Government of Saint Lucia

Department of Economic Development

Consulting Services for Designs for Riverbank Stabilization Works along the Marchand/Entrepot River

ESMP Report(September 2022)

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ABBREVIATIONS

Acronym	Meaning
BoQ	Bill of Quantities
EHS	Environmental, Health and Social
ESS	Environmental and Social Safeguards
ESIA	Environmental and Social Impact Assessment
EWMP	Extreme Weather Management Plan
ESMP	Environmental and Social Management Plan
FDL	FDL Consult Inc
HSMP	Health and Safety Management Plan
ToR	Terms of Reference
WB	World Bank
WMP	Waste Management Plan

1 INTRODUCTION

1.1 Overview

The communities of Marchand and Entrepot border one another and are located in Castries to the south-east of the city. The Marchand-Entrepot River is a tributary of the Castries River which traverses these communities on its way to the sea through the city of Castries. The Marchand-Entrepot riverbank stabilisation works aim to address soil erosion which has created bank slope instability along the banks of this tributary, increasing the risk of land slippage along a densely developed area with existing structures lining the riverbank.

The riverbank stabilization works along will introduce a retaining wall structure along the banks of the tributary to mitigate the soil erosion and risk of land slippage in the future. In addition, the construction of the retaining structure will ensure the long-term stability of the existing buildings constructed along the riverbank.

This Environmental and Social Impact Assessment is a requirement and compliant deliverable of the ToR section 5.11 (b) and (c) for Design and Supervision of Riverbank Stabilization Works along the Marchand-Entrepot River. The project is in the Marchand-Entrepot community and comprises the construction of a combined reinforced concrete and gabion basket retaining wall to provide slope stabilization along a section of the community over a distance of 40 meters.

1.2 Objectives of the ESMP

The objectives of this Environmental and Social Management Plan (ESMP) are to:

i. identify the potential adverse environmental and social impacts of the proposed project

ii. identify measures to mitigate adverse environmental and social impacts from project activities

iii. identify roles and responsibilities for the implementation of mitigation measures by the Client, Consultant and Contractor

iv. establish procedures for implementing mitigation measures captured within an environmental management plan and

v. establish clear procedures for the verification, documentation, and reporting of the implementation of the ESMP,

vi. ensure compliance with legal requirements.

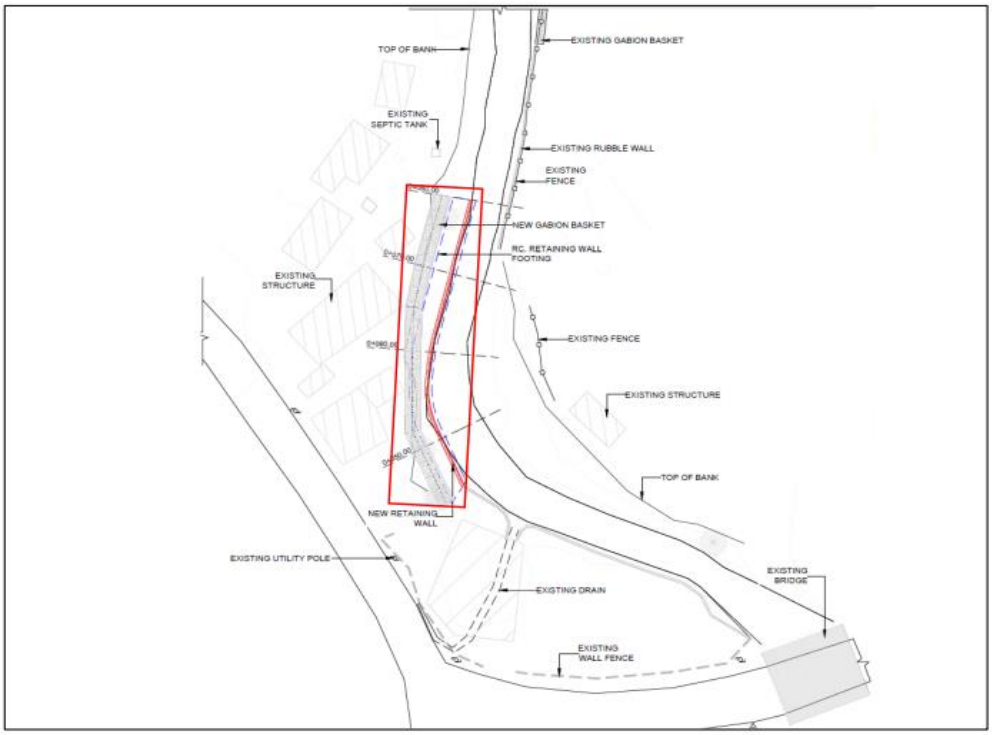
1.3 The Site

The slope stabilization works will be constructed along a section of the western bank of the Marchand/Entrepot river - approximately 40 meters long. The works span a section of the river tributary where several existing residential structures are sited. **Figure 1-1** shows the location and extent of the works in relation to the river and section of the community situated along the Marchand Road. **Figure 1-2** shows the footprint of the proposed retaining wall structure along the riverbank.

Figure 1-1: Google Aerial Image showing location of proposed Retaining Structures

The project site runs proximal to the Marchand main road. Several residential buildings exist along the section that form part of the works. The Marchand Combined School is situated approximately 30 metres downstream. **Figure 1-2** shows the footprint of the proposed retaining wall structure along the riverbank.

Figure 1-2: Project Footprint



There are no water catchment (intake) structures located downstream of the project site. No sensitive ecosystems have been identified in the vicinity of the project footprint during the site investigation.

1.4 Legal Framework

Implementation of the Environmental and Social Management Plan will take cognisance of the following laws and regulations:

- Physical Planning and Development Act (2005)
- Public Health Act (1978)
- Employees Health and Safety Act (1985)
- Solid Waste Management Act 2004
- Forest and Water Conservation Act (1983)
- Motor Vehicle and Road Traffic Act (2003)

- Disaster Management Act (2006)

1.5 Roles and Responsibilities

The success of the project from an environmental and social context relies on the collaboration of all parties involved. **Table 1-1** identifies the roles and responsibilities of the parties involved with project oversight, implementation and monitoring of mitigation measures related to the environmental and social impacts identified.

Table 1-1: Project Roles and Responsibilities

Position	Agency/ Firm	Role	Task/Responsibility
Client's Civil Works Manager	Project Coordination Unit	Employer's representative responsible for supervision oversight	• Acting as the main point of contact and conduit for the contractor and oversight agencies regarding compliance with mitigation measures; • Verifying compliance with mitigation measures through auditing and field surveying; • Providing direction and guidance to contractors regarding mitigation measures based on the interpretation of the ESMP procedures; • Issue of Non-compliance notices to contractors if they do not comply with the mitigation measures set out within the ESMP or local or national environmental legislation; • Support and provide advice to the contractor in the event of an emergency environmental event to prevent further environmental impact; and for • Oversee any rehabilitation works following an environmental incident.
Client's Project Manager/EHS Expert	FDL Consult Inc.	Design of the works in accordance with the Terms of Reference and established design codes and standards.	
Environmental and Social Safeguard Officers	Project Coordination Unit (PCU)	Interaction with local community on behalf of the Client.	• Acting as the main point of contact for residents and community members if they have any grievances with the project. • Act as the main conduit between the contractor and the residents/community members to resolve any grievances related to project activities. • Recording and verifying the implementation of socio-economic mitigation measures.
Contractor's EHS Officer	Main Contractor	Construction of the new retaining structures in	• Acting as the main point of contact for the EHS Expert and conduit for the contractor and oversight agencies regarding compliance with

Position	Agency/ Firm	Role	Task/Responsibility
		accordance with the contract documents.	mitigation measures. • Ensuring that all personnel (including sub-contractors) are inducted and receive environmental, health and safety training prior to commencing work on the project site. • Undertaking inspections of the active work areas throughout the workday and recording findings through a daily record sheet to be supported by photographic evidence where appropriate. • Compiling reports and maintaining an EHS file which will be updated daily and be available for review by the EHS Expert upon request. • Preparing an emergency plan for dealing with fuel spills. • Verifying compliance with mitigation measures through auditing and field checks. • Providing direction and guidance to Contractors regarding mitigation measures based on the interpretation of the ESMP procedures • Issue of non-compliance notices to subcontractors when required • Support and provide advice to the contractor in the event of emergency environmental incidents to prevent further environmental impact. • Supervise any rehabilitation works following an environmental incident.

1.6 Potential Environmental and Social Impacts

The likely impacts from the screening process are:

- **Generated Dust** – There is a potential that construction and haulage works will result in both dust and exhaust emissions, which may cause a deterioration in the ambient air quality and impact the nearby residents, businesses and ecology;
- **Noise** – It is likely that some construction activities will result in an increase in the background noise levels that could impact the local residents, businesses and ecology;
- **Vibration** – Excavation as well as placement and haulage of materials and construction activities could increase the vibration causing damage to buildings and disturbing residents, businesses and ecology;
- **Traffic** – The increased vehicle movements may cause delays in the flow of regular traffic and damage to the road surface and structure;
- **Surface Water Pollution** – There is a potential that the activities associated with the construction could cause pollution to the nearby rivers and coastal waters;
- **Sewerage Treatment** – The staff and construction workers will require suitable hygiene facilities which will need to be managed and waste disposed of appropriately;
- **Construction Waste** –construction materials and domestic waste that would be generated during the construction phases will need to be stored and disposed of appropriately;
- **Soil Erosion and Sedimentation** – Any construction works have potential to alter the local hydrology due to soil displacement.
- **Public Safety** – Due to proximity of school facilities, construction traffic including heavy equipment throughout the construction period increases the risk of accidents and exposure to dust and noise.

- **Social Impacts** – There is a potential to disrupt the operations of an adjacent car wash as well as temporarily disturb the functionality of the backyard of adjacent residencies.
- **Occupational Health & Safety** – There is a potential that the health & safety of the construction workers could be impacted during the works.
- **Biodiversity** - No protected species were identified during the environmental screening of the site and are therefore unlikely to be impacted by the site clearance and preparation works.

2 ENVIRONMENTAL AND SOCIAL BASELINE

The Marchand and Entrepot communities are densely populated areas which include a combination of residential, commercial, and recreational zoning. Within proximity to the site are the Marchand Combined and Entrepot Secondary Schools;both situated away from the project footprint.

The river channel was heavily vegetated during the site reconnaissance. However, no major obstructions or limitations to the implementation of the Works were identified. The retaining wall construction will require some site clearance, which likely to catalyse erosion with consequential siltation downstream.

Along the project boundary, several residential buildings exist as well as a small car wash. The existing land slippage currently extends along the full extent of the car wash. Therefore, it is anticipated that a section of the car wash may be rendered temporarily non-functional during the construction period. Under the social safeguards, income support may have to be considered for the car wash.

Given that all properties existing along the project boundary are accessed from the main road, it is not expected that the project will hinder access to any of these properties. However, it will be necessary for the contractor to erect hoardings and safety barriers to restrict access to the site from the main road and adjacent buildings.

An existing electrical utility pole was observed along the periphery of the site which may be affected by the earthwork operation for the retaining wall construction. It may be necessary to engage LUCELEC regarding relocation of this pole to mitigate potential risks associated with excavation activities.

It is envisaged that the project will provide some measure of short-term employment for community members. The implementation of the project will carefully consider all relevant social and environmental risk factors and benefits with the potential to impact the community. Further, it is anticipated that the project will generate some measure of income for small shops and or canteens within proximity to the project.

The construction activity is anticipated to create various short – term environmental impacts, such as riverbed disturbances, as well as social impacts such as noise and dust nuisances and disruptions to traffic. Once the ESMP is adequately implemented the short-term impact arising from the construction of the retaining wall will be sufficiently mitigated.

3 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Implementation of this Environmental and Social Management Plan involves:

i. identification of critical work activities, the safety and environmental implications of these activities and ways to mitigate any negative impact which they may have;

ii. regular collaboration between the Contractor and the monitoring team; and

iii. continual review of the Environmental and Social Management Plan to adjust to changes in the site conditions.

The impact on the natural and social environment due to the implementation of this project will be continually assessed with timeous mitigation measures to arrest nascent impacts.

3.1 Health and Safety

Safety on the site will be the collective responsibility of all parties – management, employees, and the public as follows:

i. Personal safety equipment must be worn as prescribed for each job, safety glasses for eye if welding is to occur, hard hats, gloves, and safety shoes.

ii. The unlawful use of any illegal or controlled substance, and abuse of prescribed drugs, is prohibited in the workplace

i. All employees shall abide by the rules of this policy and should notify the employer in writing of his/her conviction for a violation within 5 days after such conviction.

ii. Employees shall inform the supervisor if he/she is taking strong prescription drugs that make them drowsy and/or warn against driving or using machinery.

iii. Employees shall maintain a clean job site, and their working area free from rubbish, debris, and clutter.

The contractor shall employ a trained EHS Officer who shall assume responsibility and ensure that the guidelines/checklists are adhered to safeguard all personnel and the environment.

3.1.1 In the event of Emergencies: Fire, Medical, Environmental:

The Contractor's EHS Officer shall:

i. assume responsibility and ensure that all guidelines/checklists provided are adhered to for the safety of all personnel and the environment.

ii. designate a safe assembly point for workers in the event of a hazard occurring.

iii. maintain a First Aid Kit on site to provide First Aid and medical attention.

iv. immediately report all illnesses and injuries to the contractor's emergency personnel and, where necessary, to the nearest emergency and/or medical centre and the Project Manager.

Only qualified personnel shall provide emergency services and medical transportation.

3.1.2 Worker Sanitation

Sanitation facilities shall be provided to site workers. All sanitary waste generated because of project activities shall be managed in a manner approved by the Project Manager. The contractor shall provide a site sanitation plan for approval and implementation prior to the commencement of site activities.

3.1.3 Materials

i. Materials shall be stored, handled, transported, and used in accordance with manufacturer's guidelines and established industry standards (occupational health and safety).

ii. The contractor shall provide complete Material Data Safety Sheets for all materials used on the project.

The use of containment for spill intervention shall be implemented when applicable.

3.2 Project Implementation Phases

In the context of this ESMP, the impacts are grouped into three phases:

Pre-Construction - The period between the contractor taking possession of the project site and the start of actual construction. During this time, the contractor undertakes establishment of site facilities, surveys and setting out.

Construction and Demobilisation - The period when excavation and physical construction takes place including the operation of heavy equipment for delivering and installing the pipeline components. The ESMP will highlight the potential impacts and propose mitigation measures for the following construction activities associated with the Works. Phased demobilisation of such heavy equipment will take place upon completion of the Works.

Post-Construction/Operation - The period between the completion of construction works (Taking-Over) and the end of the Defects Notification Period, during which the Contractor remedies any defect manifested in the Works and completes outstanding Work.

The construction ESMP is intended to mitigate the impacts of the related activities associated with the construction of the retaining wall structures, which will include but not be limited to:

- Surveying and setting out
- Stockpiling of materials (aggregates)
- Excavation for retaining wall foundation
- Concrete placement for retaining wall
- Operation of equipment for constructing the works
- Demobilisation and clean-up

3.3 Impact and Mitigation Measures

The ESMP will aim to identify the impacts with recommended mitigation measures to address the following environmental issues:

- Air quality
- Noise and vibration
- Vehicular and pedestrian traffic
- Surface water pollution
- Soil erosion and sedimentation
- Natural hazards
- Occupational health and safety
- Construction waste, solid waste, and sewerage
- Social impacts
- Community health and safety

Table ESMP 3-1 - Environmental Mitigation and Management Measures – Air Quality

Potential Impact(s)	Activities	Mitigation Approach	Mitigation Measures	Implementation Responsibility	Project Phase
❖ **Air Quality**	• General site preparation works; • Transportation and hauling of materials on site; • Storing and stockpiling of materials; • Construction of retaining structures; • Earthworks; • Construction of culverts; • Construction of rock revetments and; • Back-end tipping	Dust Management	Construction activities, including excavation activity, use of various types of materials, plant, and equipment, may impact the air quality of the immediate and surrounding environment. Mitigation measures: • Use of dust suppression measures, including wetting and regular cleaning of the site • Use of debris sheeting and hoarding to prevent the spread of dust • Ensure that material stockpiles are suitably located from sensitive receptors • Use storage bays to contain stockpiles where possible • Establish designated routes for site traffic • Establish and enforce speed limits on site • Use dust extraction or water spray attachments on cutters and saws • Monitor and log routine checks of dust on and off site • Communicate with site neighbours if certain activities are expected to generate excessive dust • Avoid burning materials on site	• Contractor	• During Construction

Potential Impact(s)	Activities	Mitigation Approach	Mitigation Measures	Implementation Responsibility	Project Phase
❖ **Air Quality**	• Transportation and hauling material to site • Use of generators and plant on site	Construction Emissions	Exhaust emissions from vehicles, generators and plant may impact the air quality and result in loss of amenity. Measures should include: • Use modern plant, equipment, and generators • Ensure that vehicles are served regularly and • Turn off plant and equipment when not in use and or avoid idling	• Contractor	• During Construction
❖ **Worker Health and Safety** ❖ **Community Health and Safety**	• General site operations and • Transportation and hauling of materials to site	Odour and Noxious Gas	The contractor will be responsible for managing risks to workers and local communities from potentially harmful vehicle emissions and dust generation during the transportation and site-based operations: • Provide toolbox talks on the impacts of dust and reduced air quality • Provide workers with appropriate PPE • Monitor and log routine checks of dust on and off-site • Communicate with site neighbours if certain activities will cause excessive dust levels • Ensure that construction waste is collected on a regular basis and • Avoid burning materials on site	• Contractor	• Pre-Construction • During Construction

Table ESMP 3-2 - Environmental Mitigation and Management Measures – Noise and Vibration

Potential Impact(s)	Activities	Mitigation Approach	Mitigation Measures	Implementation Responsibility	Project Phase
❖ **Noise and Vibration**	• General site preparation works; • Transportation and hauling of materials on site; • Storing and stockpiling of materials; • Construction of retaining structures; • Earthworks; • Back-end tipping • Weekend or night-time working	Noise Abatement	Construction noise and the associated effects shall be reduced or minimised to the greatest extent as reasonably practicable by implementing the following procedures through the preparation of a Noise Management Plan which shall aim to: • Control noise at the source • Restrict working hours to daytime only (8:00 to 18:00) • Restrict noisy activities to certain times of the day • Minimise drop heights into haulage vehicles and other plants • Provision of acoustic enclosures • Local screening of plant • Site perimeter hoarding • Establishing one-way systems to restrict unnecessary movement • Adoption of low noise methods, e.g. use of silencers, mufflers, insulators and enclosures where possible • Use of screening between noise and neighbours	• Contractor	• During Construction

Potential Impact(s)	Activities	Mitigation Approach	Mitigation Measures	Implementation Responsibility	Project Phase
❖ **Worker Health and Safety** ❖ **Community Health and Safety**	• General construction activities	Worker Protection and Community Coordination	To reduce the impacts on the workforce and the local community, the contractor shall implement the following mitigation measures: • Provide toolbox talks on the dangers of long-term exposure to workers • Provide toolbox talks on the risks of vibration from the use of hand tools (vibration white finger) • Provide appropriate PPE to all site staff • Avoid mass starting of vehicles at the start of shift and idling; and • Communicate with site neighbours on a regular basis through the PCU Environmental and Social Safeguards Officers and the contractor's EHS Officer, especially when an activity will cause excessive noise	• Contractor	• During Construction

Table ESMP 3-3: Environmental Mitigation and Management Measures – Water Resources

Potential Impact(s)	Activities	Mitigation Approach	Mitigation Measures	Implementation Responsibility	Project Phase
❖ **Water Quality** ❖ **Erosion and Topsoil Loss**	• Working within watercourse • General site preparation works • Storing and stockpiling of materials • Earthworks • Construction of retaining structures • Back-end tipping	Stormwater, Erosion and Sediment Control	Stormwater runoff and drainage should be properly managed within all work areas to prevent sediment and control erosion from overland flows using best practice. Construction activities are likely to result in temporary deterioration in water quality through increased turbidity and suspended solids from run-off. The following mitigation measures should be undertaken to minimise impacts: • Plan site drainage to include cut off drains and settlement ponds if required • Use of silt curtains • Inspect site after heavy rainfall events and note and remedy any design non-performance • Concrete wash water to be managed and correctly discharged • Use of drip trays • Use of cofferdams to prevent sediment build-up • Use silt traps at the base of stockpiles to prevent silt run-off • Minimise exposed earth and seed areas as quickly as possible to prevent run off and erosion; and • Locate stockpiles away from watercourses	• Contractor	• During Construction

Potential Impact(s)	Activities	Mitigation Approach	Mitigation Measures	Implementation Responsibility	Project Phase
❖ **Water Quality**	• Refuelling of vehicles, plant, and equipment • General site preparation works	Water Quality Monitoring Programme	Where it is established that the project is reducing water quality, the contractor shall make appropriate adjustments to the construction activities to correct the problem. Visual inspections should also be undertaken, and records kept by the EHS Officer daily and an emergency Spill Plan be developed by the contractor. To minimise the impacts to water quality, the following measures should be implemented: • Provide training to staff to prevent accidental discharge of contaminated waters to waterbodies • Daily checks to be undertaken by the EHS Officer • Develop action plan for pollution incidents and have spill kits and booms available at multiple locations throughout the scheme • All liquids to be stored appropriately • Fuel storage tanks to be double skinned and bunded to 110% capacity • Store fuel and hazardous material in appropriately safe locations above storm surge heights • Regularly maintain plant and equipment and inspect for leaks • Avoid the use of mineral-based lubricating oils • Place covers over freshly poured concrete to prevent runoff	• Contractor • EHS Officer	• Pre-Construction • During Construction

Potential Impact(s)	Activities	Mitigation Approach	Mitigation Measures	Implementation Responsibility	Project Phase
			• Refuelling to be undertaken away from water courses, on hard standing area using drip trays to prevent accidental spillage into soil • Locate fuel stores away from watercourses/drains		
❖ **Worker Health and Safety** ❖ **Community Health and Safety**	• Site welfare facilities • General site setup	Effluent Management	The management of effluent, wastewater and sewerage is important in ensuring ESMP compliance by: • Discharge to sewers (surface and foul) to be agreed with the environmental regulator • All staff to use the toilet facilities; and • On site toilet facilities to be managed and correctly discharged. Where sewerage treatment is not sufficient, chemical toilets must be provided, maintained, and emptied by the contractor	▪ Contractor ▪ EHS Officer	▪ During Construction

Table ESMP 3-4: Environmental Mitigation and Management Measures – Traffic Circulation and Safety

Potential Impact(s)	Activities	Mitigation Approach	Mitigation Measures	Implementation Responsibility	Project Phase
❖ **Worker Health and Safety**	• Transportation of site personnel and staff to and from the project site • Transportation of materials and equipment • Excavation and	Traffic Control	The transport of large equipment may necessitate the need for temporary road closures and restrictions at specific locations. Proper traffic controls shall be in place during closures to minimise impacts on traffic circulation, and for safety including signage, temporary barriers,	▪ Contractor ▪ EHS Officer	▪ During Construction

Potential Impact(s)	Activities	Mitigation Approach	Mitigation Measures	Implementation Responsibility	Project Phase
❖ **Community Health and Safety**	construction of earthworks, retaining structures and revetments		pilot vehicles, stop/go signs. Any road closures must be posted at least 7 days in advance prior to closure, and the ESS Officers should contact the community representatives to ensure closures do not clash with local events: • Code of Conduct to be signed by all employees and contract staff regarding alcohol use and a zero-tolerance policy for drug use, sale, or purchase • Always adhere to local traffic laws and speed limits • Tracked vehicles are to avoid using the main road to prevent damage to the road surface and infrastructure • A Traffic Management Plan shall be prepared providing details of proposed road closures, diversions, heavy equipment transport and proposed road safety measures		

Potential Impact(s)	Activities	Mitigation Approach	Mitigation Measures	Implementation Responsibility	Project Phase
❖ **Worker Health and Safety** ❖ **Community Health and Safety**	• Protect staff travelling to and from the site • Protect site staff and workers from vehicle strikes and • Transportation of materials and equipment	Road Hazard Avoidance	The project should not degrade road safety or introduce new road hazards. A condition survey of the route shall be conducted by the contractor and any repairs from haulage of equipment and materials will be undertaken as part of the remedial works. Road hazard avoidance mitigation measures shall include: • Time transport of equipment or materials to avoid busy traffic periods • Adhere to traffic laws and speed limits (on and off site) • Designated and demarcated crossing points on site and • Proceed with extreme caution at school zones along travel routes	▪ Contractor ▪ EHS Officer	▪ Pre-Construction ▪ During Construction

Table ESMP 3-5: Environmental Mitigation and Management Measures – Construction Waste

Potential Impact(s)	Activities	Mitigation Approach	Mitigation Measures	Implementation Responsibility	Project Phase
❖ **Worker Health**	• General site management	Waste Management Plan	The construction contractor shall prepare and implement a Waste Management Plan. As a minimum, the plan shall address the sources of waste, waste minimization measures to be adopted, and maximize reuse and recycling	▪ Contractor ▪ EHS Officer	▪ Pre-Construction ▪ During Construction

Potential Impact(s)	Activities	Mitigation Approach	Mitigation Measures	Implementation Responsibility	Project Phase
and Safety ❖ **Community Health and Safety**			opportunities. Most of the solid wastes are to be disposed of at an approved landfill / waste disposal site. To ensure that waste is correctly stored and disposed of properly the following actions shall be undertaken: • Designation of a waste collection area, where a container can be kept for collection of site waste • The waste container will be waterproof to prevent the escape of fluids. It will be covered with a lid to prevent rainwater from flooding the waste and overflowing the container. The stored waste will always be covered • Waste containers will be checked weekly to ensure there are no leaks of fluids. Any container that presents output of fluids, corrosion, or damage in any way will be replaced • Garbage containers will be covered at all time • Waste storage areas will be swept and cleaned regularly, Hose washing will not be used in the cleaning process • Adequate containers will be provided on site to deposit the waste within the construction zone • Hazardous wastes (chemicals, fluorescent lights etc.) will be stored and collected separately and disposed of appropriately • Storage areas will be located away from rivers/watercourses/drains • No burning of waste of any other debris will occur on site		

Table ESMP 3-6 - Environmental Mitigation and Management Measures – Geology and Soils

Potential Impact(s)	Activities	Mitigation Approach	Mitigation Measures	Implementation Responsibility	Project Phase
❖ **Topsoil Loss**	• Site clearance and preparation works • Tracking and movement of heavy equipment	Topsoil Preservation and Restoration	Where site clearance is required for site preparation, compound areas and haul roads, topsoil shall be separated and stockpiled during the construction process and the following procedures implemented: • The topsoil shall be covered with plastic to prevent erosion and wind-blown dust contamination. • Compacted areas due to movement of construction equipment shall be loosened to enable regrowth of vegetation and soil infiltration • Topsoil shall be re-laid by applying evenly, compacted correctly, and stabilized (to prevent erosion and sediment transport) during the restoration process. Topsoil should be laid and seeded immediately. • The soil surface must be maintained until vegetation has grown.	• Contractor's EHS Officer	• Post Construction

Table ESMP 3-7: Environmental Mitigation and Management Measures – Extreme Weather Management

Potential Impact(s)	Activities	Mitigation Approach	Mitigation Measures	Implementation Responsibility	Project Phase
❖ **Water Quality** ❖ **Worker Health and Safety** ❖ **Community Health and Safety**	• General construction activities	Extreme Weather Management - Hurricane and Tropical Storms	It is important to have procedures in place to anticipate natural disasters and take the necessary precautions to prevent loss of life, materials, and equipment during their occurrence by adopting the following mitigation measures: • Schedule construction activities outside of the rainy/wet season (June to November) • Establish a storm or hurricane threat alert system if works are to be undertaken during the rainy/wet season • In the event of a storm or hurricane, all equipment and materials should be stored away and or temporarily relocated to prevent loss or damage • Any fuel or hazardous materials should be stored at appropriate locations above likely storm surge heights	• Contractor	• During Construction

Table ESMP 3-8 - Environmental Mitigation and Management Measures – Utilities and Communication Systems

Potential Impact(s)	Activities	Mitigation Approach	Mitigation Measures	Implementation Responsibility	Project Phase
❖ **Utility Companies** ❖ **Worker Health and Safety** ❖ **Community Health and Safety**	• Transportation of materials • General site activities • Excavation works • Use of overhead swinging equipment	Protection of Existing Utilities	The contractor shall identify and protect any underground and overhead utility and communication lines/services to minimize damage during construction. The following mitigation measures shall be adopted: • Contractor shall work with the service providers to temporarily disconnect or reposition the lines for the duration of the construction. • Underground service plans shall be obtained by the contractor from the utility providers and the utility locations will be clearly marked on site prior to the commencement of any ground activities. • The contractor shall co-ordinate with utility companies for the temporary or permanent relocation of any utilities.	• Contractor	• During Construction

Table ESMP 3-9 - Social Mitigation and Management Measures – Working Conditions and Equality

Potential Impact(s)	Activities	Mitigation Approach	Mitigation Measures	Implementation Responsibility	Project Phase
❖ **Working Conditions and Equality**	• Site employment	• Gender Equality Measures	Employment opportunities created by the project shall be equally available to men and women. Implementation measures shall include: • Provide safe and equal working conditions for men and women on the project site by implementing the following: • Information on their rights regarding safety and payment prior to commencing employment • Gender-specific latrines maintained in a sanitary condition with adequate capacity • Gender-specific sleeping quarters at the worker camp if applicable • Adequate training for their position • Establish and enforce sexual and gender-based violence policy/plan • Implement a grievance and redress mechanism • Implement a code of conduct to be adopted by all employees	• Contractor	• Pre-Construction • During Construction

Table ESMP 3-10 - Social Mitigation and Management Measures – Community Engagement and Sensitivity

Potential Impact(s)	Activities	Mitigation Approach	Mitigation Measures	Implementation Responsibility	Project Phase
❖ **Community Health and Safety**	• Site employment	• Community Consultation, Information and Training	• **Pre-construction Meeting**: prior to the start of the construction activities, the contractor shall hold a public meeting for the affected communities to explain the project activities, schedule, possible inconveniences that may be experienced during construction, and safety considerations associated with the works. The affected communities shall be informed of the grievance mechanism and process. • **Informational Signs**: the contractor shall install project information signs at the site entrance and implement regular public announcements with information on the scheduling of activities, health and safety and the grievance mechanism process and contact person. • **Worker Sensitivity Training**: the Contract shall provide social and community sensitivity training to all site personnel and workers on the local customs, traditions and community considerations. vii.	• Contractor's EHS Officer	• Pre-Construction • During Construction

Table ESMP 3-11 - Health and Safety Mitigation and Management Measures – Health and Safety Plan

Potential Impact(s)	Activities	Mitigation Requirements	Mitigation Measures	Implementation Responsibility	Project Phase
❖ **Worker Health and Safety** ❖ **Community Health and Safety** ❖ **Fire**	• General site management	• Health and Safety Consideration and Procedures	The Contract shall prepare and implement a Health and Safety Plan intended to address the applicable risks and prevention measures appropriate to the construction activities which should encompass but not be limited to: • General occupational hazards which may be encountered (e.g. mobile equipment, working at heights or in confined spaces, repetitive motions, falling objects, heat exposure, loud noise, vibration and hazardous materials) • Minimum training requirements for operating vehicles, equipment, and machinery in accordance with applicable laws and industry standards • Manual handling training and correct use of lifting equipment • Fire prevention and response procedures • Natural hazards response procedures • Disease risk and prevention • Community safety considerations (vehicular and pedestrian traffic) • Emergency preparedness and response procedures (including location of hospitals and medical services in the project area) The contractor shall provide pre-construction and interval training to workers during construction on the contents of the	• Contractor	• Pre-Construction • During Construction

Potential Impact(s)	Activities	Mitigation Requirements	Mitigation Measures	Implementation Responsibility	Project Phase
			Health and Safety Plan.		
❖ **Workers Health and Safety**	• General site management	• Provision of Health and Safety Equipment	The contractor shall supply all workers with personnel protective equipment (PPE) and ensure workers use the proper PPE during all work activities. The minimum PPE requirements shall include where applicable: • Hard hats • Steel toe boots • Safety glasses or impact resistant eye protection • Ear defenders • Harnesses for working at height • Respirators • Gloves • High visibility clothing • Specialist protective equipment for welding, concrete mixing etc. All PPE shall be properly fitted for each worker including body size and gender. Workers shall be trained in the proper use of PPR prior to commencing work on site.	▪ Contractor	▪ During Construction

3.4 Contractor's Environmental and Social Management Plans

The contractor shall be required to prepare the environmental and social management plans detailing the proposed mitigation measures, procedures, and practices in response to these defined project risks:

- Environmental issues
- Health and safety
- Air quality monitoring
- Noise/vibration
- Traffic management
- Emergency response
- Waste management

4 ESMP IMPLEMENTATION

4.1 Implementation and Verification Procedures

Requirements for mitigation measures, as well as implementation and verification procedures, are applicable during all phases of this project, identified as:

- Pre-construction - establishment of site facilities including utilities, if necessary,surveys and setting out.
- During construction – site clearance, material stockpiling, construction of reinforced concrete retaining structures
- Operational phase – remedying defects and completing outstanding work, during the defects liability period.

4.2 Auditing

4.2.1 Pre-construction Audit

The EHS Expert and the Contractors' EHS Officer shall survey the project site prior to construction to record the extant site condition as well as the surrounding area. During the survey, the EHS representatives will identify sensitive areas to be avoided and discuss the optimum locations for site compounds, laydown and stockpile areas, fuel stores, haulage routes, and worker camps if required. In addition, the EHS Expert, will prepare a pre-construction audit report that documents the detailed status of each project work area prior to the project activities. The audit will include:

- A description of the work area that identifies and describes the locations of previously disturbed or undisturbed features;
- Areas to be avoided (e.g. protected habitats, recreational areas, farmland);
- Photographic records of the pre-construction conditions of the site and surrounding areas

This document will be used to compare the site conditions following construction and to determine the adequacy of restoration.

4.2.2 Construction Audit

The EHS Expert shall visit the site monthly (or more frequently if needed) during the implementation of the civil works to verify compliance at the site. In addition, oversight agencies shall visit the site on an as need basis. An audit report documenting compliance with all applicable construction mitigation measures shall be prepared at the completion of each site visit.

4.2.3 Post-construction Audit

The EHS Expert shall visit the project site following construction to document the condition of all work areas and sensitive areas adjacent to work areas. Any observed issues shall be documented in a post-construction audit report prepared by the EHS Expert. The contractor shall be responsible for addressing any identified issues related to the post-construction condition of the worksites and surrounding area to the satisfaction of the EHS Expert.

4.2.4 Monitoring Frequency

The Contractor's EHS Officer should be on site on a daily or otherwise defined in the contractor's approved ESMP to inspect active work sites and verify compliance with all applicable mitigation measures for the work phase. The EHS Expert shall monitor the site monthly (or more frequently if needed) during the execution of the civil works. Compliance Reporting

4.2.5 Compliance Reporting

With the aid of a monthly compliance checklist, the Contractor's EHS Officer shall prepare and submit a monthly compliance report to the EHS Expert to document construction and compliance activities completed during the month and track the resolution of any issues that may have occurred. The reports should capture the following information for the period:

- A summary of the completed construction activities;
- Estimated remaining construction and schedule;
- Summary of compliance activities;
- An updated list of all of the EHS incidents that have occurred during the reporting period;
- Follow up information from any past activities that are still to be resolved;
- Photographs of project activities; and
- Any chemical testing results or monitoring data.

4.3 Contractor Training

4.3.1 Responsibilities and Non-compliance

The contractor will be required to train workers on the applicable mitigation measures to ensure compliance with environmental and social requirements for the project. Supplemental to the general environmental and social awareness training, specific environmental and social training requirements are identified in **Table ESMP 3-1** through **Table ESMP 3-10**.

Similarly, the contractor shall ensure that workers are adequately trained prior to commencing work activities on the project. In addition to applicable worker safety laws, mitigation measures identify specific health and safety requirements that the contractor must comply with. Health and safety training requirements are identified in **Table ESMP 3-11**.

4.4 Incidents

4.4.1 Incident reports

The Contractor's EHS Officer shall be responsible for preparing and submitting incident reports to the EHS Expert within 24 hours from the discovery or occurrence of the incident.

Any fatalities (or serious injuries that require hospitalisation) shall be immediately reported to the EHS Expert, who will inform the implementing agency.

The EHS Officer shall maintain a complete project record of incidents associated with the contract scope of work. The record shall be regularly updated and included with monthly reports submitted to the EHS Expert capturing incidents involving but limited to:

- Fires;
- Ecological incidents;
- Accidents or near-miss events;
- Hazardous material spills that contaminate soil and water resources;
- Non-compliance with mitigation measures; and
- Any improvement orders or notices issued by outside agencies.

EHS incidents report should include but not be limited to:

- Date and time of the incident;
- Description of the incident;
- Mitigation measures or environmental laws that were breached or violated;
- Witnesses or parties who were present;
- Corrective actions taken to remedy the issue and preventative measures implemented to prevent it from reoccurring;
- Any remaining actions that are required to correct the situation, such as rehabilitation, indicating the responsible parties.

4.4.2 Non-compliance Notice

Suppose any issues with compliance are discovered, the observing party shall submit a written notice of non-compliance to the contractor, documenting the issue and recommending preliminary corrective actions, if applicable. Notices of non-compliance shall include the following information:

- Date of the incident and when it was discovered (if different);
- Description of the issue;
- Photographic evidence of the environmental, social or safety violation
- Witnesses or parties that were present during the event (if applicable)
- Mitigation measures or environmental laws that were breached or violated;
- Recommended corrective actions to be taken
- A contractual timeline for addressing the violation, indicating the responsible parties

4.4.3 Corrective Actions

The contractor will be responsible for the following relating to any violation of the environmental and social management plan:

- providing a description of corrective actions taken to remedy the issue and any preventative measures implemented to prevent it from reoccurring;
- responding to and addressing notices of non-compliance in a timely manner and to the satisfaction of the EHS Expert;
- rehabilitation costs and work effort associated with any environmental damage that may occur due to non-compliance with mitigation measures and environmental laws;
- any necessary follow up actions that are required to correct the situation, such as rehabilitation if environmental damage occurred.

4.4.4 Grievance and Redress Mechanism

4.4.4.1 Environmental and Social Safeguard Officers

The ESS Officers will manage concerns and complaints raised by project affected persons (PAPs) within the communities affected by the project. The responsibilities of the ESS Officers shall include:

- ensuring that grievances are correctly logged, recorded, investigated, managed, and reported to the appropriate authorities through the correct channels.
- conducting stakeholder outreach and responding to any grievances or complaints that may arise.
- act as the key point of contact to resolve project grievances from construction workers, residents, and community members.
- addressing project grievances and directing the contractor to make any appropriate change to their work.

The Project Manager and ESS Officers shall adopt grievance redress mechanism for recording and reporting on all concerns and complaints made by the community in relation to the project and ancillary activities.

4.4.4.2 Civil Works Contractor

The contractor shall take reasonable action to address grievances as required by local laws and the environmental and social management plan requirement. The Contractor's EHS Officer will also act as the point of contact for residents or workers that express grievances at the project site. If grievances are expressed in the field, the receiving EHS Officer is responsible for notifying the ESS Officers and EHS Expert, respectively, within 48 hours of receipt.

APPENDIX

APPENDIX A - CODE OF CONDUCT FOR CONTRACTOR'S PERSONNEL (ESHS)

Code of Conduct

1.0 INTRODUCTION

The Code of Conduct and Business Ethics provides the ethical framework to guide actions and behaviors of all Employees while at work.

This Code emphasizes and advances the principles of discipline, good conduct, professionalism, loyalty, integrity and cohesiveness that are critical to the success and well-being of the company.

Business shall be conducted fairly, impartially, in an ethical and proper manner, and in full compliance with all applicable laws and regulations. In conducting its business, integrity must underline the company relationships, including those with customers, suppliers, communities and among employees. The highest standards of ethical business conduct are required of all employees in the performance of their company responsibilities. Employees will not engage in conduct or activity that may raise questions as to the company's honesty, impartiality, or reputation or otherwise cause embarrassment to the company.

2.0 OBJECTIVE

The objective of the Code is to provide guidance on the standards of behavior expected of all Employees, and where applicable, Counterparts and Business Partners. For all intent and purposes, all Employees shall always observe and ensure compliance with all applicable laws and regulations to which they are bound to observe in the discharge of their duties.

3.0 SCOPE

The Code is applicable All Employees (including full time, probationary, contract and temporary staff) ("Employees"). Each Employee has a duty to read and understand the Code. Violation of any of the Code's provisions can result in disciplinary action, including termination of employment.

4.0 WORKERS' CODE OF CONDUCT

Everyone is required to follow the company's Code of Conduct including the standards related to the Safety Policy Statement, Safety Handbook, Site Safety Rules & Procedures, and Labor Laws and Regulation of Saint Lucia.

The objective of the Worker's Code of Conduct is to avoid or minimize as much as possible, any negative impact that could arise as a consequence of interrelations between the Workers inside the local areas of influence and the outskirts of the Project Area. The company will require that all employees comply with the following measures:

- Each of the Workers should receive a written copy of this Code as a part of the induction process. Additionally, a copy of this Code will be available in a visible place on the Project notice board.
- As a requirement to be hired, all Workers must sign a copy of this Code, where they acknowledge it and certify they have read it and accepted its terms, promising to comply with its terms thoroughly and at all times.
- Any question related to this Code or any regulation within it must be addressed by a designated representative.
- The workers are obliged to comply with the rules and procedures indicated in this Code, so as to maintain good relations with the local communities in the direct area of influence of the Project.
- Any worker may be subject to disciplinary actions and/or may be fired if their behavior went against the rules stated in this Code.
- All workers are expected to behave adequately at all times and must avoid improper relations with the local population.
- All Workers are required to show at all times a transparent and honest behavior, and a high level of personal responsibility and professionalism, either in or out of the Project Area.
- Without exception, all workers shall comply with all applicable laws, rules, and regulations of the country.
- All Workers shall immediately inform the management team or any medical staff in the Project Area with any kind of sickness or symptom that may affect their ability to carry out their work related obligations properly.
- Workers shall use adequate personal protection equipment during their activities in any Project Area or property, including Project Vehicles.
- Workers are not allowed to smoke or make an open fire within or in the surroundings of the Project Area or near any Project Property, including Project Vehicles.
- Any public release about the Project must be approved by the Management team of or duly appointed person.
- All workers shall avoid any discriminatory conduct based on gender, age, disability, race, language, culture, political affiliations, philosophy, religion, or any other illegal basis.

- Workers are forbidden to possess, use or carry any kind or illegal drugs, medical paraphernalia, narcotics or alcoholic beverages within the Project Area or any Project property, including Project Vehicles.
- Workers will promptly report any illegal or unethical conduct to management or other appropriate authorities.
- All workers must comply at all times, with all applicable environmental rules and regulations, including complying with the implemented social and environmental responsibilities.
- Workers are not allowed to possess or carry weapons, such as firearms, explosives, ammunitions, knives, clubs, etc., within the Project Area or any Project Property, including Project Vehicles.
- All Workers shall report any conflicts of interest in writing to their supervisor.
- Workers shall not receive or hand over money, goods or other objects of value in order to obtain benefits, receive favors or influence decisions benefiting the company, third parties, or themselves.
- Workers shall not use the company's funds or equipment or other articles provided by the Company for their personal benefit or any other unauthorized use.
- Workers shall keep all information related to the project in the strictest confidence.
- Pets are not allowed in any Project Area. Fishing, hunting and deforestation is also forbidden inside the Project site and its immediate surroundings.
- Workers may not abandon any Project Area without permission. Local Workers may be transported to and from the site in transport units provided by the Project. Project Transport Units may not make unauthorized stops.
- Should the worker fail to comply with the Code, or behave in such a way that he/she creates a problem with the local population, the corresponding action must be communicated to the relevant supervisor, detailing what happened, so that the necessary investigation can be carried out.

5.0 CONFIDENTIAL INFORMATION

Employees should maintain the confidentiality of information entrusted to them by the company or its customers, except when disclosure is authorized or legally mandated. "Confidential information" includes all non-public information that might be of use to competitors, or harmful to the Company or its customers, if disclosed.

6.0 ACCOUNTABILITY

Employees are each held accountable for Code compliance with regard to issues within his or her control. Sanctions for a breach of this Code shall be determined by the company or the appropriate officer as designated by the Company. Sanctions may include serious

disciplinary action, suspension, dismissal, or other remedies available to the extent permitted by law and as deemed appropriate under the circumstances.

7.0 ADMINISTRATION

7.1 REPORTING OF VIOLATIONS OF THE CODE

Every employee has the responsibility to ask questions, seek guidance, and report suspected violations of this Code of Conduct. Everyone is encouraged to report concerns of violation of the company's management team. No individual will be discriminated or suffer any act of retaliation for reporting in good faith. Retaliation against employees who come forward to raise genuine concerns will not be tolerated. The company will seek advice when unsure of an appropriate legal or ethical course of action.

7.2 REVIEW OF THE CODE

This Code can be modified at any moment, in which case it will immediately deliver a written copy of said change to each Worker, in accordance with the assent procedure explained before. The company will monitor compliance with the Code and review the Code regularly to ensure it remains relevant and appropriate.

8.0 SAFETY RULES AND PROCEDURES

ALL OF OUR SAFETY RULES MUST BE OBEYED. FAILURE TO DO SO WILL RESULT IN STRICT DISCIPLINARY ACTION BEING TAKEN.

1. Keep your mind on your work at all times. No horseplay on the job. Injury or termination or both can be the result.
2. No employee is expected to undertake a job until that person has received adequate training.
3. All employees shall be trained on every potential hazard that they could be exposed to and how to protect themselves.
4. No employee is required to work under conditions which are unsanitary, dangerous or hazardous to their health.
5. Personal safety equipment must be worn as prescribed for each job, such as: safety glasses for eye protection, hard hats at all times within the confines of the construction area where there is a potential for falling materials or tools, gloves when handling materials, and safety shoes are necessary for protection against foot injuries.

6. Precautions are necessary to prevent sunburn and to protect against burns from hot materials.
7. If any part of your body should come in contact with an acid or caustic substance, rush to the nearest water available and flush the affected part. Secure medical aid immediately.
8. Watch where you are walking. Don't run.
9. The use of illegal drugs or alcohol or being under the influence of the same on the project shall be cause for termination. Inform your supervisor if taking strong prescription drugs that warn against driving or using machinery.
10. Do not distract the attention of fellow workers. Do not engage in any act which would endanger another employee.
11. Sanitation facilities have been or will be provided for your use. Defacing or damaging these facilities is forbidden.
12. A good job is a clean job, and a clean job is the start of a safe job. So, keep your working area free from rubbish and debris.
13. Do not use a compressor to blow dust or dirt from your clothes, hair, or hands.
14. Never work at high altitude if you are afraid to do so, if you are subject to dizzy spells, or if you are apt to be nervous or sick.
15. Never move an injured person unless it is absolutely necessary. Further injury may result. Keep the injured as comfortable as possible and utilize job site first-aid equipment until an ambulance arrives.
16. Know where firefighting equipment is located and be trained on how to use it.
17. Lift correctly - with legs, not the back. If the load is too heavy GET HELP. Stay fit. Control your weight. Do stretching exercises. Approximately twenty percent of all construction related injuries result from lifting materials.
18. Only qualified trained personnel are permitted to operate machinery or equipment.
19. Nobody but operator shall be allowed to ride on equipment unless proper seating is provided.
20. Do not use power tools and equipment until you have been properly instructed in the safe work methods and become authorized to use them.
21. All hand and power tools and similar equipment, whether furnished by the employer or the employee, shall be maintained in a safe condition.
22. Be sure that all guards are in place. Do not remove, displace, damage, or destroy any safety device or safeguard furnished or provided for use on the job, nor interfere with the use thereof.

23. The employer shall insure that electrical equipment is free from recognized hazards that are likely to cause death or serious physical harm to employees.
24. Do not enter an area which has been barricaded.
25. If you must work around power shovels, trucks, and dozers, make sure operators can always see you. Barricades are required for cranes.
26. Never oil, lubricate, or fuel equipment while it is running or in motion.
27. Before servicing, repairing, or adjusting any powered tool or piece of equipment, disconnect it, lock out the source of power, and tag it out.
28. Barricade danger areas. Guard rails or perimeter cables may be required.
29. All floor openings, open sided floor and wall openings shall be guarded by a standard railings and toe boards or cover.
30. Trenches over five feet deep must be shored or sloped as required. Keep out of trenches or cuts that have not been properly shored or sloped. Excavated or other material shall not be stored nearer than two feet from the edge of the excavation. Excavations less than 5 ft. may also require cave in protection in some instances.
31. Use the "four and one" rule when using a ladder. One foot of base for every four feet of height.
32. Portable ladders in use shall be equipped with safety feet unless ladder is tied, blocked or otherwise secured. Step ladders shall not be used as a straight ladder.
33. Ladders must extend three feet above landing on roof for proper use.
34. Defective ladders must be properly tagged and removed from service.
35. Keep ladder bases free of debris, hoses, wires, materials, etc.
36. Build scaffolds according to manufacturers' recommendations and Construction Safety Standard.
37. Open fires are prohibited.
38. Scaffold planks shall be properly lapped, cleated or otherwise secured to prevent shifting.
39. All scaffolding shall be erected in accordance with the proper safety procedures of connecting accessories and rails for fall protection and ladders for safe access shall be used.
40. Use only extension cords of the three-prong type. Use ground fault circuit interrupters at all times and when using tools in wet atmosphere (e.g. outdoors) or with any temporary power supply. Check the electrical grounding system daily.
41. The use of harnesses with safety lines when working from unprotected high places is mandatory. Always keep your line as tight as possible.

42. Never throw anything "overboard." Someone passing below may be seriously injured.
43. Know what emergency procedures have been established for your job site. (Location of emergency phone, first aid kit, stretcher location, fire extinguisher locations, evacuation plan, etc.)
44. Never enter a manhole, well, shaft, tunnel or other confined space which could possibly have a non-respirable atmosphere because of lack of oxygen, or presence of toxic or flammable gas, or has a possibility of engulfment by solids or liquids. Make certain a qualified person tests the confined area with an appropriate detector before entry, that the necessary safety equipment is worn. Standby person may be required to be stationed at the entrance.
45. All injuries must be reported to your supervisor/foreman.
46. Manufacturer's specifications /limitations /instructions shall be followed.
47. Particular attention should be given to new employees and to other employees moving to new jobs or doing non-routine tasks.
48. All Health and Safety posters shall be posted.
49. Emergency numbers shall be posted and reviewed with employees.
50. Each employee in an excavation/trench shall be protected from cave-ins by an adequate protective system.
51. Employees working in areas where there is a possible danger of head injury, excessive noise exposure, or potential eye and face injury shall be protected by Personal Protection Equipment (PPE).
52. All materials stored in tiers shall be stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling or collapse.
53. The employer as well as the operator shall comply with the manufacturer's specifications and limitations applicable to the operation of any and all cranes and all other heavy operating.
54. All equipment left unattended at night, adjacent to a highway in normal use, or adjacent to construction areas where work is in progress, shall have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, to identify the location of the equipment.
55. No construction loads shall be placed on a concrete structure or portion of a concrete structure unless the employer determines, based on information received from a person who is qualified in structural design, that the structure or portion of the structure is capable of supporting the loads.

56. A stairway or ladder shall be provided at all personnel points of access where there is a break in elevation of 19 inches or more, and no ramp, runway, sloped embankment, or personnel hoist is provided.
57. To facilitate cleaning, every floor, working place, and passageway shall be kept free from protruding nails, splinters, loose boards, and holes and openings.
58. All places of employment shall be kept clean, the floor of every workroom shall be maintained, so far as practicable, in a dry condition; standing water shall be removed. Where wet processes are used, drainage shall be maintained and false floors, platforms, mats or other dry standing places or appropriate waterproof footgear shall be provided.

9.0 SAFE WORKING PRACTICES

1. Prohibit employees from working on faces of slope of benched excavations at levels above other employees unless employees at lower levels are adequately protected from the hazards of falling, rolling or sliding material or equipment.
2. Prohibit employees under loads that are handle by lifting or digging equipment, to avoid being struck by any spillage or falling materials, require employees to stand away from vehicles being loaded or unloaded. If cabs of vehicles provide adequate protection from falling loads during loading and unloading operation, the operator may remain in them.
3. Prohibit an employee to work in another position for which he was not hired.
4. Workers are forbidden entry to the work area without personal protection means.
5. All workers must enter and exit the work area by the location built for this purpose.
6. All workers must review the terms of their jobs and equipment before beginning their work.
7. All workers must clean, organize and secure their work area after completing the work of the day.

APPENDIX B - ESHS MONITORING CHECKLISTS

- Environmental and Social Management Plan (ESMP) Monitoring Checklist
- Extreme Weather Management Plan (EWMP) Monitoring Checklist
- Health and Safety Management Plan (HSMP) Monitoring Checklist
- Waste Management Plan (WMP) Monitoring Checklist
- Traffic Management Plan (TMP) Monitoring Checklist

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Inspection Template: Environmental & Social Management Plan [Monitoring]

Type	Monitoring Checklist	**Trade**	Asst. Resident Engineer
Description	Environmental & Social Management Monitoring Checklist as per contractor's ESMP Instructions: Completed in conjunction with the QMP and Contract to clarify responses		
Attachments			

General Requirements

1.1	**Site documentation and reporting requirements implemented.**
1.2	**Environmental Safety Officer monitoring and visits implemented.**
1.3	**Incident reporting processes established.**
1.4	**Incident reports submitted.**
1.5	**Site documentation and records available.**

Air Quality Control

2.1	**Air quality monitoring procedures in place.**
2.2	**Air quality control monitoring conducted.**
2.3	**Air emissions and quality control procedures implemented.**

Noise Control

3.1	**Auditory observations of the noise level monitoring and measurement procedures implemented.**
3.2	**Nosie level mitigation measures followed.**

Dust Control

4.1	**Dust level monitoring procedures implemented for all construction related activities .**
4.2	**Dust mitigation measures implemented.**
4.3	**Specified dust suppression methods followed.**

Vibrations Control

5.1	Vibration level monitoring during construction.
5.2	Auditory observations, location and the source of vibrations, and time of vibration of the level and frequency of vibrations during construction conducted.
5.3	On site assessment of damage conducted.
5.4	Vibrations mitigation methods deployed

Site Clearing

6.1	Site/vegetation processes established and followed.
6.2	Measures to avoid excess clearing deployed.

Transportation (haulage) of construction materials

7.1	Monitoring and Control practices implemented
7.2	Condition of haulage vehicles
7.3	Driver control measures adopted (licensing, speed limits etc)
7.4	Practices for transport of materials followed e.g covering

Storage of Construction Materials

8.1	Monitoring and control practices for storage of construction materials implemented.
8.2	Mitigation measures to limit consequences of improper storage adopted.

Pollution of Land and Water Resources

9.1	Mitigation measures to limit pollution of water and land resources in place.
9.2	Monitoring for pollution of land and water resources implemented.
9.3	Water/soil samples collected
9.4	If yes, are sample results available.

Stormwater

10.1	Stormwater monitoring measures in place.

10.2	Erosion control measures implemented.
10.3	Assessment of the impacts of the rainfall post-storm event implemented.
10.4	Cleaning post-rainfall event adequate.

Wastewater and Sewage

11.1	Wastewater and sewage monitoring system implemented.
11.2	Quality and quantity of wastewater discharged into water bodies monitored.
11.3	Condition of receiving water bodies observed.
11.4	Mitigation measures to limit wastewater and sewage pollution in place.

Waste Management (hazardous & non-hazardous wastes)

12.1	Waste Management (hazardous & non-hazardous wastes) monitoring system implemented.
12.2	Volume and type of wastes collected, exported, transported, and disposed of registered/recorded.
12.3	Incidents/spills during wastes collection, exportation, transportation and disposal recorded.
12.4	Photographic documentation of spills registered/recorded.

Traffic Management

13.1	Project traffic management monitoring system implemented.
13.2	Site Traffic management plan implemented.
13.3	Traffic Material track out procedures implemented.

Debris Stockpiles

14.1	Debris stockpile management procedures implemented.
14.2	Mitigation measures from the impact of debris implemented.

Construction Material Stockpiles

15.1	Material stockpile management procedures implemented.
15.2	Mitigation measures from the impact of material stockpiles implemented.

Sediment and Erosion Control

16.1 Sediment and erosion control monitoring measures implemented.

16.2 Sediment and erosion control mitigation measures implemented.

Borrow Pits and Quarries

17.1 Borrow pits monitoring measures implemented.

17.2 Borrow pits mitigation measures implemented.

Hot-mix Plant Operations

18.1 Hot mix plant operation measures implemented.

Demolition of existing Structures

19.1 Demolition monitoring and procedures implemented.

19.2 Mitigation measures to limit environmental damage from demolition activities implemented.

Site Compound Management

20.1 Site compound location, management and practices implemented.

20.2 Site compound environmental mitigation measures implemented.

Stakeholder Participation

21.1 Stakeholder engagement processes implemented.

21.2 Stakeholder engagements conducted.

21.3 Stakeholder monitoring process implemented.

Site Safety

22.1 Site Safety practices implemented.

Monitoring Outcome an d Endorsement

23.1 Environmental and Social Management practices comply with Plan and Contract.

23.2 Monitor/Inspector

23.3 Engineer's Response

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Inspection Template: Extreme Weather Management Plan [Monitoring]

Type	Monitoring Checklist	**Trade**	Asst. Resident Engineer
Description	Extreme Weather Management Management monitoring Checklist - Reconciliation with plan and Contract Requirements. Instructions: Must be checked alongside an accepted plan for details and performance indicators		
Attachments			

General Requirements

1.1	**Organisation plans and personnel in place.**
1.2	**Extreme Weather Management personnel roles and responsibilities confirmed.**

Extreme Weather

2.1	**Risk Identification and evaluation implemented.**
2.2	**Pre-event action plans established.**
2.3	**Health and safety measures adopted.**
2.4	**General response action implemented and executed.**
2.5	**Post-event plan, reentry and initial recovery published.**
2.6	**Re-entry and Initial recovery activities implemented.**
2.7	**Linkage with health and safety measures established.**

Measures To Mitigate Impact of Extreme Weather

3.1	**Daily monitoring of weather patterns.**
3.2	**Site huts constructed to withstand high winds.**
3.3	**All building materials stored in forty-foot container.**
3.4	**Fuel and inflammable material stored high above ground.**
3.5	**Site huts and containers built in areas not prone to flooding.**

3.6	Drainage network to remain clean to reduce flooding occurrences.
3.7	Measures to mitigate the effects of heavy rains implemented.
3.8	Measures to mitigate the effects of landslide implemented.
3.9	Measures to mitigate fire on site implemented.

Monitoring Outcome and Endorsement

4.1	Extreme Weather Management practices comply with Plan and Contract.
4.2	Monitor's Signature
4.3	Engineer's Response

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Inspection Template: Health and Safety Management Plan [Monitoring]

Type	Monitoring Checklist	**Trade**	Asst. Resident Engineer
Description	Health and Safety Management monitoring Checklist - Reconciliation with plan and Contract Requirements. Instructions: To be completed in conjunction with plan and contract.		
Attachments			

General Requirements

1.1 **Health and Safety personnel roles and responsibilities confirmed.**

1.2 **Health and Safety Officer appointment compliant.**

1.3 **Health and Safety standards available to staff.**

Employees

2.1 **Employees aware of safety plan, disciplinary policy.**

2.2 **Health and Safety training policy enforced.**

Emergency Procedures

3.1 **First Aid Equipment adequate.**

3.2 **First Aid Equipment maintained, checked and easily accessible.**

3.3 **Facilities for quick drenching or flushing of the eyes and body provided within the work area for immediate emergency use.**

3.4 **Location of first aid box is clearly identified by signage at the site.**

3.5 **Number of trained personnel as first aiders comply.**

3.6 **Minimum number of employees trained in basic first aid/CPR on sites comply.**

3.7 **Training certificates available and validated.**

3.8 **Emergency evacuation plan implemented.**

3.9 **Emergency warning signal method adequate.**

3.10	Assembly points clearly identified.

Communication and Telephone Contact with Emergency Services

4.1	Communication and access for emergency services compliant.

Accident/ Incident/Near Miss Procedures

5.1	Procedures established for reporting accidents, incidents and near misses established.

Project Specific Elements

6.1	Method statement prepared for the methods of work or protective structures required to carry-out a safe working environment including for work at height.
6.2	Risk assessment of the work executed and communicated to site personnel.
6.3	Traffic Management plan prepared.
6.4	Temporary facilities erected to safeguard pedestrians and vehicles.
6.5	Adequate warning, information and diversion signs erected.
6.6	Barricades, fencing, caution tape and other safety devices installed.
6.7	Safety of site personnel, the movement of heavy equipment within and around the sites carefully coordinated.
6.8	Operation of heavy equipment such as excavators included a spotter, if work is in proximity to pedestrians or public vehicles.
6.9	Stockpiling of material is away from pedestrian and vehicular activity.
6.10	Public announcement of work operation and working hours broadcast.

Safety around Utilities

7.1	Utility companies notified of project start date.
7.2	Stakeholders' consultations held.
7.3	Efficient work practices/method employed.
7.4	Utility company informed of work activity conducted near facilities to mitigate service destruction.
7.5	Removal of services conducted before excavation work commences.

Hazard Identification and Communication

8.1	Safety induction and toolbox meetings conducted with all new workers.

Hazard Control Program and Risk Assessment

9.1	Hazard identification recorded.
9.2	Regular observation and inspection conducted.
9.3	Workers informed of the potential hazard.
9.4	Hazard Communication Programme implemented and communicated to site personnel.
9.5	Hazard report form filled and responded to immediately or within 24 hours.

Risk Assessment

10.1	Relevant risk assessments implemented and available for review.

Suspension of Work due to Unsafe Conditions

11.1	Procedures for suspension of work in unsafe areas established.

Sanitation and Welfare

12.1	Welfare of employees, toilets, water, and site hut areas provided and adequate.
12.2	Toilet facilities and designated wash areas provided and adequate.
12.3	Welfare facilities such as lunch shelter, sick bay site hut provided and is located within the work site specific zones to ensure risk management controls are implemented to protect workers walking along the roadside.
12.4	Separate toilet facilities (portable toilets) provided or male and female employees, safely located at an area adjacent to the worksite throughout the project progression.
12.5	Works carried out in areas with appropriate risk management controls.

House Keeping

13.1	Construction debris kept cleared from work areas and around buildings or other structures.
13.2	Toilets and other welfare facilities kept clean continuously.
13.3	Precautions taken to provide for the safe storage of materials on site compound.
13.4	Work site secured.

Environment

14.1	Waste disposal containers provided at the worksite and the waste collected regularly and disposed of at an approved dumpsite.
14.2	Tools, equipment and machinery maintained in good condition to avoid any oil leakage.
14.3	The tray/ bins of all haulage trucks transporting aggregate or building materials covered on all public roads.
14.4	Dust and air pollution due to construction activities limited.
14.5	Water-truck utilized to spray water to maintain dust levels on a regular basis to employ dust control measures.
14.6	During dusty conditions, employees wore dust mask and breathing protection.

Employees Safety on Site

15.1	Employees safety procedures on site followed

Truck Drivers, Equipment Operators

16.1	Drivers and equipment operators practice the plan safety procedures

Personal Protective Equipment Responsibilities

17.1	Hard hats provided and compliant.
17.2	Safety boots provided and compliant.
17.3	Reflective safety vest provided and compliant.
17.4	Safety glasses provided and compliant.
17.5	Respiratory protection provided and compliant.
17.6	Hearing protection provided and compliant.
17.7	Employees used the PPE assigned appropriately at all times when at work sites and reported to the site management any loss or damage.
17.8	PPE used as specified by the manufacturer and was not modified or altered.
17.9	Periodic checks conducted of PPE policy compliance

Subcontractor Policy

18.1	Subcontractors complete risk assessment.

18.2 Subcontractors follow H&S plan requirements including PPE.

18.3 Subcontractor compliant with safety plan requirements and participates in site safety meetings and training.

Monitoring Outcome and Endorsement

19.1 Health and Safety Management practices comply with Plan and Contract.

19.2 Monitor's Signature

19.3 Engineer's Response

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Inspection Template: Waste Management Plan [Monitoring]

Type	Monitoring Checklist	**Trade**	Asst. Resident Engineer
Description	Waste Management Plan Monitoring Checklist - Reconciliation of Practice with plan and Contract		
Attachments			

Waste Management Practices

1.1	**Unreserved agreement with policies of waste management authority.**
1.2	**Waste management personnel appointed.**
1.3	**Areas for temporary storage of waste exist.**
1.4	**Transportation and disposal of waste compliant.**
1.5	**Areas for disposal of waste approved.**
1.6	**Solid waste handling practices compliant.**
1.7	**Handling of hazardous waste compliant.**
1.8	**Handling of liquid waste Compliant.**
1.9	**Methods for waste separation and collection compliant.**
1.10	**Emergency measures for dealing with accidental leaks and spills clearly posted.**
1.11	**Measures for minimizing waste practiced.**

Monitoring Outcome and Endorsement

2.1	**Waste Management practices complies with Plan, Contract and the Solid Waste Management Act.**
2.2	**Monitor's Signature**
2.3	**Engineer's Response**

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Inspection Template: Traffic Management Master Plan [Monitoring]

Type	Monitoring Checklist	**Trade**	Asst. Resident Engineer
Description	Traffic Management Monitoring Checklist - To monitor plan and the update requirements.		
Attachments			

TMP General Requirements Compliance

1.1	**Traffic management personnel confirmed in roles**
1.2	**Traffic management signs and measures implemented**
1.3	**Diversion, detours and by-passes implemented**
1.4	**Emergency access for emergency vehicles implemented**
1.5	**Frequent Community Consultation**
1.6	**Public sensitization, communication and participation procedures followed**
1.7	**Public grievance/complaint mechanism implemented**
1.8	**Road closure procedures followed**
1.9	**Procedures for nightwork followed**
1.10	**Roadway maintenance plans adopted**
1.11	**Incident management and reporting system in place**

Public Safety (Pedestrians and Vehicles Interaction)

2.1	**Pedestrian safety measures in place**
2.2	**Vehicle safety and traffic flow management measures in place**
2.3	**Access road accessibility maintained**
2.4	**Coordination of traffic accommodation with relevant authorities**

2.5	Public communication plan and methods followed
2.6	Method for undertaking night work at key locations followed
2.7	Procedure for channelisation of traffic from two lanes to a single lane is acceptable and safe
2.8	Traffic calming measures in high pedestrian flow/activity zones adequate
2.9	Pedestrian control measures at school zones adequate
2.10	Traffic calming measures and control at school zones acceptable

Vehicles and Equipment

3.1	Safety measures for large and articulated vehicles acceptable
3.2	Construction equipment traffic adequately managed for safety
3.3	Employee and visitor parking areas identified
3.4	Reflective signage and labelling on equipment and semi-permanent fixtures adequate

Traffic Management (Traffic Controllers, Flag Persons, Signs, Traffic Devices and Visibility)

4.1	Traffic control signage adequate for permanent works
4.2	Traffic control signage adequate for temporary works
4.3	Traffic wardens deployed in adequate numbers and in accordance with the plan
4.4	Traffic wardens adequately equiped with radios, safety gear and signage
4.5	Traffic control devices (lights, barriers, signs etc) adequate in numbers and installation
4.6	Night safety lighting adequate for motorist and pedestrians
4.7	Night lighting at construction zones adequate for safe operations
4.8	Traffic police are deployed as necessary where complex flows require their support

Diversions and By-Passes

5.1	Diversion routes adequately deployed to aid traffic flows

5.2	Diversion signs are adequate in position and quantum
5.3	Traffic safety measures for diverted traffic in residential areas/communities adeqaute

Construction Consideration

6.1	The use of reduced lanes optimised and managed
6.2	Compliance with minimum lane width of 3 meters
6.3	Parked construction equipment does not pose a threat to public safety

Monitoring Outcome and Endorsement

7.1	Traffic Management practices comply Plan and Contract.
7.2	Monitor's Signature
7.3	Engineer's Response