ENVIRONMENTAL MANAGEMENT PLAN

FOR THE

CIVIL WORKS TO RETROFIT

THE MARCHAND COMMUNITY CENTRE

IN CASTRIES, SAINT LUCIA

UNDER THE

SPECIAL PROGRAMME FOR ADAPTATION TO CLIMATE CHANGE PROJECT

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MAY 2011

Technical Report 5C/SPACC-12-05-2

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1.0 INTRODUCTION

1.1 Background

The civil works to retrofit the Marchand Community Centre are being executed under the Special Programme on Adaptation to Climate Change (SPACC): Implementation of Adaptation Measures in Coastal Zones Project and form part of the - Northern Sub-Component: Strengthened Critical Infrastructure in the Castries Area. The SPACC Project is a collaborative effort of the Caribbean Community Climate Change Centre (CCCCC) - the regional executing agency for the SPACC; the World Bank (Global Environment Facility) and the Government of Saint Lucia (GOSL) - the local executing agency for the SPACC.

The CCCCC engaged the services of Egbert Louis – an Engineering Consultant (EC) to undertake a number of tasks under the SPACC Project. One of these tasks (Task 4) includes the preparation of an Environmental Management Plan (EMP) for the civil works to retrofit the Marchand Community Centre. The retrofitting works are aimed at upgrading the structural integrity of the Marchand Community Centre/building by utilizing design standards which have been updated taking into account the amplification/escalation of the frequency and strength of natural disasters, particularly hurricanes, due to climate change.

1.2 Purpose and Scope of the Environmental Management Plan

The EMP for undertaking the works is a requirement of the funding agencies of the SPACC Project. Overall, the purpose of this EMP is to ensure that any negative impacts of the works (to retrofit the Marchand Community Centre) on the environment are kept to a minimum. This involves ensuring that mitigation measures are implemented to eliminate, offset or reduce adverse negative environmental and social impacts resulting from implementation of the civil works. More specifically the EMP includes continual monitoring of the civil works; and involvement of interested and affected parties in a meaningful way.

In terms of scope, the selected contractor is to undertake the works in keeping with the guidelines of the EMP, while the Engineering Consultant/Environmental Managers (EC/EM) will monitor the works to ensure that activities are as per these guidelines.

2.0 DESCRIPTION OF THE WORKS

The Marchand Community Centre is anticipated to serve the dual purpose of an emergency shelter in times of disaster and a location for undertaking community activities on a normal daily basis. The retrofitting works will involve the demolition and reconstruction of various components of the building, including, but not limited to the roof, stairs, some partitioning and the external walkways.

2.1 Site Description

The site is situated along the Marchand Road, borders the Marchand Playing Field and is easily accessible via three separate routes. Marchand is a densely populated community within Castries. Statistics from the Government Department indicate an approximate population of 179 persons along the Marchand road only. The area is an active sub-urban community. Therefore socio-economic impacts from the civil works should be monitored very closely and any possible friction addressed in a timely manner. Knowledge of the site suggests that there are no known features of historical, archaeological or ecological significance in the immediate vicinity which are likely to be affected by the works. The site is along the southern boundary of the Marchand Playing Field and in very close proximity to many residential buildings and small business places. Utility poles, service lines and drains are other noteworthy components of the site.

2.2 Civil Works Schedule

The actual execution of the construction works is not expected to exceed a period of eight months. The works are not expected to involve the use of large plant such as cranes and other heavy equipment. However, with the principal restriction at the site being space, work and time schedules may be influenced. Table 1 outlines the broad anticipated construction schedule.

Table 1 – Broad Schedule of Civil Works

Civil Works Phase	Activities	Time
Pre Construction	Initial site visit by contractor after having received notice of award	At award
Construction	Possession of site by contractor:	Start of works
	Installation of hoarding	2 days
	Demolition and cart away	1 week
	Construction of temporary structures	2 days
	Reconstruction/retrofitting works	7 months
Completion	Cleaning of site	1 week
	Removal of hoarding	
	Handing over	

2.3 Roles and Responsibilities

All project stakeholders are responsible for ensuring that all activities are in keeping with the guidelines, procedures and requirements outlined in the EMP; these include the EC/EM, contractor and other officers. The EC, given the nature of the Project will also perform the functions of the EM, through the effective usage of the EMP. The EC/EM who already has adequate training to undertake the environmental monitoring will also undertake the monitoring of the civil works. Appendix 1 outlines the responsibilities and authorities of key persons involved in monitoring the works.

3.0 REGULATORY AND INSTITUTIONAL FRAMEWORK

3.1 Legislation

This includes environmental legislation applicable to the Civil Works and any associated licensing requirements as outlined in Table 2. Copies of licenses and any permits granted for purposes will be kept on the site.

Table 2 – Relevant Legislation

Legislation	Relevance to the Works
Physical Planning and Development Act No. 29 of 2001	Local guidelines to ensure that the structure complies with the building code requirements
The Public Health Act, Chapter 11.01	The sanitary components of the Civil Works are to be in keeping with the Ministry of Health guidelines. Approval is required from the Ministry for this.
Waste Management Act No. 8 of 2004	Site waste is to be deposited in such a manner as to ensure that this is in keeping with the requirements and guidelines of SWMA. A site management plan will be submitted to the SWMA for approval.

3.2 Other Requirements

The other requirements include standards and guidelines which are not legislated, but applicable from the point of view of good environmental practice.

4.0 ENVIRONMENTAL MANAGEMENT FRAMEWORK

The EMP is designed in a manner that individual plans, procedures and methodologies will respond to the specific potential impacts of the civil works, thus ensuring minimal environmental conflicts. Another important component is the clear demarcation of lines of responsibility, accountability and appraisal, with respect to the monitoring of the works.

In order to manage various components of the EMP, forms, procedures and guidelines will be used to facilitate the following

a. ***Environmental Risk Register/Identification and Assessment*** – this involves the identification of sensitive receptors and constraints, the assessment of potential environmental and social risks and the establishment of objectives. Also covered within this section are the identification of procedures for implementation and identification of entities responsible for implementing the activities and those for monitoring the implementation.

b. ***Public Relations and Communication*** – this constitutes the dissemination of information about the works, mitigation measures, communication with the nearby community, general stakeholder consultation, internal environmental communication and environmental training

c. ***Implementation Register*** – this involves description of procedures and controls to monitor the review and monitoring of the works and the implementation of the mitigation measures.

d. ***Incident Management/Contingency Plan*** – this covers major incidents which surpass the magnitude forecasted at the time of the initial preparation of the EMP. This will also involve the planning of procedures for responding to unexpected events and findings.

The above are dependent on the characteristics and peculiarities of the civil works; such as social and physical and resulting potential impacts, legislative guidelines and standards, to name a few. It should be noted that these above are subject to revision during the implementation process, in response to observations/conditions identified at this time.

The documents to be used include:

1) Sub-plans – documents to guide the approach to specific significant risks or components of the civil works. They identify and assess the potential impacts of each significant risk/aspect of the Project and identify the corresponding mitigation and management measures, responsibilities and monitoring requirements in order to ensure that the environmental impacts of the works are avoided, controlled or mitigated. The sub plans are presented in matrices in the appendix section of the document. Sub plans are prepared for the following: environmental monitoring, noise and vibration management, air quality management, soil and water management, waste management, transport management, health and safety management and community relations. These are presented in Appendix 2.

2) Environmental Method Statements – these are site documents prepared by the Contractor to describe the execution of specific aspects of the works. These must be presented to the EC/EM prior to undertaking the specific tasks. The contractor will be required to submit method statements for waste disposal and demolition. During the undertaking of the works, the need for additional statements will be determined.

3) Checklists, Forms and Registers – these pieces of documentation respond to various components of the works and are to facilitate the implementation and monitoring of the works, and on a broader spectrum ensure the documentation of factors affecting the civil works. The Mitigation Measures Checklist contains a list of aspects of the works to be monitored by officers during their visits. These are to be completed subsequent to visits.

At the inception of the civil works, the Contractor is to confirm that the relevant and necessary control resources are available.

4.1 Environmental Risk Register/Identification and Assessment

4.1.1 Identification of Sensitive Receivers

Sensitive receivers were identified during site inspections and these are detailed in the relevant tabulated representations. The potential impacts on sensitive receivers include noise, dust and visual nuisances. The principal sensitive receiver is the community in the vicinity of the site.

4.1.2 Identification of Environmental Constraints

This involves the identification of the location of the constraint or environmentally sensitive area. Constraints dictate the extent of the works as some of the methodologies for activities may have to be revised to avoid negative impacts to or by these constraints. The main constraint on this Project is that of space restriction. Not only is the site small, but it is also within a very active sub-urban community.

4.1.3 Identification and Assessment of Environmental Risks

Information garnered during this assessment is pivotal to the general management of the environmental impacts. Potential environmental risks are identified and assessed throughout the construction process. In the case of this assessment, potential risks are categorized based on the component of the works with which they are likely to be associated. The environmental risks are presented in Appendix 3.

4.1.4 Environmental Objectives and Targets

The main goal is to implement the civil works in such a manner that will have minimal negative environmental impacts and to effectively manage all resulting risks. Project targets are measured by means of tracking reports which respond to each specific objective. The Mitigation Measures Checklist is to be used by officers for monitoring.

This is presented in Appendix 4. These are to be used, with the guidance of the Environmental Monitoring Schedule for recording of any impacts. The Environmental Monitoring Schedule is included as Appendix 5.

4.1.5 Temporary Works

Temporary works such as temporary site offices, storage sheds, batching plants, material storage and stock piles constitute construction project. The locations of these are to be identified by the contractor prior to mobilizing and presented to the EM for review, recommendations and approval. Among the criterion for assessment of the temporary works are:

a. Location in relation to the site;
b. Proximity to main access roads – they must ideally be so positioned as to ensure that there is minimal interference/movement of heavy machinery through residential areas
c. Topography of site and possible run off of any contaminants/silt into sensitive waterways;
d. Proximity, particularly of any batching plants to residential areas;
e. Proximity to any sensitive ecosystems;
f. Likely impact to heritage sites or structures.

The Contractor shall be responsible for ensuring that the locations and functioning of these plant and other facilities are in keeping with the EMP. The placement of these should be guided by the referenced guide sheet. Throughout the construction process, the temporary works will be assessed for compliance. A preliminary site management plan has been prepared by the EC/EM, and is presented in Appendix 6. This is to be discussed with the contractor and any revisions made prior to the commencement of works.

4.2 Public Relations

4.2.1 Communication with Client

Communication with the Client is with the intention of establishing any client-specific requirements as regard the execution of the works. Records of communication are in the form of minutes or aide memoires of meetings, email, facsimile or other official correspondence, which will constitute part of the environmental management documentation.

4.2.2 Communication With Statutory and Other Bodies

This communication is in an effort to obtain information on any specific environmental requirements which need to be adhered to.

4.2.3 Communication with the Community

Communication with the community is to be by way of public advisories of road closures, heavy machinery operation or similar disturbances anticipated. The contractor is also to communicate, by way of signs, safety notices and hoarding, on which the purpose of the works will be indicated. Community consultations are expected to be facilitated by the Community Clerks.

4.2.4 Environmental Training Officers

The EM is to hold training sessions for the Environmental Officers to indicate the methodology to be exercised for the environmental monitoring. Forms are to be distributed to each of the officers.

4.2.5 Contractor Sensitization

The Contractor is to be provided with the guidelines for ensuring environmental preservation. These guidelines are to govern the undertaking of the works. The contractor is to submit the relevant method statements for works.

4.3 Implementation Register

4.3.1 Environmental Inspections

These inspections are to undertaken by the Environmental Officers during visits to the site. Prior to the undertaking of the works, a baseline assessment is to be undertaken to determine the state of the existing environment. During visits, the officers are to record observations on prescribed forms. These are to serve as a database of the impacts of the civil works. Records of inspections are to be kept by the EM, and summaries of these included within the Project Reports. The Mitigating Measures checklist and Environmental Monitoring schedule are to serve as resources for this process.

4.4 Incident Management

Incidents, in this instance are environmental issues arising for which corrective and or preventative action will have to be undertaken. The EM will be responsible for tracking and recording these incidents. The incidents and guidelines for addressing them are to be recorded on prescribed forms. In Appendix 6 are some possible incidents and the contingency plans to be effected in the event that they occur. Appendix 7 contains contract information to be used in the event of emergencies.

Appendix 1 – Key Personnel and their Environmental Responsibilities

Title	Responsibilities	Authority	Accountability
Engineering Consultant (EC)/ Environmental Manager (EM)	Ensure that all stakeholders are in receipt of all information necessary to ensure that the works comply with the EMP Liaise with all authorities and licensing agencies Liaise with the Client on all incidents regarding the Civil Work Report to the Client any incidents of non compliance	Halt works in the event of any significant environmental incident or action non-compliant with the EMP	Client
	Overall responsibility for all environmental matters Development, implementation, monitoring and updating of the EMP Ensure the timely identification of environmental risks and prescription of the appropriate mitigation measures Ensure that environmental procedures are in place and managed Obtain and update all environmental licenses, approvals and permits as required Lead liaising with approval authorities on issues environmental-related matters Manage environmental document control, reporting and training Oversee site monitoring, inspections and audits Manage contractor, subcontractors and consultants on issues relating to the environmental, assess their environmental capabilities and oversee their submission of environmental documents Prepare and/or distribute environment alerts Develop and/or deliver training programmes regarding the environmental requirements of the civil work	Halt works in the event of environmental breaches Directly implement environmental protection issues	EC/EM

Title	Responsibilities	Authority	Accountability
EC/EM	Ensure that design is safe and there is minimal negative environmental impact Ensure that environmental requirements are taken into account at the design stage	Ensure that designs are in compliance with environmental requirements	EC/EM
Architect	Ensure that materials specified are not environmentally hazardous Ensure that basic health and safety/accessibility standards are upheld in the design Ensure that environmental guidelines are taken into account during the design stage	Ensure that designs are in compliance with environmental requirements Ensure that materials specified are not environmentally hazardous	EC/EM
Other Consultants	Comply with the requirements of the EMP ; Consult with the EC	Provide required information in their specific field of expertise	EC/EM
Contractor/ Construction Manager	Carefully plan and strategize works to ensure minimal negative environmental impacts Ensure that personnel undertake works in accordance with construction and environmental guidelines and specifications Ensure that the procedures are upheld and protection measures implemented Liaise with the EC/EM with regard to any discrepancies/breaches	Direct the implementation of EMP Report to the EC/EM any incidents of non compliance	EC/EM

Appendix 2 - Management Plans

Environmental Monitoring Plan

Objectives:

a. Ensure that the implementation of the works is in keeping with laws and guidelines outlined

b. Measure the success of the mitigation measures

c. Continue baseline monitoring

Implementation:

This plan is to be implemented during pre construction, construction and during the defects liability period/part operations period. Officers will, during site visits log observations as regards the environmental state of the site and environs. Areas to be monitored include:

- Noise
- Accesses
- Air quality
- Water quality
- Waste disposal
- Observations will be logged in the Monitoring Log.

Schedule:

The monitoring shall be undertaken in accordance with the EMP

Responsibility:

The EM/EC shall be responsible for monitoring the site

Appendix 2 - Management Plans (cont'd)

Noise and Vibration Management Plan

Objectives:

Ensure that the noise and vibration emissions are kept within acceptable limits and are not significantly higher than the normal threshold

Implementation:

- Works are to be performed during normal daylight working hours from Monday to Friday. No work is to be undertaken on evenings, weekends or public holidays unless so determined by the Contractor, in an effort to expedite the works.
- When works are to be undertaken on evenings weekends and holidays, the community is to be given due notice of this, and all should be done to ensure that noise and vibration are within normal limits, and in the instance that these should surpass normal limits, these interruptions should not be for excessively long periods of time. Should this not be possible, the EM and community should be so informed.
- Equipment such as jack hammers, compressors, compactors, should be fitted with appropriate silencing devices

Schedule:

These guidelines are to be adhered to throughout the undertaking of the works.

Responsibility:

The Contractor is responsible for implementation of the works.

Air Quality Management Plan

Objectives:

Ensure that the air quality on and in the vicinity of the site is maintained within normal thresholds prior to the construction works.

Implementation:

- Dust emissions are to be controlled by spraying water.
- Dust screens are to be installed in the perimeter of the site, particularly during demolition
- Heavy vehicles carrying aggregates and other fine materials leaving or coming to the site are to be properly covered and secured.
- Works which will potentially generate high volumes of dust should not be performed on days of high winds
- Equipment should be properly maintained
- Spoil heaps are to be covered/wetted

Schedule:

This is to be performed throughout the execution of the works.

Responsibility:

The Contractor is responsible for implementing this plan

Soil and Water Management Plan

Objectives:

Ensure that minimal negative impacts to the soil and water on site and the vicinity

Implementation:

- Garbage generated on site should be sent to the waste disposal facility and not deposited within waterways or indiscriminately on the site.
- Solids and plastics should not be dumped in waterways

Schedule:

This is to be implemented throughout the works.

Responsibility:

The contractor is responsible for execution of this plan

Waste Management Plan

Objectives:

Ensure the safe deposit of generated waste in accordance with the Saint Lucia Solid Waste Management Authority guidelines.

Implementation:

- Sanitary facilities, such as chemical toilets are to be provided for site workers. They shall be one toilet at least, for every 25 workers.
- Demolished materials are to be removed from the site on a daily basis
- In the event that it may be necessary to stockpile waste, this should be done in a way that in no way obstructs traffic or the undertakings of the community.
- Disposal areas are to be properly demarcated and protected
- Though no hazardous wastes are expected, the occurrence of such shall be handled in accordance with the requirements of the Saint Lucia Solid Waste Management Authority. The EM should also be informed of the presence of such waste.

Schedule:

This is to be implemented throughout the works

Responsibility:

The Contractor is principally responsible for implementing this plan.

Transport Management Plan

Objectives:

Ensure minimal interruption to regular traffic routes

Implementation:

- Parking along the main Marchand Road should be avoided.
- The Contractor should park along the secondary road adjacent to the Marchand Community property – near the playing field.
- The Contractor is to be responsible for repairing any damage to public roads resulting form the passage of site vehicles along roads.
- Adequate signage is to be installed in strategic locations during implementation. Different operations may merit the relocation or replacement of signs.
- Temporary signage is to be installed during concrete pours for which heavy plant will be utilised

Schedule:

This is to be implemented throughout the duration of the civil works.

Responsibility:

The contractor is to implement this Plan.

Health and Safety Management Plan

Objectives:

Ensure that persons working on and in the vicinity of the site are at minimal risk of injury

Implementation:

- Ensure that site vehicles within the community are driven within the legislated speed limits
- Signs are to be installed in the vicinity of the works to ensure that workers and passersby are guided away from dangerous areas. Pedestrian access routes must be clearly marked.
- In light of a nearby school, special personnel should be present, during times of movement of high volumes of children, for ensuring that children keep away from the construction site.
- Workers are to be equipped with, *inter alia*, proper safety equipment and clothing, such as goggles, gloves, dust masks, hard hats and steel toe boots.
- Materials used on site are to be in accordance with the respective Material Safety Data Sheets for these
- Works are to be suspended in the wake of site emergencies. The contractor is to determine whether the emergency merits site closure. He may also be advised by the EM/EC on this matter.

Schedule:

This is to be implemented throughout the Civil Works

Responsibility:

The Contractor shall be responsible for implementing this Plan

Community Relations Plan

Objectives:

Ensure that the community in the vicinity of the works is not adversely affected by the works but rather is so sensitized that they appreciate the inconveniences to be borne and make the necessary adjustments in their lives to accommodate the civil works

Implementation:

- The community shall be informed, via various media of the works ongoing – schedules, interruption of services, detours, demolitions, noise interruptions
- Contractor is to ensure that works are principally undertaken during regular daytime working hours. At instances where it may be necessary to perform works at night, the community is to be so informed.
- The community is to be given advanced notice (at least three days) of interruptions to services, such as water, electricity, telephone, transportation, unless these occur accidentally.
- The contractor is to inform the local community council of activities ongoing which may interrupt the community life
- There is to be open communication between the local community council and the residents
- The workers are to be sensitized of the environmental guidelines enforced on the civil works
- Site Officers under the EM are to be trained in the monitoring of the works.

Schedule:

In accordance with works ongoing on site

Responsibility:

The Contractor is to be responsible for the implementation of this activity.

The local community council is to also be responsible for informing the residents about the civil works.

The Client, by way of a construction sign shall inform the community of the civil works.

Appendix 3 – Potential Environmental Risks

Activity	**Aspect**	**Impact**	**Risk Level**
Demolition	Surface Water discharge	Contamination of off-site waters	Low
	Dust emission	Air contamination on and off site	High
	Noise emission	Noise pollution on and off site	High
	Vibration	Vibration off site	High
	Transport and Haulage	Dust and mud generation on local roads Noise off site Deterioration of roads	High
Stockpiling	Dust emission	Air contamination off site	High
	Surface water run off	Clogging of drainage systems	Moderate
Plant maintenance/refueling	Surface water run off	Contamination to off-site waters	Moderate
Temporary site accommodation	Food wastes and litter generation	Attraction of vermin	High

Appendix 4 – Mitigation Measures Checklist

No.	Activity	Parameter	Mitigation Measures Checklist	Yes or No	Comments
	General	Notification and Worker Safety	Local community and environment representatives notified of upcoming construction activity		
			Public has been notified of the works through appropriate notification in the media and/or at publicly accessible sites, including the site of the work		
			All legally required permits have been acquired for construction and rehabilitation		
			Contractor formally agrees that all work will be carried out in a safe and disciplined designed to minimize impacts on neighboring residents and environment		
			Workers shall comply with good safety practice such as the use of hardhats, masks, safety glasses, ear plugs, safety boots and harnesses		
			Appropriate signposting of the sites to inform workers of the key rules and regulations to follow		
	General Construction	Air Quality	During the demolition activities, chutes shall be used from first floor level		
			Demolition debris shall be kept in a controlled area and sprayed with water mist to reduce debris dust		

No.	Activity	Parameter	Mitigation Measures Checklist	Yes or No	Comments
			During pneumatic drilling or wall destruction, dust shall be suppressed by ongoing water spraying and or dust screen enclosures		
			The surrounding environment (sidewalks, roads) shall be kept free of debris to minimize dust		
			Materials for delivery to and from the site are to be properly covered and secured.		
			There will be no open burning of construction waste or materials at the site		
			There will be no excessive idling of construction vehicles at the site		
		Noise	Construction noise will be limited to restricted times during normal working hours.		
			During operations the engine covers of generators, air compressors and other powered mechanical equipment shall be closed and equipment placed as far away from residential areas as possible.		
		Water Quality	The site will establish appropriate erosion and sediment control measures to prevent sediment from moving off site and causing blockage of drains or excessive turbidity in watercourses to which these are connected.		

No.	Activity	Parameter	Mitigation Measures Checklist	Yes or No	Comments
		Waste Management	Waste collection and disposal pathways and sites will be identified for all major waste types expected from demolition and construction activities.		
			Construction waste will be collected and disposed properly		
			Records of waste disposal will be maintained as proof of proper management		
			Wherever feasible, the contractor will use and recycle appropriate and viable materials		
	Site Wastewater treatment system	Water Quality	The approach to handling sanitary waste from temporary facilities shall be approved by local authorities Construction vehicles and machinery will be washed only in designated areas where run off will not pollute natural surface water bodies		

No.	Activity	Parameter	Mitigation Measures Checklist	Yes or No	Comments
	Traffic and Pedestrian Safety	Direct or indirect hazards to public traffic and pedestrians by construction activities	Develop and update Traffic Management Plans for all stages of work Identify and assess roads likely to be affected by the civil works Undertake before and after dilapidation surveys on local roads Traffic controllers and/or signage for both egress and ingress of site works All vehicles carrying materials to be adequately covered and secured to prevent any loss of material The Contractor will ensure that the construction site is properly secured and construction related traffic regulated. This includes, but is not limited to: • Signposting, warning signs, barriers and traffic diversions. Site shall be clearly visible and public warned of all potential hazards • Traffic management system and staff training, especially for site access and near-site heavy traffic. Provision for safe passages and crossings for pedestrians where construction traffic interferes. • Adjustment of working hours to local traffic patterns, eg. Avoiding major transport activities during rush hours • Active management by trained and visible staff at the site		

No.	Activity	Parameter	Mitigation Measures Checklist	Yes or No	Comments
	Visual Impact, Landscaping and Rehabilitation	General public aesthetic impacts	Landscaping and rehabilitation to include planting Site compound and area surround should be kept tidy and regularly cleaned and maintained		

Appendix 5 – Environmental Monitoring

Activity	Area	Type of Assessment	Resources/Forms	Responsibility	Frequency	Reported To
Noise and Vibration						
Plant and Equipment Monitoring	Community	Assess adequacy of sedimentation/environmental controls on site	Environmental Monitoring Log	EO	During Visits	EM
Building Condition Survey	Structures in vicinity of works	Inspection of all structures likely to be affected prior to construction works	Inspection Log	EC	At inception of works, at incidence on complaints	EC/EM
Vibration Monitoring	In vicinity of site	Note times at which vibrations are observed and equipment causing vibration	Environmental Monitoring Log	EO	During Visits	EM
Complaints Monitoring	All complaints	Note taking	Complaints Log	Community Officer	As Required	EM/EC
Air Quality						
Dust Deposition Monitoring	In vicinity of site	Visual assessment during site works	Environmental Monitoring Log	EO	During Visits	EM
Complaint Monitoring	All complaints	Note taking	Complaints Log	Community Officer	As Required	EM/EC
Water						
Monitoring of surface water	In drainage routes leading from the site	Visual Inspection	Environmental Monitoring Log	EO	During Visits	EM

Appendix 6 – Potentially Serious Environmental Incidents/Emergencies/Contingency Plan

Incident/Emergency	Evidence/Sign	Potential Impact	Planned Contingency Measure
Excessive noise	Complaints from residents and/or other persons in the vicinity of the site	Noise nuisance to nearby residents and commercial establishments	Install dampers, if possible on equipment which generate noise Ensure that plant are installed in areas where vibration emission is minimized Install hoarding Ensure that minimal to no noise creating activities are undertaken after normal working hours Work practices, work controls may need to be reviewed. Equipment maintenance regime to be checked; silencers installed on equipment and noise barriers installed. Work hours may also have to be modified
Fire	Observation by workers or persons in the vicinity of the site	Risk to human life and property	Work is to be stopped Flammable substances and combustible materials are to be removed from the vicinity of the fire Contact emergency services

Incident/Emergency	Evidence/Sign	Potential Impact	Planned Contingency Measure
Excessive dust	Dust on and/or off site Complaints from persons in the vicinity	Respiratory risk to workers and persons in the vicinity	Increase wetting of surfaces being demolished Increase wetting of demolition stockpiles Install fabric fence for containment of dust Minimize exposed surfaces Cease dust generating activity until better dust control measures are undertaken Works procedures to be reviewed Use of temporary covers
Release of large volumes of fuel/oil into drains	Oily sheen/sleek on the surface of water	Risk to aquatic life	Remove source Use absorbent pad to remove oil Repair defective equipment

Appendix 7 – Emergency Contact Information

Name	**Contact Number**
Police	758-456-3885 (Marchand)
Ambulance	999
SWMA	758-450-7070
Environmental Manager/ Engineering Consultant	758-453-2093/484-3759
Contractor	To be included