



**ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) FOR
THE CONSTRUCTION OF THE REGIONAL CENTRE OF ENERGY AND
ENVIRONMENTAL SUSTAINABILITY (RCEES)**

**UNIVERSITY OF ENERGY AND NATURAL RESOURCES, SUNYANI -
GHANA**



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PROJECT'S ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

SUMMARY

This ACE project is classified as "category B", because its adverse effects on the population or areas of environmental importance are limited and likely reversible, and mitigation measures can be more easily designed/implemented. It is considered a low-risk minimal civil works involving construction of offices, classrooms and laboratories. This project's environmental and social management plan (ESMP) consists of set of mitigation, monitoring, and institutional measures to be taken during implementation and operation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels.

This document constitutes the Environmental and Social Management Plan (ESMP) for the project. The ESMP covers three sections:

Section 1 describes the project, specifies the institutional and regulatory aspects, describes technical project content, outlines any potential need for capacity building and briefly characterizes the public consultation process.

Section 2 includes a screening checklist of potential environmental and social impacts, where activities and potential environmental issues can be checked in a Yes/No format. If any given activity/issue is triggered by checking “yes”, a reference to the appropriate section can be followed, which contains environmental and social management and mitigation measures.

Section 3 contains a simple monitoring plan to enable the Contractor as well as authorities and the World Bank specialists to monitor implementation of environmental management and protection measures and detect deviations and shortcomings in a timely manner.

1 INTRODUCTION

1.1 Background

The Regional Centre of Energy and Environmental Sustainability seeks to be the leading internationally accredited Centre of Excellence that provides Quality Research and Postgraduate Education in Energy and Environmental Sustainability. It is a World Bank funded Africa Centre of Excellence (ACE) in Energy and Environmental Sustainability based in Ghana with a mission to provide Excellent and Quality Postgraduate Education, Discover, Preserve and Disseminate cutting-edge interdisciplinary Research. RCEES also aims, through Training and Capacity Building, Consulting, Professional Development, and securing Grants and Donor funding to enhance the lives of our students, industry and society. The centre's key research thematic areas include:

- Research into the use of renewable energy, especially for the off-grid and island communities
- Development of energy transformation strategies – transition from the current supply systems to renewable power generation systems
- Strengthening the use of smart distributed technologies - Smart grid and smart distributed power generation systems, and energy efficiency.
- Development of sustainable low-cost technologies for rural electrification
- Environmental and Social issues related to energy supply and demand, and sustainable development

1.2 General Information

Table 1 provides the institution and administrative framework for the project. It provides key information on the location of RCEES and the University of Energy and Natural Resources (UENR), as well as the legal requirement of this project.

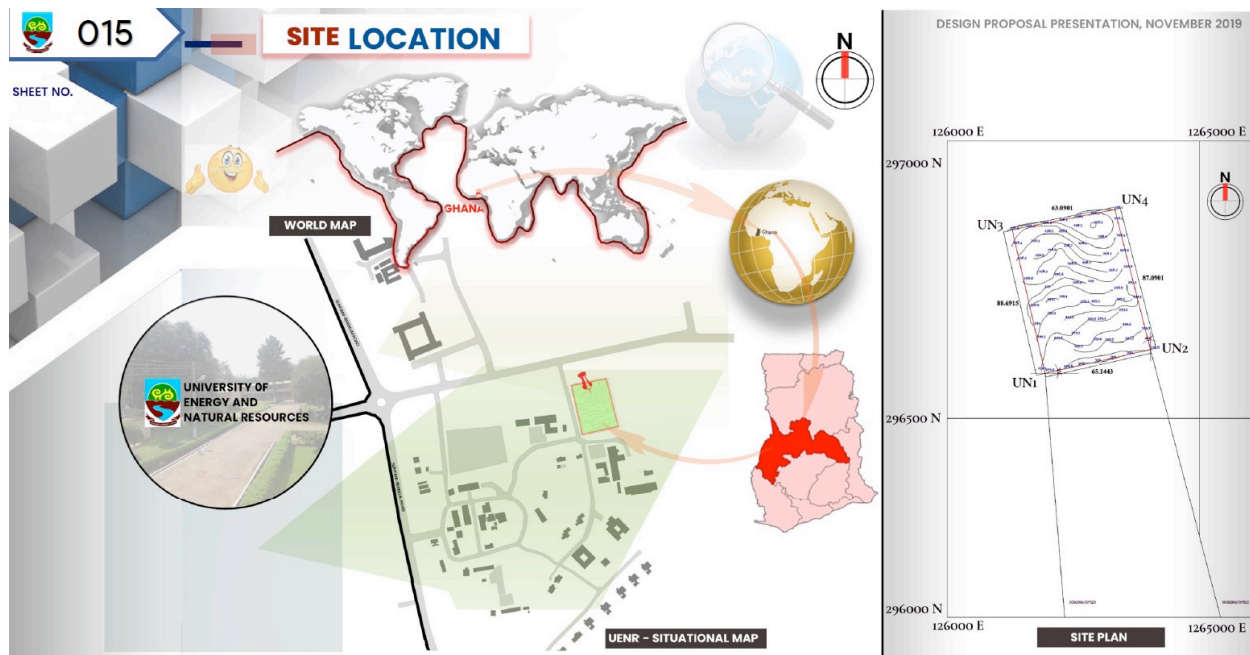
Table 1 Institutional & Administrative for the Africa Centres of Excellence Project

Institutional and administrative framework for the ACE project	
Country	Ghana
Project title	Regional Center for Energy and Environmental Sustainability (RCEES), Sunyani. Construction of state-of-the-art building for the Regional Center for Energy and Environmental Sustainability (RCEES)
Scope of project and activity	The Proposed Regional Center for Energy and Environmental Sustainability (RCEES) aims at building human resource capacity, intensify research into clean appropriate energy solutions and to influence policy such that there will be innovation in the financing of viable and sustainable energy projects. The Center also seeks to build the capacity of a critical mass of the society to be able to assess and mitigate the environmental impacts of development most especially in the energy and related sector.

Description of undertaking/Development	The building has the following main components – Staff offices, lecture/research rooms, seminar rooms, multi-purpose auditorium, ICT lab, laboratories, and a security post. The building is disability friendly and include washroom facilities. More details will be presented in the Bill of Quantities			
Institutional arrangements (Name and contacts)	World Bank Task Team Leader (Andreas Blom)	Project Management	Local Counterpart and/or Recipient (Ghana Government/NCTE/UENR Project Team)	
Implementation arrangements (Name and contacts)	Safeguard Supervision	Local Counterpart Supervision	Local Inspectorate Supervision (Dr Eric Ofosu Antwi, @) eric.ofosu@uenr.edu.gh And Dr Prince Antwi-Agyei @ prince.antwi-agyei@uenr.edu.gh	Contactor

2 PROJECT SITE DESCRIPTION

SITE DESCRIPTION		
Name of site	University of Energy and Natural Resources (UENR), Sunyani	
Describe site location	Site is located at Fiapre, Brong Ahafo, Ghana	Attachement 1 : Site Map []Y [x] N
Who owns the land?	The site is a public university with a vast land for further development of ACE into a permanent centre	
Current zoning	Infrastructure development	
Distance to nearest residential and/or other facilities	About 500m	
Adjacent land uses (existing & proposed)	Businesses	
Geographic description		
INFRASTRUCTURE AND UTILITIES		
Access to water	Ghana water connection available	
Access to power	Connection to national grid available	
Nearness to water body	No surface water nearby	
Access to project site	Full access to all types of vehicles including construction equipment	
Other major utilities proposed or existing on site	Sanitation facilities available	
LEGISLATION		
Identify national & local legislation & permits that apply to project activity	Ghana has an environmental policy and regulation and legal instrument for safeguarding the environment. Environmental permit is required for any project that is likely to impact on the environment.	
PUBLIC CONSULTATION		
Identify when / where the public consultation process took place	The site for the ACE is not close to any settlement and therefore will not require community consultation. There will however be consultation with the Development Office and the governing body of the university for release of land for the project. There will also be consultation with other stakeholders including the EPA, Sunyani Municipal Assembly, the Ghana National Fire service, NEDCO, Ghana Water Company Ltd, among others.	
INSTITUTIONAL CAPACITY BUILDING		
Will there be any capacity building?	[] N or [X]Y if Yes, Attachment 2 includes the capacity building program	



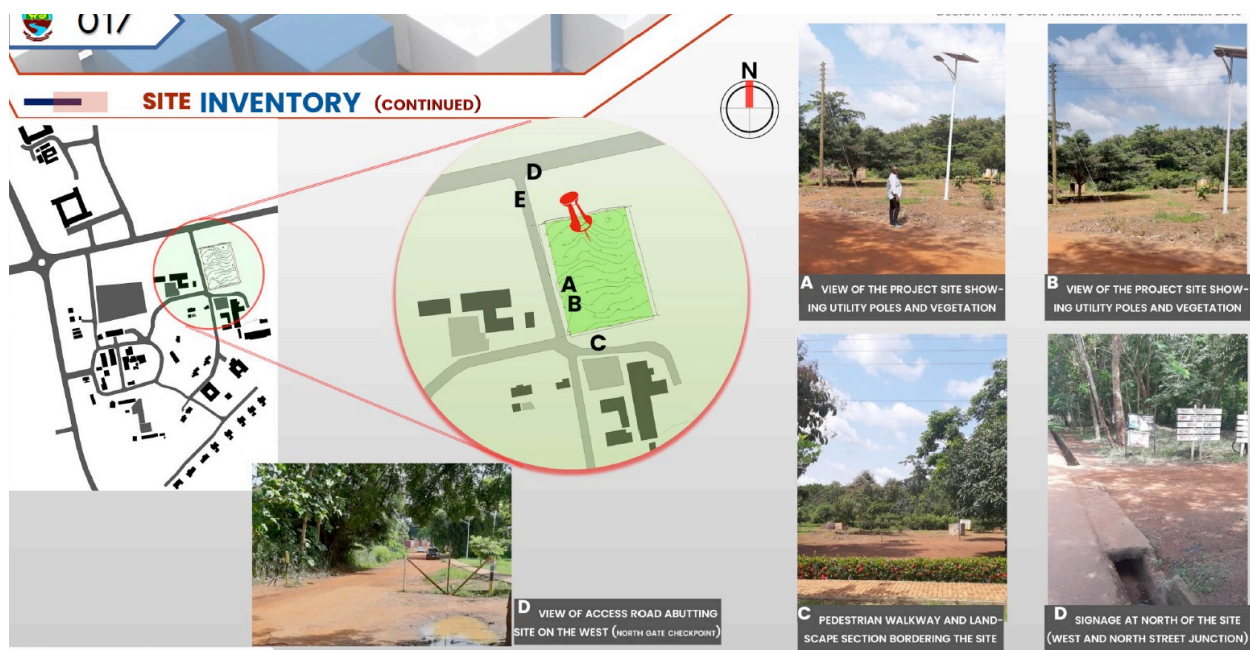


Figure 2. Site Inventory

2.1 Description of Undertaking

The proposed building for RCEES has the following facilities:

<ul style="list-style-type: none"> ♦ 80-100 seater Conference Room ♦ 3 No. 20 seater Seminar Rooms ♦ 4 No. 40 seater Classrooms ♦ Board Room ♦ 20 Staff Offices ♦ Administration housing <ul style="list-style-type: none"> • Centre Leader • Deputy Centre Leader • Project Accountant • Coordinator • Technical Officer • ICT and Administrative Assistant 	<ul style="list-style-type: none"> ♦ Library ♦ ICT Room ♦ Break out area for discussion ♦ 40 seater PhD study room ♦ 40 seater MSc study room ♦ Coffee Room/Restaurant ♦ 2 No: Laboratories <ul style="list-style-type: none"> • Renewable Energy lab • Environmental Quality Lab ♦ 2 No: Demonstration Rooms
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3 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

Brief descriptions of the main environmental legislative policies and guidelines of Ghana within which the project will be implemented and how they influence EIA are presented below:

3.1 Relevant World Bank policy

Environmental effects of a project may be minor and/or indirect. This project will include construction works related to office buildings, renovations or minimal civil works. To allow the flexibility to accommodate or to address environmental hazards as they may be encountered, the EMP is prepared according to World Bank operational policy (OP) and bank procedure (BP) - OP/BP 4.01 Environmental Assessment. WB OP 4.01 and simple environmental management plan is prepared. ***OP/BP 4.01 Environmental Assessment*** covers impacts on the environment, human health and safety, physical cultural resources, and global transboundary and environmental issues. OP 4.01 is triggered because the Project is likely to have environmental risks and impacts on its area of influence. The objective is to minimize, prevent, reduce, or compensate for adverse impacts and thereby maximize positive impacts, and include processes for mitigation and management of environmental and social impacts during the project cycle.

The plan is prepared in accordance with World Bank guidelines and the Borrower's legal and regulatory framework. It states the foreseen environmental impacts and provides good operational practice to control emissions (e.g., dust, noise, and exhaust fumes), wastewater discharge and solid waste management on the construction site. It will provide guidance on avoiding the use of hazardous substances, such as toxic paints, solvents or cleaning agents. Moreover, it will include traffic safety (especially focusing on pedestrian safety) in the immediate vicinity of the construction sites, as necessary.

World Bank Operational Policy OP 4.12 (Involuntary Resettlement).

This policy is to assist displaced persons in their effort to improve or at least restore their standards of living. Avoid resettlement where feasible or minimise. Displaced persons should share in project profits. The policy aims to avoid involuntary resettlement to the extent feasible, or to minimize and mitigate its adverse social and economic impacts. The policy prescribes compensation and other resettlement measures to achieve its objectives and requires that borrowers prepare adequate resettlement planning instruments prior to Bank appraisal of proposed projects. Under the ACE project, however, this policy is not triggered since the undertaking does not involve acquisition of land. The proposed site is owned by the university.

3.2 Relevant Environmental Legislation and Policies in Ghana

According to the ***1992 Constitution*** of the fourth Republic of Ghana, citizens of Ghana are required to protect and safeguard the environment: this is a constitutional requirement which applies to all construction stakeholders, large and small and must be applied in all sectors, both private and public.

Ghana has several policies for protecting the environment .¹ Whole or partial sections of these policies relate directly to construction works.

EPA Act 1994 (Act 490)

This Act establishes and mandates the EPA to seek and request information on any undertaking that in the opinion of the Agency can have adverse effects, and to instruct the proponent to take necessary measures to prevent the adverse impacts.

The EA Regulations 1999, LI 1652 gives activities for which an EA is mandatory. It describes procedures to be followed to obtain Permits for existing and proposed undertakings through EIAs and EMPs;

The 1999 Environmental Assessment Regulations, or Legislative Instrument (LI) 1652, include the procedures for compliance with EA requirements. They consist of thirty Regulations and five Schedules detailing the procedures to be followed in the EA process.

The ***1995 Environmental Impact Assessment Procedures*** aim to provide guidance on complying with the EA requirements of the EPA Act. Schedule 1 of LI 1652 provides the list of undertakings that require registration with EPA and issuance of an environment permit. Schedule 2 lists undertakings for which EIS is mandatory (it is also required for any proposed undertaking or development to be located in any of the areas broadly defined as environmentally sensitive).

EIA procedures also describe in detail the stepwise EA process, including: *registration* of any activity with EPA; *screening* (allowing EPA to determine whether a proposed activity should be subjected to further assessment, and if so, the level of assessment that will be required); issuance of environmental permit; type of environmental assessment report required, i.e. *Preliminary Environmental Report (PER)*, *Scoping Report* or *Environmental Impact Statement (EIS)*; and, finally the issuance of an *Environmental Permitting Decision (EPD)*.

Under LI 1652, potential impacts on ***physical cultural resources*** are to be considered at several stages in the EA process – in screening proposed undertakings and scoping, preparing, consulting on and reviewing reports.

The EA (Amendment) Regulations 2002, LI 1703 establishes the charges to be taken by the EPA for review and issuance of a Permit.

In terms of Labour, ***the 2003 Labour Act*** amended and consolidated previous laws relating to Labour and employers. Under Part XV (Occupational Health, Safety and Environment), the Act explicitly indicates that it is the duty of an employer to ensure that ***every worker works under satisfactory, safe and healthy conditions***.

Lands Act, 2020 (Act,1036)

Ghana's new Land Act, 2020 (Act 1036) ("the Land Act") seeks to inform the public about their rights and interests in acquiring and possessing land; by improving the tenure security of interests

¹ Such as the following : Environmental Protection Agency- Guideline; Environmental Sanitation Policy; National Action Programme to Combat Drought and Desertification; National Water Policy; etc

in land ownership; and by enhancing public accountability in land administration. The Act consolidates the existing laws on land and land administration into a single Act.

Land Use and Spatial Planning Act 2016 (Act 925) - The Act consolidates the laws on land use and spatial planning. It provides sustainable development of land and human settlements through a decentralized planning system and ensures judicious use of land to improve the quality of life, promote health and safety in respect of human settlements. This gives a clearer direction to ensure compliance and enforcement of development regulations by the Ghanaian society. It will also contribute to a more sustainable and well-functioning land administration system that is fair, efficient, cost effective and decentralized and will enhance land tenure security in the country.

The Lands (Statutory Wayleaves) Act, 1963

AN ACT to provide for entry on any land for the purpose of the construction, installation and maintenance of works of public utility, and for the creation of rights of way and other similar rights in respect of such works and for purposes connected with related matters. Where the government needs to establish a Right of Way to create a project in the public interest, the Lands (Statutory Wayleaves) Act states that the President may declare the land to be subject to such a statutory wayleave. On publication of a wayleave instrument specifying the area acquired, and without further assurance, the land becomes subject to wayleave. Compensation is then determined and paid, with the right of appeal to a tribunal established by the President in parallel with the Lands Act of 1962.

State Lands Acts, 1962 (Act 125)

An ACT to provide for the acquisition of land in the national interest and other purposes connected therewith. The State Lands Act 1962 (Act 125) has vested authority in the President of the Republic of Ghana to acquire land for the public interest via an executive instrument. On publication of an instrument made for the acquisition, the land shall vest in the President on behalf of the Republic (sect. 1). The Minister may pay compensation or may offer land of equivalent value. Disputes that arise may be referred by the Minister to the Tribunal established under section. In addition, the State Lands Act, 1962, details the different elements to be taken into consideration when calculating compensation

Administration of Lands Act, 1962 (Act 123)

AN ACT to consolidate with amendments the enactments relating to the administration of Stool and other lands. "Stool land" includes land controlled by a person for the benefit of the subjects or members of a stool, clan, company or community, and the land in the Upper and Northern Regions other than land vested in the President and accordingly "stool" means the person exercising that control. The management of stool lands shall be exercised in accordance with article 267 of the Constitution and where there is a conflict between a provision of this Act and a provision of Chapter Twenty-one of the Constitution the provision of the Constitution prevails.

3.3 Other relevant policies

According to the **1998 Children's Act** (Part V on Employment of children), the minimum age for admission of a child to employment is fifteen years (eighteen years for hazardous works). The program on the elimination of child labor was instituted in Ghana in 2000. Since then, several steps have been taken to withdraw or prevent children from engaging in child labor. In line with these efforts, a legal framework and a *National Plan of Action* (NPA) has been developed to guide the prevention or fight against child labor.

Building companies operating under the ACE Impact Project ***will strictly adhere to this legislation.***

National arrangements for persons with reduced mobility

Ghana has taken affirmative action in favor of marginalized groups at a higher level with a focus on persons with disabilities. These efforts have resulted in laws and policies promoting equality, inclusion and participation of persons with disabilities in society. More specifically, the national legislation recognizes the formal rights of persons with disabilities or those with limited mobility to access public buildings and buildings open to the public. The **1996 National Disability Policy**, leading to the passage on the National Disability Law, Act 715 of 2006, aims to promote equal opportunities, enhance, empower and seek the protection of the rights of persons with disabilities irrespective of gender, age, or type of disability. Among other things, this concerns ***the accessibility of disabled people to public building and facilities.***

The facilities to be built or rehabilitated under the ACE Impact Project will ***strictly adhere to this legislation.***

Workmen's Compensation Law 1987 (PNDC 187)

The law relating to compensation to workmen for personal injuries caused by accidents arising out of and in the course of their employment. The basic provision is the principle of compulsory payment by an employer of compensation in respect of death or disablement of a workman as a result of an accident occurring in the course of his employment – independently of negligence on the part of the employee or fellow worker. The Law deals with the liability of employers for the payment of compensation to workmen as defined in the Law in respect of injuries resulting from accident, the amount of compensation to be paid in the various cases which can arise, the method of calculating the workmen's earnings for the purpose of determining the compensation payable and the persons to whom it is to be paid.

The Labour Act 2003 (Act 651) - The purpose of the Labour Act, 2003 (Act 651) is to amend and consolidate existing laws relating to employers, trade unions and industrial relations. The Act provides for the rights and duties of employers and workers; legal or illegal strike; guarantees trade unions the freedom of associations and establishes Labour Commission to mediate and act in respect of all labour issues. Under Part XV (Occupational Health Safety and Environment), the

Act explicitly indicates that it is the duty of an employer to ensure the worker works under satisfactory, safe and healthy conditions.

Ghana National Fire Service Act, 1997 (Act 537) - This act makes provision for the management of undesired fires and as per the functions of the service provides technical advice for building plans in respect of machinery and structural layouts to facilitate escape from fire, rescue operations and fire management. Other functions of the service are:

- i. Organize public fire education programmes;
- ii. Inspect and offer technical advice on fire extinguishers; and
- iii. Offer rescue and evacuation services to those trapped by fire or in other emergencies.

The Fire Precaution (Premises) Regulations, 2003 (LI 1724) - The Ghana National Fire Service Act, 1997 (Act 537) states that a fire certificate will be required for premises used as a public place or place of work. This requirement is reinforced by the Fire Precaution (premises) Regulations, 2003 (LI 1724). It is incumbent on any project developer to ensure that adequate measures are introduced to minimize or prevent fire out breaks and a fire permit is obtained for development prior to the commencement of works.

Differences between the Ghana Regulations and WB Policies and Gap Filling measures

In general, there is great convergence of views and similarity between Ghana's environmental and social management system and that of the World Bank. All laws, regulations and instruments governing investments and activities in the natural resources sector are generally consistent with the Bank procedures. There are only minor gaps / differences in terms of explicit arrangements (for example, for disclosure of documents in form and language). Recent WB assessments have pointed out the quality of the interactions existing between EPA and World Bank regulations, the EPA having demonstrated willingness and ability to undertake in-depth, technically-sound reviews and provided authoritative guidance, and used conditionality effectively in administering the environmental permitting process. If policy discrepancy exists in some domains, World Bank policies will override national policies and regulations.

3.4 Institutional Arrangements

The relevant institutions are given below, and their respective mandates are subsequently described:

The Ministry of Environment, Science, Technology and Innovation (MESTI) has, among other missions, the mandate to: ensure the establishment of the regulatory framework and setting of standards to govern the activities of science and technology and the management of the environment for sustainable development; and ensure effective environmental management and governance.

The Ministry of Education (MoE)

The Ministry of Education (MoE) was established in 1957 under the Civil Service Law 1993 and the PNDC Law 327. The mandate of the ministry is to formulate and coordinate education policies, set standards, and monitor and evaluate their implementation. The MoE works to ensure that

quality education is accessible for all Ghanaians, in order to support human capital and national development. The MoE is committed to ensuring that all Ghanaians are prepared to succeed in the world of work. It achieves this through the development of an educational system that focuses on promoting problem solving and creativity and building critical skills through academic, technical and vocational programs.

The National Council for Tertiary Education (NCTE)

The National Council for Tertiary Education (NCTE) Act, 1993 (Act 454) established the Council to among other things advise the Minister of Education on the development of tertiary education institutions in Ghana. Act 454 also enjoins the Council to recommend national standards and norms including standards and norms on staff, costs, accommodation and time utilisation for approval of the Minister of Education; to monitor the implementation of any approved national standards and norms by the institutions; and to publish information on tertiary education in Ghana. The NCTE is the coordinating agency responsible for facilitating the implementation of the ACE impact project in Ghana at the tertiary level.

Environmental Protection Agency (EPA Act 1994, Act 490)

This Act establishes and mandates the EPA to seek and request information on any undertaking that in the opinion of the Agency can have adverse environmental effects and to instruct the proponent to take necessary measures to prevent the adverse impacts. The Environmental Assessment Regulations 1999, LI 1652 list activities for which an environmental assessment is mandatory. The Regulations describe the procedures to be followed to obtain permits for both existing and proposed undertakings through the conduct of environmental impact assessments and preparation of environmental management plans. The Environmental Assessment (Amendment) Regulations 2002, LI 1703 establishes the charges to be taken by the EPA for review and issuance of a Permit. EPA has a ***Grievance Redress Mechanism (GRM)***, which is a system that assists the Agency's clients and the general public to resolve environment related complaints and grievances in a timely, effective and efficient manner.

The National Commission on Culture (NCC) oversees the implementation of the cultural policy on physical cultural resources, which requires the preservation of national heritage.

Ghana Water Company Limited (GWCL Act, 1993 Act 461)

The GWCL Act mandates the GWCL to provide, distribute and conserve the supply of water to urban settlements in Ghana for public, domestic and industrial purposes.

Northern Electricity Distribution Company (NEDCO)

NEDCO is an electricity distribution utility company in Ghana. The company is a subsidiary of the Volta River Authority, the main electricity generation company in the country. As part of the Energy Sector Reform programme, the Northern Electricity Department (NED) of the Volta River Authority established in April 1987 was renamed the Northern Electricity Distribution Company (NEDCo) with the official appointment of a Managing Director in June 2011. NED as it was originally called was established when the Northern Electricity Distribution operations of the then Electricity Corporation of Ghana were ceded to the Volta River Authority (VRA), at the time of extending the national grid beyond Kumasi to the northern parts of Ghana. The Volta River Development (Amendment) Law, 1987 (PNDCL 171) was passed to enable VRA to enter the

distribution market at the level of the consumer. The operations of NED currently cover about 64% of the geographical area of Ghana including all of the Northern, Brong-Ahafo, Upper East and Upper West Regions and the northern parts of Volta and Ashanti Regions.

Water Resources Commission (WRC Act 1996, Act 522)

The Act establishes and mandates the WRC as the sole body responsible for the regulation and management of water resources and for the coordination of any policy in relation to them. The WRC does this through the granting of water rights to potential users such as DAs, GWCL, CWSA, Communities and so on. The WRC is developing a Water Policy to give support to the use of environmental assessments to assist in the protection and conservation of water resources and encourages its application to all water usage. The Policy also promotes the rational allocation of water resources through Water Demand Management (WDM), which offers the possibility of improving the efficiency and sustainability of the use of water resources, considering economic, social, environmental, regional and national considerations.

Ministry of Lands and Natural Resources

The Ministry of Lands and Natural Resources (MLNR) was established under Section 11 of the Civil Service Law, 1993 (PNDCL 327), and is mandated to ensure the sustainable management and utilization of the nation's lands, forests and wildlife resources as well as the efficient management of the mineral resources for socio-economic growth and development.

Forestry commission of Ghana

The Forestry Commission of Ghana is responsible for the regulation of utilization of forest and wildlife resources, the conservation and management of those resources and the coordination of policies related to them. The Commission embodies the various public bodies and agencies that were individually implementing the functions of protection, management, the regulation of forest and wildlife resources. The commission aims to be a corporate body of excellence in the sustainable development management and utilization of Ghana's forest and wildlife resources meeting both national and global standards for forest and wildlife resource conservation and development.

Metropolitan, Municipal and District Assemblies (MMDAs)

The MMDAs are the highest political authority in the districts, and they are responsible exercising both political and administrative authority in the districts. They also serve as the planning authority responsible for the overall economic development of their areas of jurisdiction. The proposed undertaking falls within the jurisdiction of the Sunyani Municipal Assembly and they are expected to ensure that the proposed undertaking does not pose any adverse effect on public safety.

Lands Commission

The Land Valuation Division (LVD) is the statutory body ensuring that land required for projects are properly acquired and transparent procedures are followed, and fair and adequate compensation is paid.

Town and Country Planning Department

The Town and Country Planning Department (TCPD) was established in 1945 and charged with the responsibility of planning and management of growth and development of cities, towns and villages in the country. It therefore seeks to promote sustainable human settlements development based on principles of efficiency, orderliness, safety and healthy growth of communities.

It is a unique service delivery Department under the Ministry of Environment, Science and Technology.

National Disaster Management Organization (NADMO)

The National Disaster Management Organisation (NADMO) is the government agency that is responsible for the management of disasters as well as other emergencies in Ghana. NADMO performs specific functions which are all aimed at ensuring that in times of emergency, the government is ready to support relief efforts.

Civil society and the media play a strong role in environmental awareness, and in influencing to the extent possible, the decision-making process related to environmental issues. Non-governmental organizations (NGOs) have been increasingly involved in project implementation, in public debate, in hearings/consultations on EA, and in monitoring compliance with environmental laws. The media have contributed to increased awareness and to changes in behavior.

3.5 Environmental and Social Safeguard Implementation Arrangements

The University of Energy and Natural Resources (UENR) was established by an Act of Parliament, Act 830, 2011 on December 31, 2011. The University is a public funded national institution which seeks to provide leadership and management of energy and natural resources and be a centre of excellence in these critical areas. The University approaches its programmes and research emphasizing interdisciplinary collaboration and considering, areas such as economics, law and policy, management, science, technology and engineering as well as social and political issues affecting energy and natural resources. UENR will be responsible for the overall implementation of the Project and will work in collaboration with other key institutions including the EPA and the Sunyani Municipal Assembly to monitor the Project activities. The key management tasks of the centre are to:

- Oversee the implementation of this environmental management plan to ensure that any environmental and social impact is mitigated,
- Follow appropriate laid down protocols for disposing off use chemicals from laboratories,
- Manage project activities and prepare annual work plans based on the implementation plan,
- Coordinate and support partner institutions implementing project components

4 ENVIRONMENTAL AND SOCIAL BASELINE CONDITIONS

The proposed site belongs to the university and is host to several species of trees and plants. The land is generally flat and largely made up of loamy and clay soil. Part of the university's nursery was located there until it was relocated to a nearby site after the site was earmarked for the construction of the RCEES building. Some of the trees also served as habitat for bats which are popular at some parts the university campus. There is no wildlife at the site. There are also no water sources (surface water sources) at the site and no underground electricity or telephone conduits onsite, though there is proximity to access to electricity and sanitation facilities in nearby classrooms and office buildings for students and staff of the university. The site is also not close to any residential place (about 500m away), though it is about 50 metres away from the UENR/Fiapre roundabout – Sunyani Airport Road.

5 ENVIRONMENTAL SCREENING, ASSESSMENT AND MANAGEMENT

This ACE project may be classified as Category B since it is likely to have minimal or no adverse environmental and social impacts. Therefore, beyond screening, no further Environmental Assessment (EA) action is required. The development proposal is screened by the EPA assisted by a cross-sectoral technical committee in order to identify projects which are likely to have harmful impacts and to exclude the other projects for further environmental consideration, to identify the important expected impacts (environmental and social) of a project and to indicate the level and nature of evaluation the project will need. Location, size and output of proposed project, technology used, concerns to the general public, land use considerations, and other factors relevant to the development are all of relevance during screening in taking a decision on the project.

5.1 Potential Environmental and Social Impacts

Summary of activities to be implemented

The major activities to be implemented for this undertaking are civil works for Staff offices, lecture/research rooms, seminar rooms, multi-purpose auditorium, ICT lab, laboratories, washroom facilities, and a security post. The civil works will also come along with site clearing, soil excavations, transportation of construction materials, and disposal of construction waste. We anticipate some minor potential negative impacts to pertain to the pre-construction, construction and post-construction phases. These potential negative environmental impacts relate to the following:

Preconstruction Stage: During the pre-construction phase (preparation of the bidding documents), the main risk is the neglect of the environmental and social aspects and their low consideration during the technical studies and / or the preparation of unsatisfactory environmental and social studies. Some potential impacts relate to impact of Existing Storm Water Drainage and existing Solid, Liquid and Human Excreta Waste management (Physical, biological and health impacts). Other impacts could emanate from building designs not including universal access and in particular access to vulnerable groups including people with physical disability as required under the Ghana Disability Act. New acquisition of land will not be required since the proposed site belongs to the University.

Construction Stage: this phase will have **low to moderate impacts** and could be a source of inconvenience for workers and all those living or working on university campuses impacts from terrestrial ecology (flora & fauna), air and noise, drainage, transportation and storage of construction materials, disposal of construction waste, occupational health and safety of workers, and social-economic impacts (community health and safety, risk of road accidents, traffic congestion, non-recruitment of local labour to offer employment opportunities and income).

Table 2. Potential impacts during construction phase

Category of impact	Potential impact
--------------------	------------------

<i>Air quality, noise, dust, water and sanitation, waste</i>	<ul style="list-style-type: none"> • Pollution and nuisance (noise, dust) due to the construction of facilities. • Occasional forms of pollution generated in construction sites by waste. • Solid and liquid waste generation and disposal from construction sites. • Impact of some works on sources of drinking water. • Damage to some underground networks and even temporary suspension of certain services (water, electricity, etc.). • Emissions of greenhouse gas (GHG) related to the exhaust gases of construction vehicles, as well as olfactory nuisances, health risks and pollution.
<i>Vegetation and soils</i>	<ul style="list-style-type: none"> • Uprooting of trees and cutting of shrubs made necessary by certain activities, with reduction of green spaces. • Risks of localized soil degradation, despite the fact that washout works will be limited in depth. • Certain forms of soil erosion due to the construction activities. • Risk of subsidence and landslides due to possible excavation work. • Risks of floods, without the adoption of soil waterproofing techniques.
<i>Hygiene, health and safety of workers, residents and users</i>	<ul style="list-style-type: none"> • Accidents caused by construction machinery traffic and possible non-compliance with safety instructions. • Risk of accidents around unreported excavations and open trenches, unmarked and poorly lit. • Safety of university campus users due to poor organization of work sites and work areas. • Accidents of workers (scaffolding falls, misuse of equipment, electrocutions, etc.). • Use of child labour, forced labour, exposure to HIV/AIDS, COVID and other infectious and communicable diseases that could spread among workers and surrounding communities
<i>Risks of conflicts between the workers and local populations</i>	<ul style="list-style-type: none"> • The works may have impacts on university campuses, with the likely restriction of vehicle and pedestrian traffic in the vicinity of construction sites, noise and dust-related inconvenience, space congestion caused by building materials, construction and construction waste, not to mention negative impacts due to the transformation of the landscape. <ul style="list-style-type: none"> ○ To avoid social tension, it is desirable to recruit <i>local workforce and provide opportunity for the timely and amicable resolution of grievances.</i> ○ Although it is expected that selected contractors would recruit a local workforce, it can be expected that <i>skilled and unskilled workers</i> may be brought in for temporary periods from outside the community. This would potentially increase risks of sexual exploitation and abuse and sexual harassment, prostitution and underage sex on vulnerable sections of the local population, especially women and minors.

Operational Stage: impact will cover areas including drainage, demand on Water Supply and Resources, ground water extraction and pollution, possibility of rainwater harvesting, waste management and Impact on Sources and types of Energy for operation and used chemicals from the laboratory.

All these are addressed in the mitigation measure and the monitoring plan to safeguard the environment and people.

5.2 Socio-economic analysis of project effects/impact

Social impacts include changes which affect individuals, institutions, communities and larger social systems and the interactions between them.

Social impacts can be subdivided into:

- i. *Demographic impacts* such as changes in population numbers, population characteristics (such as sex ratio, age structure, in-and out-migration rates) and resultant demand for social services (hospital beds, school places, housing etc.);
- ii. *Cultural resource impacts* including changes in archaeological, historical and cultural artefacts and structures and environmental features with religious or ritual significance; and
- iii. *Socio-cultural impacts* including changes in social structures, social organizations, social relationships and accompanying cultural and value systems (language, dress, religious beliefs and ritual systems).

Socio-cultural impacts are those changes in social relations between members of an institution, community and society resulting from external influence. For social impacts, changes in such features of social life of the underlisted are expected:

- quality of life/way of life;
- social organization and structures;
- cultural life; including such aspects as language, rituals and general life-style (such as dress).
- political and dispute-resolution institutions and processes;
- relationships between generations; and
- values.

For this undertaking, the potential social risks and impacts are listed below:

- Job creation for youth in the local and neighbouring communities to be involved in the construction works
- Job creation and improved revenue generation for food vendors
- Risks of sexual exploitation and abuse
- Use of child labour and forced labour,
- Exposure to infectious and communicable diseases including HIV/AIDS, COVID and other diseases that could spread among workers and surrounding communities

5.3 Economic Impacts

The focus of economic impact assessment is the estimation of changes in employment, per capita incomes and levels of business activity. The magnitude and extent of economic impacts will be dependent on the following main factors:

- duration of construction and operational periods;

- workforce requirements for each period and phasing of construction workforce needs (numbers to be employed during the peak phase for construction works);
- skill requirements (local availability);
- earnings;
- raw material and other input purchases;
- capital investment;
- outputs; and
- of course, the characteristics of the local economy.

5.4 Environmental and Social Screening

The environmental and social screening in a simple Yes/No format followed by mitigation measures for any given activity and the monitoring plan for activities during project construction and implementation. Annex 1 presents the general list of activities and the potential impacts. The specific mitigations for these activities have also been presented under the mitigation section.

5.5 Risk Assessment Matrix

Table 3. Risk Assessment Matrix

Types of risk	Assessment	Level of risk (*)	Main measures
1. Tendering process (pre-construction phase)	Neglecting environmental and social issues	Low to moderate	Preparation of appropriate Terms of Reference, which will be approved by the WB. All mitigation measures must be included into the contractor bid documents.
2. Constructions	Risks related to large deep excavations; opening of trenches for laying extension and densification pipes.	Moderate	Selection of specialized companies Conduct of prior technical studies. Preparation of detailed technical specifications for contractors
4. Soils	Pollution risks or accidental soil erosion (at the site and neighborhood level)	Low	Conducting preliminary geotechnical studies. Anti-erosion measures
5. Waters	Potential groundwater pollution and groundwater contamination	Low to moderate	Use of small structures allowing the flow of rainwater Wastewater management: Sanitary sewage disposal (or sealed and fenced pit) Quality control of drinking water Implementation of appropriate erosion and sediment control measures, such as hay bales and / or silt barriers to prevent the movement of sediments from the site and the generation of excessive turbidity in the yards, water and nearby rivers.
6. Debris	Construction debris	Moderate	Correct management of debris, according to the standards established in the contractor's ESMP
7. Waste	Construction site waste (during construction)	Low to moderate	Adequate storage of products and waste (waterproof storage); Disposal of waste to authorized public waste disposal facilities Hygiene in construction sites Prohibition of waste in the open air Roadways and sites for waste collection and disposal will be identified for the main types of waste typically generated by construction activities. Construction waste will be collected and disposed of appropriately by licensed collectors Waste disposal records will be maintained as evidence for the appropriate management planned. Where appropriate, the contractor will reuse and recycle suitable and viable materials
8. Hazardous toxic waste	Management of hazardous toxic waste	Low	Temporary on-site storage of any hazardous or toxic substances will be conducted in secure containers that provide compositional data, properties and handling information for those substances. Containers of hazardous substances must be placed in a leak-proof container to prevent spillage and leakage The waste is transported by specially authorized carriers and is disposed of at a site authorized for this purpose. Paints containing toxic ingredients or solvents or lead-based paints will not be used

10. GHG emissions	Exhaust gas	Low to moderate	Regular maintenance of construction machinery and vehicles
11. Vegetation	Some works involve the cutting or removal of vegetation (trees, shrubs) and the reduction or destruction of green spaces.	Low	Establishment of a green zone Search for alternative solutions (to avoid cutting trees) Tree planting to compensate for the possible destruction of green spaces and the shortfall in terms of CO ₂ sequestration capacities
12. Air quality	Negative potential impact of heavy machinery on construction sites and vehicles	Moderate	Air pollution control system (compliance with standards for exhaust emissions from construction equipment (work phase). Watering of construction sites; Systematic removal of unused embankments
13. Atmospheric pollution	The sites could contribute to increase air pollution and dust generation. Increased pollution and improper storage of materials and displacement and use of materials	Low to moderate	Adoption of strict safety standards in areas close to construction sites. Use of techniques to mitigate this risk in construction sites Organization of public awareness and information campaigns Watering the building sites
14. Noise pollution	Increased noise and vibration (rolling stock, jackhammers, air compressors)	Low to moderate	Establishment of regular control measures of the intensity of noise pollution Sound measurements in case of complaints or perception of exceedance by controllers Respect of working hours on construction sites Noise from construction activities will be restricted to the schedule agreed in the permit During operation, the engine covers of generators, air compressors and other mechanical equipment shall be closed and the equipment will be placed as far as possible from the residential, office and classrooms areas.
15. Health and safety of workers, residents and users	Accidents in construction sites Workers falling from scaffolding (the most common of accidents)	Moderate	Establishment of safety rules in construction sites and application of instructions and rules of hygiene Staff management Helmets for workers Warning signs for places at risk
16. Building safety	Risk of fires and explosions	Low	Respecting NADMO's regulations (building safety and prevention of fire and explosion risks). Installation of smoke detectors, fire extinguishers and alarm devices.
17. Traffic and pedestrian safety	Direct or indirect hazards to public traffic and pedestrians through construction activities	Low to moderate	In accordance with national regulations, the contractor must ensure that the construction site is properly secured and that traffic related to the construction is regulated. This includes, but is not limited to, signage, warning signs, gates and diversions: the site will be clearly visible and the public warned of all potential dangers Traffic management system and staff training, particularly for site access and dense traffic near the site. Provide safe crossings and passages for pedestrians when construction traffic interferes.

			<p>Adjustment of working hours to local traffic patterns</p> <p>Active management of traffic by trained and visible staff on the site, if necessary for a safe passage and convenient for the public.</p> <p>Provide safe and continuous access to offices, stores and residences during renovation activities, if the buildings remain open to the public.</p>
18. Child labour	Use by contractors of child labour	Low	Strict compliance with national regulations on child labour by works contractors
19. Disabled people	Neglecting disabled people in building plans and rehabilitation of buildings	Low to moderate	Accessibility mechanisms for persons with disabilities in public buildings (access ramps, sanitary blocks, etc.)
21. Archaeological, cultural and historical heritage	Neglecting historic heritage	Low	<p>Ensure that arrangements are in place to ensure that artefacts or other "finds" encountered during excavation or construction are noted, that officials are contacted and that work is delayed or altered to accommodate these discoveries.</p> <p>Compliance with national regulations for the protection of historical and cultural property.</p> <p>Possible involvement of the National Heritage Department and specialized centers.</p>

6 MITIGATION MEASURES

Table 4 presents a checklist of good practice mitigation measures. Section B of these good practice mitigation measures will be applicable to this ACE project. The impacts such as air quality, noise, water quality and waste management will have to be mitigated.

The ESMP identifies feasible and cost-effective measures that may reduce potentially significant adverse environmental impacts to acceptable levels. The plan includes compensatory measures if mitigation measures are not feasible, cost-effective, or sufficient.

Table 4. Good Practices Mitigation Measures Checklist

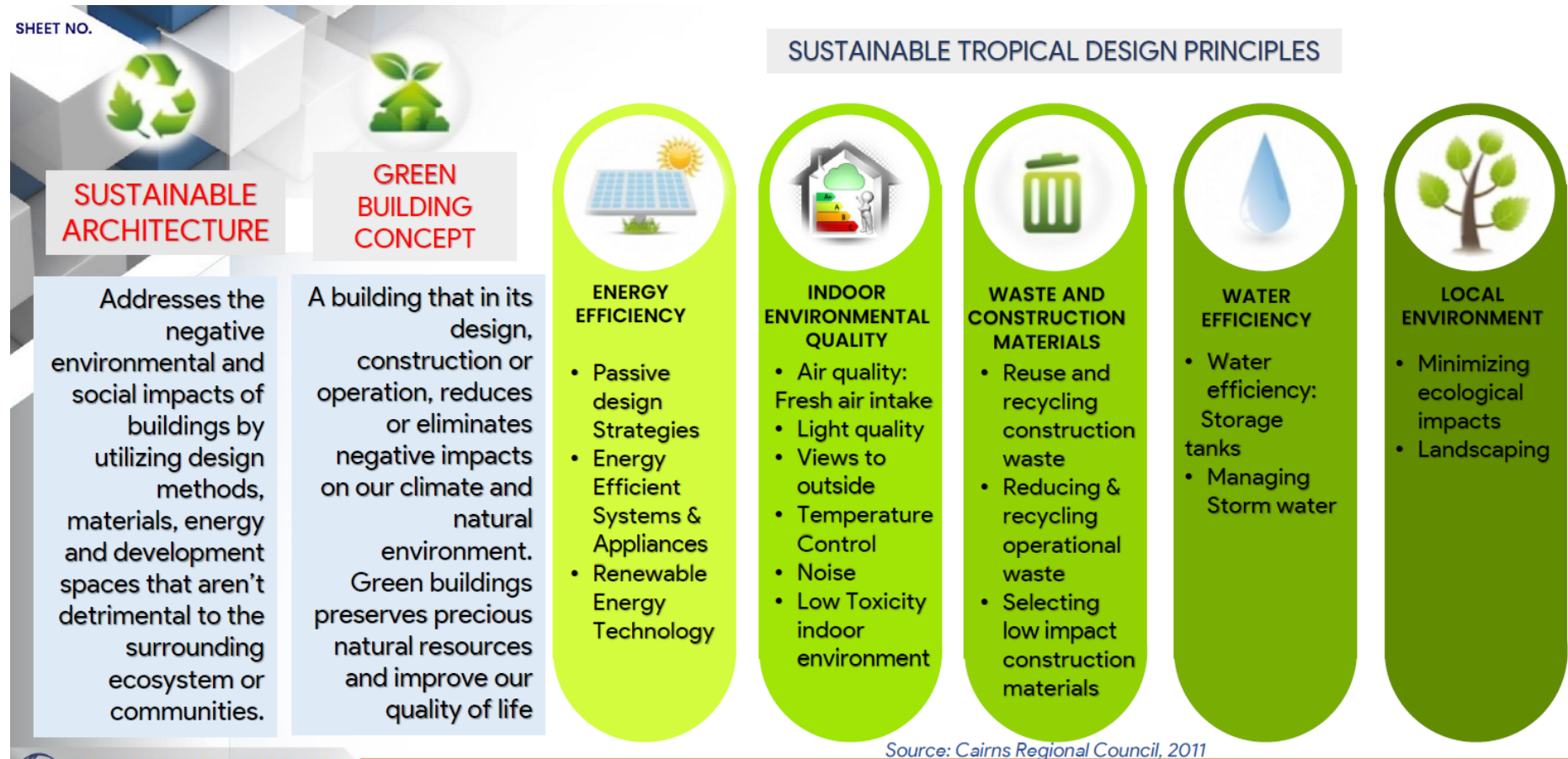
ACTIVITY	PARAMETER	GOOD PRACTICES MITIGATION MEASURES CHECKLIST
A. General Conditions	Notification and Worker Safety	<ul style="list-style-type: none"> (a) The local construction and environment inspectorates and communities have been notified of upcoming activities (b) The public has been notified of the works through appropriate notification in the media and/or at publicly accessible sites (including the site of the works) (c) All legally required permits (to include not limited to land use, resource use, dumping, sanitary inspection permit) have been acquired for construction and/or rehabilitation (d) All work will be carried out in a safe and disciplined manner designed to minimize impacts on neighbouring residents and environment. (e) Workers' PPE will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots) (f) Appropriate signposting of the sites will inform workers of key rules and regulations to follow.
B. General Rehabilitation and /or Construction Activities	Air Quality	<ul style="list-style-type: none"> (a) During interior demolition use debris-chutes above the first floor (b) Keep demolition debris in controlled area and spray with water mist to reduce debris dust (c) Suppress dust during pneumatic drilling/wall destruction by ongoing water spraying and/or installing dust screen enclosures at site (d) Keep surrounding environment (sidewalks, roads) free of debris to minimize dust (e) There will be no open burning of construction / waste material at the site (f) There will be no excessive idling of construction vehicles at sites
	Noise	<ul style="list-style-type: none"> (a) Construction noise will be limited to restricted times agreed to in the permit (b) During operations the engine covers of generators, air compressors and other powered mechanical equipment should be closed, and equipment placed as far away from residential areas as possible
	Water Quality	<ul style="list-style-type: none"> (a) The site will establish appropriate erosion and sediment control measures such as e.g. hay bales and / or silt fences to prevent sediment from moving off site and causing excessive turbidity in nearby streams and rivers.
	Waste management	<ul style="list-style-type: none"> (a) Waste collection and disposal pathways and sites will be identified for all major waste types expected from demolition and construction activities.

		<p>(b) Mineral construction and demolition wastes will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and stored in appropriate containers.</p> <p>(c) Construction waste will be collected and disposed properly by licensed collectors</p> <p>(d) The records of waste disposal will be maintained as proof for proper management as designed.</p> <p>(e) Whenever feasible the contractor will reuse and recycle appropriate and viable materials (except asbestos)</p>
C. Individual wastewater treatment system	Water Quality	<p>(a) The approach to handling sanitary wastes and wastewater from building sites (installation or reconstruction) must be approved by the local authorities</p> <p>(b) Before being discharged into receiving waters, effluents from individual wastewater systems must be treated in order to meet the minimal quality criteria set out by national guidelines on effluent quality and wastewater treatment</p> <p>(c) Monitoring of new wastewater systems (before/after) will be carried out</p>
E. Acquisition of land	Land Acquisition Plan/Framework	<p>(a) If expropriation of land was not expected and is required, or if loss of access to income of legal or illegal users of land was not expected but may occur, that the bank task Team Leader is consulted.</p> <p>(b) The approved Land Acquisition Plan/Framework (if required by the project) will be implemented</p>
F. Toxic Materials	Asbestos management	<p>(a) If asbestos is located on the project site, mark clearly as hazardous material</p> <p>(b) When possible, the asbestos will be appropriately contained and sealed to minimize exposure</p> <p>(c) The asbestos prior to removal (if removal is necessary) will be treated with a wetting agent to minimize asbestos dust</p> <p>(d) Asbestos will be handled and disposed by skilled & experienced professionals</p> <p>(e) If asbestos material is be stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately</p> <p>(f) The removed asbestos will not be reused</p>
	Toxic / hazardous waste management	<p>(a) Temporarily storage on site of all hazardous or toxic substances will be in safe containers labelled with details of composition, properties and handling information</p> <p>(b) The containers of hazardous substances should be placed in an leak-proof container to prevent spillage and leaching</p>

		<p>(c) The wastes are transported by specially licensed carriers and disposed in a licensed facility.</p> <p>(d) Paints with toxic ingredients or solvents or lead-based paints will not be used</p>
G. Affects forests and/or protected areas	Protection	<p>(a) All recognized natural habitats and protected areas in the immediate vicinity of the activity will not be damaged or exploited, all staff will be strictly prohibited from hunting, foraging, logging or other damaging activities.</p> <p>(b) For large trees in the vicinity of the activity, mark and cordon off with a fence large trees and protect root system and avoid any damage to the trees</p> <p>(c) Adjacent wetlands and streams will be protected, from construction site run-off, with appropriate erosion and sediment control feature to include by not limited to hay bales, silt fences</p> <p>(d) There will be no unlicensed borrow pits, quarries or waste dumps in adjacent areas, especially not in protected areas.</p>
H. Disposal of medical waste	Infrastructure for medical waste management	<p>(a) In compliance with national regulations the contractor will ensure that newly constructed and/or rehabilitated health care facilities include sufficient infrastructure for medical waste handling and disposal; this includes and not limited to:</p> <ul style="list-style-type: none"> ▪ Special facilities for segregated healthcare waste (including soiled instruments “sharps”, and human tissue or fluids) from other waste disposal: <ul style="list-style-type: none"> a. Clinical waste: yellow bags and containers b. Sharps – Special puncture resistant containers/boxes c. Domestic waste (non-organic): black bags and containers ▪ Appropriate storage facilities for medical waste are in place; and ▪ If the activity includes facility-based treatment, appropriate disposal options are in place and operational
I Traffic and Pedestrian Safety	Direct or indirect hazards to public traffic and pedestrians by construction activities	<p>(b) In compliance with national regulations the contractor will ensure that the construction site is properly secured and construction related traffic regulated. This includes but is not limited to</p> <ul style="list-style-type: none"> ▪ Signposting, warning signs, barriers and traffic diversions: site will be clearly visible, and the public warned of all potential hazards

		<ul style="list-style-type: none"> ▪ Traffic management system and staff training, especially for site access and near-site heavy traffic. Provision of safe passages and crossings for pedestrians where construction traffic interferes. ▪ Adjustment of working hours to local traffic patterns, e.g. avoiding major transport activities during rush hours or times of livestock movement ▪ Active traffic management by trained and visible staff at the site, if required for safe and convenient passage for the public. ▪ Ensuring safe and continuous access to office facilities, shops and residences during renovation activities, if the buildings stay open for the public.
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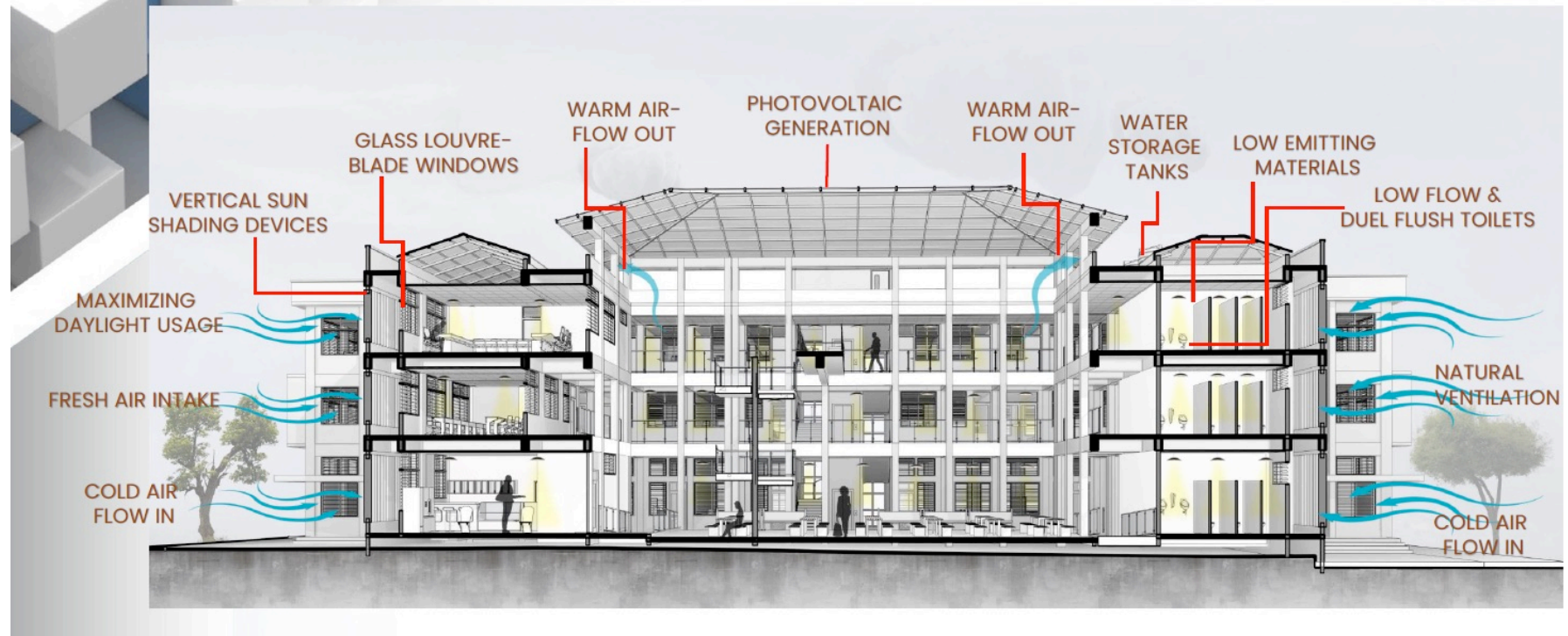
6.1 Design Concepts to Ensure Environmental Sustainability



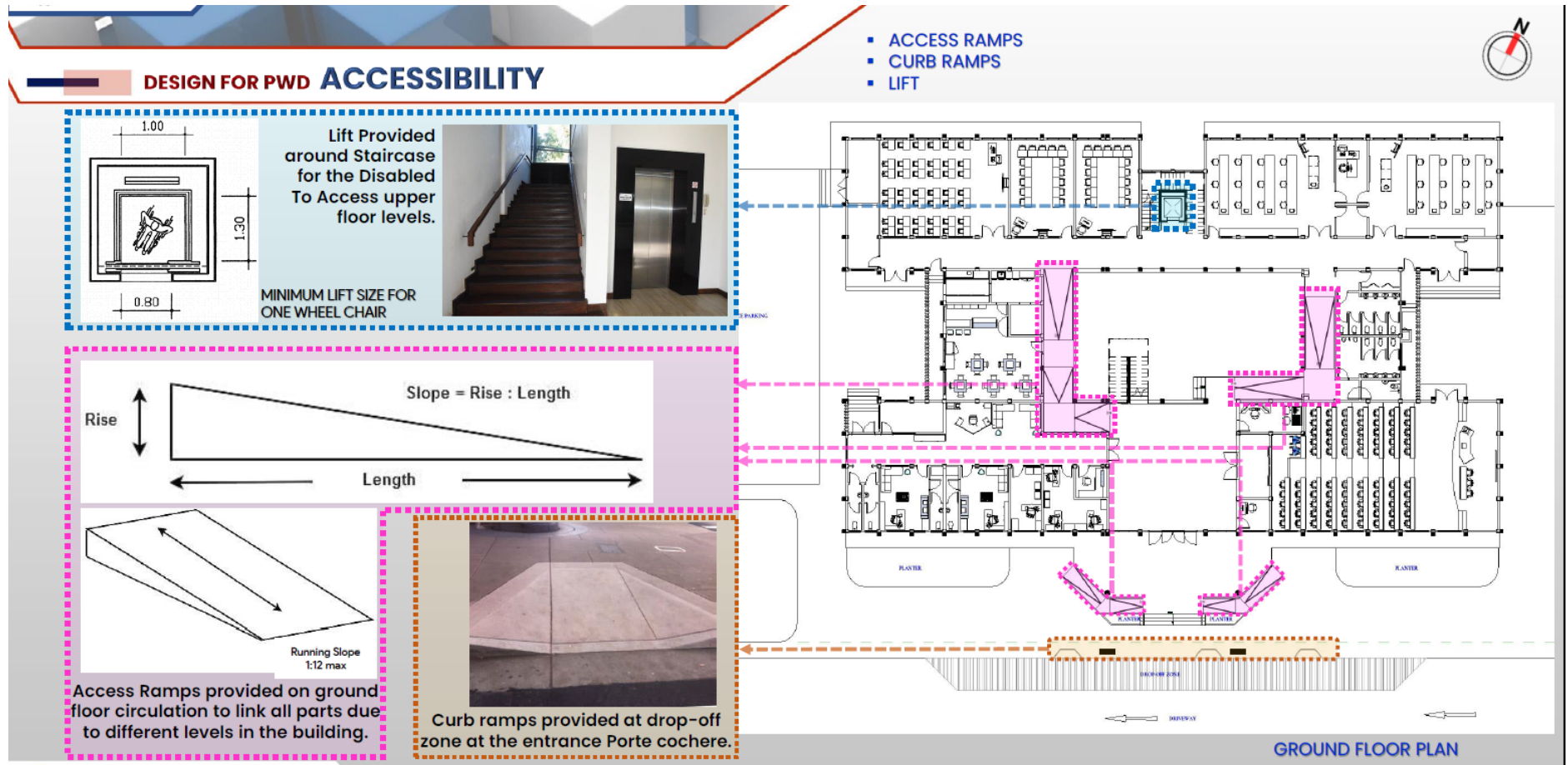
6.2 Green Building Concept and Sustainability

SHEET NO.

INDOOR ENVIRONMENTAL QUALITY & WATER EFFICIENCY

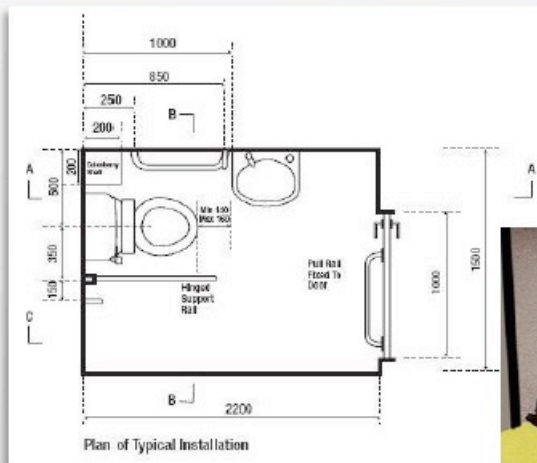


6.3 Design concepts for people with physical disability



Door widths and washrooms

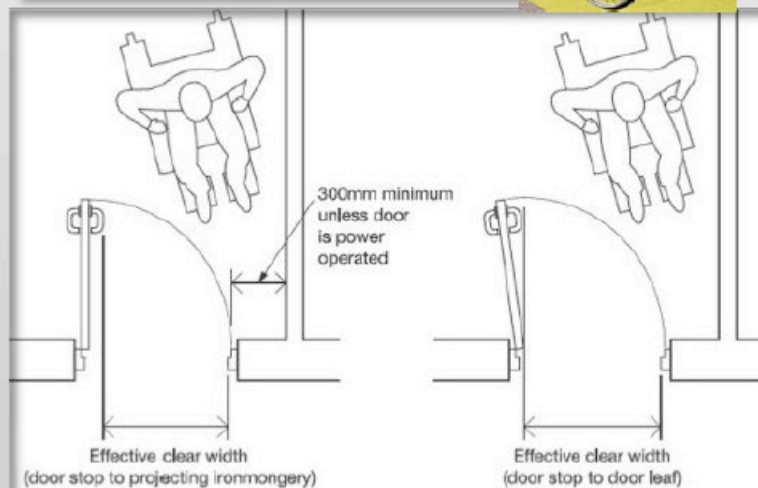
DESIGN FOR PWD ACCESSIBILITY (CONTINUED)



Disabled washroom provided on every floor with a single swing - double acting door of minimum width 1000mm.

DESIGN FOR EFFECTIVE CLEAR WIDTH OF DOORS
For main activity areas:

- DOUBLE DOORS**
 - 1800mm
 - 2000mm
- SINGLE DOORS**
 - 900 mm
 - 1000mm



6.4 Environmental and Social Impact Mitigation Plan and Responsibility

Table 5. Environmental and Social Impact Mitigation Plan and Responsibility

ACE Building	Potential Impact/ Issue	Action/Mitigating Measures	Responsibility		Time Frame	Reporting
Environmental/Social Issues			Implementation	Monitoring	Pre, Construction, Post	Monthly – Consultant Quarterly
Air pollution (E)	Handling of cement and other dusty materials	Prevention of excessive dust emissions including cement dust by carefully handling and working under moist conditions	Contractor	Consultant, RCEES-UENR	Construction	Consultant, RCEES-UENR
Solid waste (E)	Waste from bush clearing and removal of trees	Waste should be disposed of at approved site	Contractor	Consultant, RCEES-UENR	Construction	Consultant, RCEES-UENR
Hazardous toxic waste	Management of hazardous toxic waste	<ul style="list-style-type: none"> • Temporary on-site storage of any hazardous or toxic substances will be conducted in secure containers that provide compositional data, properties and handling information for those substances. • Containers of hazardous substances must be placed in a leak-proof container to prevent spillage and leakage • The waste is transported by specially authorized carriers and is disposed of at a site authorized for this purpose. 	Contractor	Consultant, RCEES-UENR	Construction	Consultant, RCEES-UENR
Water pollution (E)	<ul style="list-style-type: none"> • Sediment laden runoff from exposed areas mainly due to vegetation clearing during siting and construction; 	<ul style="list-style-type: none"> • Work camps should not be sited close to a water table • Sanitary waste should be properly disposed of at approved sites 	Contractor	Consultant, RCEES-UENR	Pre-construction	Consultant, RCEES-UENR

	<ul style="list-style-type: none"> • Groundwater becomes vulnerable to contamination for areas with high water table; • Improper disposal of sanitary waste from workers • Depth of pit within or close to local water table will expose groundwater to faecal contamination. This may be exceptional but serious 	<ul style="list-style-type: none"> • There should be installation of temporary barriers to ward off sediments entering watercourse • Locate latrine 30m away and downhill of water point and pit should be 5m above water table 				
Soil erosion (E)	Exposed land surfaces from cleared vegetation may induce erosion from rain events	<ul style="list-style-type: none"> • Application of appropriate erosion-protection measures, in particular where it concerns works on slopes, stream beddings 	Contractor	Consultant	Construction	Consultant, RCEES-UENR
Loss of flora/fauna (E&S)	Due to the removal of vegetation	<ul style="list-style-type: none"> • The contractor should limit the destruction of flora/fauna to working area 	Contractor	Consultant	Construction	Consultant RCEES-UENR
Public safety (S)	Badly managed work activity/ site within community	The contractor should follow health and safety measures in accordance with local regulations and also relating to personal protection and lifting heavy materials, use of personal protection equipment, posting of signages etc	Contractor	Consultant, RCEES-UENR	Construction	Consultant RCEES-UENR
Land use (S)	Conflicts with incompatible activities and land uses	<ul style="list-style-type: none"> • Consultation with university management and works department • Prepare and operationalizes a grievance redress mechanism 	Client	Consultant, RCEES-UENR	Pre-construction	Consultant RCEES-UENR
Socio-economic (S)	Use of local labour and therefore income earning; Community convenience vs consultant's technical judgement	<ul style="list-style-type: none"> • Contractor as much as possible should use local labour • 	Contractor, Consultant,	Consultant, RCEES-UENR	Pre-construction	Consultant RCEES-UENR
Raw material usage (E)	Depletion of raw materials. [PVC pipes, sand, stones, bamboo, thatch from local and external sources (quarries etc)]	The contractor should select raw materials that can be reused, recycled or recovered	Contractor	Consultant, RCEES-UENR	Construction	Consultant RCEES-UENR

Occupational health and safety (E)	Hazards from handling equipment, materials (e.g. cement dust), ergonomic stress, lifting heavy materials etc	<ul style="list-style-type: none"> •The contractor should follow health and safety measures in accordance with local regulations relating to personal protection and lifting heavy materials etc •The contractor shall provide to all work force deployed at work sites Protective footwear, protective goggles, reflective jacket, helmet, and nose masks to the workers employed for concrete works, crusher etc. Welder's protective eye-shields to workers who are engaged in welding works 	Contractor	Consultant, RCEES-UENR	Construction	Consultant RCEES-UENR
Public health and safety (E)	<p>Poor housekeeping leading to stagnant water as breeding grounds for insect vectors (causing malaria etc)</p> <p>Movement of trucks and equipment and road safety</p> <p>Workers exposure to COVID-19</p> <p>Gender-based violence (i.e sexual harassment) from workers to university and local community especially on women, girls and minors.</p>	<ul style="list-style-type: none"> •Interference with the access to and use and occupation of roads should be minimized. •Breeding grounds for insect should be avoided. •There must be properly illuminated directional signs for movement of vehicles and as much as possible avoid blocking of roads. •All covid-19 protocols (availability of handwashing stations with soap, use of sanitizers, use of nose marks, etc.) to be observed •Sensitisation and education of gender-based violence including sexual harassment to workers. Use of the university's sexual harassment policy and related documents • 	Contractor Consultant Client	Consultant RCEES-UENR	Construction	Consultant RCEES-UENR
Nuisance and disturbance of community life (S)	<p>Visual intrusion by delivery trucks (sand, stones) and equipment</p> <p>Disruption of social (or school) activities</p>	<ul style="list-style-type: none"> •Interference with the access to and use and occupation of roads should be minimized 	Contractor	Consultant RCEES-UENR	Pre-construction	Consultant RCEES-UENR

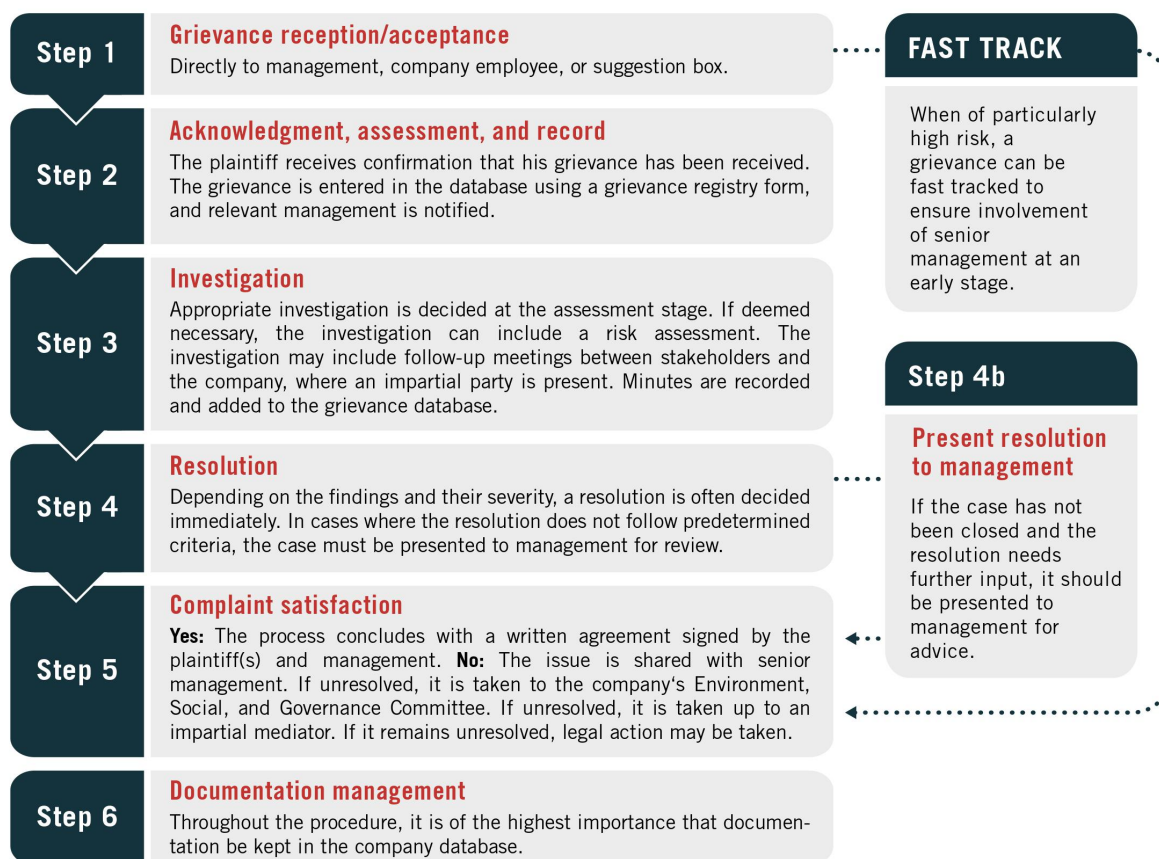
		<ul style="list-style-type: none"> • Contractor should ensure proper work practices and ensure good site maintenance 				
Sexual harassment/ Sexual exploitation and abuse (SEA/SH)	Gender-based violence (i.e sexual harassment) from workers to university and local community especially on women, girls and minors.	<ul style="list-style-type: none"> • Sensitisation and education of gender-based violence including sexual harassment to workers. Use of the university's sexual harassment policy and related documents • Workers to sign a code of conduct on sexual harassment and exploitation 	Contractor	Consultant, RCEES-UENR	Construction	Consultant, RCEES-UENR
Use of child labour	Use by contractors of child labour	<ul style="list-style-type: none"> • Strict compliance with national regulations on child labour by works contractors 	Contractor	Consultant RCEES-UENR	Construction	Consultant RCEES-UENR
Complaints resolution	Conflicts, misunderstandings, and complaints from workers or university community.	<ul style="list-style-type: none"> • Use of Grievance Redress Mechanism to receive and manage complaints from workers or university community. 	Client Contractor Consultant	Consultant RCEES-UENR	Construction	Consultant RCEES-UENR

7 SUMMARY OF STAKEHOLDER CONSULTATIONS AND DISCLOSURE

Consultations were done with both internal stakeholders (within the university) and external stakeholders (outside the university) – see Annex 2. At the university, consultations were done with the university management who provided the university land for this undertaking. Consultations were also made with staff at the works department including the Director of Works. The works department is mandated to oversee all development projects or undertakings on university land. They also have the master plan of the university and they confirmed that the proposed site for the undertaking was appropriate. The wider university staff and faculty were also informed on the undertaking through the academic board for people who have any issues regarding the location to raise it or inform the appropriate authorities for redress. Externally, we consulted the Sunyani Ghana National Fire Service (GNFS), the Ghana Water Company Limited (GWCL), Northern Electricity Distribution Company (NEDCO), the Environmental Protection Agency (EPA), and the Sunyani Municipal Assembly. All these stakeholders were consulted to assess the appropriateness of the site for the undertaking and to offer any recommendations where applicable.

8 GRIEVANCE REDRESS MECHANISM

The project will make use of appropriate grievance redress mechanism to address all grievances (conflicts, complaints, concerns, etc) among workers and among stakeholders including the university community. The grievance mechanism will be communicated to all workers and also to relevant stakeholders during site meetings and other recognised meetings. The grievance mechanism has been developed largely based on the World Bank's Approach to Grievance Redress in Projects, and follows three interlinked steps: (i) a risk-based assessment of potential grievances, disputes or conflicts that may arise during project preparation and implementation; (ii) identification of the client's existing capacity for grievance redress; and (iii) an action plan that identifies priority areas for strengthening grievance capacity, or if necessary, establishing new mechanisms at the project level. An example of a more detailed steps that would be followed and recommended by the World Bank is presented in the figure below: The mechanism will also allow for anonymous complaints to be raised and addressed to encourage people to come forward to present their grievances without fear of any form of victimisation.



Source: UNCTAD–World Bank Responsible Agricultural Investment Database.

Figure 1. Steps for grievance redress mechanism

9 MONITORING PLAN

Monitoring provides information that is critical to impact management, as well as to making improvements to EIA practice. There are three main types of monitoring which can be undertaken for a project:

- Compliance monitoring (amount/content of waste or effluent streams);
- Mitigation monitoring (whether mitigation actions have been implemented in accordance with an agreed schedule and are working as expected); and
- Impact monitoring (scale and extent of impacts caused by the project).

Environmental monitoring ensures that the impacts have been accurately predicted and that mitigation measures are being implemented as planned and have the assumed effects. Some elements in and around the site area will be monitored before the construction starts. This will allow a baseline to be established against which changes in construction and into operation can be assessed. The monitoring activities will be carried out by various stakeholders including the contractors, supervising engineers, health authorities, EPA, UENR and any other agency having a responsibility in the development and operation of the project.

The monitoring section of the EMP provides

(a) Specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection

limits (where appropriate), and definition of thresholds that will signal the need for corrective actions; and

(b) Monitoring and reporting procedures to (i) ensure early detection of conditions that necessitate particular mitigation measures, and (ii) furnish information on the progress and results of mitigation.

Table 6 presents the monitoring plan for the project by outlining what have to be checked during activity preparation and implementation. For the monitoring of the Contractor's safeguards, due diligence of the designated construction inspector is required. The key monitoring criteria must be checked during and after works for compliance assurance. Such parameters and criteria include:

- dust generation and prevention,
- amount of water used and discharged by site,
- presence of proper sanitary facilities for workers,
- waste collection of separate types (mineral waste, wood, metals, plastic, hazardous waste, e.g. spent engine oil), waste quantities, proper organization of disposal pathways and facilities, or reuse and recycling wherever possible.

To assure a degree of leverage on the Contractor's environmental performance an appropriate clause will be introduced in the works contracts, specifying penalties in case of noncompliance with the contractual environmental provisions, e.g. in the form of withholding a certain proportion of the payments, its size depending on the severity of the breach of contract.

Capacity Development

To support timely and effective implementation of environmental project components and mitigation measures, the EMP draws on the EA's assessment of the existence, role, and capability of environmental units on site or at the agency and ministry level. Specifically, the EMP provides a specific description of institutional arrangements - who is responsible for carrying out the mitigatory and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training).

Project Implementation

It is expected that the plan be specific in its description of the individual mitigation and monitoring measures and its assignment of institutional responsibilities, and it must be integrated into the project's overall planning, design, budget, and implementation. Such integration is achieved by establishing the ESMP within the project so that the plan will receive funding and supervision along with the other components.

For all three aspects (mitigation, monitoring, and capacity development), the EMP provides

(a) an implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans; and

(b) the capital and recurrent cost estimates and sources of funds for implementing the EMP are also to be integrated into the total project cost.

Table 6. Monitoring Plan

Phase	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Cost (if not included in project budget)	Who (Is responsible for monitoring?)
During activity preparation	Traffic management, availability of waste disposal facilities, hazardous waste inventory (asbestos , paints / solvents),	at the site, in site vicinity, Contractor's store / building yard,	check if design and project planning, procedures, visual /analytical if in doubt, visual /research in toxic materials databases	before launch of construction, before start of rehabilitation, before approval to use materials,	safety of general public, timely detection of waste disposal bottlenecks, public and workplace health and safety,	marginal, within budget, (prepare special account for analyses)	Contractor, Engineer
During activity implementation and supervision	Dust Generation, noise emissions, waste and wastewater types, quality and volumes, surface drainage, Monitor compliance of workers use of appropriate PPES, existing of safety warning signs for both workers and university community.	on site and in immediate neighbourhood, close to potential residents at discharge points or in storage facilities,	consultation of locals, visual, analytical if suspicious, count of waste transports off site, check flow rates and runoff routes for wastewater,	daily / continuous	avoidance of public nuisance, avoidance of negative impacts on ground/surface waters, ensuring proper waste management and disposal	marginal, within budget	Contractor, Engineer

ANNEX 1: ENVIRONMENTAL AND SOCIAL SCREENING

ENVIRONMENTAL /SOCIAL SCREENING			
Will the site activity include/involve any of the following potential issues and/or impacts:	Activity and potential issues and/or impacts	Status	Additional references
	1. Building rehabilitation <ul style="list-style-type: none"> • Site specific vehicular traffic • Increase in dust and noise from demolition and/or construction • Construction waste 	[X] Yes [] No	See Section B below
	2. New construction <ul style="list-style-type: none"> • Excavation impacts and soil erosion • Increase sediment loads in receiving waters • Site specific vehicular traffic • Increase in dust and noise from demolition and/or construction • Construction waste 	[X] Yes [] No	See Section B below
	3. Individual wastewater treatment system <ul style="list-style-type: none"> • Effluent and / or discharges into receiving waters 	[] Yes [X] No	See Section C below
	4. Historic building(s) and districts <ul style="list-style-type: none"> • Risk of damage to known/unknown historical or archaeological sites 	[] Yes [X] No	See Section D below
	5. Acquisition of land ² <ul style="list-style-type: none"> • Encroachment on private property • Relocation of project affected persons • Involuntary resettlement • Impacts on livelihood incomes 	[] Yes [X] No	See Section E below
	6. Hazardous or toxic materials ³	[X] Yes [] No	See Section F below

² Land acquisitions includes displacement of people, change of livelihood encroachment on private property this is to land that is purchased/transferred and affects people who are living and/or squatters and/or operate a business (kiosks) on land that is being acquired.

³ Toxic / hazardous material includes and is not limited to asbestos, toxic paints, removal of lead paint, etc.

ANNEX 2. List of stakeholders engaged as part of the preparation of this ESMP

- RCEES management
- University management
- Academic board
- Works department
- Procurement department
- Finance Directorate
- Students
- Ghana Fire Service (Sunyani)
- Ghana Water Company Limited (Sunyani)
- Northern Electricity Distribution Company (NEDCO)
- Environmental Protection Agency (Sunyani)