Environmental Management Plan

November 2015

Cambodia: Flood Damage Emergency Reconstruction Project - Additional Financing

Subproject of Ministry of Public Works and Transport Civil Work 14 in Banteay Meanchey Province

Prepared by Ministry of Public Works and Transport for the Asian Development Bank.

KINGDOM OF CAMBODIA

Nation Religion King

MINISTRY OF PUBLIC WORKS AND TRANSPORT

FLOOD DAMAGE EMERGENCY RECONSTRUCTION PROJECT – ADDITIONAL FINANCING (FDERP-AF)

ADB Loan No. 3125-CAM (SF) and

AusAID Grant No. 0285-CAM (EF)

ENVIRONMENTAL MANAGEMENT PLAN - ENVIRONMENTAL MONITORING PLAN

For

CW14: Reconstruction of 22.00km Laterite Road along the Provincial Road No. 2563 in Banteay Meanchey Province

(MPWT-CW14)

Phnom Penh, October 2015

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ABBREVIATIONS

ADB	Asian Development Bank
APL	Angkor Protected Landscape
APSARA	Authority for Protection and Management of Angkor and the Region of Siem Reap
BOD	Biological Oxygen Demand
DBST	Double Bituminous Surface Treatment
DOE	Department of Environment
EA	Executing Agency
EARF	Environmental Assessment and Review Framework
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
FDERP	Flood Damage Emergency Reconstruction Project
FS	Feasibility Study
GoC	Government of Cambodia
GPS	Global Positioning System
GRM	Grievance Redress Mechanism
Ha	Hectare
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
IA	Implementing Agency
IEE	Initial Environmental Examination
MAG	Mines Advisory Group
MCFA	Ministry of Culture and Fine Arts
MEF	Ministry of Economy and Finance
MOE	Ministry of Environment
MOU	Memorandum of Understanding
MOWRAM	Ministry of Water Resources and Meteorology
MPWT	Ministry of Public Works and Transport
MRD	Ministry of Rural Development
MT	Motorized Transport

NR	National Road
NTFP	Non-Timber Forest Products
O&M	Operation and Maintenance
PCMU	Project Coordination and Monitoring Unit
PDPWT	Provincial Department of Public Works and Transport
PDRD	Provincial Department of Rural Development
PIU	Project Implementation Unit
PPTA	Project Preparation TA
PR	Provincial Road
RCVIS	Road Crash and Victim Information System
REA	Rapid Environmental Assessment
RI	Riel
ROW	Right of Way
RP	Resettlement Plan
SBST	Single Bituminous Surface Treatment
SEIA	Summary Environmental Impact Assessment
SEU	Social and Environmental Unit (in MRD)
SPS	ADB's Safeguard Policy Statement (2009)
TA	Technical Assistance
TSBR	Tonle Sap Biosphere Reserve
TSP	Total Suspended Particulates
UNESCO	United Nations Educational Scientific and Cultural Organization
US$	United States Dollar
UXO	Unexploded Ordnance

ENVIRONMENTAL MANAGEMENT PLAN - ENVIRONMENTAL MONITORING PLAN

A. BACKGROUND

1. The Asia Development Bank (ADB) and the Royal Government of Cambodia (RGC) agreed to implement the additional financed Flood Damage Emergency Reconstruction Project (FDERP-AF),in April 2014 which will be financed by a project loan from the ADB and grant from the Australian Government. The Project is being implemented through the Ministry of Economy and Finance (MEF) as the executing agency (EA). The Implementation Agency (IA) for the National and Provincial Roads is MPWT. The MPWT has engaged Egis International to provide services on the detailed design and implementation supervision (DDIS) for Output 1.

2. In compliance with the Safeguard Policy Statement 2009 of ADB, this Environmental Management Plan (EMP) was prepared for inclusion in the tender documents for Subproject CW14 under Stage 3 of FDERP-AF. The DDIS will perform periodic monitoring to check if the mitigation measures provided in the EMP are appropriately implemented.

3. The EMP summarizes the project scope, the environmental condition, the impacts, the mitigation measures and monitoring plan to be implemented particularly during the construction stage of the project. The national environmental standards related to discharges, emissions release and disturbances by noise and vibration are also presented in the Appendices.

4. Also refer to ADB's MOU which is listing all the provinces of FDERP-AF and, in turn based on MPWT's Fact Finding Mission Report of January 2014.

B. PROJECT SCOPE

5. The subproject consists of restoration of the existing road embankment and top up with laterite, The road will be mildewed, while the road alignment will remain the same as the existing one. Box culverts and pipe culverts will be installed as required for drainage and located per design, to be reconfirmed on site based on contractor's resurvey and profiles.

B.1 Road Construction and Protection Work

6. The proposed reconstruction of 22km Laterite road along PR No.2563 in Bantey Meanchey province. During construction, a temporary access road will be provided at the area of box culverts/pipe culverts installation to accommodate the traffic in that area. The embankment for the widening and the heightening of existing road are not applied in this project, but the sections of the road are seriously damaged during flooding in 2013. Laterite will be placed on properly reshaped road along with existing alignment 60 to 80 cm thickness. Road slope from adjacent floodwater will be protected with stone gabion boxes or grouted riprap to control or minimize soil erosion.

B.2 Drainage work

7. Subproject CW14 involves the reconstruction of 22 km Laterite road along PR No.2563 in Bantey Meanchey province. Laterite road is a method of construction that involves: (1) Embankment; (2) Sub-grade; (3) Sub-base (laterite), present design requires installation of 48 precast concrete pipe (PCP) culverts, 5 box culverts, and 1 bridge along the said road.

8. Clogged or damaged pipe culverts will be replaced with bigger size culverts for the smooth drain.

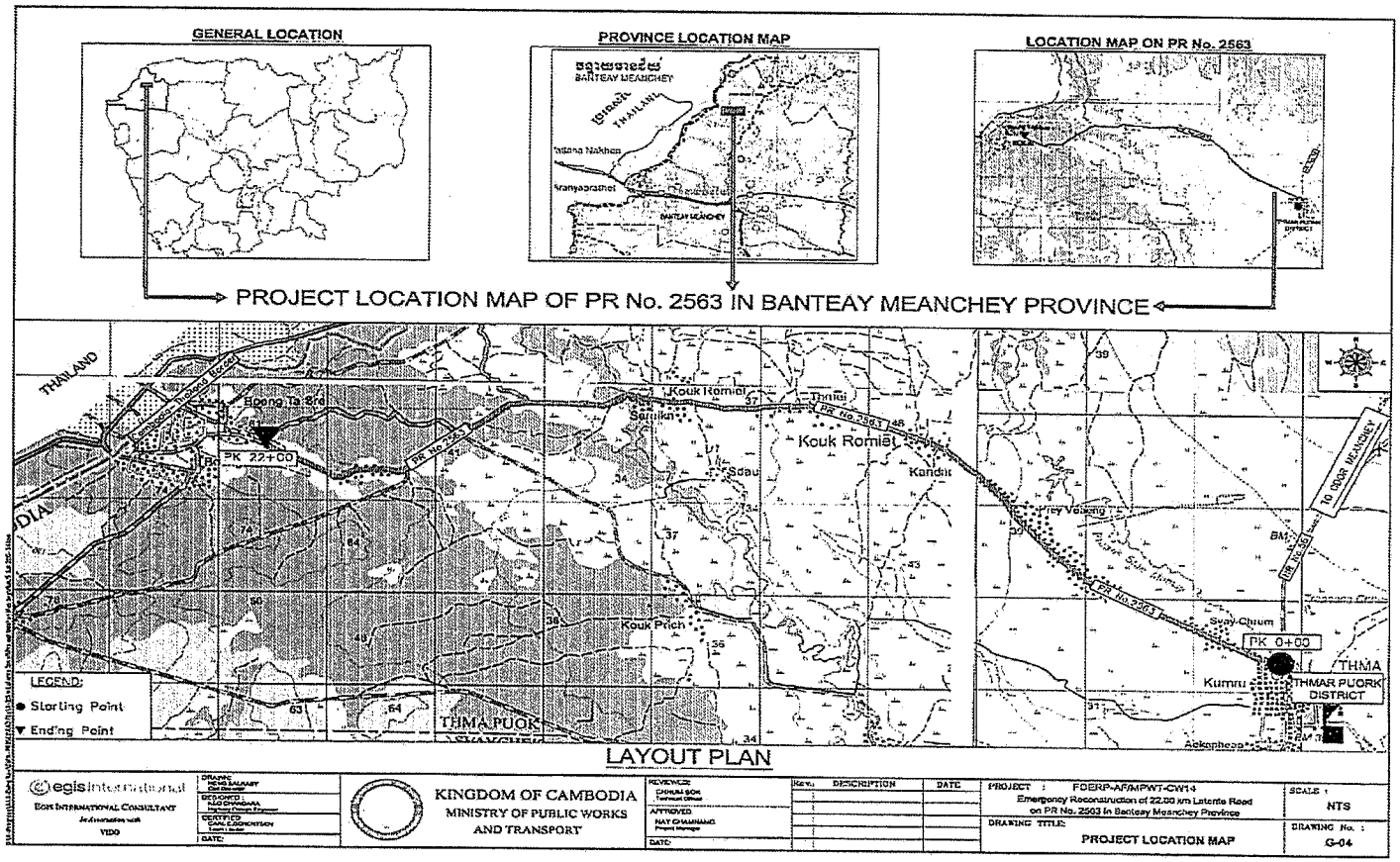

Figure 1: Project Location Map

C. ENVIRONMENTAL CONDITIONS

9. Sensitive areas including cultural heritage sites, protected areas, wetland, mangrove, estuarine and buffer zone of protected area are not adjacent or within the project area. Wildlife, rare and endangered species were not found at project site.

10. Houses, schools, health care center, small-scale business shops, rice fields and productive trees were found along the alignment. The road specifically was designed to avoid conflict or damage of trees and structures along the alignment.

11. CW14 has been classified under Category B, with minor short- or long-term environmental impacts provided that the mitigation measures identified in this report are implemented and monitored.

D. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

D.1 Design Stage

D.1.1 Loss of trees

12. Although the project will only involve reconstruction of the existing alignment, there are still indirect potential impacts on trees and natural forest depending on the location of borrow pits to be used as source of earthwork.

13. Ensure that there are acceptable alternative borrow pit areas that would have an overall beneficial advantage in terms of improved livelihood and ensure reduced environmental impact during and after construction.

D.1.2 Damage to existing structures

14. Number of houses, small-scale business shops and trees are located within the vicinity of the project. To lessen the project impacts, the road was designed in such a way that trees and structures along the alignment will not be affected. Resettlement framework for the Project and Cambodian laws, policies, and regulations should be complied with.

D.1.3 Risk of Land Mine and UXO

15. Subproject CW14 will be reconstructed road and other structures along the PR No. 2563 at Banteay Meanchey Province. However, risks remain since there may be deep seated mines that could be exploded by heavy construction equipment.

16. Consultative meetings with local communities and contractor and stakeholders are necessary to know clearly where there are risks of mines or UXO. Unsafe areas should be cleared by an authorized (sub-) contractor before project implementation.

D.2 Construction Stage

D.2.1 Dust Impacts

17. Generation of dust is expected during earthworks and from hauling of construction materials to site. Dust pollution could be a nuisance to communities adjacent to the site, especially during dry season.
18. The Contractor will be required to formulate and implement a dust control program that includes spraying of water on roads and work areas within villages close to the road. Vehicles transporting materials should be covered with tarpaulin or similar material.

D.2.2 Noise Impacts

19. Similar to dust, operation of construction equipment and transporting materials will cause temporary noise and vibration. Communities close to work areas will be affected.

20. The Contractor should consider proper scheduling of construction activities particularly in sensitive areas. Acoustic barriers or enclosures for working areas should be provided where required, and after pre- consultation with authorities.

D.2.3 Generation of wastes

21. During construction, various wastes will be generated. Potential sources are wastes from construction workers, site clearing, and excavation, dismantling of old structures and from other construction-related activities. If not properly managed, it will affect the health of the workers and the village people. Garbage dump area will serve as breeding ground for disease-carrying species. Waste may even clog the drainage system.

22. Contractor should formulate and implement a Waste Management Plan where required as a result of the construction and camp activities. This should include: employ waste segregation (recyclables/biodegradable/residual wastes), designate an appropriate location as temporary staging area for excavated materials and other waste, provide sufficient garbage containers in the construction camps and at work site, regular disposal of wastes to a designated area, provide sanitary facilities to workers which should be cleaned and maintained regularly. Upon completion of construction works, camps and work sites used should be restored to its original or better state.

D.2.4 Water contamination

23. The most severe water quality impact would be from bitumen, diesel fuel or used oil. These substances are toxic to living organisms.

24. Contractor has to ensure that: (i) Diesel and waste oil are handled and stored properly to prevent leakage or spill. (ii) Waste oil are stored in suitable containers and disposed thru a registered hauler or treater (according to national standard). (iii) Storage is to be in drums or other appropriate containers, raised off the ground, covered to keep rain out and surrounded by a bund to contain any spills and simplify clean up (iv) The Contractor shall prepare a Spill Management Plan (including measures to be taken and equipment to be used) to ensure adequate cleanup of any spills. Such information shall be submitted to MPWT at early stages of construction.

D.2.5 Water-borne disease

25. Borrow pits may hold water and can serve as breeding grounds for mosquitoes causing dengue fever.

26. Contractor must ensure that (i) solid wastes are regularly disposed into safe landfill. (ii) Siting camps distant to community's where appropriate and removal of

stagnant water areas, and (iii) borrow pits may be utilized for aquaculture or be developed as water storage for community use.

D.2.6 Soil erosion

27. Soil erosion usually occurs during site clearing, embankment works and other earth moving works. When heavy rain comes, sediments are carried into ditches, culverts, nearby water bodies and adjacent lands.

28. The contractor will be required to implement soil erosion control to minimize soil erosion and sedimentation of waterways. The alternative approaches should be: (1) provide adequate cross drainage to avoid over flow or flooding and (2) re-vegetation of erosion-prone areas. Suggest revision(s) to existing drainage plans it required.

D.2.7 Loss of trees

29. The project will only improve the existing alignment. Impact on trees is insignificant.

30. The borrow pits will need to be re-vegetated before being handed back to the owner, or may be used for aquaculture.

31. Tree clearing should be avoided as much as possible and tree planting carried out where appropriate in order to enhance the environment around the road.

D.2.8 Loss of agricultural land for borrow pits

32. Quarrying fill materials from the rice fields will reduce areas used for rice production. It is expected that the volume of rice that can be planted and be harvested will decrease.

33. The contractor will use only licensed borrow operators and borrow areas. There will be no side borrow permitted, unless agreed to with roadside residents.

34. The contractor will be responsible for rehabilitating any borrow sites opened and operated by them.

D.2.9 Traffic congestion, Safety and Health

35. Traffic congestion normally occurs during construction of roads, bridges and drainage structures on major thoroughfares. Accidents inevitably happen also during construction. Some motorists drive at high speed and without lights at night time, construction equipment not properly park, construction wastes piled along roads and no warning signs on deep excavations.

36. The contractor should formulate Traffic Management Plan and Safety and Health Plan. This should include the following: (i) Install traffic/warning signs like "safety first" at the construction area including fences or enclosures (ii) orient drivers to drive at low speeds, especially in areas close to market, school, hospital, urban areas. (iii) keep the roadway or bypass accessible to commuters to avoid traffic jam (iv) park at designated area (v) Detour road should be provided and accessible to commuters (vi) Temporary access of equipment and trucks must be established and approved by the sub-district officials (vii) Workers should be provided with Personal Protective Equipment (viii) A trained first aid personnel and health facility should be provided on site.(ix) Potable water and sanitary facilities should be provided

to workers, and (x) To prevent the transmission of HIV/AIDS, the contractor should incorporate on the health and safety plan the education of workers about sexually transmitted disease. These plans shall be provided to the Client and Client's consultants at the early stages of the project.

E. APPENDICES

Appendix 1: Environmental Management Plan

The Environmental Management Plan will be part of the Technical Specifications (Section 1.10) of the contract and therefore will take precedence in any conflict with General Specifications.

This item will not be measured separately, instead this will be assessed by the Engineer if the Contractor has successfully met all the requirements based on the Specifications.

No separate payment shall be made with respect to the implementation of the Environmental Management Plan. The Contractor should incorporate the cost of mitigation measures or items in the EMP to his Bill of Quantities.

It is the responsibility of the Contractor to comply with the Cambodian Policy and ADB Safeguard Policy.

The EMP is a general guide for the contractor to follow. After appointment and mobilization of the contractor. Their own version of the EMP known as the Contractors EMP (CEMP) should be prepared where required. This must give specific details of locations of borrow areas, borrow roads, workers camps and other facilities. This must be submitted to the Supervising Consultant for their approval before works commence.

Compliance monitoring reports will be submitted by the contractor to PIU and PCMU of MPWT and DDIS (Design and Supervision Consultant) on a monthly basis.

Project Phase	Project Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Institutional Responsibilities	
				Implement	Supervise
1.Pre-Construction	Detailed Engineering Design	1) Loss of trees (during site clearing and quarrying of construction materials)	• On the design stage, ensure that there are acceptable alternative borrow pit areas that would have an overall beneficial advantage in terms of improved livelihood and reduced environmental impact.	DDIS Consultant, IA/EA in cooperation with contractor	DDIS Consultant, IA/EA
		2) Damage to existing structures	• The design should maximize benefits or avoid impacts on assets. Resettlement framework for the Project and Cambodian laws, policies, and regulations should be complied with.	DDIS Consultant, IA/EA	DDIS Consultant, IA/EA
		3) Risk of land mine or UXO	• Consultative meetings with local communities are necessary to know clearly where there are risks of mines or UXO. Unsafe areas should be cleared before project implementation.	DDIS Consultant, IA/EA	DDIS Consultant, IA/EA
2. Construction	Earthworks, site clearing, hauling of construction materials, piling works, Operation of	4). Dust generation	• The Contractor will be required to formulate and implement a Dust Abatement Program that includes spraying of water on roads and work areas within villages close to the road.	Contractor	DDIS Consultant, IA/EA

Project Phase	Project Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Institutional Responsibilities	
				Implement	Supervise
	construction/ workers' camps, borrow operation, hauling of construction wastes to spoil sites		• Vehicles transporting materials should be covered with tarpaulin or similar material		
		5).Noise and vibration	• The Contractor should consider proper scheduling of construction activities particularly in sensitive areas. Acoustic barriers or enclosures for working areas should be provided.	Contractor	DDIS Consultant, IA/EA
		6).Water contamination/ quality	• Waste/used oil should be collected, properly stored and disposed to an approved site (according to national standard). Storage should be in drums raised off the ground and properly covered to keep rain water out. Lining or pan should be provided to contain any spills and simplify clean up. • The Contractor shall prepare a Spill Management Plan (including	Contractor	DDIS Consultant, IA/EA

Project Phase	Project Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Institutional Responsibilities	
				Implement	Supervise
			measures to be taken and equipment to be used) to ensure adequate cleanup of any spills. • Avoid discharging of petrol, or lubricants into stream, reservoir or land. • Construction shall be worked during the dry season.		
		7) Water-borne disease	• Fill-up depressed areas to prevent water ponding which may be used as breeding ground for disease-carrying organisms mosquitoes • Borrow pits may be utilized for aquaculture or be developed as water reservoir for community use.	Contractor	DDIS Consultant, IA/EA
		8).Loss of agricultural land for borrow pits	• The contractor will use only licensed borrow operators. There will be no side borrow permitted, unless agreed to with roadside residents. • The contractor will be responsible for rehabilitating any borrow sites	Contractor	DDIS Consultant, IA/EA

Project Phase	Project Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Institutional Responsibilities	
				Implement	Supervise
			opened and operated by them		
		9) Loss of trees	• Tree clearing should be avoided as much as possible; • The borrow pits will need to be re-vegetated before being handed back to the owner, or could be used for aquaculture. • Tree planting should be carried out in the appropriate location of the road. Coordinate with MoE regarding the species of trees to be used.	Contractor	DDIS Consultant, IA/EA
		10) Soil erosion	• The contractor will be required to implement soil erosion control to minimize soil erosion and sedimentation of waterways. The alternative approaches should be: (1) provide adequate cross drainage to avoid over flow or flooding and (2) re-vegetation of erosion-prone areas	Contractor	DDIS Consultant, IA/EA
		11)Generation of wastes	Contractor should formulate and implement a Waste Management	Contractor	DDIS Consultant, IA/EA

Project Phase	Project Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Institutional Responsibilities	
				Implement	Supervise
			Plan. This should include : • employ waste segregation (recyclables/biodegradable/ residual wastes) • designate an appropriate location as temporary staging area for excavated materials and other waste • provide sufficient garbage containers in the construction camps and at work site • regular disposal of wastes to an approved landfill or site should be implemented • provide sanitary facilities for workers; this should be cleaned and maintained regularly • Upon completion of construction works, camps and work sites used should be restored to its original or better condition.		

Project Phase	Project Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Institutional Responsibilities	
				Implement	Supervise
		12)Traffic congestion , Safety and Health	The contractor should formulate Traffic Management Plan and Safety and Health Plan. This should include the following: • Install traffic/warning signs like "safety first" at the construction area including fences or enclosures • Orient drivers to drive at low speeds, especially in market, school, hospital, urban areas • Keep the roadway or bypass accessible to commuters to avoid traffic jam • Park at designated area • Detour road should be provided and accessible to commuters • Temporary access of equipment and trucks must be established and approved by the sub-district officials • Workers should be provided with	Contractor in coordination with the sub-district officials	DDIS Consultant, IA/EA

Project Phase	Project Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Institutional Responsibilities	
				Implement	Supervise
			Personal Protective Equipment • A trained first aid personnel and health facility should be provided on site • Potable water and sanitary facilities should be provided to workers • To prevent the transmission of HIV/AIDS, the contractor should incorporate on the health and safety plan the education of workers about sexually transmitted disease.		
		13) Generation of employment	• The contractor should comply with the Labor and Gender Action Plan ; employ people from villages including women and unskilled workers	Contractor	IA/EA , local authorities
3.Operation Phase	Use of bypass and the bridge	14)Traffic accident	• Provide traffic signs on accident-prone points especially near schools, hospitals and market areas.	IA/EA	IA/EA, local authorities

Appendix 2: Environmental Monitoring Plan (EMoP)

Issue	Mitigation Measures (Items to Monitor)	Monitoring Required/Methods/ Parameters	Schedule / Frequency	Start/ Completion Date	Reporting	Responsibility
Pre-Construction Phase						
Loss of trees	• Ensure that there are acceptable alternative borrow pit areas that would have an overall beneficial advantage in terms of improved livelihood and reduced environmental impact.	Confirmed by MPWT-IA via note to file	Once during Contract preparation	Before start of Construction stage / Before end of design stage	Note to file regarding action(s) by MPWT-IA	DDIS Consultant, EA, IA
Damage to existing structures	• The design should maximize benefits or avoid impacts on assets. Resettlement framework for the Project and Cambodian laws, policies, and regulations should be complied with.	Confirmed by MPWT-IA via note to file	Once during Contract preparation	Before start of Construction stage / Before end of design stage	Note to File regarding action(s) by MPWT-IA	DDIS Consultant, EA, IA
Possible accident due to risk of Land mine or UXO	• Consultative meetings with local communities are necessary to know clearly where there are risks of mines or UXO. Unsafe areas should be cleared before project implementation.	Verify Information from local communities	Before the mobilization of contractor	Before the mobilization of contractor	Information from local communities	DDIS Consultant, EA, IA

Issue	Mitigation Measures (Items to Monitor)	Monitoring Required/Methods/ Parameters	Schedule / Frequency	Start/ Completion Date	Reporting	Responsibility
Construction Phase						
Dust generation	• .The Contractor will be required to formulate and implement a Dust Abatement Program that includes spraying of water on roads and work areas within villages close to the road. • Vehicles transporting materials should be covered with tarpaulin or similar material	Check copy of the Dust Abatement Plan Check level of dust pollution by: -Aesthetics thru visual observation -Feedback from village people	Monthly	Start of Construction stage/Construction stage	Proof that copies of the IEE/EMP are received by the contractor; Compliance monitoring reports	DDIS Consultant, EA,IA, Contractor's Safeguard Specialist (self monitoring)
Noise and vibration	• The Contractor should consider proper scheduling of construction activities particularly in sensitive areas. Acoustic barriers or enclosures for working areas should be provided.	Feedback from village people about noise concern	Monthly	Construction stage	Compliance monitoring reports	DDIS Consultant, EA, IA, Contractor's Safeguard Specialist (self monitoring)
Generation of wastes	Contractor should formulate and implement a Waste Management Plan. This should include : • employ waste segregation (recyclables/biodegradable/	Check aesthetics thru visual observation	Monthly	Construction stage	Compliance monitoring reports	DDIS Consultant, EA, IA, Contractor's Safeguard Specialist (self monitoring)

Issue	Mitigation Measures (Items to Monitor)	Monitoring Required/Methods/ Parameters	Schedule / Frequency	Start/ Completion Date	Reporting	Responsibility
	residual wastes) • designate an appropriate location as temporary staging area for excavated materials and other waste • provide sufficient garbage containers in the construction camps and at work site • regular disposal of wastes to an approved landfill or site should be implemented • provide sanitary facilities for workers; this should be cleaned and maintained regularly • Upon completion of construction works, camps and work sites used should be restored to its original or better condition.					
Water contamination	• Waste/used oil should be collected, properly stored and disposed to an approved site (according to national standard). Storage should be	Check copy of Spill Management Plan; records of waste/used oil generated/ collected	Monthly	Construction stage	Compliance monitoring reports	DDIS Consultant, EA, IA, Contractor's Safeguard Specialist (self

Issue	Mitigation Measures (Items to Monitor)	Monitoring Required/Methods/ Parameters	Schedule / Frequency	Start/ Completion Date	Reporting	Responsibility
	in drums raised off the ground and properly covered to keep rain water out. Lining or pan should be provided to contain any spills and simplify clean up. • The Contractor shall prepare a Spill Management Plan (including measures to be taken and equipment to be used) to ensure adequate cleanup of any spills	by licensed transporter-treater Visual inspection of waste/used oil in the storage area Check of color of surface water traversed by the project thru visual inspection				monitoring)
Water-borne disease	• Contractor must ensure that (i) solid wastes are regularly disposed into safe landfill • Locate camps distant to communities • Fill-up depressed areas to prevent water ponding which may be used as breeding ground for disease- carrying organisms mosquitoes • Borrow pits may be utilized for aquaculture or be developed as water reservoir for community use.	Visual observation – stagnant water/water ponding due to construction	Monthly	Construction stage	Compliance monitoring reports	DDIS Consultant, EA, IA, Contractor's Safeguard Specialist (self monitoring)

Issue	Mitigation Measures (Items to Monitor)	Monitoring Required/Methods/ Parameters	Schedule / Frequency	Start/ Completion Date	Reporting	Responsibility
Loss of agricultural land for borrow pits	• The contractor will use only licensed borrow operators. There will be no side borrow permitted, unless agreed to with roadside residents. • The contractor will be responsible for rehabilitating any borrow sites opened and operated by them	Check records on borrow sites ;license of borrow pit operators; rehabilitation done ; status of borrow sites used				
Loss of trees	• Tree clearing should be avoided as much as possible; • The borrow pits will need to be re-vegetated before being handed back to the owner, or may be used for aquaculture. • Tree planting should be carried out in the appropriate location of the road. Coordinate with MoE regarding the species of trees to be used.	Visual observation , records of trees affected; Check tree planting plan	Monthly	Construction stage	Compliance monitoring reports	DDIS Consultant, EA,IA, Contractor's Safeguard Specialist (self monitoring)
Soil erosion	• The contractor will be required to implement soil erosion control to minimize soil erosion and sedimentation of waterways. The alternative approaches should be: (1)	Visual observation of possible eroded segments. Visual observation	Monthly	Construction stage	Compliance monitoring reports	DDIS Consultant, EA, IA, Contractor's Safeguard Specialist (self monitoring)

Issue	Mitigation Measures (Items to Monitor)	Monitoring Required/Methods/ Parameters	Schedule / Frequency	Start/ Completion Date	Reporting	Responsibility
	provide adequate cross drainage to avoid over flow or flooding and (2) re-vegetation of erosion-prone areas	on the possible change of color of surface water traversed by the project.				
Safety and Health	• The Contractor should formulate and implement a Health and Safety Plan to prevent accident both on the side of the public and the workers as well. A trained first aid personnel and health facility should be provided on site. The Contractor should incorporate in the Health and Safety Plan the education of workers on sexually transmitted disease. • Provide potable water and sanitary facilities to workers • Install warning signs like "safety first" at the construction area including fences or enclosures • Provide Protective Personal Equipment (PPE) to workers e.g. safety shoes, hardhats, earplugs, etc.	Check copy of Health and Safety Plan; health/accident records Visual observation – Safety signs installed, workers in PPE and without PPE	Monthly	Construction stage	Compliance monitoring reports	DDIS Consultant, EA, IA, Contractor's Safeguard Specialist (self monitoring)

Issue	Mitigation Measures (Items to Monitor)	Monitoring Required/Methods/ Parameters	Schedule / Frequency	Start/ Completion Date	Reporting	Responsibility
Traffic congestion	• Contractor should perform the following: i) orient their drivers or equipment operators to comply with the required speed limit. (ii) drive at low speeds, especially in market, school, hospital, urban areas. (iii) keep the roadway or bypass accessible to commuters to avoid traffic jams. (iv) park at designated area. • Prepare and implement a Traffic Management Plan • Provide appropriate storage area for the construction materials. • Detour road should be provided and accessible to commuters • Temporary access of equipment and trucks must be established and approved by the sub-district officials	Feedback from village people about traffic; visual observation Check copy of Traffic Management Plan	Monthly	Construction stage	Compliance monitoring reports	DDIS Consultant, EA, IA, Contractor's Safeguard Specialist (self monitoring)
Generation of employment particularly among women	• The contractor should comply with the Labor and Gender Action Plan ; employ people from villages including women	Check reports/records on women/unskilled	Monthly	Construction stage	Compliance monitoring reports	DDIS Consultant, EA, IA, Contractor's Safeguard

Issue	Mitigation Measures (Items to Monitor)	Monitoring Required/Methods/ Parameters	Schedule / Frequency	Start/ Completion Date	Reporting	Responsibility
and unskilled people	and unskilled workers	workers employed				Specialist (self monitoring)
Operation Phase						
Traffic accident	• Provide traffic signs on accident-prone points especially near schools, hospitals and market areas. • Regular maintenance of road/bridges	Check traffic signs installed; accident record	Annually	Operation stage	Compliance monitoring reports	EA, IA,

Appendix 3: Environmental Monitoring Checklist

Contract Package : **Inspector's Name :**
Inspection Date ; **Position :**

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
1. Community Facilities (power lines, irrigation canals, etc.)						
Interruption of utility services are minimized by laying out new lines prior to transfer						
Replacement structure are constructed prior to demolition of existing structure						
Temporary facilities to maintain adequate services are in place						
Coordination with local company or local offices						
Affected parties are informed in advance						
2. Air Quality (Dust and Gaseous Emissions)						
Vehicles and equipment are well maintained and in good condition.						
Borrow areas, casting yard and other project facilities are duly licensed and have all the necessary environmental approvals						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
All construction vehicles and equipment are tested for compliance with relevant emission standard and properly licensed						
Parked vehicles on the site works have their engines turned off. Unnecessary engine idling of vehicles and equipment is prohibited.						
Water spraying of roadways, working areas and other construction-related facilities near sensitive receptors and handling of all raw sand and aggregates, and other similar materials						
Dust barriers are installed as necessary						
Storage areas of construction materials such as sand, gravel, cement, etc., have provisions that prevent them from being blown away towards sensitive receptors						
Trucks transporting construction materials (i.e. sand, soil, cement, gravel, etc) are tightly covered						
Roadways are regularly cleaned of tracked in mud, cement, etc. from construction works						
Stockpiling of spoils near sensitive receptors is prohibited						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
Construction vehicles have speed limits (typically 25 km/hour or less) along areas where sensitive receptors are located						
Areas where there is a regular movement of vehicles have an acceptable hard surface and are clear of loose surface material						
Cement and other fine-grained materials delivered in bulk are stored in closed containers						
Conveyor belts are fitted with wind-boards, and conveyor transfer points and hopper discharge areas are enclosed						
Weigh hoppers are vented with a suitable filter						
Wheel washers are used to clean delivery/ haul trucks of mud and dirt as they exit the work area						
Smoke belching vehicles and equipment are not used for the project						
Construction vehicle trips and travel distances for material deliveries are minimized (e.g., by using local materials and labor sources).						
Construction access roads are temporarily						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
paved or sealed						
3. Noise Levels						
Prior notification to the community on construction schedule						
Vehicle and equipment are fitted with emission control and silencers to meet national noise standard						
Vehicles and equipment are well-maintained and checked by the contractor every 6 months						
Only vehicles and equipment that are registered and have necessary permits are used						
Noisy equipment are completely enclosed whenever possible						
Stationary equipment that produce high noise level are positioned as far as is practical from sensitive receptors.						
Noisy construction activities within 200m of a settlement are only during daytime						
Suitable noise control barriers are used in the vicinity of house, school, temples, medical						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
facilities and other sensitive receptors						
Noisy construction activities are avoided near school during examination period and coordinated with school administration						
Noisy construction activities are avoided in the vicinity of sensitive receivers						
Suitable noise level reduction measures are installed by the contractor if construction activities are disruptive						
Speed limits on construction vehicles are imposed						
Construction traffic routes are defined in cooperation with local communities and traffic police						
Asphalt concrete batching plants and crushing plant are located at least 500 m away from inhabited areas and other sensitive receptors						
4. Vibration Levels						
Fully loaded trucks are rerouted away from roadways that go through heavily built areas						
Heavy equipment are operated away from						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
vibration-sensitive areas						
Simultaneous activities like demolition, ground impacting and earthmoving are avoided						
Alternative equipment is used						
Use of vibrating rollers near vibration-sensitive structures are avoided						
5. Erosion and Sedimentation						
Suitable soil erosion control measures are implemented prior to excavation of the bridge pier foundation and construction activities at waterways						
Silted water carried with the spoils during excavation and construction of bridge foundation are properly treated						
Spoils (excavated soil, rocks, removed asphalt, etc.) stockpiles are located at least 50 m from watercourses						
A bund is placed around the spoils stockpile area						
Spoil disposal does not cause sedimentation and obstruction of water flow, damage to						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
agricultural land and densely vegetated areas						
Grading is avoided or minimized during the rainy season particularly in areas of steep topography and/or adjacent to water courses						
Phased grading schedule is implemented to limit the area subject to erosion at any given time						
Appropriate erosion control and stabilizing measures (such as geotextiles, mats, fiber rolls, soil binders that are not toxic to the environment, or vegetation measures/temporary landscaping) are used in disturbed areas and on graded slopes						
Construction works (for bridges, culverts, drainage, etc.) on or near watercourses do not cause obstruction of channel flow						
Slopes along water channels are stabilized						
Dumping of soil, rocks, construction materials and debris onto watercourses is prohibited						
When construction works cause obstruction of watercourses, the obstruction is immediately cleared to restore channel flow						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
6. Spoils Disposal						
Spoils (excavated soil and rocks, cut vegetation, removed pavement such as asphalt, etc.) are immediately transported to disposal sites approved by local authorities						
Temporary spoils stockpiles near paddy fields have bund or silt fence around them						
Temporary spoils stockpile that are planned to be used longer than six months are sodded.						
Height of spoils stockpile are limited to minimize windblown dust						
7. Soil and Groundwater Contamination						
Maintenance shops, fuel and oil depot have impermeable flooring with sump						
Refueling and servicing of equipment are carried out only in adequately equipped areas						
Only minimal chemicals, hazardous substances and fuel are stored on site works, within an enclosed and covered secure area that has an impervious floor and impervious bund around it						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
Storage area for chemicals, hazardous substances and fuel are located away from watercourses, flood-prone areas, work camps, and danger areas						
Oil-stained refuse such as oily rags, spent oil filters and used oil are collected and disposed of through recyclers/authorized waste handlers and disposed in authorized waste facilities						
Availability of spill clean-up materials specifically designed for petroleum products and other hazardous substances						
Immediate cleanup of spills or leaks of petroleum products and/or hazardous substances						
Training of relevant construction personnel in handling of fuels/hazardous substances and spill control procedures						
At least weekly check for leakage in containers and immediate repair or replacement when necessary						
Equipment maintenance and fuel storage areas are provided with drainage to an oil-water separator that is regularly skimmed of oil and maintained						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
Discharge of oil-contaminated water into the environment is prohibited						
Waste oil, used lubricant and other hazardous wastes are stored in tightly sealed containers with proper labeling						
Removal and treatment or proper disposal of oil contaminated soils is included in work sites restoration						
8. Water Availability						
Temporary canals /irrigation channels to prevent disruption of water supply to farmlands.						
9. Water Quality						
Suitable settling/retention ponds are constructed prior to operation of asphaltic concrete batching plants and casting yards						
Settling/retention ponds are properly operated and maintained to ensure effluent quality meets applicable effluent standards						
Bentonite slurry and sludge, mud and other materials and wastes from drilling are collected and processed to avoid pollution of surface water						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
Bentonite slurry and sludge, mud and other materials and wastes from drilling are not discharged into watercourses						
Drilling solutions (e.g., bentonite slurry) for bridge construction, abutment construction, piling, etc. are processed in a closed system						
Proper disposal of bentonite-containing spoils as fill material in appropriate sites						
Spilled bentonite mud in agricultural land is cleaned immediately before it cakes and hardens						
Water from bridge foundation dewatering is not discharged directly into a water body						
Total suspended solids content of discharges into water bodies comply with applicable standards						
Sanitation facilities with sufficient capacity are provided to handle and treat sewage generated by workers						
Equipment service and maintenance yards are provided with impermeable flooring and collection sump						
All equipment maintenance shops are						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
provided with water-tight receptacles for waste oil, oily rags, spent oil filters, solvents and oily containers						
Disposal of all waste oil, oily rags, spent oil filters, solvents and oily containers are through authorized waste handlers and recyclers						
Paving operations are restricted during wet weather						
Use of sediment control devices downstream of paving activities						
Use of mobile fueling/maintenance units for construction equipment whenever feasible						
Accurate and up-to-date written inventories and labels for all stored hazardous materials						
Use of berms, ditches, and/or impervious liners, etc. in material storage, vehicle/equipment maintenance and fueling areas						
Material storage, maintenance and fueling areas and septic systems are at least 30 m from storm drains and surface waters						
Facilities for solid and domestic liquid waste						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
management are used and maintained						
10. Solid Waste						
Garbage bins and temporary storage facilities for construction wastes, domestic solid wastes and segregated wastes are provided within the project site						
Waste segregation (hazardous, non-hazardous, reusable) is practiced						
Regular collection and disposal of wastes (by contractor or authorized third party) to sites approved by local authorities						
Wastes are not dumped into watercourses, agricultural land and surrounding areas						
11. Borrow Pits						
Borrow areas are not located in productive land, forested areas and near water courses such as rivers, streams, etc.						
Topsoil are properly removed, stockpiled and preserved for later use during site restoration and provision of vegetation cover to minimize erosion						
Stable side slopes are provided during						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
excavation of the borrow pits						
Quarry sites lying on small rivers and streams are avoided						
Quarry sections located on the river bed are avoided or reduced if unavoidable						
Borrow pits are left in a tidy state with stable side slopes and proper drainage						
Quarry sites and borrow pits are restored and rehabilitated after use						
12. Traffic Management and Local Access						
Signs advising that construction is in progress are provided, particularly where the alignment crosses existing roads and where construction related-facilities are located						
Flag persons are employed to regulate traffic especially in potentially hazardous areas						
Traffic advisory signs (to minimize traffic build-up) are posted in coordination with local authorities						
Sufficient lighting at night within and in the vicinity of construction sites are provided						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
Regular monitoring of traffic conditions along access roads to ensure that project vehicles are not causing congestion						
Schedules are observed for different types of construction traffic trips (e.g., transport of pre-cast sections, haulage of spoils, delivery of construction materials, etc.)						
Delivery of construction materials and equipment and transport of spoils are during non-peak hours						
Interactions between construction works, traffic flows and pedestrians are minimized by the following safety measures: • Temporary signals or flag controls • Adequate lighting • Fencing • Signage • Road diversion • Traffic cones • Barricades						
Use of escort vehicles and warning signs/lights to increase public awareness of potential hazards						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
Construction activities and schedules are coordinated in advance with local agencies, community representatives, businesses, schools						
Existing access routes are maintained (whenever feasible)						
Provision of alternative access and/or parking when impacts to principal access routes and parking areas cannot be avoided						
Adequate informational and directional signage to improve alternative access function						
Construction operations are scheduled to avoid or minimize conflicts with local uses/activities						
At least one safe through lane is maintained at all times in construction areas						
13. Damage to Properties and Community Facilities						
Local roads used by the project are upgraded prior to use						
Local and access roads used by the project are repaired and maintained regularly and						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
fully restored at the end of the project						
Contractor immediately repairs and/or compensates for any damage to properties						
14. Accidental Discovery of Artefacts						
Immediate stoppage of operations on road section where artifacts/ archaeological finds are unearthed; contractor informs the DDIS and CIPM						
CIPM notifies Ministry of Culture and Information (MCI) to obtain advice regarding the next steps						
Work is resumed only after MCI has provided official notification						
15. Occupational Health and Safety						
Orientation for construction workers regarding health and safety measures, emergency response and prevention of HIV/AIDS and other diseases						
Workers at the bridge site are provided with life vests/buoyancy devices at all times						
Stable footpaths/access with sturdy guardrails to the bridge work sites shall be provided						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
Preparation and implementation of a waterway safety plan, approved by the agencies in charge						
Contractor complies with the waterway traffic safety during construction						
First aid facilities that are readily accessible to workers						
Fire-fighting equipment at construction camps and work areas, as appropriate						
Adequate drainage in workers' camps						
Adequate and clean housing and sanitation facilities for all workers at the workers'/ construction camps						
Separate sleeping quarters for male and female workers						
Reliable supply of water for drinking, cooking and washing purposes at the workers' camps						
Separate hygienic sanitation facilities/toilets and bathing areas with sufficient water supply for male and female workers						
All wastewater from workers' and construction camps and project-related activities/ facilities						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
are treated consistent with national regulations						
Proper collection and disposal of solid wastes within the workers'/construction camps						
Sturdy fencing on all excavation areas greater than 2 m deep						
Workers are provided and use appropriate and complete safety equipment such as safety boots, protective clothes, breathing mask, ear protection, helmets, gloves, etc.						
Reversing signals are installed on all construction vehicles						
Fall prevention and protection measures whenever a worker is exposed to the hazard of falling more than two meters, falling into operating machinery or through an opening						
16. Public Safety						
Signage are installed at the periphery of the construction site to warn and direct traffic and pedestrians						
Security personnel are deployed in hazardous areas to restrict public access						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
Speed limits are imposed on construction vehicles along residential and other sensitive areas (typically 25 km per hour)						
Drivers are taught safe driving practices to minimize accidents and prevent spill of hazardous and other construction materials during transport						
Safe access to properties and establishments affected by construction works						
Safe passageways for pedestrians crossing the construction site						
Excavated areas are immediately backfilled, covered (e.g., with metal plates) and/or repaved						
All construction vehicles and equipment are secured during non-working periods to prevent unauthorized access or use						
Appropriate safety barriers and warning signs are installed in areas that pose safety risks such as open excavations, cut slopes, erosion-prone slopes, manufactured slopes, drainages, etc.						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
17. Flora and Fauna						
Vegetation removal is coordinated with forest authority						
Tree-cutting permit is secured, as necessary						
Tree planting and landscaping plan that includes: • Inventory of the number of species of trees proposed for removal • Identifying and documenting quantity, variety, and location of replacement trees • Replanting at the outer portions of the ROW and in other locations agreed with local authorities • Monitoring and maintenance program to ensure effectiveness of the plan • Adopting remedial measures where appropriate (e.g., replacing dead or damaged replanted trees)						
Clearing of trees is limited to areas that are only necessary based on the project design and as approved by the forestry department						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
Cutting of trees for firewood and for use in project is prohibited						
New alien plant species are not used for replanting/re-vegetation without an existing regulatory framework						
Invasive species are not introduced into new environments						
Workers are prohibited from hunting wild animals and collecting forest products						
Bridge works are scheduled in dry season to minimize adverse impacts to aquatic resources						
Contractors do not buy or use wood from illegal sources (illegal logging)						
No construction camps, asphalt mixing plants, material storage sites and other construction facilities are located in protected areas						
Construction camps, asphalt mixing plants, material storage sites and other construction facilities are located at least 1 km from the boundaries of national parks and class 1A and 1B watershed designated areas						
Precautions are adopted to ensure that						

EMP Requirement (Mitigating Measures)	Compliance Status			Remarks/ Reasons for Partial or Non-Compliance	Recommendations	Deadline
	Yes	No	Partially			
damage to vegetation is avoided should fires resulting from execution of the works occur						
Road improvement works are restricted to the existing ROW boundaries						
Grading methods and facilities i.e., rounding, benching, terracing and retaining walls are used to reduce earthwork and related topographic alteration/vegetation removal						
Suitable wildlife crossing structures are installed at locations agreed with the park management boards and National Environmental Board						

Appendix 4: Annex to Sub-decree No. 42/ANK/BK of July 10, 2000 (Ambient Air Quality Standard)

No.	Parameter	1 Hour Average mg/m^3	8 Hours Average mg/m^3	24 Hours Average mg/m^3	1 Year Average mg/m^3
1	Carbon Monoxide (CO)	40	20		
2	Nitrogen dioxide (NO_2)	0,3		0,10	
3	Sulfur dioxide (SO_2)	0,5		0,30	0,10
4	O Zone (O_3)	0,2			
5	Lead (Pb)			0,005	
6	Total Suspended Particulate (TSP)			0,33	0,10

This standard applies to ambient of air quality and to monitoring of air pollution status.

Method for analysis of ambient air quality is specified in the guideline of the Ministry of Environment.

TSP = Total Suspended Particulate.

Appendix 5: Annex to Sub-decree No. 42/ANK/BK of July 10, 2000 (Maximum Allowable Standard of Pollution Substance for Immovable Sources in Ambient Air)

No.	Parameter		Maximum Level of Discharge
1	Particulate in smoke of:		
	- Incinerator		400 mg/m^3
	- Heating Metal		400 mg/m^3
	- Bad Stone, lime, cement manufacturing		400 mg/m^3
	- Asphalt concrete plant		500 mg/m^3
2	Dust		
	- Containing silica (SiO_2)		100 mg/m^3
	- Containing Asbetos		27µg/m^3
	Chemical in organic substance		
3	Aluminum	Al	(dust) 300mg/m^3; (Al) 50mg/m^3
4	Ammonia	NH3	100 mg/m^3
5	Antimony	Sb	25 mg/m^3
6	Arsenic	As	20 mg/m^3
7	Berylium	Be	10 µg/m^3
8	Chloride	Cl	20 mg/m^3
9	Hydrogen chloride	HCl	200 mg/m^3
10	Hydrogen Fluoride	HF	10 mg/m^3
11	Hydrogen Sulfide	H2S	2 mg/m^3
12	Cadmium	Cd	1 mg/m^3

No.	Parameter	Maximum Level of Discharge
13	Copper Cu	(dust) 300 mg/^{3} (Cu) 20 mg/m^3
14	Lead Pb	(dust) 100 mg/m^3 , (Pb) 30 mg/m^3
15	Zinc Zn	30 mg/m^3
16	Mercury Hg	0,1 mg/m^3
17	Carbon Monoxide CO	1000 mg/m^3
18	Sulfur dioxide SO_2	500 mg/m^3
19	Nitrogen Oxide (all kinds) NOx	1000 mg/m^3
20	Nitrogen oxide NOx (emitted HNO_3 product)	2000 mg/m^3
21	Sulfuric Acid H2SO4	35 mg/m^3
22	Nitric Acid HNO_3	70 mg/m^3
23	Sulfur Trioxide SO_3	35 mg/m^3
24	Phosphoric Acid H3PO4	3 mg/m^3
	Chemical organic substance	
25	Acetylene tetra bromide $CHBr_2$	14 mg/m^3
26	Acrolein CH2=CHCHO	1,2 mg/m^3
27	Aniline C6H5NH2	19 mg/m^3
28	Benzidine NH2C6H4C6H4NH2	None
29	Benzene C6H6	80 mg/m^3
30	Chloro benzyl C6H5CH2Cl	5 mg/m^3
31	Butyl Amine CH3(CH2)2CH2NH2	15 mg/m^3
32	Cresol (O-,m-,p-) CH3C6H6H4OH	22 mg/m^3

No.	Parameter		Maximum Level of Discharge
33	Chloro benzene	C6H5CL	350 mg/m^3
34	Chloroform	CHCl3	240 mg/m^3
35	Chloropicrin	$CCl3NO_2$	0,7 mg/m^3
36	O-dichlorinbenzene	C6H4Cl2	300 mg/m^3
37	1,1-dichloro ethane	CHCl2CH3	400 mg/m^3
38	Di methyl sulfate	(CH3)2SO4	0,5 mg/m^3
39	Di methyl hydrazine	(NH3)2NNH2	1 mg/m^3
40	Di nitro benzene (o-,m-,p-)	C6H4(NO2)2	1 mg/m^3
41	Ethylene di amine	NH2CH2-CH2NH2	30 mg/m^3
42	Ethylene Chlorohydrine	CH2ClCH2OH	16 mg/m^3
43	Ethylene oxide	CH2OCH2	20 mg/m^3
44	Formaldehyde	HCHO	6 mg/m^3
45	Methyl Acrylate	CH2=CHCOOCH3	35 mg/m^3
46	Methanol	CH3OH	260 mg/m^3
47	Methyl bromide	CH3Br	80 mg/m^3
48	Monomethyl Aniline	C6H5NHCH3	9 mg/m^3
49	Nitro Benzene	C6H5NO2	5 mg/m^3
50	Nitroglycerine	C3H5(NO2)3	5 mg/m^3
51	Nitrotoluene	NO2C6H4CH3	30 mg/m^3
52	Phenol	C6H5OH	19 mg/m^3
53	Phenylhydrazine	C6H5NHNH2	22 mg/m^3
54	Pyridine	C5H5N	30 mg/m^3

No.	Parameter		Maximum Level of Discharge
55	Pyrene	C16H10	15 mg/m^3
56	Quinone	C6H4O2	0,4 mg/m^3
57	Styrene	C6H5CHCH2	420 mg/m^3
58	1,1;2,2-tetrachloroethane	CL2HCCHCl2	35 mg/m^3
59	Tetrachloromethane	CCl4	65 mg/m^3
60	Toluene	C6H5CH3	750 mg/m^3
61	Tetranitromethane	C(NO2)4	8 mg/m^3
62	Toluidine	CH3C6H4NH2	22 mg/m^3
63	Toluene-2,4-D-isocyanate CH3C6H3(NCO)2		0,7 mg/m^3
64	Trichloro ethylene	ClCH=CCl2	110 mg/m^3
65	Xylidine	(CH3)2 C6H3NH2	50 mg/m^3
66	Vinylchloride	CH2=CHCl	150 mg/m^3

This standard applies to control of pollution substances for immobile source to atmosphere

Appendix 6: Annex_5 to Sub-decree No. 42/ANK/BK of July 10, 2000 (Maximum Standard of Noise Emission Level Allowable for Vehicles on Public Roads)

No.	Category of Vehicles	Maximum Noise Level permitted (dB (A))
1	- Motorcycles, cylinder capacity (cc) of engine <125cm^3	85
2	- Motorcycles, cylinder capacity (cc) of engine ≥125cm^3	90
	- Motorize Tricycles	
3	- Cars, taxi, bus with capacity of < 12 passengers	90
4	- Bus with capacity of ≥ 12 passengers;	80
5	- Truck with loading capacity of <3,5 tons	85
6	- Truck with loading capacity of ≥ 3,5 tons	85
7	- Truck with engine capacity of ≥ 150 kw	88
8	- Other machinery (tractors/trucks) that are not listed above	89
9		91

This standard applies to control of noise emission standard for all kind of vehicle when operating on the public road.

Appendix 7: Annex-6 to Sub-decree No. 42/ANK/BK of July 10, 2000 (Maximum Standard of Noise Level Allowable in the Public and Residential Areas (dB(A))

No.	Areas	Period of Times		
		From 6AM through 18PM	From 18PM through 22PM	Form 22PM through 6AM
1	Quiet Areas - Hospitals - Libraries - School - Kindergarten	45	40	35
2	Residential Areas - Hotels - Administrative office - Villa, flat	60	50	45
3	Commercial and Service Areas and Area of multiple business	70	65	50
4	Small industrial factories mingling in residential area	75	70	50

This standard applies to control of noise level of any source or activity that emitted noise into the public and residential areas.