

**Mauritius Public Infrastructure Project
Periodic Road Maintenance
Environmental Management Plan**

**E2020
V1**

A) Introduction

The Government of Mauritius (GoM) plans to implement the Mauritius Public Infrastructure Project (the Project) with support from the World Bank (IBRD). The activities will include the periodic maintenance of three highway sections, which will complement the ongoing works on the Terre Rouge – Pamplemousse section on M2 (approx. 10 km of dual carriageway): (i) Terre Rouge – Quay D on M2 (5 km of dual carriageway), (ii) Nouvelle France – Vigie on M1 (8 km of single carriageway) and (iii) parts of Pamplemousse-Grand Baie on M2 (4 km of double carriageway). Each of these three sections would be then maintained through one of the pilot performance-based routine maintenance contracts. The Road Development Authority (RDA) is the Executing Agency for the Project.

An Environmental Management Plan (EMP) has been established and specific safeguard requirements will be included in the bidding and contract documents to ensure that good engineering practices will be applied during construction. The contractors will be made aware of this obligation and their safeguard performance during construction will be closely supervised and monitored by the Project Engineers with close supervision of the Project Supervision Consultants.

B) Potential Negative Impacts and Safeguard Policies

Road maintenance operations may potentially affect the environment in a number of ways. For example, environmental concerns can stem initially from poor road design and planning, mobilization of construction crews, construction camp maintenance, storage and handling of wastes and hazardous materials, location of borrow pits and quarry sites, associated earthworks, and drainage design. Poorly executed maintenance activities may create localized soil erosion problems affecting streams or other water bodies; lack of clear plans for environmental management will create opportunities for inappropriate disposal of solid waste materials and could lead to lack of controls of noise and dust which can create a nuisance for individuals and communities. Better maintained roads could lead to increased accessibility in remote areas thus increasing the potential for uncontrolled resource extraction and land conversion along the road sides. Concerns over such issues are heightened in areas where roads pass through protected areas or other sites of a sensitive ecological nature such as wetlands, streams or forest areas.

The alternative to road maintenance program is basically a no maintenance approach. This scenario also has adverse environmental implications. Lack of maintenance could generate unstable road bed conditions leading to localized erosion and drainage problems. In areas of high rainfall and geologic instability, these risks can be substantial. Road maintenance programs also provide an opportunity to address some basic design problems which can create drainage and erosion problems.

B.1 Environmental category and justification

The Project is not expected to create significant impacts on the local environment and local communities. It is assigned as a safeguard Category B for IBRD projects, wherein preparation of an Environmental Management Plan (EMP) is generally recommended. RDA experience suggests that most of the potential impacts during maintenance works will be localized, temporary, and can be mitigated through the application of good engineering practices.

B.2 Safeguard Arrangements

Contracts for the road maintenance works will include specific clauses for environmental protection based on the technical guidelines. An RDA Field engineer will supervise and monitor the contractor performance. .

(iv) Consultation and information disclosure: Due consideration will be given to improve consultation and information disclosure, ensure close supervision and monitoring of the contractor's performance, and address the impacts after maintenance operations.

(v) Training: Training on safeguard operations for staff and contractors will also be provided.

(vi) Supervision, monitoring, and reporting: The RDA will prepare a semi-annual report on the overall safeguard performance of the Project. The IBRD supervision mission will also monitor the safeguard performance of the Project. Monitoring requirements are as follows:

Monitoring Requirements

Mitigation Measure	Parameters to be monitored	Location	Measurement	Frequency	Responsibilities	Cost
On completion of the work, the contractor shall restore the sites to their original state;	Restoration and revegetation of disturbed sites	Borrow areas and worksite installation	Inspection of the areas following completion of the work Ensure that sites have been restored to their original state	After the end of the maintenance work	Contractor	No marginal cost

C) Institutional Capacity for Safeguards Implementation

The RDA recognizes the importance of environmental protection and has made basic commitments to addressing environmental concerns. It is the responsibility of the RDA to ensure effective implementation of potential negative impacts at all stages (planning and pre-construction, construction, operations). To ensure effective implementation of safeguards for the RDA, technical assistance will be provided to the RDA to strengthen: (i) supervision and monitoring of safeguard compliance, including reporting; (ii) safeguard training, including consultation with local agencies and communities; and (iii) mainstreaming of safeguard requirements into RDA operations for road maintenance.

C.1 Public disclosure

The Safeguard Policies will be disclosed to the public (on the RDA website and office)

Assumptions.

The EMP is based on the assumptions described below.

- The main civil works to be carried out will be limited to activities typically defined as routine and periodic maintenance (resurfacing and bridge repairs; flood repairs or emergency maintenance; regular upkeep of safety features and road signs, etc.) and small rehabilitation works to strengthen the road, repair structural defects, restore the road to its initial condition, make small changes or improvements to alignment, and small construction of drainage and footpaths.
- The works will be carried out within the existing right of way (ROW) and will not involve relocation and land acquisition.
- The Project-related impacts are site specific; few of the effects are irreversible; and appropriate mitigation measures can be developed and implemented by the contractors and the RDA.

Table A1: Environmental Management Plan During Construction

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES
Resurfacing of pavements and associated pavement works and repair and surfacing of shoulders	<ul style="list-style-type: none"> - Possible pollution of waterways or groundwater by bituminous products or solvents. 	<ul style="list-style-type: none"> - Strict control to avoid spills and contractor to have adequate clean up procedures.
	<ul style="list-style-type: none"> - Works can have temporary effects on irrigation or washing/drinking water supplies. 	<ul style="list-style-type: none"> - Contractor to take into account local water uses.
	<ul style="list-style-type: none"> - Dust noise and vibrations. 	<ul style="list-style-type: none"> - Specification to include for watering in the contract; - Control of contractors equipment noise and vibrations, especially close to settlements - Construction activities will be avoided at night, close to residential areas;
	<ul style="list-style-type: none"> - Effect on traffic and pedestrian safety. 	<ul style="list-style-type: none"> - Contractor to employ safe traffic control measures and limit possible disruption to non-construction traffic.
Transport of Materials.	<ul style="list-style-type: none"> - Air and noise pollution for any nearby settlements and damage to existing roads. 	<ul style="list-style-type: none"> - Control contractor's vehicle speeds, noise and weight of loads and control dust and flying debris by covering loads or wetting material if necessary. - Use locally available construction material wherever possible to minimize transport distances.
Materials stockpiling on shoulders	<ul style="list-style-type: none"> - Possible pollution of waterways by solids - Possible impacts on road users safety 	<ul style="list-style-type: none"> - Choose appropriate location for materials stockpiling well away from any waterways, irrigation or washing/drinking water supplies. - Avoid encroachment on carriageway; - Preserve trees during material stockpiling
Borrow areas	<ul style="list-style-type: none"> - Quarries and borrow pits can have impacts on soils, water and the natural environment; 	<ul style="list-style-type: none"> - Locate borrow areas away from any residential or other environmentally sensitive areas such as hospitals, intensive livestock production areas or wildlife breeding areas. - Also avoid farmlands or forests as much as possible. Restrict work to daylight hours and limit the size and frequency of any blasting. - Borrow areas will be restored and re-vegetated.
Worksite installation (if needed)	<ul style="list-style-type: none"> - Degradation of plant cover - Soil and water pollution (trash dumping, oil spills) 	<ul style="list-style-type: none"> - Choose location of work site installations in order to reduce impacts on the environment of these sites and the people living in the immediate vicinity; - Fuel and oil, and bitumen storage areas will be located well away from any watercourses; - These storage areas will be provided with interceptor traps so that accidental spills do not contaminate the environment; - All waste oil will be stored and disposed of to acceptable oil industry standards; - Wherever possible, refueling will be carried out at a fuel storage area and not permitted within or adjacent to watercourses; - On completion of the work, contractor shall restore the sites to their original state;
Road safety and traffic management	<ul style="list-style-type: none"> - Road accidents due to inadequate control of vehicle speeds and signs/signals 	<ul style="list-style-type: none"> - Prepare/finalize an action plan for each subproject in close consultation with local agencies and communities, the implementation results should be reported periodically.

