COOPERATIVE REPUBLIC OF GUYANA
Secondary Education Improvement Project
Project ID Number: P147924
THE WORLD BANK

ENVIRONMENTAL ASSESSMENT AND MANAGEMENT PLAN (EAMP)

Revised Version - March 2018

This version of the Environmental Assessment and Management Plan was revised from the 2014 version to reflect the changes which have occurred to the project since then, including the reduction of schools to be constructed from three to two, and to place more emphasis on the environmental and social issues relating to the construction of the two selected schools.

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Acronyms

CHPA	Central Housing and Planning Authority
EAMP	Environmental Assessment and Management Plan
EIA	Environmental Impact Assessments
EPA	Environmental Protection Agency
ES	Environmental Specialist
ESP	Education Strategic Plan
GPL	Guyana Power and Light Inc.
GSEIP	Guyana Secondary Education Improvement Project
GSS	Government Secondary Schools
GTT	Guyana Telephone and Telegraph Company
GWI	Guyana Water Inc.
HSSE	Health, Safety, Social and Environment
MoE	Ministry of Education
NDC	Neighbourhood Democratic Council
PM	Project Manager
PTT	Project Technical Team
SC	Supervisory Consultants
USE	Universal Secondary Education

Executive Summary

The Ministry of Education (MoE) has set the attainment of quality Universal Secondary Education (USE) as a major objective in its current Education Strategic Plan (ESP). The MoE is currently implementing the Guyana Secondary Education Improvement Project (GSEIP) with support from the World Bank to assist in meeting this objective. The objective of the GSEIP is to increase the number of students with access to secondary school mathematics teachers benefitting from continuous professional development nationwide and, to increase the number of students in secondary schools with improved learning conditions in targeted regions. The Project comprises of three components; the second component focuses on expansion of general secondary school facilities in underserved areas of Regions 3 and 4. This includes new school construction and provision of furniture and equipment for these schools.

The works proposed under this component are the construction of 2 new Government Secondary Schools (GSS) which are listed below:

1. Westminster, West Bank Demerara. In Region 3, a 1000 student school (Grade A+)
2. Good Hope/Lusignan GSS. In Region 4, a 800 student school (Grade A).

This civil works component of the project has triggered the World Bank's Operational Policy: OP/BP 4.01: Environmental Assessment. The objective of this policy is to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision-making is improved through appropriate analysis of actions and of their likely environmental impacts. This policy is triggered if a project is likely to have potential (adverse) environmental risks and impacts on its area of influence. OP 4.01 covers impacts on the natural environment (air, water and land); human health and safety; physical cultural resources; and trans-boundary and global environment concerns. The proposed project is categorized as Category B: Partial Assessment - assigned to projects that are likely to have impacts that are site-specific and limited in number, and for which mitigation measures are readily identifiable.

This Environmental Assessment and Management Plan (EAMP) has been developed for the civil works component of the GSEIP. The purpose of this EAMP is to assess and recommend measures to mitigate the potential negative environmental impacts of the project.

The MoE is the implementing agency responsible for the Project. Coordination, technical and fiduciary aspects of the Project is being overseen by Project Technical Team (PTT) which is headed by a Project Coordinator, who reports to the Permanent Secretary of the MoE.

The PTT, along with the Supervisory Consultant, will be responsible for the environmental supervision of the implementation of project components and the Environmental Assessment and Management Plan. The PTT has as part of its team an Environmental Specialist (ES) who will support the PTT in addressing the environmental issues associated with the project.

The main environmental impacts expected from the Project would be those connected to the proposed construction activities planned under Component 2 of the Project. The construction works proposed will generate environmental and social impacts common to this type of civil work, including dust, noise and waste from the construction site, traffic congestion and the risk of accidents. It is intended that these environmental and social impacts will be mitigated through the implementation of this EAMP. Additionally, the selected contractors will be required to prepare and implement a Contractor Environmental and Social Management Plan (C-ESMP). The C-ESMP will have to be approved by the PTT and will have to identify measures to be implemented by the Contractor to mitigate potential environmental impacts during construction. It is expected that the C-ESMP will be a working document and will be updated as the project progresses.

The environmental and social management process will include public information and communication strategies with beneficiary students and families, as well as other stakeholders in the project area. A grievance mechanism is also included as part of the environmental and social management process to hear concerns, and address concerns as appropriate in a timely and transparent manner.

1.0 Introduction

1.1 Background

The Government of Guyana has set the attainment of quality Universal Secondary Education (USE) as a major objective in its current Education Strategic Plan (ESP). To assist in meeting this objective the Government through the Ministry of Education, and with support from the World Bank, is currently implementing the Guyana Secondary Education Improvement Project (GSEIP). The purpose of the GSEIP is to assist the Government of Guyana in its plan to make secondary school education available to the vast majority of the accessible population, which is a major objective its 2008-2013 Education Strategic Plan. Specifically, the GSEIP aims to increase the number of students with access to secondary school mathematics teachers benefitting from continuous professional development nationwide and, to increase the number of students in secondary schools with improved learning conditions in targeted regions. The project scope and activities are divided into three components:

Component 1: Strengthen the Capacity of Secondary School Mathematics Teachers Nationwide – This component includes three sub-components:

(i) Teacher Training and Upgrading in Mathematics.
(ii) Teacher Appraisal Instrument.
(iii) Technology – Assisted Learning in Mathematics.

Component 2: **Expansion of Secondary School Facilities** – Two sub-components would be supported:

(i) New School Construction.
(ii) New School Furnishing and Equipment.

Component 3: **Institutional Capacity Building and Project Management** – Two sub-components would be supported:

(i) Education Management Information System (EMIS).
(ii) Project Management.

1.2 Purpose of the EAMP

Only Component 2 (new school construction) has triggered the World Bank's Operational Policy: OP/BP 4.01: Environmental Assessment, and as a result, will need to have mitigation measures implemented. In this regard this Environmental Assessment and Management Plan (EAMP) was prepared. The EAMP has focused primarily on the assessment and management activities to mitigate such effects as related to this Component.

The objectives of the EAMP include:

- To reduce environmental and social impacts due to the Project activities and components;

- To minimize risk to the community during the construction works;
- To ensure Health, Safety, Security & Environmental (HSSE) obligations are implemented throughout project development and construction activities; and
- To increase environmental management capacity at the MoE.

The EAMP consist of mitigation and prevention measures and programs considered necessary for implementation by the MoE, the PTT, Supervisory Consultants, and Contractors to ensure the proper environmental management of the overall project.

2.0 Description of the Project

2.1 Project Overview

The civil works component of the project, for which this EAMP was prepared, falls under Component 2 of the GSEIP. This component focuses on the expansion of secondary school facilities, including new school construction and new school furnishing and equipment.

These new secondary schools will be constructed to accommodate a total of eighteen hundred (1800) students with each school accommodating eight hundred to one thousand (800-1000) students. Each GSS will be fully outfitted with furniture and laboratory equipment. When completed, they will be classed as Grade A+ secondary schools by the MOE. The two schools to be constructed are:

1. Westminster GSS, West Bank Demerara. In Region 3, a 1000-student school (Grade A+)
2. Good Hope/Lusignan GSS. In Region 4, an 800-student school (Grade A).

2.2 Facilities to be included

The construction will include the following:

- Information Technology Laboratory
- Industrial Technology Department (Metal Work and Wood Work)
- Agriculture Department
- Science Department
- Home Economics Department (Food & Nutrition, Clothing and Textile and Home Management)
- Library
- Sick Bay
- Guidance and Counseling Unit
- Classrooms
- Staff Room and Facilities
- Head Master's (HM) Office
- Deputy H.M Office
- Canteen
- Sanitary Facilities (Students & Staff)
- Assembly Area/All Weather Playing Area
- Playground

In addition, the following ancillary facilities will be constructed:

- Guard Huts
- Car Park and Cycle Shed
- Septic system

- Water trestle & Reservoirs
- Auditorium
- Boundary Fence
- Bridge(s)
- Internal and External Drainage System
- Speed Bumps and Pedestrian Crossings

2.3 Proposed Construction Works

The construction will be carried out by a general contractor under contract to the MoE. Once the contract has been signed and the contractor has been given possession of the site, the contractor will be legally responsible for the performance of the works in the manner required by the contract which will include this document as an appendix.

Site Areas

A total ground floor area (covered area) of approximately 32,000 square feet (2972.89 meter square) would be utilized for the construction of these schools.

Design

The proposed GSS will be designed by the selected Consultants, with all social and environmental considerations.

- Block A, Administrative Block to accommodate the H. M office, Deputy H.M office, sick bay, guidance and counseling unit, staff room and facilities, sanitary facilities (staff) and storage room.
- Block B, Multipurpose Hall including auditorium, stage, canteen and storerooms
- Block C, Home Economics including Food and Nutrition, Clothing and Textiles and Home Management
- Block D, Science Laboratories for Physics, Chemistry and Biology with Preparation Areas and store rooms
- Blocks E & G, Classrooms, Library with storage and students' washrooms
- Blocks F&K, Classrooms, I.T Laboratories, Audio Visual rooms with storage and students' washrooms
- Block H, Allied Arts including Visual Arts, Music and Dance
- Block J, TVET-Metal work, wood work and Technical Drawing

Sub-structure

The sub-structure will be constructed using reinforced concrete for foundation in a strip and pad combination. The finished floor level will be raised on kerb walls to a height designed to prevent flooding with respect to each site.

Superstructure

The superstructure will be constructed using reinforced concrete for columns, beams, floor slabs, stairs and rails. Windows will be Protecto-vent, sash and ventilation blocks. All doors will be timber.

Cladding: Walls will be constructed using hollow concrete blocks

Roofing: Roofing will be done using timber and steel members to form trusses and finished with galv-alum sheeting.

Materials

A combination of local and imported materials will be used during construction, e.g. aggregates, steel, cement, white sand, timber, PVC, plywood, galv-alum sheeting, paint, glass, aluminum, ceramic tiles and fixtures.

Drainage

Both internal and external drains would have to be included as a major component of the design for this project. Internal surface water drains leading to external perimeter drains and then to primary channels to ensure effective drainage of the project area. Rainwater harvesting will be employed to reduce surface runoff and the project will incorporate hydraulic designs for the drainage network. Laboratory wastes will not be connected to the main drains, so as to avoid the unintentional discharge of potentially hazardous chemicals from the school grounds during operation.

Utilities

Utilities (water, electricity and telecommunication) exist at the proposed sites selected for the construction of this school. Therefore, the respective utility providers (GWI, GT&T and GPL), will be notified by the MoE/PTT of the construction and agreements made for the provision of the required services.

Internet Access

All areas are currently in receipt of telephone service via the Guyana Telephone and Telegraph Company (GT&T) land line service, thus internet service can be accessed via the DSL broadband service offered by GT&T.

Special Provisions

Special provisions under this project will include:

- **Science Laboratories** – Physics, Chemistry and Biology
- **Industrial Technology** - Metal Work and Wood Work
- **Disabilities Facilities** – to accommodate the physically and mentally challenged persons (both students and teachers)

3.0 Project Environment

3.1 Westminster Secondary School

This proposed project site is located in Westminster on the West Bank of the Demerara River, Region # 3 (Essequibo Islands – West Demerara). This community is a relatively new housing development (or Scheme) through the Central Housing and Planning Authority (CHPA) of the Ministry of Communities.

Due to the large size of this proposed new housing development, the MoE has recognized the importance to construct a new secondary school in the vicinity.

Site Topography
The site/location is generally flat with mostly clayey soils and light vegetation.

Accessibility and Traffic
This site is located on the West bank of the Demerara River and access from Georgetown and its environs is via the Demerara Harbour Bridge. The project site is accessible via paved roads from three points: through the La Grange Independence Street, the Canal Number 1 access road and the main road along the Schoornard canal. It should be noted that these roads also serve the older communities in the area and there can be a buildup of traffic during peak periods. Traffic within the Westminster area is considered light at present. The internal roads around the site are in a deplorable condition and will require an upgrade before start of construction to ensure accessibility by the Contractor. This will have to be undertaken by the Neighborhood Democratic Council responsible for the area.

Drainage
The site is presently surrounded by an earthen perimeter drain. The perimeter drains form a network that then discharges into the primary drainage canals which flows to the outfall of the Demerara River via sluice gates. Maintenance of the earthen drains is key to proper drainage and blockage near unoccupied lots may become problematic. High water level in the main drainage canals during high tide can also result in a backup of water in the drains. Maintenance of the external drainage will be the responsibility of the Neighborhood Democratic Council for the area.

Current Site Use
The proposed site is presently reserved for educational development in accordance with the CHPA's Housing Master Plan.

Previous Site Use
These areas were previously used for agriculture (sugar cultivation) and cattle rearing.

Surroundings

The surrounding lands are mainly used for residential development. Westminster is one of the larger housing schemes to be established by the Central Housing and Planning Authority (CH&PA) within the past ten (10) years. While the area is generically referred to as La Parfaite Harmonie, in actual fact, the development area comprises several plantations, namely: (1) Schoonord, (2) La Parfaite Harmonie, (3) Westminister, (4) Onderneeming, (5) Recht-Door-Zee and (6) Lust-En-Rust. There has been an increase in the number of residents in these areas over the past 5 years. There has also been significant deterioration of the access roads which are quite narrow. There are several occurrences of persons storing building material on the road and its shoulders. Some residents also have domestic animals being kept on the roads.

3.2 Good Hope/Lusignan Secondary School

This proposed project site is located in Good Hope, East Coast of Demerara, Region # 4 (Demerara – Mahaica). This community is a relatively new housing development through the Ministry of Communities. This proposed school will capture students from Lusignan, Paradise, Annandale, Enterprise, Enmore and Enmore-Hope Primary Schools; it will also reduce overcrowding at the Buxton Secondary School.

Site Topography

The site/location is generally flat with mostly clayey soils and light vegetation.

Current Site Use

The proposed site is presently not in use, since same was identified by the housing master plan for educational development. However, a small portion of the plot is currently occupied by the Good Hope Nursery School. The surrounding lands are mainly for residential proposes.

Previous Site Use

These areas were used in the past for mainly agriculture development.

Surroundings

The surrounding lands are mainly used for residential development. There are several small commercial activities in the area; including a woodworking establishment, mechanic workshops and small grocery shops. Additionally, the Good Hope Nursery school shares the site where the proposed school is to be constructed. The nursery school site is securely fenced with its main access being in the opposite side of the area for construction. A small depression extends across the site which will be in filled before start of construction. This is included in the Bills of Quantities for the Works.

Accessibility and Traffic

The site is accessible by vehicle via all-weather roads and a main access bridge across the main drainage canal. The traffic volume on the access road to the site is considered medium at present. However, there can be a buildup of traffic at peak hours when most persons leave or return from work.

The traffic intensity along the access and residential roads is considered medium while that along the East Coast Demerara Highway and Railway Embankment are considered high.

4.0 Legal Framework

4.1 The World Bank Safeguards Policies

Component 2 of the project, for which this EAMP has been prepared, has triggered only one Environmental Safeguard Policy of the World Bank, which is Environmental Assessment: OP/BP 4.01. The objective of this policy is to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision-making is improved through appropriate analysis of actions and of their likely environmental impacts. This policy is triggered if a project is likely to have potential (adverse) environmental risks and impacts on its area of influence. OP 4.01 covers impacts on the natural environment (air, water and land); human health and safety; physical cultural resources; and trans-boundary and global environment concerns.

The Policy, when triggered, requires that an Environmental Assessment be conducted, at a level of detail commensurate with the projected negative impacts. For the GSEIP Component 2, this EAMP document represents the appropriate level of analysis, and development of the corresponding mitigation measures, as determined by the World Bank Environmental Specialist and the PTT. This EAMP follows Policy OP4.01 by providing a description of the project; basic information on existing environmental and social baseline conditions of the selected project sites; an assessment of the potential environmental and social effects likely to occur and generic mitigation measures to mitigate those impacts; specific environmental and social measures where applicable to address any site-specific problems; legal and institutional provisions; and, a grievance redress mechanism. In accordance with World Bank policy, the EAMP must be disclosed and consultation carried out to incorporate the concerns and views of stakeholders involved in the Project.

Other components of the GSEIP has triggered another World Bank Safeguard Policy, OP 4.10, which covers effects on Indigenous Peoples. Given the project's intended intervention areas include those inhabited by indigenous groups, an Indigenous Peoples Plan was prepared and associated consultations took place. The expected impacts of the project on indigenous communities are both positive and discrete; the main impact is expected to be improved learning of mathematics among indigenous youth, which should increase their secondary level completion rates and opportunities to continue on to higher education and/or succeed in the labor market. There is no school construction or rehabilitation planned in indigenous areas.

It should also be noted that no private land acquisition will occur under this Project, so World Bank Policy OP 4.12 on Involuntary Resettlement is not triggered. All schools will be constructed on existing Government land.

4.2 National Laws and Regulations

The civil works to be conducted under the Guyana Secondary Education Improvement Project are expected to comply with the Guyana national legal framework. This section provides an overview of the principal environmental and health and safety legislation which forms the legal

framework for the project. These include firstly the Environmental Protection Act, 1996 and Environmental Protection Regulations 2000, the Health and Safety Act 1997 and the Pesticides and Toxic Chemicals Control Act and Regulations.

4.2.1 Environmental Protection Act, 1996 (As Amended by the Environmental Protection (Amendment) Act, 2005

The Environmental Protection Act, 1996, and the Environmental Protection Amendment Act 2005, establishes the basic institutional and regulatory framework within which all activities that may significantly impact on the natural, social, and cultural environments are assessed. The Act also provides that the Environmental Protection Agency (EPA) will be the central coordinating agency for environmental management in the relevant sectors in Guyana.

The EPA was created through the Environmental Protection Act, 1996 and is mandated to oversee the effective management, conservation, protection and improvement of the environment. It also requires that the Agency takes the necessary measures to ensure the prevention and control of pollution, assessment of the impact of economic development on the environment and the sustainable use of natural resources.

The EPA is responsible to evaluate project development in the country and to classify each project according to the potential environmental and social impact. EPA is also responsible to undertake proper supervision and monitoring of the project environmental and social outcomes.

Part IV of the Act requires all developers of any project listed in the fourth schedule or other projects that may significantly affect the environment to apply to the EPA for an Environmental Authorisation. The Application Form, which must be accompanied by the prescribed fee, must include a description of the project as well as information regarding location, size, duration of the project, and potential environmental impacts. The EPA will review the application and assess whether or not the project should be exempted from the Environmental Impact Assessment (EIA) process. Once a decision has been made, the EPA will publish a notice to the public in at least one daily newspaper informing them of EPA's position, thereby allowing the public to review the decision.

Under this process an application is required to be submitted to the EPA for Environmental Authorisation for the construction of the two schools. It was decided that this will be done by the Design Consultants. The application was submitted and the EPA conducted visits to the sites. The EPA now has to decide whether an EIA is not required or not for this project. It is, however, uncommon for the EPA to request EIAs for small civil Works project. Once the Construction Permit is issued by the EPA, the Permit would outline conditions to be complied with to ensure that the potential negative impacts on the environment are minimised. The conditions of the Permit will be in accordance with the requirements of the Regulations under the Act and National Standards and the project would be monitored by the EPA to ensure compliance.

4.2.2 Environmental Protection Regulations

The Environmental Protection Act, 1996 comprises several subsidiary Environmental Protection Regulations. These are:

- The Environmental Protection Authorizations Regulations 2000
- The Environmental Protection Air Quality Regulations 2000
- The Environmental Protection Water Quality Regulations 2000
- The Environmental Protection Noise Management Regulations 2000
- The Environmental Protection Hazardous Wastes Management Regulations 2000
- The Environmental Protection (Litter Enforcement) Regulations 2013
- The Environmental Protection (Expanded Polystyrene Ban) Regulations 2016

These Regulations were developed to regulate and control the activities of development projects during construction and operation. The EPA has the responsibility to ensure the compliance of all new and existing activities to these Regulations by issuing the required authorizations and monitoring the operations.

Table 1: Regulations under the Environmental Protection Act

Environmental Protection (Authorizations) Regulations 2000	The Regulations require development activities/facilities pertaining to industry (e.g. manufacturing, processing, handling, transport, storage, disposal) to be authorized by EPA, with specified conditions to avoid, minimise, and mitigate environmental impacts. It also provides for Environmental Impact Assessments (EIAs) where necessary (Section 3 of the Act). The EPA determined the types/categories of development that requires environmental authorization. The authorization process for both new and existing facilities including variances are outlined in these Regulations, Part 3, Section 17 and 20.
Environmental Protection (Air Quality) Regulations 2000	In accordance with these Regulations anyone who emits any air contaminant in the construction, installation, operation, modification or extension of any facility related to industry, commerce, agriculture or any institution shall apply to the EPA for an environmental authorization at least ninety days before the date on which the emission is to commence. In accordance with the Regulations the EPA shall establish the desirable air pollution limits. Currently, there are no nationally determined or established Air Quality standards, however the Agency is guided by and utilizes the WHO and United State Environmental Protection Agency (USEPA) allowable limits. In relation to the project, these Regulations would be important considering discharges including smoke, particulate matter and carbon monoxide (CO).

Environmental Protection (Hazardous Waste Management) Regulations 2000	These Regulations outline the rules and procedures for transport, storage, treatment and disposal of hazardous wastes and are intended to ensure, through the environmental authorization process, that all operations that generate, transport, treat, store and dispose of hazardous wastes are managed in a manner that protects human health and the environment. The Regulations allow for the provision of information on the types of facilities and quantity of hazardous waste generated, treatment standards and efforts to reduce the waste generated. An Emergency Preparedness Plan is required for anyone who operates a hazardous waste facility. Based on these regulations the Contractors will be required to maintain a register on the generation and management of all hazardous waste generated and report on this to the EPA.
Environmental Protection (Water Quality) Regulations 2000	These Regulations require an environmental authorization for construction, installation, operation, modification/extension of facilities that discharge effluents. Requirements and guidelines on the discharge of effluents and disposal of sludge are provided. The EPA and Guyana National Bureau of Standards (GNBS) developed Interim Guidelines for Industrial Effluent Discharges into the Environment and these are currently being used by the EPA. These set limits for key parameters for industrial effluent discharges and also considers key water chemistry parameters such as temperature, pH etc. The EPA also adopts the WHO and USEPA standards for surface and potable water when applicable. Draft Water Quality Guidelines have also been developed by the EPA but have not been finalized to date.
Environmental Protection (Noise Management) Regulations 2000	Under these Regulations, operations that emit noise in the execution of various activities such as construction, transport, industry, commerce and any institution are required to apply to the Agency for an environmental authorization. The EPA is responsible for the establishment of standards for permissible noise levels in industry, construction and other areas. The EPA may grant authorization for noise emission unconditionally or subject to conditions and may require environmental audit procedures. The GNBS and the EPA together with other relevant agencies, developed standards for noise emissions into the environment. Residential, Institutional, and Educational daytime and night-time decibel limits are 75 and 60 respectively. Industrial and transportation limits are set at 100 and 80 dB, Commercial at 80 and 65, Construction at 90 and 75, and Recreational at 100 (between 18:00-01:00hrs), and 75 (01:00-08:00hrs). Considering the nature of activities of the project, these Regulations would be important.
Environmental	These Regulations provide for the enforcement against litter offences. It

Protection (Litter Enforcement) Regulations 2013	is an offence under these regulations to (a) place litter in a public place; (b) permit or cause another person to litter a public place or; (c) have litter on private premises that pose a health risk. The fine for an individual found littering in a public place is $50,000, while for body corporate it is $100,000. A fixed penalty of fifteen thousand dollars ($15,000) is offered to offenders who accept liability for the offence committed. Under the Litter Prevention Regulations, the NDCs and RDCs are to provide receptacles in public places. Further, every Council shall make appropriate provision for the prompt, efficient and regular emptying of the contents of the receptacles and for the removal and disposal of those contents.
Environmental Protection (Expanded Polystyrene Ban) Regulations 2016	The EPA in 2016 established a ban on extended polystyrene (styrofoam) food service containers. The Regulations prohibit the importation, manufacture and sale of expanded polystyrene food service products. Persons or businesses that breach these regulations shall be liable upon summary conviction to a fine of no less than $50,000. The EPA currently enforces the importation and manufacture of styrofoam food service containers. It will later in the year enforce the sale as well.

Section 68 of the Act provides for the elaboration of regulations to articulate specific areas of environmental management, and of relevance, are the Regulations on hazardous waste management, water quality, air quality, noise management and environmental authorization which were established under the Environmental Protection Act in 2000. These pollution management regulations were developed to regulate and control the activities of developmental projects during construction and operation. Standards establishing the permissible parameters under these regulations are being developed.[1]

4.2.3 Occupational Safety and Health Act 1997 (NO. 32 OF 1997)

The provisions for registration and regulation of industrial establishments and for occupational safety and health of persons at work are enshrined in the Occupational Safety and Health Act 1997. The Act covers areas such as administration, safety and health, hazardous chemicals, physical and biological agents, notifications of accidents and occupational diseases, offenses, penalties, and procedures.

In keeping with the laws and regulations, a description of the established management procedures to monitor and manage occupational health and safety hazards is critical for this project. The Contractors will need to comply with the requirements of this Act and Regulations in particular as it regards health and safety systems for workers and the use of Personal Protective Equipment (PPE).

[1] For example the *Noise Emission into the Environment Standard*

5.0 Summary of Potential Project Impacts

The potential environmental and social impacts from the Project activities are, for the most part, those related to the planned construction activities under Component 2. It is therefore important to manage the construction activities so as to prevent or reduce impacts on the community and environment, although it is acknowledged that some disruption will be unavoidable.

There are also possible minor impacts to the community as the schools become operational but the anticipated benefits suggest that any possible negative impacts are outweighed by the positive impacts.

The following Table indicates the potential adverse impacts with mitigation and prevention measures; which will be necessary to implement during project duration.

Table 2: Potential Adverse Impacts and Mitigation Measures

Activity	Impact Category	Potential Impact	Mitigation
CONCEPTUALIZATION PHASE			
Design and planning Two (2) Secondary Schools)	Social	Lack of consultation and participation of stakeholders. Lack of information/data in preparing designs to meet the need of the end users.	The PTT will prepare and review the construction design proposal. The MoE and Design Consultants will be responsible to design proper consultation sessions to include all stakeholders for all phases of the Project. It is proposed that all stakeholders will be a part of the design; this includes the National Commission on Disability among many other important agencies.
CONSTRUCTION PHASE			
Construction	Environment	Generation of particulate matter, particularly due to storage of construction materials and operation of cement mixers	See Dust Control Prerequisites Contractor will have to address in C-ESMP
		Increased emission of gases and particulate matter from increased traffic	
		Generation of construction and other waste materials (including hazardous) generated by construction activities	See Waste Management Prerequisites Contractor will have to address in C-ESMP
		Overload of current capacity of	

Activity	Impact Category	Potential Impact	Mitigation
		waste disposal facilities	
		Generation of noise from machinery and construction activities	See Dust Control Prerequisites Contractor will have to address in C-ESMP
		Decreased quality of surface water due to discharge of fuel, engine oil and transmission or hydraulic fluids into surface water	See Hazardous Materials Prerequisites Contractor will have to address in C-ESMP
		Decreased quality of soil due to discharge of fuel, engine oil and transmission or hydraulic fluids	
	Social	Social conflicts arising from presence of construction personnel	See Grievance Mechanism and Resolution of Conflicts Contractor to prepare Code of Conduct for Workers
		Health and Safety Risk to nearby communities due to construction activities	Contractor to address in C-ESMP
		Disruption of utilities	The contractor is responsible for the preservation (and restoration) of all utilities.
		Health and Safety risk to workers and community to construction activities	Contractor to address in C-ESMP
OPERATION PHASE			
Operation	Environment	Improper disposal of laboratory wastes into waste disposal facilities	Include provisions for separate drains or storage areas for liquid and solid laboratory wastes
	Social	Localised Traffic congestion due to school drop off and pick up	Schools are sited away from the main roadway. Will be for short duration and unavoidable.

The table above shows that construction activities have the most potential to create negative impacts. These are minor impacts such as dust, noise, storage and disposal of construction and other waste, utilities disruption, and safety of workers and community. These effects are minor and temporary and measures can be implemented to prevent or minimise all the potential impacts, as is outlined in the table.

The table also shows that there are mitigation measures applicable during design. To avoid community misunderstandings and to enhance acceptance of the facilities, more information is needed by the stakeholders in the design phase. The table above recommends that the MoE and Design Consultants are responsible to design proper consultation sessions to include all the

stakeholders of the project. Stakeholders would include the National Commission on Disability, among other important agencies. In the case of any historic structures, or of any effects upon sites or materials deemed to be of historical or cultural value by the community, consultation should be undertaken with the community to get input on the final design.

Impacts may also occur during operations and must be properly addressed. For example, waste management activities will be implemented to make provisions for the proper disposal of laboratories and specialist rooms required under the secondary education curriculum, in particular correct design of drains so that any potentially hazardous wastes are not discharged into the wastewater disposal systems but instead are collected and managed appropriately. During this phase, localised traffic congestion can also occur during school drop off and pick up. However, the schools are sited away from the main roadways.

6.0 Mitigation and Management Measures – Construction Phase

The construction phase of the project will be implemented in a manner that will ensure impacts to the environment are prevented and minimized, the health and safety of workers and surrounding land users is maintained and the social welfare of all stakeholders is not compromised. As such, in executing the project, the Contractor shall comply with all national regulatory requirements and best practices, and ensure activities are in compliance with the environmental and social safeguards of the World Bank. The Contractor is required to implement the mitigation measures outlined in the Environmental Authorisation from the EPA, the EAMP and in the C-ESMP. Other applicable measures recommended by the Supervisory Consultants or Employer are also to be implemented. In this regard several management and mitigation measures are to be implemented during this phase to ensure compliance, as is outlined below:

- Environmental Personnel
- Contractors' Environmental and Social Management Plan
- Contractors Code of Conduct for Workers
- Monitoring and Reporting
- Grievance Mechanism
- Sustainable Development Initiatives

6.1 Environmental Personnel

The PTT will have as part of its team an Environmental Specialist who will oversee the environmental, social and health and safety aspects of the project. The Environmental Specialist will ensure that the World Bank Environmental Safeguard Policies are adhered to with where applicable, that the contractors comply with the requirements of the Construction Permits to be issued by the EPA, and that the Contractors prepare and implement their Environmental Management Plans. The ES will report to the Project Coordinator. Guidance will also be provided to the PTT by the World Bank's designated Environmental Specialist.

The Contractor will also be required to employ a suitable qualified and experienced personnel as an Environmental, Social, Health and Safety Officer, with the responsibility of ensuring compliance with the environmental, social, health and safety requirements. The responsibilities of this individual will include but not limited to the following:

- prepare the Contractor's Environmental and Social Management Plan;
- conduct training of workers in health, safety and environment requirements;
- ensure compliance with the Construction Permits;
- liaise with the PTT and Supervisory Consultants' Environmental, Health and Safety Personnel on compliance;
- implement the Contractor's Environmental and Social Management Plan;
- monitor the site for compliance with the obligations and ensure corrective actions are implemented;

- address any grievances of stakeholders;
- report on environmental and health and safety compliance; and
- oversee the clean-up and decommissioning of the site on the completion of works.

In addition, the Supervisory Consultants will have to designate a senior member of their team with team with the responsibility of ensuring compliance with the environmental, social, health and safety requirements. This person will be responsible for ensuring day to day compliance onsite.

6.2 Contractors' Environmental and Social Management Plan

The Contractors will be required to prepare a Site Specific Contractor's Environmental and Social Management Plan (C-ESMP) to mitigate issues pertinent to the construction phase of the project. This ESMP is to be submitted to the PTT and Supervisory Consultant within 28 days of contract signature for approval prior to the commencement of works. Once approved, the C-ESMP is expected to be implemented during the construction period, and be updated/revised periodically and updated in a timely manner, to ensure that it contains measures appropriate to the works activities being undertaken. The updated C-ESMP shall be subject to prior approval by the ES. Preparation of the C-ESMP shall be guided by the requirements outlined in the EPA approval for the works, this EAMP, relevant national standards and guidelines including those of the Guyana National Bureau of Standards, and the World Bank Environmental, Health and Safety (EHS) Guidelines. The completed C-ESMP once approved by the PTT will be appended to the Contract. The following should be addressed/included in the C-ESMP:

- Contractor's Work Programme – A brief overview of the Contractor's proposed Work Programme should be provided, including information on expected duration of the works, amount of workers to be onsite, type and quantity of heavy equipment to be onsite, whether workers will be housed onsite or travel daily, etc. This information will be essential in the review process of the C-ESMP.

- HSSE Policy – If the Contractor has a Health Safety, Social and Environmental Policy then this should be included in the Plan.

- Management Structure – The C-ESMP should describe the Contractor's management structure for the project, clearly highlighting the responsibilities for health, safety and environment.

- Solid Waste Management – Measures to manage solid waste generated during construction should be described. It should be noted that the contractors are expected to implement a system to ensure solid waste is management properly. Solid waste expected to be generated includes; plastic bottles, food boxes, packaging materials, etc. Adequate collection receptacles are to be provided onsite and waste should be taken to an approved site for disposal. Disposal sites should be approved by the local authority such as the Neighbourhood Democratic Councils (NDCs) e.g. the Haag Bosh Landfill. No

burning of any type of the wastes generated will be allowed onsite. Workers are to be made aware of the waste management procedures.

- Liquid Waste/Wastewater Management - The Contractor is expected to provide adequate toilet facilities onsite. The number and type of toilets to be provided, whether portable of toilets equipped with septic tanks should be indicated. Provision of water for the toilets and maintenance of the toilets should also be described, since toilets are expected to be well maintained. If portable toilets are to be utilized these will have to be emptied on a regular basis.

- Hazardous Waste Management - The construction works are not expected to generate significant hazardous waste. Hazardous waste generation may be limited to the servicing of heavy equipment onsite and should include waste oil, oil filters and oily rags. If hazardous waste is generated onsite, the waste should be carefully collected and removed from site and disposed of in an approved manner. A register of hazardous waste generated should be kept onsite by the Contractor.

- Construction Waste Management – Construction waste will be generated throughout the construction process. This waste should not be allowed to accumulate in significant quantity onsite for extended period (not more than 30 days) and should be consolidated in a designated area. Reusable construction waste should be separated for reuse and the remainder dispose of at a site approved by the NDC.

- Erosion and Sedimentation Control – The C-ESMP should describe measures to be implemented by the Contractor to prevent erosion onsite, and sedimentation of nearby drains. Stockpiles of construction materials should be placed away from the drainage systems. Nearby drains should also be regularly checked for accumulation of construction materials and if found to be present the materials should be immediately removed.

- Hazardous Materials Management – The Plan should state if hazardous materials will be kept onsite or taken to the site as required. This would include fuel and lubricants. If these materials are to be kept onsite then the C-ESMP should describe how this will be done. Significant quantity of fuel should be stored within a contained impervious area and workers should be made aware of the handling practices to avoid spills.

- Dust Control - There is the potential for dust nuisance to occur which can affect workers and surrounding residents. Dust can be generated from material stockpiles and cement mixing. As such, the Contractor must include in the C-ESMP measures to prevent dust nuisance from occurring. Measures such minimizing the height of sand stockpiles, covering of stockpiles, covering of trucks transporting materials to the sites and providing dust mask to workers should be considered.

- Noise Prevention – Construction activities can generate noise at levels which can affect workers and nearby residents, and in this regard, measures should be outlined to noise is within the prescribed limit. Noise levels should not exceed 90 dB during the day and 75 dB at nights. Night works should be avoided and must be approved in advance by the Supervisory Consultants. The contractor shall ensure that equipment is in good working order with manufacturer supplied noise suppression (mufflers etc.) systems functioning and should make reasonable efforts not to schedule heavy noise activities for weekends or in the late afternoon and keep the noisy activities for normal working hours (between 8 am and 5 pm). However, at Good Hope it should be ensured that noise does not affect the Nursery School which is in close proximity to that site. Where noise is likely to pose an impact to the normal environmental surrounding the school compound and the community, the contractor shall inform the Supervisory Consultants and nearby residents should be informed. Workers operation in areas where decibel levels reaches more than 85 decibels should use hearing protection.

- Workers Health and Safety – Construction activities pose several risks to workers health and safety. It is therefore essential that the Contractor develop and implement a system to ensure workers health and safety are not compromised. This should be detailed in the C-ESMP. It should describe management commitment to safety and employee involvement and should include an analysis of the worksite in terms of safety, the potential hazards and prevention and control measures and training for employees. Measures which should be considered by the Contractor should include the provision and enforcing the use of safety gears by workers, training of workers, identify hazardous areas, etc. All safety activities must be documented all illness/injury and exposure should be documented on an Incident Form.

- Community Safety – Measures should be implemented to ensure that the safety of the nearby community is not compromised. These measures should also be documented in the C-ESMP. Measures which should be considered by the Contractor include restricting access to the construction zone securing/barricading area, installing the necessary warning signs, ensuring the free flow of traffic around the work site, careful planning when large trucks are accessing the site to allow for minimal disruption and at no time should there be trucks or other construction equipment left standing on the road way or shoulders.

- Contingency and Emergency Response Plan – A Contingency and Emergency Response Plan must be included in the C-ESMP to address emergencies relevant to the project. The possible emergencies are:
    a. Accidents – can occur which can result in injuries to workers. At least one First Aid Kit should be provided onsite and arrangements should be in place to transfer serious cases to medical institutions.
    b. Fires - Fire extinguishers must be placed at the working sites and training should be provided on usage.

c. Fuel/Chemical Spills - If there is a large spill or release of solvents, fuels, or other kind of hazardous material, then the EPA should be notified and other measures taken. A spill response kit should be provided and kept onsite and workers should be trained to respond to spills through mock spills exercises.
d. Flooding - The contractor must have a plan to address floods during the rainy period and maintain the works on the timeline agreed and reduced environmental and social impact.

The Contingency and Emergency Response Plan should also address training of employees, assembly point in case of emergency, emergency contacts, communications, responsible personnel, response procedures and incident reporting.

- Chance Find Procedure – This should be included to cater for if during excavations archaeological pieces are found. The procedures to be followed should be outlined. The works must be stopped and the Contractor Environmental Personnel and the ES should be informed. The National Trust should be informed and should recommend when works can proceed.

- Training - Prior to the commencement of works the Contractor shall conduct an Induction Training for all workers. The training should be conducted by the Contractor's Environmental Personnel and covers the environmental and social requirements of the project, including the role of workers in pollution control, health and safety and emergency response. Thereafter, all new workers should be adequately briefed on the requirements prior to commencing work onsite. If necessary refresher training may be conducted. Training to be conducted should be described in the C-ESMP.

- Site Closure, Decommissioning and Restoration - At the conclusion of works the site will have to be cleaned up and all waste removed and all temporary structures belonging to the Contractor dismantled and also removed. The measures to be employed by the Contractor during this process should be described in the C-ESMP.

- Grievances – A Grievance Mechanism is included in the EAMP (Section 6.5). However, since the Contractor will be responsible for addressing grievances, including implementation of corrective actions, measures to be employed by the Contractor in dealing with grievance should be outlined in the C-ESMP.

- Monitoring and Reporting – The C-ESMP should outlined how monitoring will be done by the Contractor's Environmental Personnel, including frequency, areas to be monitored, etc.

  The Contractor is required to report on environmental compliance at the Monthly Progress Meetings and in the Monthly Progress Reports. The Contractor is also required to report on any environmental or health and safety incidents which might occur. Further, the Contractor will be responsible to prepare and submit any report requested

by the EPA in the Environmental Authorisation. The Contractor is expected to submit a report on environmental, social, health and safety performance at least on a monthly basis. The report should include but not limited to the following:

- Environmental incidents or non-compliances observed and corrective actions taken with regards to contract requirements, including waste management, contamination, noise and dust control, traffic management, etc.;
- Health and safety incidents, accidents, injuries and all fatalities that require treatment and actions taken to improve conditions. Information on number of workers, work hours, PPE provided and usage, and worker violations and follow-up actions taken (if any);
- C-ESMP implementation progress, including implementation of the management and mitigation measures outlined in the plan, effectiveness of the measures being implemented, any emerging ESHS issue and any adjustments required (if any); and
- Grievances by workers and community, including grievances received, how resolved, those unresolved and plan for resolving these.

In addition to the monthly report, the Contractor shall also provide immediate notification to the Project Manager of incidents in the following categories. Full details of such incidents shall be provided to the Project Manager within the timeframe agreed with the Project Manager.

- confirmed or likely violation of any Environmental Permit Conditions or any relevant legislation;
- any fatality or serious (lost time) injury;
- significant adverse effects or damage to private property, e.g. vehicle accident;
- damage to public utilities; or
- any allegation of sexual harassment or sexual misbehavior, child abuse, defilement, or other violations involving children.

6.3 Contractors Code of Conduct for Workers

As a requirement of the World Bank the Contractor is required to prepare a Code of Conduct for its workers. This Code of Conduct is to guide workers behavior onsite during the conduct of works. The Code should be written in simple language and presented to workers. Once understood and accepted Code should be signed off by all workers onsite. The Code of Conduct can be included as part of the C-ESMP or submitted separately to the PTT. If it will be submitted separately then this should be done within 28 days of the signing of the Contract. Areas to be addressed in the Code of Conduct include:

- Compliance with applicable laws, rules, and regulations.

- Compliance with applicable health and safety requirements (including wearing prescribed personal protective equipment, preventing avoidable accidents and a duty to report conditions or practices that pose a safety hazard or threaten the environment).
- The use of illegal substances.
- Non-Discrimination (for example on the basis of family status, ethnicity, race, gender, religion, language, marital status, birth, age, disability, or political conviction).
- Interactions with community members (for example to convey an attitude of respect and non-discrimination).
- Sexual harassment (for example to prohibit use of language or behavior, in particular towards women or children, that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate).
- Violence or exploitation (for example the prohibition of the exchange of money, employment, goods, or services for sex, including sexual favors or other forms of humiliating, degrading or exploitative behavior).
- Protection of children (including prohibitions against abuse, defilement, or otherwise unacceptable behavior with children, limiting interactions with children, and ensuring their safety in the project area).
- Sanitation requirements (for example, to ensure workers use specified sanitary facilities provided by their employer and not open areas).
- Avoidance of conflicts of interest (such that benefits, contracts, or employment, or any sort of preferential treatment or favours, are not provided to any person with whom there is a financial, family, or personal connection).
- Respecting reasonable work instructions (including regarding environmental and social norms).
- Protection and proper use of property (for example, to prohibit theft, carelessness or waste).
- Duty to report violations of the Code.
- Non retaliation against workers who report violations of the Code, if that report is made in good faith.

6.4 Environmental Monitoring

To ensure that the management and mitigation measures are effective a multi-layer monitoring structure will be implemented. Environmental monitoring will be implemented throughout the construction phase by the Contractor, Supervisory Consultant and the PTT.

PTT has in place an Environmental Specialist to oversee the environmental, social, health and safety aspects of the project. The Environmental Specialist will ensure that the World Bank Environmental Safeguard Policies are adhered to with where applicable and that the Contractors comply with the requirements of the Construction Permits and implement the C-ESMP. The ES will visit the sites at least once per week to check on the Contractors environmental, social, health and safety performance and compliance. The Environmental Specialist will be responsible for supervising adequate monitoring by the contractors. A

monthly compliance report will be prepared by the ES, documenting the status of compliance, areas of non-compliances, corrective actions recommended and other improvements required.

The Supervisory Consultants will also monitor overall works performance and will oversee the environmental, social, health and safety aspects of the project on a day to day basis. A senior member of the Supervisory Consultants team will be designated with this responsibility.

The Contractor is required to monitor the implementation of the mitigation measures to ensure that the works do not negatively affect the environment and that the health and safety of workers and nearby land users are not compromised, and that activities are being carried out in accordance with the C-ESMP. Monitoring is the responsibility of the Contractor's Environmental Personnel with support from other senior members of staff. Once non-compliances are detected corrective actions are to be implemented.

Prior to the commencement of works, baseline monitoring shall be conducted to establish a baseline of conditions before the works begins and track any changes that could be attributed to the project, in the event of complaints or issues arising in the construction and operation phases. The Contractor shall submit a report, to the Supervisory Consultants, with all findings inclusive of drawings, photographs highlighting areas of critical areas which may negatively impact the project. This document shall be submitted within 28 days from contract signature and before any work commences.

During the construction phase, the Contractor will be responsible for continuously monitoring environmental impacts at the construction site. Table 3 provides some guidance on the areas to be monitored.

Table 3: Construction Period Monitoring Plan

Impact	Monitoring Parameter	Sampling Frequency	Responsible	Monitoring Location
Generation of particulate matter, particularly due to storage of materials and operation of cement mixers	Ease of visibility Complaints received Number of trucks arriving covered	Weekly Weekly	Contractor Environmental Specialist	All Sites
Increased generation of emission of gases and particulate matter from increased traffic	Frequency of maintenance of vehicles	Monthly	Contractor Environmental Specialist	All Sites
Generation of construction and other waste materials	Quantity and type of waste Waste collection,	Weekly	Contractor	All sites –workers' area, designated

Impact	Monitoring Parameter	Sampling Frequency	Responsible	Monitoring Location
generated by construction activities Overload of current capacity of waste disposal facilities	storage and disposal method/s Littering onsite	Weekly	Environmental Specialist	waste disposal area
Generation of noise from machinery and construction activities	Level of decibels	Weekly	Contractor Environmental Specialist	All sites, workers' area, project site boundary
Reduction in aesthetics due to construction and storage of materials	Number of sites with waste materials left unattended by contractor	Monthly	Contractor Environmental Specialist	All sites
Decreased quality of surface water due to discharge of sediments, fuel, and engine oil into surface water	Visual observation of contaminants	Monthly	Contractor Environmental Specialist	At discharge points Surrounding drains
Decreased quality of soil due to accidental discharge of fuel, engine oil and other hazardous materials	Visual observation of contaminants	Monthly	Contractor Environmental Specialist	At fuel, waste oil storage sites, oil changing areas and areas that show visible signs of contamination
Disruption of utilities	Frequency and type of utilities disrupted	Monthly	Contractor Environmental Specialist	All sites
Health and Safety risk to workers arising from construction	Number of accidents due to construction works	Weekly	Contractor Environmental Specialist	All sites
Community Health and Safety	Number of accidents due to construction works	Weekly	Contractor Environmental Specialist	All sites
Social conflicts arising from presence of construction personnel on site	Number of reported complaints/grievances Compliance with Code of Conduct	Monthly	Contractor Environmental Specialist	All sites

6.5 Grievance Mechanism

The safeguards policies of the World Bank ensure the establishment of a grievance mechanism during project implementation which aims to offer a clear set of opportunities for affected people or any other interested stakeholder to post a claim, request information and have a formal mechanism to communicate with project developers and supervisors. A project-level grievance mechanism for affected communities is a process for receiving, evaluating, and addressing project-related grievances from affected communities at the level of the company, or project.

For the works to be conducted grievances may arise, since, given the nature of the project, it is expected that conflicts and other issues such as nuisances are possible. All stakeholders who believe aspects of the project will have a detrimental impact on the community, their day to day activities, the environment, or on their quality of life should be able to communicate their grievances. These grievances should be documented, analysed and responded to efficiently. Stakeholders may also submit comments and suggestions that they feel will increase the benefits of the project and decrease the impact they face.

It is expected the any grievances arising from the construction activities will be localized. As such, to ensure that the process is effective, a site level mechanism to address grievances is recommended.

The grievance mechanism will be coordinated by the Supervisory Consultants Project Manager, who will to act as a point of contact to receive complaints and work to address all grievances in a timely, effective and satisfactory manner, and to foster positive engagement when issues arise.

Information on the grievance mechanism, including contact person and contact information should be shared with the communities via notices. These can be posted at the site and at public places within the community.

Once any grievance resulting from the execution of works is received the following actions should be undertaken:

- The Supervisory Consultant Project Manager, along with the Contractors Project Manager/Environmental Personnel, should investigate reported grievances to determine the validity of a complaint and cause for the grievance;
- It should then be determined whether grievance can be resolved by the Project Team or whether outside authorities with regulatory or other responsibilities and relevant skills are to be consulted;
- Or it should be determined if corrective action are to be taken by the Contractor and what those actions are;

- The Supervisory Consultant Project Manager should prepare grievance report, including supporting materials such as photographs. If necessary, a clear list of tasks and outcomes expected shall be developed;
- If grievance is the fault of the Contractor, then the Contractor is to implement corrective action immediately.
- The Supervisory Consultant Project Manager, along with the Contractors Project Manager/Environmental Personnel should conduct follow-up inspection to monitor the situation and determine whether problem is likely to recur and put measures in place to prevent recurrence.

A register of grievances received should be maintained by the Supervisory Consultants and should include information such as date of complaint, by whom, nature of grievance, date investigated and by whom, validity and corrective action required, timeline for implementation of corrective action, and if grievance was satisfactorily addressed or not. A monthly review on the status of grievances received/addressed should be conducted by the Supervisory Consultants.

Since the Contractor will be responsible for addressing grievances, including implementation of corrective actions, measures to be employed by the contractor in dealing with grievance should be outlined in the C-ESMP.

6.6 Sustainable Development

The project will try to incorporate energy efficient equipment and request the purchase and use of sustainable materials (certified woods, use of low carbon emission equipment).

The project will request to contractors to increase opportunities to people living close to the project sites in order to increase social benefits by targeting recruitment of local people. Also, the World Bank seeks opportunities to women in developing countries and where possible contracts must make any efforts to provide opportunities for women as part of the personnel or subcontractors.

6.7 Planning and Preparation for Construction

6.7.1 Roles and Responsibilities

The roles and responsibilities of the various actors in the Project are described below.

<u>Project Technical Team (PTT)</u>
The PTT will be located in the Ministry of Education (MoE). The Project Coordinator of the PTT will provide support and the necessary equipment to the Environmental Specialist appointed by Project to facilitate his performance as defined.

<u>Supervising Consultant (SC)</u>

The SC for the works will be appointed by the MoE will coordinate closely with ES to ensure that contractors follow and comply with the EAMP and all other project HSSE requirements. The PTT will ensure that these requirements are clearly communicated in all tender documents. The SC will monitor the Contractor's HSSE performance against the requirements of the law, the EAMP, the C-ESMP and the Environmental Authorisation.

Project Manager (PM)

The PM for the works will be employed with the Supervisory Consultant. He/She will be responsible for the day to day management of the site and construction activities. The PM will liaise directly with the Contractor's Environmental Personnel and the ES. The PM will be responsible for ensuring that the EAMP is adhered to and that all specified monitoring is carried out by the Contractor in accordance with the EAMP and the C-ESMP.

Project Environmental Specialist (ES)

A suitable qualified individual to be identified by either the MoE or the PTT, with no-objection by WB. The Terms of Reference of the proposed appointment will be agreed upon and will include monitoring, supervision, oversight, and reporting of environmental aspects of the civil works, and such duties could possibly be shared with other agencies or could include other duties as needed.

Project Engineer (PE)

A member of the PTT who will perform and report on scheduled and unscheduled observations, reviews and performance evaluations and make recommendations for modification and or improvements as may be required.

Contractor's HSSE Personnel

The Contractor's HSSE Personnel should be fully empowered to support the Contractor in the compliance with this EAMP developed for the mitigation and prevention of social and environmental impacts associated with the construction works.

The PTT is to ensure that all tender documents clearly communicate this and all HSSE requirements. The experience and qualifications of the designated HSSE Personnel are to be evaluated and scored as part of the technical evaluation of the bids.

6.7.2 Site Selection Process

The PTT is to establish effective linkages with the entities responsible for all aspects of national planning and development to determine their needs and these are to be integrated into the design development process.

The Terms of Reference of the Design Consultants are to incorporate specific deliverables that address all site-specific issues.

6.7.3 The Design Brief

The design brief is to be updated to be reflective of modern, sustainable, cost effective school design and operation.

The MoE will establish a formalized design development process with defined review and sign-off stages that are tied to the payment of the design consultant's fees.

6.7.4 Stakeholder Consultation

Stakeholder consultation is essential and needs to be integrated into the process. The MoE / PTT is to formalize its internal and external stakeholder consultative process and to incorporate the services of the project design consultants into the process.

6.7.5 Statutory & Regulatory Approvals

The PTT through the Design Consultant will contact the EPA and other local or national agencies and authorities to define and coordinate any environmental permit and approval required for the construction works. The contractor will be required to fulfill all necessary approvals (environmental, construction, noise, etc) to undertake the construction works described in the bidding document and established in the contract.

6.7.6 The Contractor

The Contractor will need to submit a project specific EMP/C-ESMP and will be responsible for the implementation of all plans and actions described in this EAMP, in addition to other actions defined by the PTT to ensure adequate environmental and social management during the construction works.

The Contractor shall verify, adapt, and optimize all the mitigation measures included in this EAMP and prepare their C-ESMP

7.0 Mitigation and Management Measures – Operation Phase

During the operation phase, monthly monitoring of some critical parameters will be necessary, and will be the responsibility of the MoE Environmental Personnel.

During the operation of the schools the Ministry of Education Department in the locality will ensure that the school complies with all traffic regulations governing the location.

The environmental impacts that will be monitored include: generation of solid waste and hazardous waste, water quality, disposal of chemicals from the laboratories, and other aspects as necessary.

Pesticides may be used in incidental quantities for termite treatments of foundations and ceilings, or for vector control during school operations. For such use, only licensed, authorized pest control specialists may provide these services. Guidelines for the proper selection, application, storage, handling, transport and disposal of pesticides should be developed in accordance with good practice and responsible management by the MoE Environmental Personnel. No pesticides or any agrochemical include in the List 1a, 1b and II of the WHO (Annex 2) will be used for any activity supported by Project.

The table below provides some guidance on the operations period monitoring plan. Other parameters will be included as necessary during operation of the new equipment and as research activities are developed.

Table 4: Operations Period Monitoring Plan

Impact	Monitoring Parameter	Sampling Frequency	Responsible	Monitoring Location
Increased generation of solid waste from the packaging of laboratory equipment	Quantity and type of packaging Waste collection, storage and disposal methods	Monthly	Environmental Personnel - MoE	All schools
Purchase of new equipment for labs and classrooms	Number of training and capacity building activities to use the new equipment	Monthly	Environmental Personnel - MoE Lab technicians	All schools
Generation of hazardous waste from use of new lab equipment	Collection, storage and disposal of hazardous waste according to new Waste Management Manual	Monthly	Environmental Personnel - MoE	All schools
Possibility for theft	Number of theft incidents	Annually	Environmental Personnel - MoE	All intervened sites
Difficulty to adopt to new 'environment' and to concentrate	Number of duration of disruptions to use of classrooms	Weekly	Environmental Personnel - MoE	All sites