

JAMAICA SOCIAL INVESTMENT FUND
ENVIRONMENTAL MANAGEMENT FRAMEWORK

INTRODUCTION

The Jamaica Social Investment Fund (JSIF) finances and implements a variety of small-scale community level projects in rural, peri-urban and urban areas. These projects are expected to have generally positive environmental impacts, albeit some could result in minor adverse environmental impacts that would be mostly local and reversible. Occasionally, there may be a need for involuntary land acquisition under eminent domain to meet the requirements of land for a project. JSIF has developed this Environmental Management Framework (EMF) to manage these potential adverse impacts and also to ensure compliance with the requirements of Jamaican environmental laws and regulations and the relevant policies of its major funding agencies like Caribbean Development Bank, European Union, Inter-American Development Bank, World Bank and other development partners.

One of the guiding operational principles (principle # 9) of JSIF is that projects funded by JSIF must conform to the Government of Jamaica's environmental regulations and have minimum impacts on the natural and cultural environment. Thus the EMF becomes an integral part of JSIF's Operations Manual (OM) and is applicable to all investments financed by JSIF, regardless of its funding source or implementing agency.

The main objectives of this EMF are to:

- establish procedures for screening all proposed projects for their potential adverse environmental impacts and land requirements/acquisition;
- specify measures for managing, mitigating and monitoring environmental impacts during project implementation and operation; and
- outline the training and capacity-building arrangements needed to successfully implement the provisions of the EMF.

PROJECTS FINANCED BY JSIF

Types of Projects Eligible for JSIF Financing

JSIF finances only small-scale projects which are aimed to improve the livelihood of small communities, their access to basic services and support income generating activities through micro credit funding etc. These projects can be classified into three broad groups: (a) Infrastructure; (b) Social Services; and (c) Capacity Building. Social Services¹ and Capacity Building² projects are normally environmentally benign and provisions of this EMF will not be applicable. However, some of the infrastructure projects funded by JSIF are likely to have

¹ Typical activities financed under social services category include: vocational skills training, market awareness, entrepreneur skills, job separation counselling, employment profiling, personal development, job preparation skills, literacy; personal money management, conflict resolution, anger management; parenting skills, adolescent/adult life skills; trauma and bereavement counselling; health and hygiene behaviour change and construction skills.

² Typical activities financed under capacity building category include: organizational development, planning and management, communication skills and conflict resolution, fund raising and financial management, governance, disaster preparedness, maintenance, and management of community based resource centres.

localised minor adverse impacts, mainly during construction, and therefore provisions of this EMF will be applicable to them (see Table 1 for a complete list of infrastructure project categories).

Types of Projects Ineligible for JSIF Financing

Because of their size/magnitude and significant potential environmental and social impacts, the following types of projects are ineligible for JSIF financing³:

- Construction of any new roads;
- Major upgrading or realignment of roads (“major” means changing the road category, such as from seasonal to all-weather or secondary to primary; or adding new lanes);
- Improvement and rehabilitation of any existing roads within 5 kilometres of any protected areas or any other areas of natural forest;
- Dam construction, reconstruction, rehabilitation or strengthening;
- Irrigation works with incremental command areas exceeding 200 hectares;
- Flood protection, sewage treatment⁴, agricultural drainage, or other works which could adversely affect wetlands or natural waterways, either through pollution or hydrological changes;
- Use of pesticides on the World Health Organization’s Hazardous Pesticides List which are not recommended;
- Aquaculture using non-native species in natural water bodies;
- Works which would adversely affect cultural property, including archaeological and historical sites;
- Any activities that require the conversion of natural habitats;
- Activities that negatively affect natural protected areas recognized by national or local governments (or buffer zones thereof);
- Land reclamation such as drainage of wetlands or filling of water bodies to create land;
- Purchase or lease of land which has unclear titles;
- Land clearance and levelling (when affecting critical natural habitats and natural land contours, natural habitats for this purpose being those water or land areas where most of the original plant and animal species are still present); and
- Hazardous waste management and disposal as well as manufacture, transport and use of hazardous, and/or toxic materials (except small amounts of solvents, degreasing materials, paints, fuels, and the like used during construction).

Project Target Areas

JSIF investments target existing smaller communities in rural, peri-urban and urban areas. They mostly involve repair, rehabilitation and or upgrading of existing infrastructure. Investments for creation of new infrastructure are restricted to only those which are essential for improving or sustaining the existing service levels (e.g., connection to an existing trunk sewer). Therefore, no adverse potential impacts on natural habitats (wetlands and protected forests) are anticipated. Also, as discussed above, projects that may have major adverse environmental or social impacts are ineligible for JSIF funding.

³ see Operations Manual Section 4.2 on eligibility criteria for community projects.

⁴ except for small-scale package-type sewage treatment plants, such as bio-digester.

SCREENING PROCEDURES

National Regulatory Requirements

Jamaican national environmental regulatory requirements are prescribed by the environmental Permit & License System (P&L), which came in to effect in January 1997 and is administered by the National Environment and Planning Agency (NEPA)⁵. It is a mechanism to ensure that all Jamaican facilities and development projects meet the relevant standards and procedures to minimize adverse environmental impacts during construction and operation of a facility. See Figure 1 at the back of this document for a flow diagram of NEPA's environmental permit and licence system.

JSIF approached NEPA, in November 2005, to obtain advice with respect to the national regulatory requirements (environmental permit to construct and licence to discharge) for the various categories of infrastructure projects funded by JSIF. NEPA, in its responses (dated December 6, 2005) confirmed that some of the projects would require an environmental permit. JSIF is required to submit an application to NEPA, together with a detailed Project Information Form (PIF). NEPA, after review of the application, will grant an environmental permit, sometimes with terms & conditions, or may require the preparation of a full Environmental Impact Assessment (EIA) prior to granting the environmental permit.

Projects and facilities that discharge a substance to the atmosphere, to the ground or into surface waters may require a licence to discharge. This licence is also issued by NEPA after review of an application which is submitted together with the application for an environmental permit to construct. Among the projects eligible for JSIF financing, only small (package) sewage treatment facilities would fall into the category requiring a licence to discharge.

Other Requirements

As part of the harmonization initiative by the international development partners and as part of its recent initiative to pilot the use of country systems, the World Bank has prepared a report on "Safeguards Diagnostic Review For Piloting the Use of Jamaican Systems to Address Environmental and Social Safeguard Issues in the Proposed Bank-Assisted Jamaica: Inner City Basic Services Project for the Poor" (2006). This report has found that the main difference between Jamaican national environmental requirements for the types of infrastructure projects financed by JSIF and those of the World Bank and other international development partners is the preparation and use of an Environmental Management Plan (EMP). An EMP sets out project specific mitigation measures and corresponding monitoring requirements. The use of generic EMPs for small-scale infrastructure projects with minor adverse environmental impacts (as in this case) has become internationally accepted good practice, and EMPs are often adapted as Standard Operating Procedures (SOP).

Table 1 below provides a generic list of infrastructure categories and project types financed by JSIF. It also shows requirements for an environmental permit from NEPA and / or a license to discharge depending on project type. The need for preparation and use of a project specific EMP based on project categories and types is also indicated in Table 1.

⁵ This EMF only deals with the environmental permits needed from NEPA. Planning permits for various buildings and developments required from Parish Councils and from NEPA are outside the scope of this EMF.

Screening Criteria

Some site-specific issues may present serious environmental risks and / or impacts. For example, proximity to a protected forest area could have potential impacts on a unique natural habitat (endemic species of fauna or flora) or a high water table area would have potential effect on the design and operation of sanitation systems such as soakaway pits or tile fields. In such cases there should be a consideration of alternatives or the project application will be rejected due to the unsuitable site conditions. Therefore, a site screening mechanism is needed to identify sites that are potentially unsuitable due to site-specific environmental conditions.

In addition, the land on which a project is to be located must comply with the zoning requirements of NEPA and relevant local planning legislation. In this context, the local Parish Council has an important role to play, not only by reviewing applications and issuing a local planning permit, as required, but also in the review of the details of any proposed development facilities. This is important since the Parish Council is also expected to assist with the operation and maintenance of community facilities and infrastructure.

Screening Process

Each project must be screened by the respective JSIF project officer, early in the project cycle, for potential environmental impacts and land requirements. Table 1 above must be used only as a reference to make a preliminary decision whether NEPA permit to construct and or license to operate and or an EMP is required. This decision must be confirmed by the JSIF Environmental and Resettlement Officer (ERO) after reviewing additional site specific information as detailed in the attached Form “Checklist for Screening Site Specific Issues”.

Figure 2 further below shows how the screening and implementation of mitigation measures are integrated with the JSIF project cycle.

Table 1: Infrastructure Project Categories and Regulatory and Other Environmental Requirements

PROJECT CATEGORIES	PROJECT TYPES	NEPA Permit⁶ Yes/No (Y/N)	EMP⁷ Yes/No (Y/N)	NOTES
SCHOOLS	• Basic Schools (2-4 classrooms) and associated amenities, such as sanitation	N (see Notes)	Y	1. NEPA permit is required if a bio-digester system is installed. 2. If septic tank/tile field is installed, a project brief should be sent to NEPA and comments from WRA and EU must be obtained. 3. If connection to public sewer system NWC permission must be obtained.
	• Primary/All-Age Schools – Rehab or Expansion (1-4 classrooms) and associated amenities (sanitation)	N (see Notes)	Y	
HEALTH CENTRES	• Type 1 and Type 2 ⁸	N	Y	
RECREATION FACILITIES	• Sports fields & related facilities	N	N	Includes playing fields, fencing and changing rooms.
	• Playground & recreation areas	N	N	
COMMUNITY FACILITIES	• Community (Resource) Centres	N	Y	
	• Skills Training Centres & Business Incubators	N	Y	
	• Offices/Income-generating facilities	N	Y	
	• Small community markets	N	Y	
	• Homes for Children, the Elderly or	N	Y	

⁶ This means an environmental permit.

⁷ Environmental Management Plans (EMPs)

⁸ Type 1 and 2 Health Centres provide services but do not admit patients, persons with illnesses requiring admission are sent to regional hospitals. The services are as follows:
Type 1 - Serves an area with a population of 2,000 - 4,000 people and provides: 1. Maternal and child health services (antenatal, postnatal, child health, immunization, nutrition monitoring and support) 2. Health promotion/education and community participation.
Type 2 - As in Type 1 plus additional services as follows: 1. Health promotion and illness prevention (veterinary public health and food, hygiene/food handlers clinics, water quality, solid liquid and excreta disposal)
2. Surveillance and Disease Control (specific communicable diseases e.g. TB and Hansen's, malaria and childhood diarrhoeal disease, STDs, other communicable diseases, rheumatic fever prophylaxis). 3. Curative Services (common medical conditions, STDs, acute and chronic diseases. 4. Dental services (visiting)

	the Disabled			
SMALL ROADS	<ul style="list-style-type: none"> • Small roads in agricultural areas, including small, single-lane bridges and approaches, foot bridges, retaining walls, fordings and associated drainage structures • Upgrading, rehabilitation and repair of urban local access roads 	To be Determined N	Y Y	Small rural roads means Jamaican Category C (minor roads) less than 5km in length and an average width of 5m.
WATER SUPPLY	<ul style="list-style-type: none"> • Rural, small-scale community-based water supply system for less than 2,000 people • Urban water supply rehabilitation or repairs (pipe diameter less than 10cm) 	Y (also see notes) N	Y Y	<ol style="list-style-type: none"> 1. EHU approval must be obtained for rural systems. 2. If groundwater well is used WRA permission must also be obtained. 3. If connection to public system, NWC permission is required.
SANITATION	<ul style="list-style-type: none"> • Upgrading of existing pit latrines • Septic tank with soakaway or tile field for max. number of 4 units • Upgrading and repair of local urban sewer system in community 	N (see notes) N Y (see Note 3)	Y	<ol style="list-style-type: none"> 1. No soakaways nor pit latrines are permitted on the Liguanea Plains. 2. Emptying of septic tank must be registered cesspool contractor. 3. If sewer pipes are 15cm in diameter or larger, NEPA permit is required. 4. See also notes on sanitation above for Schools.
URBAN DRAINAGE	<ul style="list-style-type: none"> • Open or covered storm drains 	Y	Y	NWA and local Parish Council also should be consulted.
STREET-LIGHTING	<ul style="list-style-type: none"> • Street-lighting in urban communities 	N	N	
FENCING	<ul style="list-style-type: none"> • Fencing along property lines in urban communities 	N	N	
AGRO-PROCESSING FACILITIES	<ul style="list-style-type: none"> • Small-scale, community-level processing factories or plants 	Y	Y	NEPA permit is required for citrus, coffee, cocoa, coconut & sugarcane

Note: NEPA requirements are based on Letters of Query submitted by JSIF to NEPA on November 7 & 10, 2005 and NEPA's response in letters dated December 6, 2005.

Checklist for Screening for Site Specific Issues

This Form is to be prepared for all JSIF projects by the Project Officer in consultation with community liaison officers and community representatives.

Note: A "Yes" or "Do Not Know" response to any of the questions below warrants an investigation by the Environmental Officer (EO). One copy of this Form must be sent to the EO, prior to project application review and another copy must be attached to the project application.

Project Title: _____	Project Number: _____
Technical Officer: _____	Project Type: _____
Appraisal Officer: _____	Date: _____

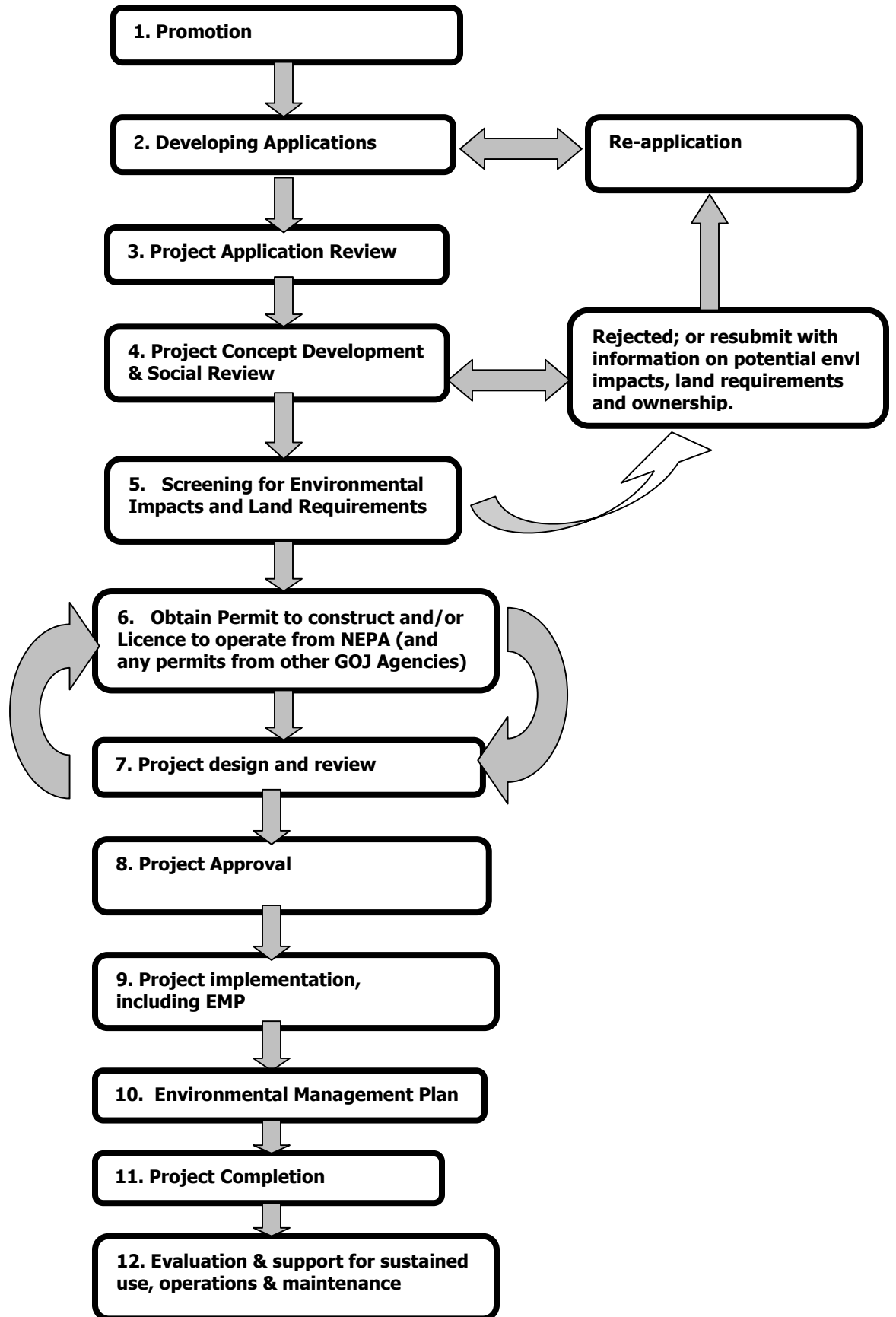
#	ISSUES	Yes	No	Do Not Know
1	Is the project area zoned for the intended land use?			
2	Will the project involve any involuntary land acquisition?			
3	Will there be any private land donation?			
4	Will the project use any vacant public land?			
5	Is the project located in an area with cultural properties such as archaeological, historical sites/monuments, religious structures, sacred groves and or cemeteries?			
6	Is the project located in an area with endangered or conservation-worthy ecosystems, or an area with endemic fauna or flora?			
7	Is the project located within or in an area close to a national park, a protected area, wilderness area, wetlands and or critical habitats?			
8	Is the project located close to a springs, groundwater sources, surface water bodies, water courses or wetlands?			
9	Is the groundwater table close to the surface, i.e. 0.5m or less?			
10	Is the project in a polluted or contaminated area and or close to a waste dump?			
11	Is the project located in an area of steep slope and or susceptible to landslides or erosion?			
12	Is the project located on prime agricultural land?			
13	Is the project located in an area of tourist importance?			
14	Is the project area prone to flooding?			

Signed by Project Officer:
 Name: _____
 Date: _____

Signed by Community Representative:
 Name: _____
 Date: _____

Approved by ERO: NEPA Environmental Permit Required YES NO
 Name: _____
 Date: _____

Figure 2: Integration of Screening With JSIF Project Cycle



IMPLEMENTATION ARRANGEMENTS

Implementing NEPA Requirements

Based on the results of the screening, JSIF staff (Project Officer in consultation with Environment and Resettlement Officer) will prepare the necessary application to NEAP for a permit (and licence to discharge, where applicable). The application requires the submission of a detailed Project Information Form (PIF). NEPA reviews the application and determines whether (i) a full Environmental Impact Assessment must be prepared before a permit is issued, or (ii) a permit is issued by NEPA with or without Terms & Conditions. See Figure 2 for the detailed flow diagram of NEPA's environmental permit application process. If needed, JSIF proceeds with the preparation of a full EIA.

Once NEPA has issued a permit to construct, JSIF makes sure that all terms and conditions, and any requirements resulting from a full EIA, where applicable, are fully integrated into the design and the contract documents of the specific project. Depending on the nature of NEPA requirements, this may be done through an alternative design, special design features or modifications, an EMP, special contract clauses.

NEPA may also require special monitoring and reporting actions, and normally will carry out periodic monitoring of the implementation of the project to make sure the NEPA requirements are being met.

Implementing EMP Requirements

Infrastructure projects generally financed by JSIF are grouped into six broad groups as follows:

- Construction of New and/or Rehabilitation of Existing Buildings (schools, health centres, recreation facilities, community centres and facilities, including the provision of on-site water supply and sanitation services)
- Construction of New and/or Rehabilitation of Existing Water Supply Schemes
- Construction of New and/or Rehabilitation of Existing Roads
- Construction of New and/or Rehabilitation of Existing Sanitation Facilities (sewer networks, small wastewater treatment plants, such as bio-digesters, and on-site sanitation)
- Construction of New and/or Rehabilitation Existing Drainage Systems (within the existing communities)
- Construction of New and/or Rehabilitation Existing Agro-Processing Facilities.

A standard generic EMP has been prepared for each of the groups listed above, based on the expected likely environmental impacts during the construction phase (see Table 3 at the back of this document for the generic EMPs by infrastructure category). Further to the results of the project screening, the applicable EMP(s) must be incorporated into the bidding and contract documents. Some projects may have additional requirements for mitigation and monitoring in response to issues identified during site screening, which shall also be specified in the contract documents. Annex 1 contains additional guidance for detailed steps in good environmental management, specifically for the design and operational (O&M) phase.

Managing Other Potential Impacts

In addition to the above, projects that require conversion of any natural habitats should be evaluated to ensure compliance with the World Bank Operational Policy on Natural Habitats. Also,

projects that require procurement of pesticides or that result in the increased use of pesticides would require the development of a Pesticides Management Plan as required under World Bank Operational Policy on Pest Management. This would include non-chemical measures for pest management and guidelines for proper selection, application, storage, handling, transport and disposal of pesticides.

Another potential impact may be chance finds of physical cultural property. Site screening may indicate that the project site is in, or close to, an area with and important cultural property. The Jamaica National Heritage Trust (JNHT), under the provisions of the JNHT Act, may enter a property or site to investigate impacts on cultural properties. If there is a chance find of archaeological or cultural value the JNHT has a right to protect that find and may issue an emergency Preservation Order covering sites and buildings considered to be potentially archeologically important or significant.

The central area of Spanish Town in St. Catherine Parish is a declared Historic District and the JNHT has the right to stop any works in that area that may prove destructive to archaeological monuments or cultural property. Certain parts of downtown Kingston may soon be similarly protected. If any chance find artefacts are found during project works the JNHT may need to perform Rescue Archaeology in order to secure and preserve these artefacts. This may require the temporary cessation of certain project activities to facilitate JNHT procedures. The contract specifications in Part H, Section 1.6 contain a clause that sets out the required actions for the contractor to comply with the requirements of the JNHT Act to protect any chance finds of cultural property⁹.

Consultation and Disclosure

It is JSIF’s mission to empower communities to effectively implement community-based programs aimed at social development. JSIF’s Operational Manual (OM) prescribes a project preparation and implementation process that involves participation of the project community at all keys steps. This participatory process facilitates the consideration of environmental aspects as it integrates into the project cycle disclosure of project information to, and consultation with, the community. The following matrix shows the key environment-related consultation and disclosure actions during project preparation and implementation; it also shows the outputs or results of these actions.

It is important that JSIF, its partner agencies and especially the communities, follow and participate in the process prescribed in the OM as set out below:

Step in Project Cycle as per Operations Manual	Actions for Screening and Environmental Management	Output / Results
Promotion	- JSIF / community leaders to publicize intention to apply for project funding ¹⁰	- There is adequate awareness in the community about the project
Developing project application	- JSIF to hold community-wide consultation on local priorities and needs - Community to participate and contribute	- Local and specific environmental concerns and constraints are considered

⁹ This provision will also satisfy the requirements of the policies on cultural property by the various development partners, such as the World Bank’s, as set out in the draft OP 4.11 on Physical Cultural Property.

¹⁰ This step and the corresponding actions are not needed when a community has been selected for a project, such as was the case for the Inner City Basic Services for the Poor Project.

Project Concept Development	- Wide cross-section of community to participate in site screening process	- Alternatives have been considered and environmental feasibility is ascertained
Project Design and Review	- JSIF to publicly display designs for min. 2 weeks - Community reviews designs and “signs off”	- Ensures that designs are environmentally appropriate, among other criteria
Project Implementation (after contract award and signing)	- JSIF to arrange for sign board providing project details - JSIF to organize Project Information Meeting held in and with community - Community to attend and participate actively - JSIF to establish Project Steering Committee (PSC) - Community to monitor work and progress of contractor - JSIF and community to participate actively in PSC meetings	- Information on contract and contractor is disclosed - Community is made aware of its role in implementation - Community has channel for providing feed-back - Community makes sure that EMPs are complied with
Project Completion	- Community to set up maintenance committee - JSIF and partner agencies to assist community with O&M	- Continuing maintenance, including environmental aspects, is ensured

Implementation Responsibility

Implementation of projects, including all environmental aspects, is under the overall responsibility of JSIF. JSIF may employ a construction contractor, use community-based contracting, or projects may be implemented by agreement with and through partner agencies, such as the local Parish Councils, the National Water Commission (NWC), or the Jamaica Public Service Company (JPS).

The provisions of this EMF will apply regardless of the implementing agency, and JSIF will retain ultimate responsibility for the good environmental management of all their projects.

Environmental Requirements in the Construction Contracts

Volume II (Technical Specifications) of the construction contract documents contain, in Part H, technical clauses on “Environmental Mitigation and Health & Safety”; including a section on how the contractor shall deal with chance finds of cultural property and archaeological remains. Based on the screening results and depending on the type of infrastructure works to be executed, the JSIF Project Officer, in consultation with ERO, must prepare a list of measures to mitigate potential adverse impacts. These would include terms and conditions mentioned in NEPA’s permit to construct or license to operate and the relevant generic EMP (from Table xx) supplemented by any additional site specific measures, if required. These measures must be attached to Part H of the contract specifications.

A clause in the Particular Conditions of Contract will refer to these environmental management requirements EMP and will state that it is a supplement to Part H of the Specifications. The Particular Conditions of Contract will also stipulate that any non-compliance with the mitigation measures set out in the contract will attract the same remedies under the contract as any non-compliance with the contract

provisions; such remedies would be instructions, notices, suspension of work, etc. The Instructions to Bidders will highlight the inclusion of the EMP in the contract specifications and the contractor's obligation of compliance.

MONITORING AND REPORTING

JSIF Board and Management will have the main responsibility for monitoring the application and use of this EMF. For this purpose the ERO will prepare quarterly and annual reports on the key steps, outputs and results of the environmental management actions taken for all projects throughout the project cycle. Problems and issues arising during the use of the EMF will be flagged and brought to the attention of Management and for their action. Copies of the quarterly and annual EM monitoring reports will also be sent to NEPA and to the World Bank. The Bank will also review these reports during the periodic supervision missions.

JSIF's management information system (MIS) which is being modified and upgraded in the first half of 2006 will be used to track the key steps and to generate the necessary reports for the JSIF Board and Management. The following steps will be monitored for all projects:

Stage in Project Cycle	Action	Result / Outcome
Project Concept Development	Site Screening	Acceptance
		Rejection
Project Appraisal	Project Screening	NEPA Environmental Permit Required
		EMP Required
		None
Project Implementation	NEPA Env'l Permit	With full EIA
		With terms and conditions
	EMP	Included with contract
	EMP implemented	With problems or issues
		With complaints
		With residual impacts
Operation	Maintenance Plan	Environmental Requirements

TRAINING AND CAPACITY-BUILDING

JSIF has designated a full-time Environment and Resettlement Officer (ERO) and an alternate for back-up and support. The designated alternate ERO is JSIF's Legal Officer; this provides a very good complement to the environmental qualifications and experience of the staff who is the main ERO.

Although the designated JSIF environmental staff have good knowledge and experience with Jamaican national regulatory requirements, they need some specific training in the policy areas of environmental assessment (and also in land acquisition and involuntary resettlement) as applied by international and bilateral development partners, such as the World Bank, the IADB, USAID, EU, CIDA, DfID, etc. who are all active in Jamaica¹¹. The World Bank will assist to identify appropriate external

¹¹ Both this EMF, and a Land Acquisition and Resettlement Policy Framework that has been prepared in parallel, are in part based on the international approaches and standards. These frameworks are also entirely new to JSIF.

training opportunities for the ERO¹². Suitable national training should also be part of the capacity building of the ERO and alternate ERO.

The designated senior ERO is also responsible for the organization and provision of training sessions in environmental screening and environmental management for JSIF project officers, field supervision staff, the community liaison officers and selected community representatives. ERO staff shall prepare a training plan and training modules for project officers, field supervision staff, and community liaison officers (CLOs) to familiarize them with the principles and procedures as set out in this framework. Project officers and (CLOs), supported by the ERO, will be responsible to training community representatives.

Initial funding for the overseas part of the training and capacity-building shall be provided under the project management component of the Inner Cities Basic Services Project. The funding for routine training of staff by the ERO shall be built into JSIF's annual budget. Only marginal cost implications are expected in this context since environmental training of field staff and community workers shall be integrated with the other training aspects.

¹² It may be possible to combine any external EA training with training in Involuntary Resettlement that is offered periodically by the World Bank Institute.

Figure 2: Flow Diagram of Environmental Permit Application Process (Source: NEPA)

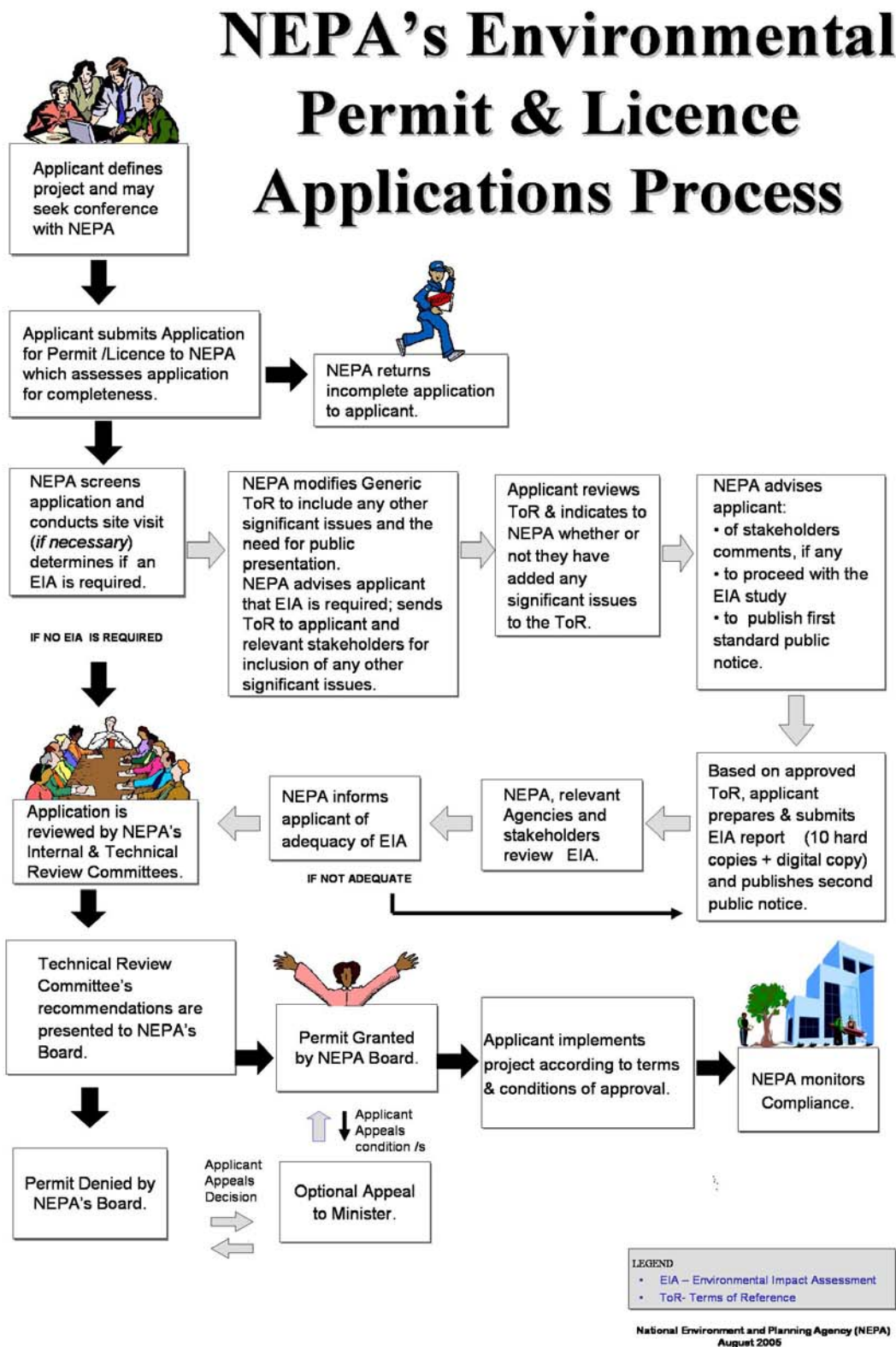


Table 3: Environmental Management Plans to Mitigate Adverse Impacts during Construction

(If a permit to construct was received from NEPA, then the following generic mitigation measures and monitoring requirements should be amended to include the general and specific terms and conditions issued by NEPA)

Activities	Potential Impacts	Mitigation Measures	Responsibility for Mitigation	Monitoring Requirements	Responsibility for Monitoring and Supervision
Construction of New and or Rehabilitation of Existing Buildings (Schools, Health Centres, Recreation Facilities and Community Facilities including provision of on-site water supply and sanitation services)					
Earthworks (Excavation, Vegetation Clearance, Trenching and Blasting)	Increase in fugitive dust levels and feeling of trees	<ol style="list-style-type: none"> 1. In residential areas, if works are conducted in the dry season, wet the exposed areas and stockpiles of earth materials, particularly fines, to minimise windborne particles and increase in levels of fugitive dust. 2. Compensate for trees removed by planting new trees. 3. Haulage vehicles transporting aggregate must be covered on all public roads. 4. Communities must be given at least two weeks prior notice of intended construction period. 5. Communities must be given prior notice of intended road closures and designated detours. 6. For worker health and safety, all workers should be supplied with dust masks. 7. Silt Screens or Sediment Traps should be deployed where earthworks or trenching occurs in close proximity or adjacent to gullies, drainage lines or rivers to avoid deterioration of water quality.. 	Contractor	<p>Suspended particulate matter (if required respirable particulates < 10 micro grams) should be monitored as per NEPA guidelines.</p> <p>Frequency: Fortnightly for the first three months and monthly thereafter.</p>	<p>Technical supervision staff, and where appropriate, with the participation of community representatives and or respective community liaison officers.</p> <p>Spot checks by ERO</p>
Movement of heavy machinery, blasting and drilling.	Increase in noise levels.	<ol style="list-style-type: none"> 1. Construction work must be carried out from 6:00 am to 8:00 pm or according to local regulations. 2. Blasting should be conducted during daylight and residents should be advised in advance when blasting will occur. 3. Blasting should only be conducted by a certified contractor and all safety requirements, including deployment of blasting mats; inspection of 	Contractor	Noise level should be monitored as per NEPA guidelines.	<p>Technical supervision staff, and where appropriate, with the participation of community representatives and or respective community liaison officers.</p> <p>Spot checks by ERO</p>

Activities	Potential Impacts	Mitigation Measures	Responsibility for Mitigation	Monitoring Requirements	Responsibility for Monitoring and Supervision
		buildings within the designated blasting radius, before and after blasting; contracting local police or security to supervise and control the movement of the public; and provision of earmuffs to workers must be strictly followed.			
Generation of construction rubbles from refurbishing or upgrading of buildings	Drain blocks and unsafe conditions by indiscriminate disposal of rubbles.	<ol style="list-style-type: none"> 1. All waste must be disposed in an approved landfill or dump site, in consultation with the National Solid Waste Management Authority (NSWMA). 2. Waste containers for recycling materials (plastics, metal & glass) shall be provided for the permanent operation of facilities (esp. schools & health centres). A recycling program should be initiated, including a simple composting facility. Only 	Contractor	Confirmation on disposal of solid wastes at an approved site to be monitored fortnightly.	Technical supervision staff, and where appropriate, with the participation of community representatives and or respective community liaison officers.
Workers on site	Sanitary facilities for workers	<ol style="list-style-type: none"> 1. Contractor to make suitable arrangements for use of sanitary facilities for his workers. 2. All large worksites to be equipped with portable chemical toilets, which must be supplied and serviced by an approved contractor. 	Contractor Contractor	Check that arrangements have been made Confirmation that portable toilets are supplied on site.	Technical supervision staff and where appropriate, community representatives and or respective community liaison officers.
Other construction activities such as: movement of heavy machinery, transportation of material, collection of wastes, road improvement works, trenching, pipe-laying etc.	Traffic congestion and hindrance of pedestrian movement	<ol style="list-style-type: none"> 1. Flagmen must be employed to direct traffic and reduce the occurrence of accidents 2. Material delivery must be confined to early mornings/late evenings (outside of peak periods) 3. Communities must be advised of intended road closures and designated detours. 4. Stockpiles and excavated material must be deposited in areas agreed with community so as not to interfere with local activities 	Contractor	Traffic congestion and number of accidents. Fortnightly.	Community representatives/ respective community liaison officers
Temp. scaffolding supports for beams and slabs	Cutting of trees in the vicinity of site	<ol style="list-style-type: none"> 1. Use sawn, dimensioned lumber, re-use supports, or use steel supports. 	Contractor	Weekly	Technical supervision staff, assisted by community representatives
Water and toilet fixtures	Water wastage and damage to equipment	<ol style="list-style-type: none"> 1. Install water-saving fixtures and toilet flushing, esp. if supply from cistern, and use institutional / commercial strength fixtures and equipment in all public facilities 	Contractor (based on spec's by JSIF)	Before and after installation on site	Technical supervision staff Spot checks by ERO

Activities	Potential Impacts	Mitigation Measures	Responsibility for Mitigation	Monitoring Requirements	Responsibility for Monitoring and Supervision
Construction of New and or Rehabilitation of Existing Water Supply Schemes					
Source/site selection and source development	Public health risks due to poor water quality (e.g. pathogen, salinity and other contamination from nearby sanitation & waste disposal facilities)	<ol style="list-style-type: none"> 1. Examine vicinity of source and investigate for potential contamination sources. 2. Test Water quality (chemical and bacteriological) from proposed and nearby sources. 3. Determine whether, and what water treatment system is needed. If needed, ensure that treatment is included in design and that source area is protected, especially upstream, from contamination. 	JSIF Project Officer JSIF Project Officer. JSIF Project Officer / Design consultant	Prior to site/source selection Completion of design	Technical supervision staff Spot checks by JSIF ERO
Excavation of trenches	Increase in fugitive dust levels; hindrance of pedestrian movement; disposal of construction waste/debris, and creation of stagnant pools.	<ol style="list-style-type: none"> 1. Excavation must be made (if possible) during the dry season, to avoid erosion and siltation of drainage canals or other water bodies in the area; 2. Use silt screens and sediment traps to prevent sediment from reaching trenches and watercourses. 3. Provide adequate drainage interception and diversion around trenches and work site. 4. Ensure prompt refilling of trenches and proper management and use/disposal of soil cover and wastes. 	Contractor	Periodic, i.e. weekly.	Community representatives/ respective community liaison officers, with spot checks by ERO
Construction of Small New and or Rehabilitation of Existing Roads (within the existing communities)					
Excavation and fill	Blocked access & disruptions Landslides & slips, erosion and sedimentation	<ol style="list-style-type: none"> 1. Give early notice to residents, use signs and flagmen, use diversion or open access periodically. 2. Keep angle of slopes within limits of soil type. 3. Use appropriate slope stabilization measures. 4. Balance cut and fill to limit steepness of slopes. 5. Cover slopes and re-vegetate early, incl. shoulders. 	Contractor	Periodic, i.e. weekly	Community representatives, community liaison officers and spot checks by JSIF ERO
Construction of drains & small bridges	Flooding & erosion of slopes	<ol style="list-style-type: none"> 1. Build bridges & drains according to design. 2. Provide temporary drainage facilities, including interception and diversion. Channel water away safely & ensure there are no downstream impacts. 3. Use silt fences & sediment traps. 	Contractor	Periodic, i.e. weekly	Technical supervision staff Spot checks by JSIF ERO

Activities	Potential Impacts	Mitigation Measures	Responsibility for Mitigation	Monitoring Requirements	Responsibility for Monitoring and Supervision
		4. Use energy dissipation for drain drops and outlets.			
Base course & surface course	Dust nuisance Stagnant water	1. Control dust through periodic watering. 2. Provide cross drains and drainage diversion.	Contractor	Ditto	Community representatives, community liaison officers and spot checks by ERO
Compaction of fill and base course	Nuisance from noise & vibrations	1. Give notice to residents and limit work of compacting equipment to daytime hours.	Contractor	Ditto	Ditto
Construction of New and or Rehabilitation of Existing Sanitation Facilities (sewer networks, small wastewater treatment plants and on-site sanitation)					
Pit Latrine Construction	Pollution, odor and fly nuisance	1. Use properly designed, ventilated improved pit latrines (VIP) only with screened ventilation stacks. 2. Locate latrines at least 15m from nearest residence and at least 10m downstream from water sources. 3. Do not build in areas with high groundwater table.	Contractor	Before and after installation	Community representatives, community liaison officers and JSIF ERO
Septic tanks, tile fields and pits	Contamination of groundwater	1. Do not build tile field or pit in areas with high groundwater table. 2. Do not locate pit on rock or in impermeable soils. 3. Locate at least 10m from nearest water source.	Contractor	Before and after installation	Technical supervision staff Spot checks by JSIF ERO
Sewer network and connections	Contamination of vicinity and of groundwater Blockage of sewer system	1. Prevent pipe breakages / fix any ruptures with clamps or replace broken pipes before covering. 2. Use sump pumps to return spilled sewage to nearest manhole. 3. Give notice to residents of sewer work. 4. Remove any obstacles or soil before making pipe connections and closing excavation.	Contractor	Frequent, during period of installation	Technical supervision staff Spot checks by JSIF ERO
Package treatment plants (bio-digester)	Pollution of surface or groundwater	1. Build plant in compliance with NEPA permit and licence. 2. Provide effluent outlet to surface or underground disposal.	Contractor	Periodic, i.e. fortnightly	Technical supervision staff Spot checks by JSIF ERO
Construction of New and or Rehabilitation of Existing Drainage Systems (within the existing communities)					
Drain excavation	Contamination or siltation from dredged/excavated	1. Dispose contaminated and unsuitable material in safe areas and haul away for off-site disposal at approved landfill site. Use sediment traps and silt	Contractor	Frequent, during critical flooding periods	Technical supervision staff assisted by the community representatives

Activities	Potential Impacts	Mitigation Measures	Responsibility for Mitigation	Monitoring Requirements	Responsibility for Monitoring and Supervision
	material Flooding from inadequate or blocked drains Erosion of drains and siltation	fences. 2. Use good design, do not block drains, clear blocked drains. Use sump pumps, especially during rains. 3. Use concrete or masonry-lined drains, or cover drain sides with stones (riprap), or use vegetation cover.	Contractor Contractor	Contractor, using good design Ditto	Spot checks by ERO Ditto Ditto
Construction of New and or Rehabilitation of Existing Agro-Processing Facilities					
Construction (and also Operation) of processing facilities	Possible pollution of surface water or groundwater. Contamination of surrounding area. Nuisance from dust, odor, or noise	1. Provide and operate wastewater treatment and dispose of treated effluent in an approved manner. Obtain licence to operate from NEPA. 2. Collect all production waste, recycle & re-use, and/or collect and store in closed containers. Dispose of collected waste materials at approved landfill or disposal site. 3. Only use approved standard processes and equipment, and maintain it in good working order.	Owner/Operator of facility Owner/Operator of facility Owner/Operator of facility	Monthly Monthly Monthly	Initial monitoring by JSIF. Later periodic monitoring by NEPA Initial monitoring by JSIF. Later periodic monitoring by NEPA Community to monitor and report

Appendix 1 – Jamaica Social Investment Fund Environmental Guidelines

1.0 The Environmental Impact of JSIF projects

Positive

There are a number of positive impacts of JSIF sub-projects to physical environmental in the communities in which they are situated. In keeping with principles of sustainable development and holistic planning where the environment is defined as the physical, biological, social and economic factors of life, the projects will have the effect of:

- i. Eliminating environmental safety hazards from deteriorating structures
- ii. Improving environmental health through water, sanitation and health infrastructure
- iii. The creation of temporary employment opportunities and long-term income generation
- iv. The provision of social services that were previously not available
- v. Improved learning environments and access to education and non-formal training
- vi. Improved living conditions in poor communities

Negative

Most of the negative impacts associated with Sub-projects are likely to occur during construction and rehabilitative works on roads, buildings, drainage, water and sanitation projects and where designs are inadequate. These tend to be minor and are easily identified and mitigated and determination of these potential impact forms and integral part of the analysis of the technical feasibility of the projects. In keeping with the principles of technical and environmental soundness however, adequate technical review, through peer review and using technical advisors, must take place to ensure adequacy of designs.

Negative impacts will also occur during operation particularly with relation to disposal of solid and sewage waste, where there is improper operational and maintenance procedures in place. These issues must also be factored into the technical analysis of the projects at the design phase.

Even with adequate planning and design, there are risks of impacts during implementation where guidelines are not followed at a supervisory level. All contracts and Terms of Reference for formulators, supervisors and contractors must therefore clearly show deliverables with the relation to implementation of mandated environmental procedures. Potential impacts include:

- i. Unnecessary removal of vegetation cover
- ii. Creation of soil slippage and soil erosion conditions from excavation and inappropriate placing of excavated matter on hillslopes
- iii. Blockage of drains from construction waste and excavated materials

- iv. Water contamination during construction on all project types or during operation of inadequate sewage facilities
- v. Excessive run-off where drainage on roads and off buildings is inadequate.
- vi. Inappropriate disposal of solid waste
- vii. Interruption of vehicular and pedestrian traffic flow or access to amenities.

2.0 General Guidance for Infrastructure Projects

I. Project Design

1. The project must be designed to minimize tree taking and damaging. When the project will result in clearing of land or cutting trees, at least the same number of trees must be replanted on or near the facility.

2. Site Selection

The land on which a building is to be located must comply with the zoning requirements of the National Environmental Planning Agency and relevant planning legislation. It must also be well drained, aesthetically landscaped and secure, especially if very small children are involved. All relevant permits and no objections from relevant agencies must be obtained.

- (i) In rehabilitation projects, when an existing building does not comply with the guideline above. Rehabilitation must, whenever possible include drainage, security and landscape of the area as well as the building itself and testing for hazardous materials such as asbestos and lead;
- (ii) In rehabilitation projects, when an existing building is located on unsuitable land, the JSIF shall not approve the project. The following are considered to be unsuitable lands:
 - (a) land resulted from fill up with any refuse matter that is contaminated by human or animal excreta or any other hazardous material;
 - (b) wetlands and flood plains;
 - (c) Protected Areas where approval has not been obtained
 - (d) steep (more than 30% declivity) and unstable slopes susceptible to slippage.

3. Any road rehabilitation project must comply with the minimum technical standards of the relevant Parish authority to which the road will be handed over to and required no objections obtained.

4. In rehabilitation/expansion or construction projects the technical and financial feasibility of using traditional architecture and simple technologies and materials must be

assessed, and simple, traditional style and materials adopted when suitable. A comparative assessment of environmentally friendly materials and techniques should also be adopted where suitable, based on comparisons of techniques and long-term cost-benefit analysis. This applies to any building, road, water and sanitation project.

5. All buildings should be well designed to provide security and at the same time to be attractive and well ventilated and make best use of natural lighting.
6. Adequate space and facilities for recreation inside and outside of a school must be designed accordingly and whenever possible, budget for its construction must be ensured in the project.

7. Sanitary Systems

Appropriate sanitation systems must be designed and installed; proper disposal systems must be functioning: it must also be determined if there is a need to provide training in environmental awareness to users¹³.

(i) Sanitary facilities must be suitable to the local and ground conditions.

(ii) Sanitary facilities must be provided in sufficient number

(iii) In order to avoid surface water contamination, when public facilities for sewage treatment are not provided, effluent should not be discharged into surface waters without adequate treatment: to avoid ground water contamination, effluent must be treated in a septic tank (minimum efficiency of 70% reduction of BOD); the absorption tank is not efficient in preventing groundwater contamination.

(iv) The site where the sanitary facility is to be installed must have a low water table.

(v) If sanitary facilities use alternative technologies such as Ventilated Improved Pits (VIP) latrines and others, it must be located at least 15 meters from existing buildings and houses, in the opposite direction of the prevailing winds, to prevent odours and undesirable impacts.

(vi) When an external latrine vent pipe exists, it must be located at the sunny side of the latrine and painted black, to produce an updraft, due to the heating of the air inside the vent: an external cover at the top of the vent pipe will prevent flies and mosquitoes

¹³ Awareness by users of sanitary systems is required whenever new systems are installed which are different from the ones they are used to. This is particularly needed when flushing toilets are introduced to new users. In many cases it has been reported that flush toilets were used to grow plants because new users did not get accustomed to using them.

from coming out the vent and therefore will reduce the risk of contamination.

- (vii) All required approval and permits must be obtained and the relevant agencies (NWC, NEPA etc) informed and involved in the development of the project

8. Adequate water supply must be provided:

- (i) Adequate structures for water storage must be provided.
- (ii) Rainwater can be collected, stored and used for sanitary facilities.
- (iii) The storage structure must be located (about 25 meters) from, the absorption tank, septic tank or other similar facility, and upstream the direction of the water table flow¹⁴.

(i) Hazard Mitigation

- (i) **Fire Control:** Safety precautions against fire must be assessed, implemented, documented and functional at all times and water supply for fire hoses must be secured. Note that:

- (a) Evacuation and fire extinguishing procedures must be approved by the fire department or a similar institution
- (b) Fire disaster preparedness should be addressed in organisational strengthening exercises and in maintenance training

- (ii) **Natural disaster mitigation:** The design of all infrastructure projects must accommodate the potential occurrence of a natural disaster and as such include the necessary mitigation measures to ensure minimum damage from disaster events. This includes but not exclusive to:

- (a) Earthquake mitigation: Designs must uphold the minimum building standards recommended for Jamaica as indicated by the Building Code.
- (b) Storm mitigation: This includes heavy rain, storm surges, tropical storms, hurricanes mitigation measures for strong winds and high levels of precipitation and runoff. Road and building designs must therefore have adequate drainage measures and buildings and other structures must maintain the minimum standards under the Building Code for wind resistance.

¹⁴ If the storage facility is underground it can be contaminated by groundwater contaminated with effluent or by effluent directly, in case an absorption tank is located nearby.

- (iii) **Safety:** Care must be taken to ensure that designs promote a safe work site and safe operation of the facility. The following must be considered:
 - (a) **Materials:** No toxic paints or construction materials (e.g., lead-based paints, amianthus, asbestos) may be used within the buildings or on water supply projects
 - (b) **Site Safety:** Designs must factor in terrain and other potential areas of danger that may lead to an unsafe work site. Where there is potential for danger on a site, cautions and recommendations for safe implementation must be outlined.

II. Construction

- 10. Dust and noise during construction works should be minimised:
 - (i) In residential areas, if works are conducted in the dry season, the contractor must water the exposed area and construction materials either stored or transported must be covered to avoid particulate matter to be blown by the wind
 - (ii) Communities must be given adequate notice of intended construction and potential for dust and blockage of access to roads or community facilities during construction
 - (iii) When sand is used to fill in land or to level a site it must be capped with clay turf, whenever possible. If this solution is not viable, spraying the area with water can minimize dust blown by the wind.
 - (iv) Construction work must be limited to daylight hours, from approximately 6:00 am to 8:00 pm, or according to local or specific regulations.
 - (v) Blasting to break up rocks will be conducted during daylight and residents will be advised when blasting will occur. The local regulatory authority should certify the person conducting this activity.
- 11. Adequate measures for preventing siltation of watercourses by run-off must be implemented, such as silt screens and straw devices, among others.
- 12. Safety measures must be taken to prevent accidents involving workers and members of the community.
- 13. Clearing of trees and other vegetation must be minimal

14. All waste must be disposed of in environmentally sound ways and at dumpsites approved by the relevant Parks and Markets Authority.
15. All sewage disposal facilities are required to be adequate and fully functional and the end of construction
16. Penalties are to be instituted for breach of guidelines mandated by JSIF

III. Operation and Maintenance

13. Sanitary Facilities:

- (i) Environmental awareness and maintenance training to users will be provided on all sanitation projects.
- (ii) Latrine pits, absorption tanks or septic tanks must be cleaned regularly, according to JSIF's Operation and Maintenance Manual for infrastructure project. Where technologies such as biodigesters or composting toilets are being used, specific training must take place to ensure ongoing functioning of these systems.

14. Solid Waste Management:

- (i) Solid waste will be collected and disposed of in an appropriate manner and on a regular basis, according to the JSIF's Operation and Maintenance Manual for infrastructure projects.
- (ii) Wastes must be stored in a covered garbage storage unit, designed in accordance to current NEPA guidelines and protected from the access by animals.
- (iii) When appropriate landfill is not provided by the local government or the sponsor community, the JSIF will develop a waste management manual provide the sponsor community with (which will become part of the Operation and Maintenance Manual). This manual will include self-sustained waste management plans that includes alternative solutions for adequate disposal of organic wastes and garbage, and potential uses for recycled materials, waste collection campaigns and other environmental awareness activities to be developed with the students and the community¹⁵.

15. Buildings and other physical structures:

- (i) Maintenance training must be done with users to ensure care of the structure and avoidance of physical danger due to deterioration or lack of maintenance, particularly in the case of schools, community centres, water supplies and small bridges.

¹⁵ Burning or, covering with earth are common practice for waste disposal in rural areas. The appropriate alternative will be provided in the JSIF Operation & Maintenance Manual.

2.0 Specific Guidelines by Project Sub-type

All Project Sub-types assume the General Guidelines in addition to the type-specific guidelines listed below and the procedure required during each stage of the Project Cycle as outlined in Section 4.0.

1. Roads

Design Phase

1. Roads must be designed and constructed so that they do not impede the free flow of intervening water ways:
 - (i) At design phase, the grade of road must be established above the level of the existing drains
 - (ii) In case the existing road crosses a waterway, the design for rehabilitation must include culverts to allow the free flow of water. Size of culverts must be designed to accommodate a 30-year storm event.
2. Capped and uncapped roads must be designed and constructed so that water does not stand over long periods either on the road (in surface depressions) or at the sides or base.
 - (i) In case the size of the existing drains are not sufficient to ensure free water flow of a 30 year storm event, their enlargement must be included in the rehabilitation design;
 - (ii) If existing drains are blocked by vegetation or silt, clearing must be included in the rehabilitation project.
3. Bridges design must include re-vegetation of shoulders using native vegetation to reduce erosion.
4. The shoulder declivity must be designed according to the soil characteristics.

Construction Phase

5. Construction works must comply with the JSIF's General Environmental Guidelines and implemented using JSIF's Environmental Handbook for Construction Supervision and monitoring and must ensure the following:
 - (i) Defined grades must be correctly set in place
 - (ii) No depressions must be left in the surface of the road

- (iii) Drains must be unblocked and correctly sized, as in the project design.
6. Erosion control measures must be implemented accordingly to project design:
- (i) Exposed road shoulders must be vegetated early with native species, appropriate to the site to reduce the impact of raindrop erosion
 - (ii) Erosion (silt/sediment) barriers must be in place and functional throughout construction.
7. There must be a satisfactory system of regular collection and disposal of waste and garbage; during construction works the contractor must ensure that:
- (i) Materials are stored in such a way that will not be carried by rains and/or run-off waters into the drains
 - (ii) Garbage and construction wastes are collected and disposed in appropriate sites in a way that ensure that they will not be carried into the drains or discharged into wetlands or in sensitive vegetation communities;
 - (iii) Measures are implemented to avoid spills of lubricants, fuels and other chemicals, and in the event of an accidental spill, clean up is done immediately
 - (iv) After construction works are concluded the contractor must clear the area from all equipment, machines and wastes (liquids or solid)
 - (v) Whenever the sponsoring community does not provide an adequate site for waste disposal, the contractor shall follow the guidelines JSIF' will develop for waste disposal

Operation and Maintenance

8. Operations and Maintenance should follow JSIF's Operational and Maintenance Manual for Infrastructure Projects. Particular attention needs to be paid to:
- i. Erosion control
 - ii. Drainage
 - iii. Clearing and mitigating against land-slippage (within the capabilities of the community e.g. minor retaining walls, major works are the responsibility of the relevant authority.

2. Infirmarys, Health Centres and Similar Facilities

Project Design

1. Ministry of Health Standards for Design of Type 1 and 2 Health Centres must be applied to all JSIF Health Centre projects
2. Optimum sanitation must be maintained at all times. Cleanliness of utensils and equipment is paramount:
 - (i) Water supply facilities must include running water. When public water supply is not available on site, the project must consider, whenever technical and economically feasible, drilling a well or other alternative to provide potable water to the centre, including storage of rain water and roof drain water.
 - (ii) When public water supply is not available and no other alternative is technically and economically feasible, the JSIF must consider not financing the project.
 - (iii) Medical wastes must be disposed through approved Ministry of Health facilities or techniques.

Construction Phase

3. Construction works must comply with the JSIF's General Environmental Guidelines and implemented using JSIF's Environmental Handbook for Construction Supervision and Monitoring.

Operation and Maintenance

4. Operations and Maintenance should follow JSIF's Operational and Maintenance Manual for Infrastructure Projects. Particular attention needs to be paid to:
 - i. Maintenance of ventilation i.e. functioning secure windows
 - ii. Pest control – particularly in bathrooms and kitchen/dining areas
 - iii. Landscaping – ensuring safe, aesthetically pleasing surroundings
 - iv. Disaster preparedness – for hurricanes, flooding and fire
 - v. Waste disposal – safe disposal of medical and other wastes

3. Sanitary Facilities (latrines)

Site Selection and Project Design

1. Pit latrines should be avoided due to (i) odour and insect (flies and mosquitoes) problems; (ii) risks of contamination by pathogens (virus, protozoa and helminths) transmitted by excreta; (iii) risk of small children falling into pits; (iv) where the water table is high

2. Pit latrines with adequately designed septic tanks and absorption pits are recommended when there is (i) inadequate water supply to support water closets (ii) where soil absorption rates ensure proper and safe diffusion of waste water (ii) where there is no potential for contamination of ground water supplies.
3. Other alternative sanitation technologies, such as ventilated improved latrines (VIP latrines), should be considered appropriate only when flushing toilets are not technically and economically feasible.
4. The sanitary facility must be installed in a site that (i) has a low water table (ii) is located down str

Construction Phase

5. Construction works must comply with the JSIF's General Environmental Guidelines and JSIF's Environmental Handbook for Construction Supervision and monitoring.

Operation and Maintenance

6. Operation & maintenance must comply with the General guidelines presented as well as with JSIF's Manual for Operation and Maintenance of Infrastructure Projects.

4. Sanitary Facilities (community showers)

Site selection and project design

1. Before the sanitary facility is designed it must be ensured that the site where it is to be installed is located downstream any water body source.
2. Community showers must be located at least 15 meters from existing buildings and houses.
3. The community shower must be installed inside a well-ventilated and well-drained super structure.
4. The area surrounding the superstructure must be adequately landscaped, secure and well drained.
5. The size and number of showers must comply with JSIF's design guidelines

Construction Phase

6. Construction works must comply with the JSIF's General Environmental Guidelines and JSIF's Environmental Handbook for Construction supervision and Monitoring.

Operation and Maintenance

7. Operations and Maintenance should follow JSIF's Operational and Maintenance Manual for Infrastructure Projects. Particular attention needs to be paid to:
 - a. Maintenance of plumbing and water supply
 - b. Cleanliness of facility
 - c. Maintenance of security measures

5. Drainage

Project Design

1. Project design must follow the general guidelines as well as the specified procedures outlines for appraisal of projects in Section 4.0.

Construction Phase

2. Construction works must comply with the JSIF's General Environmental Guidelines and JSIF's Environmental Handbook for Construction Supervision and Monitoring.
3. Vegetation and silt materials recovered from dredging must be securely, disposed, in order to avoid being brought back to canals and drains, by runoff and rains.
4. During dredging, unauthorised persons must be prevented from approaching working areas by the installation of protecting devices, in order to avoid or minimise risks of accidents involving the community.

6. Water Projects

1. It must be verified that requirements for protecting the water source from contamination are adopted.
 2. The delivery of safe potable water must be ensured: materials used in the pipeline must ensure that no leaks will threaten the delivery of safe potable water.

a. Site selection and protect design

3. Crater source must be located upstream any possible source of crater pollution and protected from contamination by a superstructure.
4. Project Application must require physical and bacteriological analysis of the water from the water source, which is intended to be used.

5. In case the water is not adequate for human consumption, the JSIF must consider not financing the project.

b. Construction phase

Excavation works must be made whenever possible during the dry season, to avoid erosion and siltation of drainage canals or other water bodies in the area.

7. During construction works, unauthorised persons must be prevented from approaching working areas by the installation of protecting devices, in order to avoid or minimize risks of accidents involving the community.

c. Operation and Maintenance

9. All infra and superstructure must be permanently maintained in adequate operating conditions.
9. Water source and water pipes must be continuously monitored to ensure that no contamination has occurred.

7. Agro-processing Facilities

1. Waste products must not be deposited in watercourses, wetlands or in sensitive vegetation communities.
2. Waste Crater and processing effluent must be treated to reduce contaminants and not be discharged directly to water bodies, wetlands, or in sensitive vegetation communities.