution (including any payments) and close the case. Monitor implementation of resolution	ESO	1 - 2 weeks
7	If the resolution is not accepted by any/both parties, it is referred to the Higher-Level Committee for resolution	Centre Leader / Vice Chancellor/ Governing Council	2-4 weeks after registration of grievance
8	Resort to judicial measures	State Judiciary	At any stage in the process though complainant would be persuaded to exercise patience until thorough utilization of this mediation path

6.6 Grievance Register/ Logbook

All project related grievances will be logged in the grievance database/logbook. The grievance logbook will be maintained by the ESO, this will be used to record grievances, status and how they are resolved. The format for the logbook is presented below:

N	Date & Time	Grievance No.	Name of Complainant	Department / Designation	Name of Recording Officer	Medium of Communication	Details of Grievance	Action Taken and Date	Status*	Remarks**
1.										
2.										

* **Status –** Open/Closed/Referred

****Remarks –** provide a summary feedback and any strategy the project has put in place to prevent re-occurrence of such complaint

6.7 GBV-GRM protocol

Procedures for responding to allegations of GBV/sexual exploitation and abuse (SEA)/ sexual harassment (SH) that are made against a project actor will not follow the typical GRM process due to the sensitive nature of complaints and level of confidentiality required.

6.7.1 Existing Structure

1. UNIBEN has a sexual harassment policy, which has been revised to cover all forms of Gender Violence and revised as tagged "Sexual and Gender-Based Violence Policy", it is pending Senate and Governing Council approval.
2. The University has a Centre for Response and Prevention of Sexual and Gender- Based Violence (CRPSGBV). The Centre adopts the Survivor's centered approach, conducts sensitization and distributes fliers and promotional materials which contain avenues for reporting such cases.
3. The centre has a SGBV Response Team who swing into action once cases are reported. They have received training on handling such cases.
4. The Response Team thoroughly investigates the cases and submit preliminary report with recommendations to the CRPSGBV Centre. The Director forwards the recommendation to the VC for further directives which could include setting up a disciplinary committee depending on the parties involved.

6.7.2 CERHI GBV Prevention and Response Strategy

CERHI will adopt a strategy which builds on the existing structure in addition to the following critical points:

i. The CRPSGBV Centre will support the CERHI project in sensitization of contractor workers on Code of Conduct against GBV/SEA/SH, unwanted pregnancy and other form of misconduct
ii. Survivors can utilize any available channel to lodge complaints
iii. Survivors can also lodge anonymous complaints through any channel, this will be accepted and treated by the CRPSGBV Centre
iv. The survivor has the right to accept or decline investigation, in any case, the required assistance will be provided to the survivor
v. Confidentiality must be maintained at all times and information about the survivor protected
vi. Such cases should not be detailed in the grievance logbook kept at CERHI, only the date, nature of complaint, whether the incident is likely to be project related, the age/sex of the survivor (if known), action taken to refer the case to the CRPSGBV Centre
vii. Promotional materials containing the contact details for the centre should be made available to stakeholders as follows:

6.8 Sensitization of stakeholders on the GRM channels

- ✓ Consultations

The CERHI Project team should ensure regular consultations with all categories of stakeholders and inform them on the available channels to lodge complaints and expectations when complaints are received.

- ✓ Placement of contact number and website on notice board

The ESO should ensure that the designated GRM contact number and website should be placed on the notice board to enable stakeholders channel their complaints regarding the project

✓ Complaint box on site

A complaint box already exists at the CERHI building beside the project site to allow for stakeholders to physically drop complaints including anonymous complaints. It should be locked and the ESO should retrieve contents on a daily basis and adopt the processing/resolution procedures.

✓ Lodgment of complaints at the project office

Complaints can be lodged directly at the project office -

Research Coordinator/Environmental & Safeguard Office, CERHI Building, Uniben

6.8 Monitoring and Evaluation

The ESO will be responsible for:

- Providing the grievance Committee with a weekly report detailing the number and status of complaints and any outstanding issues to be addressed
- Monthly/quarterly reports, including analysis of the type of complaints, levels of complaints, actions to reduce complaints and initiator of such action will be submitted to the World Bank as part of the monthly safeguards report
- Monitoring implementation of grievance resolution

CHAPTER SEVEN
CONSULTATION WITH STAKEHOLDERS

7.1 Stakeholders engagement

Stakeholder engagement is one of the most important tools for the implementation of the ESMP. It provides a better understanding of the conditions in the project area and the concerns of stakeholders. It is also essential to ensure the effectiveness of the mitigation measures developed under the ESMP. The Stakeholder Engagement and consultations were performed to meet the following basic objectives:

- Identification and planning of stakeholder engagement activities that will start at the preparation and planning stages of the project and continue during the construction and operation phases
- Determining the frequency of stakeholder engagement activities, information sharing and degree of participation, content of consultation activities
- Establishing a Grievance Mechanism that will provide an open communication channel for stakeholders at every stage of the project
- Addressing concerns and expectations communicated by stakeholders in the Stakeholder Engagement Plan, ESMP and Project decision-making and planning stages.

Consultation meetings were held with all stakeholders between the 12th and 13th of May, 2022. The suggestions and inputs made during the meetings were documented and incorporated in this report and aided the development of mitigation and/or enhancement measures and also the design of the Grievance Redress Mechanism.

The lists of stakeholders consulted with are given below:

- ✓ Ekosodin community
- ✓ University of Benin
- ✓ Center of Excellence for Reproductive Innovation (CERHI)

The summary of key discussions is presented in the table below:

Table 25: Summary of stakeholder consultations

Consultation with CERHI Project Team			
Date 13th may, 2022 Venue: CERHI Conference Room Participants: CERHI project manager, Project Architect, Social Safeguard and other staff of the project team			
In attendance were the CERHI project manager, Project contractor, representatives of the CERHI and the E&S Consultants. Following introductions, the representative of the CERHI project and the E&S Consultants introduced the project and ESMP process and objectives to the stakeholders present. The Consultant further highlighted potential environmental and social risks and impacts that may be caused by the project activities and emphasized the role that each stakeholder had to play to ensure that the impacts are adequately mitigated.			
No.	Agenda	Concerns/Questions	Consultant's Response/Remark

1.	Proposed design	The team understudied the proposed design and sought clarifications on critical issues identified, such as: Design considerations Fire response design Drainage design Design for sewage Etc.	The Architect and the CERHI project manager clarified all concerns raised
2.		Concerns were raised for the proposed headroom for the laboratories.	The Design architect stated that the proposed design drawing presents 3m while an approximately 4m headroom will be provided.
Consultation with community leaders			
Venue: UNIBEN STAFF SCHOOL MULTIPURPOSE HALL Participants: Community Leaders, and Members of the community.			
Consultations were held with some of the community members; in attendance were the chairman, secretary, Youth Leader, members of the community development association, project contractor, CERHI project manager and the E & S Consultants. They were enlightened on the CERHI project and the importance of carrying out the ESMP.			
No.	Agenda	Concerns/Questions	Consultant's Response/Remark
1	Perception of the project	They were excited about the CERHI project and stated that it will in bringing development and job opportunity to the youths of the community.	The E&S team informed them that one of the goal of the project is inclusion, and the project is aimed at bringing development to everyone, without causing a rift to others.
2	Potential Adverse Impact	The community representatives were informed that the construction works may directly or indirectly affect their activities; however, the ESMP will recommend ways to mitigate this.	The community representatives assured the consultants of their maximum cooperation, and expressed their happiness towards the proposed project
3.	Opportunities for women involvement	The E&S team explained that women will have the opportunity to be part of the project, some can work as unskilled labour (provided they are not exposed to hazardous situation), selling of food, water and petty trading	
Consultation with the Vice chancellor and the UNIBEN Management Team Venue: UNIBEN VC lounge			
Consultations were held with members of the UNIBEN management team; in attendance were the vice chancellor represented by the DVC, academics, Registrar, project contractor, CERHI project manager and the E & S Consultants. They were enlightened on the CERHI project and the importance of carrying out the ESMP.			
4		Management was sensitized on the importance of the ESMP and the need for management support in implementing the ESMP	The VC, represented by the DVC Academics reiterated management's support to the project and also implementing the ESMP.

CHAPTER EIGHT
CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusion

This ESMP has been prepared based on environmental and social assessments conducted to equip the relevant authorities, CERHI and all other stakeholders with relevant and sufficient environmental information about the proposed CERHI building extension. The proposed building project will bring economic and social benefits to the host University community and Edo State. However, the negative environmental and social impacts that have been identified and are associated with the implementation of this project are minimal and could be addressed by implementing the mitigation measures proposed to ensure that they pose no threat to the environment and to the immediate community.

8.2 Recommendations

a. The building designs should consider using solar panels as a renewable energy source
b. Green areas should be provided in the site plan
c. Ensure toilets are well lit, ventilated and properly labeled for male, female and disabled
d. The positions of the labs should be identified at the design stage to allow for effective safety and proper waste management of chemicals and other bio-hazard materials. In addition, all labs should be fitted with smoke detectors, fire extinguishers, fire resistant ceiling etc.
e. In addition to provision of access ramps to allow for inclusion of People with Disabilities;
f. the ramps should be of low slope
g. pathways should be of limited slope and include sufficient turning radius
h. doors should be light in weight and easy to turn
i. entrances should be sufficiently wide to allow for wheelchair access
j. furniture, counters, equipment, power sockets, and plugs should be placed at suitable heights reachable by persons who use wheelchairs.
k. handrails should be easy to grasp
l. CERHI project team to ensure continuous stakeholder engagements to provide adequate and timely information and ensure involvement and inclusion
m. Ensure timely implementation of actions stipulated in this ESMP
n. The contractors and the project proponents should take into consideration all mitigation measures recommended and they should be followed judiciously so as to address the environmental issues and social that may arise in the course of the implementation of this building project.

ANNEX ONE

TERMS OF REFERENCE

TERMS OF REFERENCE TO ENGAGE A CONSULTANT TO PREPARE AN ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) FOR THE CONSTRUCTION OF CERHI EXTENSION BUILDING COMPLEX, UNIVERSITY OF BENIN

A. INTRODUCTION AND BACKGROUND

The Africa Higher Education Centers of Excellence (ACE) Project is a World Bank initiative in collaboration with governments of participating countries to support Higher Education institutions in specializing in Science, Technology, Engineering and Mathematics (STEM), Environment, Agriculture, applied Social Science / Education and Health. It is the first World Bank project aimed at the capacity building of higher education institutions in Africa.

The first phase (ACE I) was launched in 2014 with 22 Centers of Excellence in nine (9) West and Central African countries; Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Gambia, Ghana, Nigeria, Senegal and Togo. The Project aims to promote regional specialization among participating universities in areas that address specific common regional development challenges. It also aims to strengthen the capacities of these universities to deliver high quality training and applied research as well as meet the demand for skills required for Africa's development.

Based on the initial successes, the World Bank and the French Development Agency (AFD) in collaboration with the African governments, launched the Second ACE Impact Project (ACE II) in 2018 across East and Southern Africa with 24 centers across Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Tanzania, Uganda and Zambia to strengthen post-graduate training and applied research in existing fields and support new fields that are essential for Africa's economic growth.

There are 43 ACEs (25 new ones and 18 from ACE I); 5 Emerging Centers; 1 "top up" center in Social Risk Management; and 5 Colleges and Schools of Engineering. The new areas include sustainable cities; sustainable power and energy; social sciences and education; transport; population health and policy; herbal medicine development and regulatory sciences; public health; applied informatics and communication; and pastoral production. The second phase (ACE II) also included new selected centers in Nigeria totaling 17.

Under ACE Impact, the Centre for Excellence in Reproductive Health Innovation (CERHI) plans to build two more modern classrooms, a molecular laboratory and a one of its kind simulation laboratory where students will be trained with high fidelity simulators with accurate anatomy and functionality to facilitate multi-professional obstetric training of birth and treatment for neonates which is the core mandate of the Centre.
The building extension complex will have the following sections:

- 2 modern theatre halls
- 4 offices
- 1 molecular laboratory
- 1 simulation laboratory
- 1 innovation hub
- 1 business centre
- A kitchen

This project entails the construction of a complex that contains various sections of computerized laboratory.

In compliance with the requirements of the Nigerian EIA Act CAP. E12 L.F.N. 2004 and the World Bank, Safeguard Policies CERHI is proposing to award a contract for the conduct of an Environmental and Social Management Plan (ESMP).

The ESMP will provide an overview of the environmental and social baseline conditions of the proposed project, summarize the potential impacts associated with the proposed construction works and set out the management measures including implementation and responsibilities required to mitigate any potential risks and impacts associated with the activities of the laboratories.

In addition, the ESMP will be utilized by the contractor, to be commissioned by CERHI for the sub-project, and will form the basis of site-specific management plans that will be prepared by the contractors as part of their construction methodology prior to works commencing also taking into cognizance the COVID 19 pandemic and the different measures used in preventing its spread.

B. RATIONALE FOR THE STUDY

The proposed project will involve construction of a new building to accommodate laboratories. Activities associated with the project such as, foundation excavation, cement works, de-vegetation, waste generation etc, will pose negative environmental and social risks/impacts due to the nature of works. Some of the potential negative impacts that would arise during the construction works will include: generation of hazardous, non-hazardous waste, noise/air pollution, vibrations, accident from movement of equipment and materials to site, occupational health & safety risks, risks associated with labour influx (security threat, gender based violence in particular Sexual Exploitation and Abuse due to labour influx, increase in sexually transmitted infections and diseases), grievance and disturbance to physical and cultural resources among others. All these trigger the World Bank's Operational Policy (OP) on Environmental Assessment (OP 4.01) and Physical Cultural and Resources (OP 4.11). In addition, the Nigeria EIA Act mandates that any construction that would have significant impact on the environment must be subjected to an environmental assessment prior to commencement of the civil works.

In meeting the requirements of the World Bank Safeguard Policies and the Nigerian EIA Act CAP. E12 L.F.N. 2004, CERHI, is proposing to engage an experienced consultant who would conduct an Environmental and Social Management Plan (ESMP) to identify the environmental and social impacts associated with this project as well as to proffer mitigation measures to address potential negative impacts.

C. OBJECTIVES OF THE CONSULTANCY

The objective of the study is to prepare an Environmental and Social Management Plan (ESMP) for the proposed **CERHI BUILDING EXTENSION.**

The ESMP will provide an overview of the environmental and social baseline conditions of the proposed sub-project, summarize the potential impacts associated with the proposed construction works, and set out the management measures required to mitigate potential adverse impacts in a series of sector specific Environmental and Social Management Plans (ESMPs).

The ESMP will be utilized by the contractor(s) to be commissioned by the CERHI in preparation of the required Contractor's ESMP (C-ESMP). which will form the basis of the site-specific management plan, prior to commencement of civil works.

The ESMP will be used by the contractor to address all Occupational Health and Safety (OHS) issues and community health and safety issues associated with the proposed construction work.

D. DISCRIPTION OF THE PROPOSED SUB-PROJECT ACTIVITIES

The proposed activities associated with the project will involve construction of two laboratories car park, an admin building, male and female toilets. Associated structures and works expected include foundation laying, plumbing, electrical fittings, soak away, universal access to all buildings including toilets, roofing, landscaping, etc to accommodate the laboratories and all laboratory activities. Thus the need to access the level of impacts, and propose mitigation measures is necessary.

The construction works will be implemented on the land University of Benin Management have donated to CERHI such there will be no involuntary resettlement, acquisition of land, relocation, compensation, loss of physical and economic assets, and /or loss of livelihoods as the project by design cannot finance such activities.

E. SCOPE OF WORK:

The consultant will be mandated to prepare an Environmental and Social Management Plan (ESMP) of the subproject in accordance with national procedures for EIA and World Bank Safeguard Policies that were triggered under the Project. To do this, the Consultant should refer directly to the results of the analyses and recommendations of the Project's Environmental and Social Management Framework (ESMF).

This document should be prepared with a level of detail sufficiently precise to be included in the tender for construction companies, in order to allow a correct estimate of the costs of these activities and to be part of the specifications of the successful bidder.

The core tasks of the consultant shall include

- Prepare a complete ESMP
- Provide a baseline description of the characteristics of the environment in which the activities of the sub-project will take place.
- Highlight the major constraints that need to be taken into account when preparing the land, construction and during operation.
- Conduct a detailed risk analysis.
- Evaluate the potential environmental and social impacts due to sub-project activities.
- Determine the significance of positive and negative impacts, direct and indirect impacts and immediate and long-term impacts associated with the sub-project
- Identify risk mitigation measures.
- Consider the potential impacts of a project on physical cultural resources and follow the required procedures.
- Analyze alternative options.
- Identify work supervision mechanisms
- Define the framework of information, consultation and public participation.
- Present institutional arrangements for implementation of the ESMP as well as reporting systems
- Describe the arrangements for handling complaints and resolving potential conflicts

CONSULTATIONS:

The consultant should carry out consultations with identified primary and secondary stakeholders in order to obtain their views about the sub-subject. These consultations shall occur during the preparation of the ESMP to identify key environmental and social issues and impacts, and after completion of the draft ESMP to obtain comments from stakeholders on the proposed mitigation/enhancement measures.

ETHICAL REQUIREMENTS

Before undertaking any activity, the Consultant will ensure that She/He understands all ethical considerations related to gender based violence (GBV) (in particular Sexual Exploitation and Abuse [SEA]). The consultant should not collect any primary data and should NOT conduct interview or research using SEA survivors and will only make use of secondary sources and data. The objective of this is to minimize harm to women and children

F. ESMP Structures

The ESMP Report shall be presented in a concise format and should not be more than 20 pages containing all studies, processes, analyses, tests and recommendations for the proposed intervention. The report shall focus on the findings, conclusions and any recommended actions, supported by summaries of the data collected and citations for any references used. The ESMP report will include the following topics:

Preliminary pages

Cover page
Table of contents
List of acronyms and their definitions
Executive Summary

Chapter 1: Introduction

- Introduction to the ACE Project and description of the proposed construction activities
- Rationale for ESMP
- Methodology

Chapter 2: Project Description

- Project Activities and Schedules including expected duration of the construction works

Chapter 3: Biophysical and Socio Economic Characteristics of project area

- Relevant Maps and engineering designs for proposed construction activities.
- Description of the area of influence and environmental and social baseline conditions

Chapter 4: Assessment of Potential Adverse Environmental and Social Impacts.

- Methods and techniques used in assessing and analyzing the environmental and social impacts of the proposed construction.
- Discussion of the positive and negative potentially significant adverse environmental and social impacts of the proposed construction.

Chapter 5: Environmental and Social Management Plan (ESMP), including:

- ESMP table highlighting Activities, identified adverse impacts, mitigation measures and corresponding indicator(s). Mode of measurement, corresponding cost of mitigation, monitoring indicators, frequency, cost, as well as responsibilities for implementing these measures.
- Institutional responsibilities for monitoring and implementation of mitigation
- Monitoring and Reporting
- Implementation schedule
- Contractual Measures
- Measures for Non-Compliance with ESMP
- Cost Estimate for ESMP Implementation
- Grievance Redress Mechanism (GRM)

Chapter 6: Consultation with Stakeholders

- This chapter shall summarize the actions undertaken to consult the groups affected by the construction. The detailed record of the consultation meetings shall be presented in annex to the ESMP.

Chapter 7: Summary and Recommendations

Annexes

Annex 1: References
Annex 2: Terms of References
Annex 3: List of persons met in consultations and summaries of meetings
Annex 4: Summary of World Bank Safeguard Policies
Annex 5: General Environmental Management Conditions for Construction/Civil Works

Annex 6: Project Occupational Health and Safety (OHS) plan
Annex 7: Company Code of Conduct on Preventing Gender Based Violence and Violence against Children
Annex 8: Manager's Code of Conduct on Preventing Gender Based Violence and Violence against Children
Annex 9: Individual Code of Conduct on Preventing Gender Based Violence and Violence against Children

Annex 10: Waste Management Plan
Annex 11: Workers Campsite Management Plan
Annex 12: Safeguard Guidance On Covid-19 Consideration In construction/Civil works projects

Annex 13: Photos

The main text of the ESMP should focus on findings, conclusions and recommended actions, supported by summaries of data collected and citations for any references used in interpreting those data. It should provide a description of the specialist studies undertaken and the report should include a bibliography, maps, photographs, diagrams and any other diagrammatic representation needed to facilitate understanding of the main text, detailed data should be presented in annexes or a separate volume. Unpublished documents used in the assessment should also be included or referenced in an appendix and the location of the originals of such documents indicated.

G. DELIVERABLES AND TIMING:

Inception report: The inception report shall be submitted a week after submission of action plan/commencement of work.
Draft report: A draft ESMP will be submitted for comments between the second and third week after commencement of work. It will identify all the areas, the mitigation measures, and the environmental and social issues associated with the construction, as well as the adequacy of the monitoring.
Draft Final: A draft final will be submitted after making inputs to comments of the draft ESMP.
Final report: The final ESMP Report will take into account all comments and will be submitted four weeks after commencement of work

H. EXPECTED WORK PRODUCT AND DELIVERABLES

Table 1: The study will be completed within 4 weeks.

Activities	Week 1	Week3	Week4	Week5
Submission of Inception Report	X			
Submission of Draft Report		X		
Submission of Draft Final			X	
Submission of Final Report				X

I. RENUMERATION AND PAYMENT SCHEDULES

The consultant will be paid based on negotiations with the CERHI but shall not exceed 1% of the entire project value.

Table 2: Payment Schedule

S/N	Deliverable	Schedule	Payment	
1	Inception Report	1 week (after contract signing)	20%	
2	Draft Report	2 to 3 weeks (after contract signing)	40%	
3	Final Report	4 weeks (after contract signing)	40%	

J. QUALIFICATIONS OF THE CONSULTANT

- University degree at the Master's level (or equivalent), specialization in environmental sciences or geography or agronomy or development studies or affiliated disciplines.
- At least 5 years of experience conducting environmental studies or environmental assessment of projects or implementing environmental initiatives.
- It is highly desirable that the consultant have experience with working with international development institutions like the World Bank, and on infrastructure related projects.

K. CLIENT INPUTS

CERHI shall provide to the consultant all relevant/supportive environment reports/documents previously carried out. Land survey report and the interpretation, soil suitability tests and meteorological reports would amongst others be inclusive.

ANNEX TWO
STAKEHOLDERS CONSULTATION PICTURES

One of the E&S consultants discussing with CERHI project team

Cross section of participants from the host community during the consultation meeting

Meeting of the E&S consultants with the UNIBEN management

ANNEX THREE

QUESTIONNAIRE FOR SOCIO ECONOMIC SURVEY

SECTION A:

1. Project Name……

2. Date…….

3. Name of Respondent……
4. Gender of Respondent……..
5. Age of Respondent…….
6. Occupation of Respondent…….
7. Religion of Respondent…….
8. Marital Status Single Married Separated Divorced Widowed

8b. If married, how many wives do you have: ……

8c. Family Size (no. of children) Small (1 – 3) Average (4 – 6) Large (above 6)

9. What is your highest educational qualification? WASC/SSCE level [ ] Diploma level [ ] Degree level Masters/Ph.D. Primary School [ ] None at all [ ]
10. How many people in your household with:
    Secondary Education [ ]Post-Secondary Education [ ]
11. What is your average monthly Below N10,000 [ ] N10,001 – 20000 [ ] N20,001 50,000 [ ] N50,001 – 80,000 [ ] Above N80,000 [ ] income?
12. Name of community……..
13. Name of local government Area……
14. State……..

SECTION B:

HISTORY, TRADITIONAL AND ADMINISTRATIVE STRUCTURE OF COMMUNITY/GROUPS OF COMMUNITIES

9. Is the village part of a clan? Yes/No. Name of clan, if yes……
10. Name the ethnic group(s) that founded the village……..
11. When was the village founded?.....
12. Who is the overall/highest traditional and administrative ruler
13. Where does he reside?.....
14. What is the traditional leadership structure?
15. Is there a council of chiefs? Yes /No.
16. State functions of the council of chiefs
17. What is the women leadership structure in the community?

SECTION C: CULTURE, RELIGION AND ARCHAEOLOGY

20. Name of shrine/deity Worshipped in the community…….
21. Name of sacred forest and their locations. ……..
22. Religious and social festivals celebrated by the community. ……
23. Name the forest reserve(s) within or near the community……
25. Name of rivers/lakes around the community……..
26. Name sites of archaeological interest e.g for digging ground to study culture of the area…….
27. Give estimate of religious worshippers in community.

SECTION D: DEMOGRAPHY

28. Give estimate of:

a. village population
males…….females……children……total……..
b. Ethnic population of the community……

29. Major crops farmed in community……..
30. Major livestock bred in community…….
31. List the different occupation/employment profile of community and income. What is the percentage/ number of the unemployed in community?.....

SECTION E: INDUSTRIES PRESENT

32. Name companies/industries present in the area. ……

SECTION F: EDUCATION

33. Give estimate of literacy level in the community for primary, secondary and tertiary levels…….
34. Do people from the community benefit from LASU? Explain – Students/workers/others

SECTION G: INFRASTRUCTURE PROVISION

35. Names and ownership of health facilities in the community…….
36. What are the main health problems?
37. Give approximate % of toilet facilities used in community: viz

a. pit toilet …… b. bush …… c. water closet (wc)
d. river. ……

43. What is the general form of houses for people to live in.
* ownership of dwelling: give % of total

i. owned by occupier……
ii. Rented…….
iii. Supplied free by employer…….

44. What is the method of disposal of solid wastes/ garbage?.....

45. Water supply sources……
46. What are the most reliable telecommunication lines in the community?
47. Electricity supply……..
48. Fuel used by households…….

SECTION H:WOMEN INFORMATION

49. What are the major women involvement in the community? For occupations, provide percentages of each type
50. Do women/girls obtain formal education?
51. Are there females within the community currently benefitting from LASU?
52. Are there ways females in the community channel their grievances?

SECTION I: YOUTH INFORMATION

53. What are the major youth involvement in the community? For occupations, provide percentages of each type
54. How do youths channel their grievances?

ANNEX FOUR
WASTE MANAGEMENT PLAN

The major waste streams identified are:

- Vegetal waste – This will be generated from vegetation clearance during site preparation.
- Construction waste – This will include concrete including cement, stones, gravels, wood, metal scraps, etc.
- E-waste – electrical wirings, sockets, ICT gadgets
- Gaseous emissions – from movement of vehicles, machine operations, site clearing activities, mixing of materials and chemicals such as paints
- Liquid waste - Leakages from vehicles, oil containers, chemicals, adhesives, etc.
- Sanitary waste – from workers onsite, campsite such as domestic sewage, faeces, urine, wastewater, food remnant, food packaging etc.

The table below shows how this waste generated will be managed.

Waste Category	Action	Timing	Cost
Vegetal Waste	Liaise with Environmental Unit/ certified waste vendor for waste management	Pre-construction	50,000
Construction Waste	• Implement good waste management practices: sorting, storage and timely evacuation of waste	Construction	300,000
	• Implement good waste management practices: sorting, storage and timely evacuation of waste • Chemical waste should be properly labelled, well covered and stored	Operation and Maintaintance	Part of facility management cost during operations
E-Waste	• Liaise with recycling firms such as SOLOUS for recycling of e-waste	Construction	Part of WMP above (300,000)
	• Liaise with recycling firms such as SOLOUS for recycling of e-waste	Operation	N/A
Gaseous Emissions	Undergo vehicle emission testing (VET) and vehicle exhaust screening (VES).	Pre-construction	50,000
		Construction	200,000
Liquid Waste	Site oil and lubricants should be kept on an impervious base and should have drip pans	construction	50,000
Sanitary Waste	Contractors to make provision for toilet facilities for workers	Pre–Construction	500,000
	Contractors to make provision for toilet facilities for workers	Construction	200,000

		Total	**1,330,000**

*All costs have been embedded in the ESMP Matrix table

ANNEX FIVE
OCCUPATIONAL HEALTH & SAFETY PLAN

This plan is developed to meet up with OHS standards and to achieve the objectives set for the 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.

- ***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.

- ***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)

- **HSE TRAINING**
    - **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.
- SEA/SH and GBV prevention strategies
- COVID-19 prevention strategies
    - ***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)

- ***Emergency Preparedness and Response***

Emergency procedures and evacuation plan shall be developed by the HSE Department and displayed on the notice board. These procedures shall be communicated to all staff. Also there shall be at least a trained first aider at all times.

- **HSE IMPLEMENTATION AND PERFORMANCE MONITORING**
  - ***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).
  - ***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.

- ***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.

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.

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.
18. COVID-19 protocols to be adhered to including frequent handwashing, use of nose masks when in crowded spaces, timely reporting of any symptoms to HSE officer and immediate isolation

- ***Safe Work Practices/Personal Protective Equipment (PPE)***

- The basic PPE required for the project shall be Safety Glasses, Safety Boots, Hand Gloves, Hard Hat, ear plugs 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.

- ***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.
Provisions for food and portable drinking water shall be made for all site workers

- ***Signage***

Adequate provision for warning and directional signs shall be made.

ANNEX SIX

TRAFFIC MANAGEMENT PLAN

The objective of this TMP is to provide safe passage for community members, pedestrians, motorcyclist, cyclists and vehicular traffic in the project areas during the construction.

The Contractor should designate a TMP Supervisor who will oversee traffic management along major roads within the project corridors.

The following are the minimum requirements for traffic management on the project:

a) Design and layout of Road Systems

The contractor in conjunction with the community, CERHI Project and FRSC must: -

a) Plan traffic routes to give the safest route between places within the project route
b) Make traffic routes wide enough for safe movement of the largest vehicle using them.
c) Ensure all drops and falls are adequately protected.
d) Avoid traffic routes passing close to vulnerable areas such as fuel tanks.
e) Ensure there are designated safe areas for loading, unloading and plant maintenance.
f) Avoid sharp corners or blind bends, if these cannot be avoided install mirrors.
g) Road crossings and junctions, should be clearly signed and marked.
h) Make entrances and gates wide enough.
i) Set speed limits and clearly mark on traffic routes; (10 mph).
j) Give prominent warning of limited headroom and overhead cables.

b) Liaisons with Government Traffic Agencies

The TMP will ensure liaisons with the FRSC and EDSTMA. In situations where heavy traffic impacts are envisaged, the Contractor will liaise with the FRSC to ensure traffic coordination and mitigate adverse traffic impacts.

c) Pedestrians

a) Provide separate routes for pedestrians and where needed provide suitable barriers.
b) If traffic routes are used by both pedestrians and vehicles they should be wide enough.
c) Provide suitable well marked crossing points.

S/N	Aspects	Descriptions	Responsible Party
1	Traffic/Safety Signage	▪ Safety signage should be put at strategic locations (in such a manner not to become a possible hazard to workers, community members or vehicles to warn road users of the ongoing construction activities	Contractor

S/N	Aspects	Descriptions	Responsible Party
2	Movement of Vehicles and Equipment	▪ Limit movement to off-peak hours (peak hours are: 7:30AM – 10:00AM; and 4:00PM – 5:30PM; Mondays – Fridays). ▪ Enforce speed limit. ▪ Ensure vehicles and equipment are parked at designated areas ONLY. ▪ The contractor must ensure that trucks carrying sand/soil to and from the sites are well covered in order not to cause injury to the public.	Contractor
3	Training	▪ Hire drivers with appropriate driver's license. ▪ Liaise with FRSC to train drivers ▪ As part of refresher course for construction workers, train drivers on defensive driving and enforce speed limits	Contractor
4	Communication	▪ All Traffic and Safety signages should be boldly written in English & local languages. ▪ Any incident/ accidents should be reported immediately to the CERHI Project within 24hrs. The Project will also report to the WB within 48hrs including immediate action taken	Contractor CERHI Contractor
	Cost	**All actions and costs have been embedded in the ESMP Matrix Table**	

ANNEX SEVEN
CODE OF CONDUCT ON PREVENTING GENDER BASED VIOLENCE AND VIOLENCE AGAINST CHILDREN

Code of Conduct for Staff/Contractor

i. Staff should allow their conduct to be governed by the University's code of conduct for staff and uphold the ethics of their respective professions by not compromising informal interactions with students.
ii. Staff shall be encouraged to leave their office doors opened during interactions with the opposite sex to encourage transparency.

Code of Conduct for Students

i. Students have responsibility to be security conscious and must avoid situations that can compromise their safety; therefore students are advised to avoid lone ranging, isolated places and paths.
ii. Students are to avoid indecent dressings which expose parts of the body supposed to be covered.
iii. Students are to avoid visiting members of the opposite sex at odd hours, and if need be, preferably in the company of another person of the same sex.
iv. Students should avoid involvement with organizations that are not registered with the Directorate of Student Affairs.

The help-lines are 08106422713 and 08156828319 and University Health Services on 08055619250 for cases of acute state-of- emergency health care services.

Reporting your experience or incident to any other University employee (including, but not limited to, professors and instructors) is an official, non-confidential report to the University. To file an official report, please contact the Dean of Student's Office 08033839154.

ANNEX EIGHT
SAFEGUARD GUIDANCE ON COVID-19 CONSIDERATION IN CONSTRUCTION WORKS

Implement physical distancing practices to maintain at least six feet between co-workers/contractors/visitors, including while inside work trailers.

• Keep in-person meetings (including toolbox talks and safety meetings) as short as possible, and limit the number of workers in attendance.

• Provide and have all workers wear face coverings (i.e., cloth face coverings or surgical masks)that have at least two layers of tightly woven breathable fabric, unless their work task requires a respirator. Face coverings should be provided at no cost to workers.

• Continue to use other normal control measures, including personal protective equipment (PPE), necessary to protect workers from other job hazards associated with construction activities.

• Provide and ensure workers use the supplies necessary for good hygiene practices. If workers do not have immediate access to soap and water, use alcohol-based hand sanitizers that contain at least 60 percent ethanol or 70% isopropanol.

• Do not allow workers to share tools and equipment. If sharing cannot be eliminated, clean and disinfect between each use.

• Clean and disinfect portable jobsite toilets and fill hand sanitizer dispensers regularly

• Train workers on COVID-19 policies and procedures in a language they understand.

• Ensure policies encourage workers to report any safety and health concerns

ANNEX NINE

GENERAL ENVIRONMENTAL MANAGEMENT CONDITIONS FOR CONSTRUCTION CONTRACTS

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 performance requirements specified in an EMP. 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, blasting) 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 wastewater 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 camps 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 SE so that the appropriate authorities may be expeditiously contacted for fulfilment 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, 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 workers camps.

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

(k) 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 SE for adherence to the contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. State environmental authorities may carry out similar inspection duties. In all cases, as directed by the 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.

Worksite/Campsite 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 of at designated disposal sites in line with applicable government waste management regulations.

7. All drainage and effluent from storage areas, workshops and camp sites 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 of 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.

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 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 SE.
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.

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.

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.

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.

Blasting

42. Blasting activities shall not take place less than 2km from settlement areas, cultural sites, or wetlands without the permission of the SE.
43. Blasting activities shall be done during working hours, and local communities shall be consulted on the proposed blasting times.
44. Noise levels reaching the communities from blasting activities shall not exceed 90 decibels.

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.
46. As far as possible, abandoned pipelines shall remain in place. Where for any reason no alternative alignment for the new pipeline is possible, the old pipes shall be safely removed and stored at a safe place to be agreed upon with the SE and the local authorities concerned.
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.

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.

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.

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 management conditions, and any specific conditions specified in an EMP;
- a description of specific mitigation measures that will be implemented in order to minimize adverse impacts;
- a description of all planned monitoring activities (e.g. sediment discharges from borrow areas) and the reporting thereof; and
- the internal organizational, management and reporting mechanisms put in place for such.

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.

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.

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).

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 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 EHS impact.

ANNEX TEN

PHYSICAL AND CULTURAL RESOURCES PLAN

In the event of a chance find of cultural/traditional/religious artefact, grave site etc. the following procedure should be adopted:

i. work should be suspended immediately, and the area protected and untouched. However, works can go on in other locations on site
ii. immediately inform the ESO-CERHI
iii. the ESO to call the attention of the Director, Faculty of Arts
iv. the Director should in turn call the attention of the Ministry of Tourism, Arts & Culture (Monument Department), through the office of the Vice Chancellor
v. Proper evaluation should be conducted by the Ministry to ascertain the best procedure to adopt to secure the artefact
vi. Upon conclusion, work can resume at that particular site

The whole process should be well documented and stored in the project office for future reference