

SFG4160 REV

KINGDOM OF CAMBODIA
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Ministry of Public Works and Transport
Road Assets Management Project II Additional Financing
RAMPII-AF (P165249)

SITE SPECIFIC
ENVIRONMENTAL MANAGEMENT PLAN

NATIONAL ROAD 4
PK19+700 to PK226+000

March 29, 2018 (revised as per comments from Regional Safeguards Secretariat of the WB)

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Abbreviations

AC	: Asphalt Concrete
CRPF	: Compensation and Resettlement Policy Framework
DoE	: Department of Environment
EMP	: Environmental Management Plan
ES	: Environmental Specialist
ESSF	: Environmental and Social Safeguard Framework
ER	: Environmental Review
GDAP	: General Department of Administration and Planning
GDPW	: General Department of Public Works
GDT	: General Department of Transport
GRM	: Grievance Redress Mechanism
MoE	: Ministry of Environment
MEF	: Ministry of Economy and Finance
MPWT	: Ministry of Public Works and Transport
PDoE	: Provincial Department of Environment
PDWT	: Provincial Department of Public Works and Transport
PMU	: Project Management Unit
RGC	: Royal Government of Cambodia
RAMP	: Road Asset Management Project
ROW	: Right of Way
NR	: National Road
NR 4	: National Road No.4
ESO	: Environment and Social Office
WB	: World Bank

SITE SPECIFIC ENVIRONMENTAL MANAGEMENT PLAN

ROAD ASSET MANAGEMENT PROJECT – RAMP II

National Road No.4
PK19+700 to PK226+000

1. Project Background

The Government of Cambodia through the Ministry of Public Works and Transport (MPWT) is provided with World Bank financing to implement Road Asset Management Project-Additional Financing of Second Road Asset Management Project (RAMP II) for a period, from 2015 to 2020. The RAMP II may include additional works for the National Road 4, from PK19+700 to PK226+000, which would build on the achievements of RAMP-II to ensure the continued effective use of the rehabilitated national and provincial road network.

For climate resilience, the works may include improvements in side drainage in flood prone areas along the roads. Then envisaged works would also support the planning and development of the road maintenance program by further enhancing the capacity of MPWT to carry out data collection, processing and analysis necessary for effective road asset management of the national and provincial road networks.

The additional works, the works and maintenance services will be implemented using the existing Royal Government of Cambodia (RGC) organizational structure and institutional arrangements, particularly within MPWT. The Project Management Unit of RAMP-II will continue to be responsible for these works. The Ministry of Economy and Finance (MEF) will be the formal point of contact between RGC and IDA on all financial and legal matters related to the credit for RAMP-II, and represents RGC in discussions on these matters. The MPWT will be responsible for overall technical supervision, execution and management of the project. The General Department of Public Works (GDPW) will be responsible for the day-to-day implementation, supervision and operation of the project, including contracting and direction of all consultants, and will be the Employer for all civil works contracts. The General Department of Administration and Planning (GDAP) will carry out the financial, safeguards, capacity development, training and public disclosure matters on the project. The General Department of Transport (GDT) will be responsible for the road safety aspects.

The additional works and maintenance services are planned to be implemented over a period of eight (8) years, from 2019 to 2026. The envisage works will focus on preservation of the existing assets and will not involve any civil works expansion beyond the current public right of way.

2. Description of Project

The envisage additional works under RAMP-II may include three main components:

Component A: Road Improvement and Maintenance: to support the preservation of MPWT's road network and provide implementation support for the design and supervision of works.

- **Sub-component A.1: Periodic maintenance and strengthening:** will be undertaken for about 206km of existing bitumen-sealed roads along the selected NR4 road with an overlay of asphalt concrete, replacement of 198km of laterite shoulders with asphalt concrete surfacing, replacement of current pavement with concrete pavement at flood prone areas, including strengthening and replacement, as necessary, of sub-base and road base-course, using unbound materials or stabilized materials for the road pavement. The civil works would include installation of about 53km of new drains on both sides of

the road, construction of bridges and cross drainages. Periodic maintenance would be followed by the application of performance-based road maintenance for a period of five years. Periodic maintenance works would be divided into six contract packages. This sub-component will also finance construction of four (4) box-culverts; two (2) pipe-culverts; and three (3) bridges along the NR4.

Sub-component A.1: Periodic maintenance and strengthening	Length	Cost (USD)
Package 1: CW1 (PK19+700 to PK60+000, Length=40.3Km): Base course improvement, AC overlay, Replacement of laterite shoulder with AC shoulder, Concrete side-drain (17km), Open side drain (10km), Outlets (5km)	40.30km	16,210,000
Package 2: CW2 (PK60+000 to PK101+000, Length=41Km): Base course improvement, AC overlay, Replacement of laterite shoulder with AC shoulder, Concrete side-drain (0km), Open side drain (0km), Outlet (0km)	41.00km	12,230,000
Package 3: CW1 (PK101+000 to PK143+000, Length=42Km): Base course improvement, AC overlay, Replacement of laterite shoulder with AC shoulder, Concrete side-drain (9km), Open side drain (0km), Outlet (3km)	42.00km	12,790,000
Package 4: CW4 (PK143+000 to PK186+000, Length=43Km): Base course improvement, AC overlay, Replacement of laterite shoulder with AC shoulder, Concrete side-drain (8km), Open side drain (0km), Outlet (2km)	43.00km	12,980,000
Package 5: CW5 (PK186+000 to PK226+000, Length=40Km): Base course improvement, AC overlay, Replacement of laterite shoulder with AC shoulder, Concrete side-drain (7km), Open side drain (0km), Outlet (2km)	40.00km	21,950,000
Package 6: CW6 (Structure from PK19+700 to PK226+000): Construction of (4) box-culverts; two (2) pipe-culverts; and three (3) bridges	9 structures	22,190,000
TOTAL	206.30km	98,350,000

- **Sub-component A.2: Implementation support:** will finance consultancy services to undertake (a) preparation of detail design and advice to MPWT on technical options and solutions, cost estimation; contract management for the civil works under Component A.1; (b) construction supervision and supervision for maintenance under the project and; (c) hands-on skills and supervision know-how to MPWT staff on best practices and internationally accepted procedures, road safety, project management, contract management, outsourcing, social and environmental management, monitoring and evaluation.
- **Sub-component A.3: (Additional Activity) - Overloading Control:** to provide tools and capacity for MPWT to chase the overloading offences by upgrading the exiting weighing stations along the key road corridors and installing weighing stations on the NR4. These would help MPWT to appropriately share risks to road durability caused by overloading with PBC contractors. This will finance the purchase of 7 sets of weighing stations, which will be installed on the NR4 and key intersections areas.
- **Sub-component A.4: (Additional activity) - Speed-limit Zoning, Safety Corridors and Feeder Road Improvement:** supports the speed-limit zoning setting by (a) installing at each end of zones the guide-signs towards speed-limit zones for drivers to slow down speeding; (b) installing solar-powered lights and surveillance cameras to record speeding offences; (c) other road furniture recommended by road safety audits. Speed-limit zoning will be established in the accident-prone areas (black spots); in major urban areas along the RAMPII and RAMPII-AF roads; and in areas approaching to schools and markets.

The activity also supports safety corridors development and improvement of major feeder road intersections.

Component B: Operationalization of Road Asset Management: will finance sub-component/activities as follows:

- **Activity B1:** System upgrading and technical capacity development for road asset management within the MPWT through support for (i) operation of the Road Data Collection and Management Unit (RDCMU) under RAMO and the effective implementation of the Road Management Decision Support (RMDS) system; (ii) strengthening of the data collection methodology, review of the current modeling system, and provision of simplified models for development of three-year rolling maintenance plans; (iii) preparation of short-term and medium term road improvement and maintenance program; and (iv) development of a useful reporting format for the results of model simulation, and training. The Activity B1 will also finance the safeguards training for staff of the Social and Environmental Office of MPWT.
- **Activity B2:** Road safety awareness raising of communities and road safety audits of project roads.
- **Activity B3:** will be ceased as financial management capacity of MPWT has been enhanced substantially and would not require further support from the Project. Moreover, the internal audit will also be undertaken by Client with close oversight by the MEF.
- **Activity B4:** Technical and financial audits;
- **Activity B5:** Procurement Supports: will finance services of international and nation procurement experts; and
- **Activity B6:** Incremental Operating Costs; will finance RAMO's administrative costs to ensure smooth implementation of the AF.

Component C: Contingent Emergency Response to enable immediate response through the reallocation of project proceeds in the event of an eligible crisis or emergency.

Table 1: Activities of RAMPII and additional activities of RAMPII-AF

Components/Activities	RAMPII (US\$ mill.)			RAMPII-AF (US\$ mill.)			RAMPII+RAMPII-AF (US\$ mill.)		
	IDA	RGC	TOTAL	IDA	RGC	TOTAL	IDA	RGC	TOTAL
Component A: Road Improvement and Maintenance	56.970	4.300	61.270	106.460	3.000	109.460	163.430	7.300	170.730
A1: Periodic maintenance and strengthening	52.670	4.300	56.970	95.350	3.000	98.350	148.020	7.300	155.320
A2: Implementation support	4.300	0.000	4.300	6.950	0.000	6.950	11.250	0.000	11.250
A3: Overloading Control	NA	NA	NA	1.570	0.000	1.570	1.570	0.000	1.570
A4: Speed-limit Zoning, Safety Corridors and Feeder Road Intersection Improvement	NA	NA	NA	2.590	0.000	2.590	2.590	0.000	2.590
Component B: Operationalization of Road Asset Management System	3.030	0.500	3.530	3.540	0.000	3.540	6.570	0.500	7.070
B1: Institutional and Technical Capacity Development of RAMO	1.350	0.000	1.350	1.200	0.000	1.200	2.550	0.000	2.550
B2: Community-based Road Safety Campaigns and Road Safety Audits on Project Roads	0.300	0.000	0.300	0.500	0.000	0.500	0.800	0.000	0.800
B3: FM and Internal Audit	0.100	0.000	0.100	NA	NA	NA	0.100	0.000	0.100
B4: External Financial Audits	0.080	0.000	0.080	0.080	0.000	0.080	0.160	0.000	0.160
B5: Procurement Support	0.200	0.000	0.200	0.220	0.000	0.220	0.420	0.000	0.420
B6: Incremental Operating Cost	1.000	0.500	1.500	1.540	0.000	1.540	2.540	0.500	3.040
Component C: Contingent Emergency Response	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL	60.000	4.800	64.800	110.000	3.000	113.000	170.000	7.800	177.800

Source: Project Description from WB

The Additional Financing (AF) would scale up the investments of RAMP-II to include the rehabilitation, enhanced climate resilience and maintenance of National Road 4 (NR4), an existing 206.3 km road that links Phnom Penh to Cambodia's only main deep-sea port, Preah Sihanouk. The rehabilitation works on NR4 would include replacement and overlay of Asphalt Concrete (AC), installation of side drains and outlets, curb side strengthening, overlay of AC on laterite shoulders, and road furniture. All works would be carried out on the existing carriage way within the right of way (ROW), such that land acquisition would not be required.

3. Environmental and Social Impacts

3.1 Potential Environmental Impacts

The proposed project builds on existing environmental practices under the previous Road Asset Management Project funded by the World Bank. The proposed project, National Road No.4, has no major adverse impacts on local environment as well as local people.

From field assessment, 17-20 February 2018, the environmental impacts would be minor and site specific. Some inconveniences may occur during construction preliminary emissions from heavy equipment, noise, construction debris (most likely the installation of construction materials and machineries along the roads or in front of local community houses or shops), and short term disturbance to daily business (likely the accessibility to shops). However, these issues can be mitigated by applying good construction practices and close supervision and monitoring.

The assessment observed the daily business activities in the urban communities along NR4, and resumed quick discussion with some households who own shops (such as restaurants, groceries, etc.). Eight (8) people in urban areas are interviewed together with two public consultations, with mainly affected people in Baek Chan and Thnal Totung market, held in Baek Chan commune center and Prey Kuy village center respectively. It was reported that the construction of side drainages (the excavation and installation of concrete pipes/box culvert or open drainages) may cause disturbance to businesses specifically these activities may limit the accessibility of customers from the road to shops. Besides, some mobile tables, cooks, and/or hawkers may have to be cleared from the pedestrian ways being used by local shop owners. This assessment, based on comments from local shop owners and discussion with road engineers of RAMO, proposed site specific EMPs described in table below. Table 2 presents potential environmental impacts.

The Kirirom Boukor National Park: The park is under the management of Ministry of Environment. The NR4 tarveerses through the park from PK PK102+000 to PK109+000. This entire road stretch (206.3 km) has been built since 1950s and a small section of NR4 (5-7km) is passing through Kirirom Boukor National Park. From PK102+000 to PK107+000, from Phnom Penh to Sihanouk Ville, on the left hand side is Boukor National Park (in Kampot Province) and from PK102+000 to PK109+000 is Kirirom National Park. The Royal Government of Cambodia awarded this NR4 contract as concession to AZ Group in 2001 and started to operate/collect tolls in 2002 until January 2016. Although the Kirirom Boukor National Park is located about 60m from the NR4 center line, the rehabilitation works would not impact to the natural habitats and the Park because there are living communities establishing the buffer zone between NR4 and the park. Currently, there are houses, shops along both sides of the road rights of way (see annex 4). Furthermore, the EMP (table 3) ensures proper and sufficient road signs are provided to inform drivers/travelers. For example, Contractor and MPWT cooperate to install signboard informing travelers about potential animal crossing areas and would install speed-limit signboards for travelers to slow-down speeds.

Table 2: Potential Environmental Impacts

Activity	Potential Impact	Location	Impact Level/time
Possible Impact During Construction Stage			
- Demolition of old damaged pavement and dust cleaning	- Air pollution caused by dust and impact on community heath	- Sections of repairing road bed and pavement. - Residential areas, school, hospital, pagoda near construction locations	Moderate to low (short term)
- Transportation of material and waste (old DBST/SBST road removal), operation of construction machines		- Along the transportation roads, NR4. - Residential areas, school, hospital, pagoda near construction locations	Moderate to low (short term)
- Road maintenance activities - Cutting/removing of concrete pavement in urban area for drainage system installation	- Noise pollution - Interruption of businesses and utility services	- Residential areas, school, pagoda, state agencies near construction locations	Low (short term)
- Transportation of soil, waste, gravel, asphalt concrete			Moderate (short term)
- Excavation of soil for side drain and open ditch	- Interruption of business and utility services	- Locations of drainage system construction	Moderate
- Digging out the old roadbed	- Environmental pollution and	- At the sections of repairing road bed and pavement	Moderate to low

Activity	Potential Impact	Location	Impact Level/time
<ul style="list-style-type: none"> - Digging, clearing drainage culverts, ditches - Machinery operation - Maintenance construction machines 	deterioration of landscape due to solid waste	<ul style="list-style-type: none"> - At the locations of repairing and adding drainage pipes, culverts, ditches 	(short term)
	<ul style="list-style-type: none"> - Surface water pollution caused by waste oil and oil-containing wastes 	<ul style="list-style-type: none"> - At the locations of reinforcing slope - At the locations near the source of surface water 	
<ul style="list-style-type: none"> - Arranging construction machines - Transportation of construction materials and waste 	<ul style="list-style-type: none"> - Cause traffic unsafely and traffic obstruction on the project route and local road 	<ul style="list-style-type: none"> - At construction locations - Along transport route, NR4 	Moderate to low (short term)
	<ul style="list-style-type: none"> - Damage to public utilities 	<ul style="list-style-type: none"> - Local road used for transport material and waste 	Moderate
<ul style="list-style-type: none"> - Outside workers 	<ul style="list-style-type: none"> - Impact on community health 	<ul style="list-style-type: none"> - All construction location 	
<ul style="list-style-type: none"> - Material exploitation 	<ul style="list-style-type: none"> - Generate dust, noise, vibration - Damage to public utilities 	<ul style="list-style-type: none"> - Borrow pits - Along transportation road, NR4 	Low (short term)
Potential Impact During Maintenance and Operation Stage			
<ul style="list-style-type: none"> - Maintenance works (pavement, drainage etc.) - Emergency repair work (arranging construction machines, transportation of material and waste) 	<ul style="list-style-type: none"> - Air & noise pollution - Cause damage to public utilities - Interruption of business and utility services 	<ul style="list-style-type: none"> - Residential area along the project road - Location of maintenance and repair 	Low (short term)
	<ul style="list-style-type: none"> - Cause traffic unsafely and obstruction on the route 	<ul style="list-style-type: none"> - Location of repair drainage system - Repair pavement 	Moderate to low (short term)

3.2 Social Impacts

The main social impacts are caused by workers focusing on infectious diseases (e.g. impact on security and order due to conflict between local people and workers, gender based violence, sexual transmitted diseases, HIV/AIDS, etc.). However, social impacts were described in the Environmental and Social Screening Report (or Due Diligence Report); revised ESMF including resettlements action plan (RAP), indigenous people, road safety and awareness campaign to local residents. This site specific EMP does not intend to address social issues because, in the meantime, a social safeguard consultant is hired to prepare ARAPs for RAMP II-AF.

4. Mitigation Measures

The main mitigation activities (specific site mitigation measures) are described in Table 3 below. Since this is a road maintenance project, good practice and standard mitigation measures are

required including construction waste management, noise, dust, and traffic safety mitigation measures.

On the other hand, the specific impacts, location and proposed mitigation measures for the proposed NR4 road are presented in below table.

Table 3: Site Specific Environmental Management Plan

Location	Sensitive Area or Activities	Potential Impacts/Concerns	Mitigation Measures	Responsibility	
				Implementation	Monitoring
Mitigation Measures During Construction and Maintenance Stage¹					
PK 19+000 – PK 229+000	All project location	- Lack of mechanism to address environmental complaints	- Establish workable grievance redress mechanism (GRM) - Make public awareness of GRM - Ensure that name and contact number of representative of MPWT and Contractor are place on the notice board outside the construction site and at local government office (provincial and commune levels) - Ensure Contractor’s compliance to TEG and Site Specific EMP is in the contract agreement	MPWT/PMU/ ESO	Consultant/ESO and contractor
PK 19+000 – PK26+000 PK29+000- PK32+000	- The route passes through residential/urban area where business operates on the ROW - School, government agency building	- Traffic accident - Air pollution due to elevated levels of dust and gaseous emissions - Solid waste and waste from construction - Canal/stream pollution - Business disruption especially those who have business along the national road	- When construction passes through residential areas particularly area near school should apply traffic safety, and noise restriction - Dust control during construction by spray water on road surface 3-6 times/day (at road construction sections) depending on weather and traffic - During construction stage, collecting and not dumping waste into canal or natural stream - Provide safe walk path if excavate soil for ditches or drainage system that requires more than 2 days	Contractor	MPWT/PMU/ ESO and contractor

¹Construction activity refers to activities during project commencement to its completion. While maintenance stage is post project activity (maintenance after project completion).

Location	Sensitive Area or Activities	Potential Impacts/Concerns	Mitigation Measures	Responsibility	
				Implementation	Monitoring
			<ul style="list-style-type: none"> - Signs shall be placed and lightning at night shall be installed to avoid any possible danger to public - Construction activities must be planned and implement as quick as possible to minimize business disruption and during construction, a path walk should be provided for temporary access into business area 		
PK 26+000 – PK 29+000 PK32+000- PK42+000	- The route passes through sparsely residential and mainly rice field	<ul style="list-style-type: none"> - Canal/stream pollution - Waste generate from construction activities - Traffic accident - Dust and noise pollution 	<ul style="list-style-type: none"> - Collection of waste, especially oil, not dumping into canal and any water body around construction site - Construction activities should be limited to working hours only - During construction phase collecting waste and not pollute the rice field and existing water body - Excavated soil shall not damp in the nearby rice field 	Contractor	Consultant MPWT/PMU/ ESO
PK42+000- PK52+000 PK64+500- PK66+000	- Urban area	<ul style="list-style-type: none"> - Traffic accident - Air pollution due to elevated levels of dust and gas emissions - Solid waste and waste from construction - Canal/stream pollution - Business disruption especially those who have business along the national road 	<ul style="list-style-type: none"> - Collection of waste, especially oil, not dumping into canal and any water body around construction site - Apply traffic safety, noise and dust control (during construction by spray water on road surface 3-6 times/day depending on weather and traffic) - Install road sign school, hospital, market, etc. areas - Road marking and speed limit 	Contractor	Consultant MPWT/PMU/ ESO

Location	Sensitive Area or Activities	Potential Impacts/Concerns	Mitigation Measures	Responsibility	
				Implementation	Monitoring
PK52+000- PK85+000	- The route passes through sparsely residential and mainly rice field	- Canal/stream pollution - Waste generate from construction activities - Traffic accident - Dust and noise pollution - Land/rice field contamination	- Collection of waste, especially oil, not dumping into canal and any water body around construction site - Construction activities should be limited to working hours only - During construction phase collecting waste and not pollute the rice field and existing water body - Excavated soil shall not damp in the nearby rice field	Contractor	Consultant MPWT/PMU/ ESO
PK85+000- PK88+000 PK99+200- PK100+000	- Urban area	- Traffic accident - Air pollution due to elevated levels of dust and gas emissions - Solid waste and waste from construction - Canal/stream pollution - Business disruption especially those who have business along the national road	- Collection of waste, especially oil, not dumping into canal and any water body around construction site - Apply traffic safety, noise and dust control (during construction by spray water on road surface 3-6 times/day depending on weather and traffic) - Install road sign school, hospital, market, etc. areas - Road marking and speed limit	Contractor	Consultant MPWT/PMU/ ESO
PK88+000- PK102+000 and PK109+000- PK140+000	- The route passes through sparsely residential and mainly rice field	- Canal/stream pollution - Waste generate from construction activities - Traffic accident - Dust and noise pollution - Land/rice field contamination	- Collection of waste, especially oil, not dumping into canal and any water body around construction site - Construction activities should be limited to working hours only - During construction phase collecting waste and not pollute the rice field and existing water body - Excavated soil shall not damp in the nearby rice field	Contractor	Consultant MPWT/PMU/ ESO

Location	Sensitive Area or Activities	Potential Impacts/Concerns	Mitigation Measures	Responsibility	
				Implementation	Monitoring
PK102+000- PK109+000	<ul style="list-style-type: none"> - Section pass through Kirirom Boukor National Park starts from PK102+000 and ends at PK107+000 (L) and PK109+000 (R) (annex 4 show the boundary of the National Park, which is about 100m from the NR4 center line). - Boukor Park buffer zone ends at PK107+000 (left hand side) while Kirirom Park buffer zone ends at PK109+000 (right hand side) 	<ul style="list-style-type: none"> - Encroachment on the National Park 	<ul style="list-style-type: none"> - Limit work only on COI and no land acquisition for those community who live along the National Park - Prevent from cutting trees or branches in this area. - No parking of heavy equipment, camp site, etc. is allowed on the road sides or within the vicinity of the park - Apply traffic safety, noise and dust control - Contractor and MPWT cooperate to make proper (crossable) embankments that the elephants can cross, install signboard informing travelers about potential animal crossing areas. Contractor and MPWT will not create obstacle for elephant to cross the road² and would install speed-limit signboards for travelers to slow-down speeds. 	Contractor	Consultant MPWT/PMU/ ESO Local authority
PK115+700- PK116+300	<ul style="list-style-type: none"> - Flooding the road during heavy raining 	<ul style="list-style-type: none"> - Water overflow on the road and flooding in the nearby village - Two bridges are flooded during heavy rain 	<ul style="list-style-type: none"> - The bridge should be elevated to a flood free level - Road elevation to prevent flooding - Contractor and local authority should cooperate to install signboard for detour road if the bridges need to be removed. 	Consultant to make revision on the design Contractor	Consultant MPWT/PMU/ ESO

² According to interviewing with Mr. Chheun Sothun, Director of the Department of Environment, Kampong Speu on 19 February 2018; the elephant crosses this area (PK107-108) two times (in May and late October) per year, usually at early morning time. The environmental rangers are assigned to educate community people and travelers.

Location	Sensitive Area or Activities	Potential Impacts/Concerns	Mitigation Measures	Responsibility	
				Implementation	Monitoring
			- Detour road should not harm to environment and should get permission from private land owners if private properties are going to use for this purpose.		
PK140+000- PK152+000 PK152+800- PK177+600	- The route passes through sparsely residential and mainly rice field	- Waste generation from construction activities - Canal/stream water pollution - Land/rice field contamination	- Collection of waste, especially oil, not dumping into canal and any water body around construction site	Contractor	Consultant MPWT/PMU/ ESO
PK152+000- PK152+800 PK177+600- PK178+300 And PK179+400- PK183+000	- Urban area	- Traffic accident - Air pollution due to elevated levels of dust and gas emissions - Solid waste and waste from construction - Canal/stream pollution - Business disruption especially those who have business along the national road	- Collection of waste, especially oil, not dumping into canal and any water body around construction site - Apply traffic safety, noise and dust control (during construction by spray water on road surface 3-6 times/day depending on weather and traffic) - Install road sign school, hospital, market, etc. areas - Road marking and speed limit	Contractor	Consultant MPWT/PMU/ ESO
PK183+000- PK207+000 PK208+500- PK219+000 PK219+800- PK222+300	- The route passes through sparsely residential and mainly rice field	- Canal/stream pollution - Waste generate from construction activities - Traffic accident - Dust and noise pollution - Land/rice field contamination	- Collection of waste, especially oil, not dumping into canal and any water body around construction site - Construction activities should be limited to working hours only - During construction phase collecting waste and not pollute the rice field and existing water body	Contractor	Consultant MPWT/PMU/ ESO

Location	Sensitive Area or Activities	Potential Impacts/Concerns	Mitigation Measures	Responsibility	
				Implementation	Monitoring
PK223+400- PK224+500			- Excavated soil shall not damp in the nearby rice field		
PK207+000- PK208+500 PK219+000- PK219+800 PK222+300- PK223+400 PK224+500- PK226+000	- Urban area - Provincial garden ³	- Traffic accident - Air pollution due to elevated levels of dust and gas emissions - Solid waste and waste from construction - Canal/stream pollution - Business disruption especially those who have business along the national road	- Collection of waste, especially oil, not dumping into canal and any water body around construction site - Apply traffic safety, noise and dust control (during construction by spray water on road surface 3-6 times/day depending on weather and traffic) - Install road sign school, hospital, market, etc. areas - Road marking and speed limit - Trees along the garden at PK226+000 should avoid cutting down	Contractor	Consultant MPWT/PMU/ ESO
Mitigation Measures During Operation					
The project road	- High risk sections of the road, especially the sharp curves and residential area		- All vehicles must go through checking regularly - Material load shall be covered and secured during transportation to prevent scattering of soil, sand, materials or dust - Vehicle owner are required to follow national regulation on traffic and traffic safety - Relevant traffic signs and road bumper need to be installed at right location of the road	MPWT/PMU	MPWT/PMU/ ESO/ contractor
Influx of Labor, Violence Against Child and Gender Based Violence (GBV)					

³ About 600m at PK206+000 in Sihanouk Ville. It is the provincial public garden area.

Location	Sensitive Area or Activities	Potential Impacts/Concerns	Mitigation Measures	Responsibility	
				Implementation	Monitoring
The project road	Influx of labor, Worker Camp Site	In general	<ul style="list-style-type: none"> - Reduction of labor influx should be a part of contract - Contractor shall recruit workers from local area and shall provide skill training to workers if necessary to reduce labor influx into community - Establish and operation of effective GRM at the worker camp site. Provide training on how to use GRM for reporting and complaining issues 	Contractor/MP WT/WB	MPWT/PMU/E SO
		Social conflict	<ul style="list-style-type: none"> - Provide information and enforcement of worker codes of conduct in local language - Provision of cultural sensitization training for workers regarding engagement with local community - Consultations with and involvement of local communities in project planning and implementation; - Awareness-raising among local community and workers 	Contractor/MP WT/WB	MPWT/PMU/E SO
		Adverse impacts on community dynamics	<ul style="list-style-type: none"> - Provision of entertainment and events for workers within camp to reduce incentives for mixing with local community - Liaison with civil society organizations to create integrative action plans; provision of upfront information on potentially 	Contractor/MP WT/WB	MPWT/PMU/E SO

Location	Sensitive Area or Activities	Potential Impacts/Concerns	Mitigation Measures	Responsibility	
				Implementation	Monitoring
			detrimental impacts on local communities - Investment in community participation and engagement programs.		
		Communicable diseases (HIV/AIDS)	- Provide training program on HIV/AIDS - Information campaigns on STDs among the workers and local community - Provision of condoms - Awareness raising about public health impacts from labor influx	Contractor/MP WT/WB	MPWT/PMU/E SO
		Gender-based violence, including sexual harassment, child abuse and exploitation	- Mandatory and regular training for workers on required lawful conduct in host community and legal consequences for failure to comply with laws - Commitment / policy to cooperate with law enforcement agencies investigating perpetrators of gender-based violence - Creation of partnership with local NGO to report workers' misconduct and complaints/reports on gender-based violence or harassment through the GRM - Provision of opportunities for workers to regularly return to their families - Provision of opportunities for workers to take advantage of	Contractor/MP WT/WB	MPWT/PMU/E SO

Location	Sensitive Area or Activities	Potential Impacts/Concerns	Mitigation Measures	Responsibility	
				Implementation	Monitoring
			entertainment opportunities away from rural host communities - Information and awareness-raising campaigns for community members, specifically women and girls - Provision of information to host community about the contractor's policies and Worker Code of Conduct (where applicable) - Reinforcement of police force where needed - Enforcement of laws on sexual violence and human trafficking		
		Child labor and school drop out	- Ensuring that children and minors are not employed directly or indirectly on the project - Communication on hiring criteria, minimum age, and applicable laws - Enforcement of legislation on child labor.	Contractor/MP WT/WB	MPWT/PMU/ E SO

4.1 Discovery by Chance finds Procedure

If the Contractor, during construction, discovers archeological sites, historical sites, remains and objects, including graveyards and/or individual graves during excavation or construction, the Contractor shall:

- Stop the construction activities in the area of the chance find and report to RAMP/Bank as soon as possible for appropriate measures;
- Delineate the discovered site or area;
- Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until there responsible local authorities or the Department of Culture and Information takes over;
- Notify the Construction Supervision Consultant who in turn will notify responsible local or national authorities in charge (within 24hours or less).
- Relevant local or national authorities would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require preliminary evaluation of the findings to be performed. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; those include the aesthetic, historic, scientific or research, social and economic values.
- Decisions on how to handle the finding shall be taken by the responsible authorities (MPWT).This could include changes in the layout (such as when finding an irremovable remain of cultural or archeological importance) conservation, preservation, restoration and salvage.
- If the cultural sites and/or relics are of high value and site preservation is recommended by the professionals and required by the cultural relics authority, the Project's Owner will need to make necessary design changes to accommodate the request and preserve the site.
- Decisions concerning the management of the finding shall be communicated in writing by relevant authorities.

5. Implementation Arrangement

The table below shows the institutional responsibilities for implementation of the EMP.

Table 4: Responsibilities for EMP Implementation

Agency	Responsibilities
Ministry of Public Works and Transport (MPWT)	<ul style="list-style-type: none"> • Executing agency, shall ensure that sufficient funds are available to properly implement the EMP including recruitment of Environmental specialist consultant • Ensure that all Project components, regardless of financing source, complies with the provisions of the EMP and the World Bank Safeguard Policy • Ensure that Project implementation complies with Government environmental policies and regulations • Ensure that tender and contract documents include the EMP • Internal cooperation with Social and Environmental Office during Project implementation • Submit Monthly monitoring reports on EMP implementation to the World Bank
Project Management Unit (PMU)/Environment and Social Office (ESO) With assistance from the Consultant, prepare monthly environmental monitoring reports for submission to WB based on the results of EMP monitoring identify environmental corrective actions, and prepare a corrective action plan, as necessary	<ul style="list-style-type: none"> • Responsible for overall project implementation, management and coordination; • Include the EMP in the tender and contract documents; • Ensure that EMP provisions are strictly implemented during various project phases (design/pre-construction, construction and operation) to mitigate environmental impacts to acceptable levels • Undertake monitoring of the implementation of the EMP (mitigation and monitoring measures) with assistance from Consultant. • With support from the Consultant, prepare monthly environmental monitoring reports for submission to WB • Ensure that Project implementation complies with WB's Safeguard principles and requirements • Commit and retain dedicated staff for the ESO to oversee EMP Implementation • Ensure that environmental protection and mitigation measures in the EMP are incorporated in the detailed design • If associated facilities are needed for the civil works, contractors must obtain necessary approvals/permits from relevant authority MOE prior to begin the civil works, e.g. borrow pits, quarry site, crash stone, etc.
Implementation Supervision Consultant	<ul style="list-style-type: none"> • Assist PMU/ESO to ensure that all environmental requirements and mitigation measures from the EMP are incorporated in the bidding documents and contracts • Implement all mitigation and monitoring measures for various project phases • Undertake environmental management capacity building activities for ESO as required in the EMP • Undertake regular monitoring of the contractor's environmental performance as scheduled in the EMP • Conduct field measurements for surface water quality, dust and noise as required in the EMP
Contractor	<ul style="list-style-type: none"> • Provide sufficient funding and human resources for implementation of the EMP • Ensure proper and timely implementation of required pre-construction and construction mitigation measures in the EMP • Implement additional environmental mitigation measures, as necessary

Agency	Responsibilities
PDPWT	<ul style="list-style-type: none"> • Responsible for operation and maintenance of Project road • Implement EMP mitigation and monitoring measures during operation
Ministry of Environment (MOE), Ministry of Culture and Fine Arts	<ul style="list-style-type: none"> • Issue necessary approvals to the Project prior to implementation • Undertake monitoring of the Project based on their mandate

5.1 Monitoring and Reporting Procedure

While awarded contractors and sub-contractors will be responsible for day to day monitoring, PMU/ESO will take charge of regular monitoring and inspection. Check list and specification for regular monitoring programs will be developed and PMU/ESO field team members will be trained for monitoring and inspection of the works. PMU/ESO local team will carry out weekly monitoring requirements using the check list and with the supervision of the PMU of MPWT, it will take corrective actions for any infringement.

In addition, an environment consultant will be hired by RAMP-II-AF to carry out environmental and cooperate with Ministry of Environment, if necessary to do monitoring for ambient air quality, noise and vibration, soil, and water quality. Results of monthly findings will be reported to PMU, and the World Bank and corrective actions will be developed as required based on the conclusion of the findings. PMU will be responsible for issuance of report for monthly environmental and social monitoring and project's progress. Awarded contractors will be required to issue reports to PMU and the World Bank if the work runs into safeguards issues, which are beyond their capacity.

5.2 Capacity Building

Actual implementation of projects shows that coordination in environmental management is not always effective because of the following reasons:

- The community does not have obvious awareness on their rights and obligations on environmental protection or in spite of understanding, there is a lack of regime to provide feedback;
- Most of the case contractor does not pay much attention to the implementation of EMP. For this purpose, environmental and social specifications for contractor is developed (see appendix 1 of the report) and shall be included in the bidding document. This environmental and social specification of the contractor shall be strictly implement and supervised by concerned agencies.

In order to overcome these matters, it is necessary to analyze and assess the capability and demands of relevant departments/divisions in environmental management and analyze actual demands for project implementation. Accordingly, a capacity building and training program will be established to increase the effective operation of environmental management systems in the future and ESO should play an important role in safeguard monitoring and reporting. On the other hand, implementation of

EMP by contractor should be re-enforced. Correction measures should be applied if it is found not compliance with the EMP.

6. Indicative Budget for EMP Implementation

The EMP implementation cost will be limited to monitoring activities aimed at ensuring that the projects activities of RAMP II-AF align with the WB operational policies. The total indicative cost is estimated and presented in below table.

Table 5: EMP Implementation Costs

No	Activity	Description	Unit	Quantity	Unit Cost	Amount (USD)
A Supervision, Monitoring, Training on EMP						
1		PMU and safeguards focal persons to provide training and quarterly monitoring including preparation of annual safeguards monitoring report for 8 years	Year	8	25,000.00	200,000.00
2		Laboratory test of ambient air quality, noise and vibration, soil, and water quality	time	16	4,500.00	72,000.00
B Research and Specific Training on Environmental and Social Issues						
1		Recruitment of national consultant(s) (parttime) to assist MPWT to monitor site specific EMP implementation supervision	month	25	2,800.00	70,000.00
2		Training to PMU/ESO field team members who will carry out environment inspection and monitoring	time	8	1,000.00	8,000.00
TOTAL						350,000.00

7. Recommendations

The rehabilitation project will be carried out on about 206km of NR4, from Phnom Penh to Sihanouk Ville province. Although no road widening would be required, the proposed rehabilitation work will be passing through mixed environmental settings such as low-lying land, flood prone areas, farm lands, residential communities, small natural streams, and Kirirom Boukor National Park. No potential impacts on critical habitats are anticipated.

NR4 has been built since 1950s, and in 2001 a concessionaire contract was awarded to AZ Group, a private firm, to operate/collect tolls until January 2016. With the improved road, several residential communities, commercial activities, bus stops, gas stations, farms, etc. were established along the corridor. The Kirirom National Park, which is under the management of Ministry of Environment, is away from NR.

Results of the study show that only minor environmental impacts are anticipated. Such impacts will be experienced during site works mainly due to dust and noise emissions as well as potential occupational and community health and safety risks, but can be mitigated.

To avoid or mitigate negative impacts arising from the Project, the site specific environmental management plan (EMP) detailing mitigation measures have been prepared for monitoring purpose

and TOR for environmental and social safeguards was prepared to implement this EMP (appendix 2 of the report).

To ensure that Project is carried out consistent with the specific EMP requirements, MPWT shall specify in the tender documents and civil works contracts the implementation of EMP. MPWT shall be assisted by the consultant in monitoring the environmental performance of contractors. The consultant shall also undertake environmental management capacity building to the Social and Environment Office in MPWT during Project implementation.

In some markets and urban communities, it is recommended that concrete side drain with cover should be installed in order to avoid dumping solid waste into the drain.

The purpose of drainage system in this project is to improve transport facilities which are essential for economic development and social activities of the nation because drainage system can reduce rate of road deterioration (or prolong the life of the facilities) and lower vehicle operating cost. This system is to drain rainwater to natural canal, stream or open rice field. As Cambodia has a combine system (rainwater and household wastewater), for short term this system is fine in all location but long term view it is necessary to prevent household, especially for those in urban area, to discharge wastewater from household into the system since it may cause pollution to natural stream or open rice field. Hence it is recommended that local authority shall take necessary measures in their area in order to prevent household waste to discharge into the system.

Dumping of solid waste into drainage system (especially open drainage) in most of urban area in the visit NR4 is very common (observed and interviewed with people during field visit from 17-21 February 2018). It is suggested that solid waste collection service should be regularly collected. And the local authority, district level, is responsible for this household waste collection, according to District Governor during public consultation at Baek Chan commune. However, it is necessary that during implementation an environmental awareness should be provided to local community.

With regards to the influx of labor, MPWT and the Contractor should work together to reduce the labor force from outside and should recruit locally. If necessary, the Contractor should provide training to unskilled worker in the local to meet the skill requirements. Contractor shall be informed and strictly followed about gender based violence and child labor as specified in the EMP. These documents (EMP, ESEH and GBV) must form part of the contract documents.

7. Conflict Resolution Procedure

In connection with this proposed road maintenance project (NR4), all grievances will be handled through negotiation with the aim of achieving consensus. It is recommended that complaints will pass through village chief/elders for submission to the project authorities and other relevant authorities.

With this regards, the Grievance Redress Mechanism should be established by MPWT to handle all complains from local community and make public awareness of its procedures. In addition, the name and contact number of representative of MPWT and Contractor are placed on the notice board outside the construction site and at local government office i.e. provincial and commune office.

APPENDIX 1: Environmental and Social Specifications for Contractor

The following are the environmental and social specifications that must be included in both the bidding documents and construction contracts to ensure an adequate management of environmental and social issues during all the phases of the road project. However, this information is intended solely as broad guidance to be used in conjunction with local and national regulations.

The Contractor and his employees shall adhere to the mitigation measures set down in:

- The Environmental Management Plan of the NR4 including identified site specific measures;
- The mitigation measures included in project design and bill of quantities;
- The specifications, procedures, and best practices included in these specifications. These specifications complement any technical specifications included in the work quantities and the requirements of any Cambodian regulations and standards.

WORKFORCE AND SITE INSTALLATION MANAGEMENT PLAN

Workforce

Workforce includes all personnel hire by the Contractors to work in the constructions, rehabilitation or improvement of roads. The workers shall, whenever possible, rent houses nearby.

The Contractors shall:

- Give priority to hire local labor for the works;
- Engineers and workers shall register their temporary residence with the local authority;
- Provide work safety training to those local labors upon their hiring;
- The construction workers and staff shall need to have appropriate certificates as required (for example, health checks, labor contracts, insurance, etc);
- Provide education classes on HIV and sexually transmitted diseases.
- Establish a Code of Conduct to outline the importance of appropriate behavior, drug and alcohol abuse, respect for local communities, and compliance with relevant laws and regulations;
- Ensure adequate use of resources and proper waste management.

Site Installation

In order to minimize adverse environmental impacts due to construction and location of areas/facilities for the complex of the project, the following measures should be put into place:

- To the extent possible, the project shall utilize the existing mixing stations and asphalt plants of local area;
- The workforce shall be provided with safe, suitable and comfortable accommodations. They have to be maintained in clean and sanitary conditions;
- A medical and first aid facilities and first aid boxes shall be provided for all workers.

Prohibitions

The following activities are prohibited on or near the project site:

- Cutting of trees for any reason outside the approved construction area;
- Hunting, fishing, wildlife capture, or plant collection;
- Buying of wild animals for food;
- Use of unapproved toxic materials, including lead-based paints, asbestos, etc.;
- Disturbance to anything with architectural or historical value;
- Building of fires;
- Use of firearms (except authorized security guards);
- Use of alcohol by workers in office hours;
- Washing cars or machinery in streams or creeks;
- Doing maintenance (change of oils and filters) of cars and equipment outside authorized areas:
- Disposing trash in unauthorized places;
- Driving in an unsafe manner in local roads;
- Working without safety equipment (including boots and helmets);
- Creating nuisances and disturbances in or near communities;
- The use of rivers and streams for washing clothes;
- Indiscriminate disposal of rubbish or construction wastes or rubble;
- Littering the site;
- Spillage of potential pollutants, such as petroleum products;
- Collection of firewood;
- Poaching of any description;
- Explosive and chemical fishing;
- Burning of wastes and/or cleared vegetation

Any construction worker, office staff, Contractor's employees or another person related to the project found violating these prohibitions will be subject to disciplinary actions that can range from a simple reprimand to termination of his/her employment depending on the seriousness of the violation.

Environmental Training for Construction Workers

The Contractor shall prepare an Environmental Training Plan for all construction workers and staff to ensure that all concerned staff is aware of the relevant environmental requirements as stipulated in the Cambodia environmental legislation and the Contract specifications.

- The Contractor shall distribute to the key staff, including newly joined key staff members, (1) the Contractor's Environmental Policy; and (2) Copies of relevant extracts from environmental laws, standards and regulations.
- The Contractor is responsible for providing appropriate training to all staff according to their level of responsibility for environmental matters. Managerial staff shall receive additional training
- All Contractor's employees shall be required to comply with environmental protection procedures and they shall be able to provide evidence that they attended the training sessions detailed in the Plan
- Training materials and methods - which shall include formal training sessions, posters, data in newsletters, signs in construction area and 'tool box' meetings - shall be reviewed by the ES

- The Plan shall educate all construction workers on the following issues but not limited to them: fire arm possession, traffic regulations, illegal logging and collection of non-timber forestry products, non-disturbance of resettlement communities, hunting and fishing restrictions, waste management, erosion control, health and safety issues, all prohibited activities, the Code of Conduct requirements and disciplinary procedures, general information on the environment in which they will be working and living; and establishment of penalties for those who violate the rules;
- Periodic training shall be provided when necessary.

CONSTRUCTION IMPACT MANAGEMENT PLAN

Emissions and Dust

In order to ensure that the generation of dust due to the constructions activities is minimized, the following activities should be put into place:

- The Contractor shall be responsible for compliance with relevant Cambodian's legislation with respect to ambient air quality;
- The Contractor shall ensure that the generation of dust is minimized and shall implement a dust control program to maintain a safe working environment, minimize nuisance for surrounding residential areas / dwellings and protect damage to natural vegetation, crops, etc;
- The Contractor shall implement dust suppression measures (e.g. water spray vehicles, covering of material stockpiles, etc.) if and when required;
- Construction vehicles shall comply with speed limits and haul distances shall be minimized;
- It is encouraged to use vehicles and machinery which would cause less pollution like gasoline without lead. Limit the use of materials which may have high risk of pollution such as coal and black oil;
- Material loads shall be suitably covered and secured during transportation to prevent the scattering of soil, sand, materials or dust.

Noise and Vibration

To minimize noise and vibration during construction, the Contractor shall:

- Be responsible for compliance with the relevant Cambodia legislation with respect to noise;
- Ensure that all instruments, machinery and construction equipment meet quality standards before they are put into use;
- Try to keep noise generating activities to a minimum;
- Restrict all operations that result in undue noise disturbance to local communities and/or dwellings to daylight hours on weekdays;
- Use temporary noise barriers to minimize the noise caused by the construction equipment;
- Provide ear pieces to workers who must work with highly noisy machines such as piling, explosion, mixing, etc., for noise control and workers protection
- Maintain the construction equipment in its best operating conditions and lowest noise levels possible; In sensitive areas (including residential neighborhoods, hospitals, rest homes, schools, etc.) more strict measures may need to be implemented to prevent undesirable noise levels;

- To the extent possible, nighttime operations shall be kept to a minimum and banned near sensitive receptors;

Earthworks, Cuts and Fill Slopes

Earthworks, cuts and fill slopes shall be carefully managed to minimize negative impacts on the environment:

- All earthworks shall be properly controlled, especially during the rainy season.
- The Contractor shall maintain stable cut and fill slopes at all times and cause the least possible disturbance to areas outside the prescribed limits of the works.
- Any excavated cut or unsuitable material shall be disposed of in designated disposal areas
- Disposal sites should not be located where they can cause future slides, interfere with agricultural land or any other properties, or cause soil from the dump to be washed into any watercourse. Drains may need to be dug within and around the tips.

Disposal of Debris

The Contractor shall carry out the following activities:

- Establish and enforce daily site clean-up procedures, including maintenance of adequate disposal facilities for debris;
- Debris generated due to the dismantling of existing structures shall be suitably reused, to the extent feasible, in the proposed rehabilitation program. The disposal of remaining debris shall be carried out only at sites identified and approved by local authority.
- The contractor should ensure that these sites (a) are not located within designated forest or cultivated areas; (b) do not impact natural drainage courses; and (c) do not impact endangered/rare flora. Under no circumstances shall the contractor dispose of any material in environmentally sensitive areas.
- In the event any debris or silt from the sites is deposited on adjacent land, the Contractor shall immediately remove such, debris or silt and restore the affected area to its original state;
- Water courses shall be cleared of debris and drains and culverts checked for clear flow paths;
- Include provisions for incorporating the most appropriate stabilization techniques for each disposal site and determine that the selected spoil disposal sites do not cause unwanted surface drainage;
- Assess risk of any potential impact regarding leaching of spoil material on surface water;
- Once the job is completed, all rehabilitation -generated debris should be removed from the site.

WASTE MANAGEMENT PLAN

During the construction stage, the Contractor shall prepare a Waste Management Plan before commencement of project works. The Plan shall include the following Sub-Plans:

Wastewater

- The Contractor shall be responsible for compliance with the relevant Cambodian legislation relevant to wastewater discharges into watercourses
- The Contractor shall submit a method statement to the local authority or Provincial Department of Environment (PDoE) detailing how wastewater would be collected from all

wastewater generating areas, as well as storage and disposal methods. If the Contractor intends to carry out any on-site wastewater treatment, this should also be included;

- Water from kitchens, showers, laboratories, sinks etc. shall be discharged to existing sewer system (if any) or a conservancy tank for removal from the site;
- Runoff from fuel depots/workshops/machinery washing areas and concrete batching areas shall be collected into a conservancy tank and disposed of at a site approved by the local authority or PDoE/MoE;
- Domestic sewage from site office and toilets shall either be collected by a licensed waste collector or treated by on-site treatment facilities. Discharge of treated wastewater must comply with the discharge limit according to the legislation;
- Toilets can be provided on site for construction workers. Domestic sewage collected from the site office and chemical toilets shall be cleaned up on regular basis. Only licensed waste collectors shall be employed for this disposal;
- Wastewater shall not be disposed in watercourses without treatment.

Solid waste

- The Contractor shall submit a method statement detailing a solid waste control system to the PDoE/MoE for approval.
- The Contractor shall ensure that all facilities are maintained in a neat and tidy condition and the site shall be kept free of litter;
- Measures shall be taken to reduce the potential for litter and negligent behavior with regard to the disposal of all refuse. At all places of work, the Contractor shall provide litter bins, containers and refuse collection facilities for later disposal;
- Solid waste may be temporarily stored on site in a designated area approved by the PDoE prior to collection and disposal as regulation.
- No burning, on-site burying or dumping of waste shall occur;
- Random disposal of solid waste in scenery areas shall be strictly prohibited.

Hazardous waste

- All hazardous waste shall be disposed of at an approved hazardous landfill site and in accordance with local legislative requirements
- The removal of asbestos-containing materials or other toxic substances shall be performed and disposed of by specially trained workers;
- Used oil and grease shall be removed from site and sold to an approved used oil recycling company;
- Under no circumstances shall the spoiling of tar or bituminous products be allowed on the site, over embankments or any burying;
- Unused or rejected tar or bituminous products shall be returned to the supplier's production plant;
- Used oil, lubricants, cleaning materials, etc. from the maintenance of vehicles and machinery shall be collected in holding tanks and sent back to the supplier or removed from site by a specialist oil recycling company for disposal at an approved hazardous waste site.
- Initiate a remedial action following any spill or incident;
- Provide a report explaining the reasons for the spill or incident, remedial action taken, consequences/damage from the spill, and proposed corrective actions.

MATERIALS HANDLING, USE AND STORAGE MANAGEMENT PLAN

Environmental considerations shall be taken into account in the location of any material storage areas.

Transportation

- The Contractor shall ensure that all suppliers and their delivery drivers are aware of procedures and restrictions (e.g. restricted areas);
- Material shall be appropriately secured to ensure safe passage between destinations during transportation;
- Loads shall have appropriate cover to prevent them spilling from the vehicle during transit;
- The Contractor shall be responsible for any clean-up resulting from the failure by his employees or suppliers to properly secure transported materials.

Hazardous Substances

The Contractor shall provide a method statement detailing the hazardous substances / material that are to be used during construction, as well as the storage, handling, and disposal procedures for each substance / material and emergency procedures in the event of misuse or spillage that might negatively affect the environment. In general terms, the following activities shall be carried out:

- Make the Hazardous Waste Management Plan available to all persons involved in operations and transport activities
- All hazardous material / substances shall be stored on site only under controlled conditions;
- All hazardous material / substances shall be stored in a secured, appointed area that is fenced and has restricted entry. All storage shall take place using suitable containers to the approval of the PDoE/MoE;
- Hazard signs indicating the nature of the stored materials shall be displayed on the storage facility or containment structure;
- Fuel shall be stored in a steel tank supplied and maintained by the fuel suppliers. The tank shall be located in a secure, demarcated area.

Surfacing Materials

- Over spray of bitumen products outside of the road surface and onto roadside vegetation shall be prevented;
- When heating of bitumen products, the Contractor shall take appropriate fire control measures; Stone chip / gravel excess shall not be left on road / paved area verges. This shall be swept /raked into piles and removed;
- Water quality from runoff from any fresh bitumen surfaces shall be monitored and remedial actions taken where necessary.

Cement and Concrete Batching

- Concrete mixing directly on the ground shall not be allowed and shall take place on impermeable surfaces;
- All runoff from batching areas shall be strictly controlled, and cement-contaminated water shall be collected, stored and disposed properly;
- Unused cement bags shall be stored out of the rain where runoff won't affect it;
- Used (empty) cement bags shall be collected and stored in weatherproof containers to prevent windblown cement dust and water contamination. Used cement bags shall not be used for any other purpose and shall be disposed of on a regular basis via the solid waste management system;
- All excess concrete shall be removed from site on completion of concrete works and disposed of washing of the excess into the ground is not allowed. All excess aggregate shall also be removed.

Maintenance of Construction Equipment

- Identify and demarcate equipment maintenance areas (>15m from rivers, streams, lakes or wetlands). Fuel storage shall be located in proper areas;
- Ensure that all instruments, machines, and construction equipment meet quality standards before they are put into use;
- Ensure that all equipment maintenance activities, including oil changes, are conducted within demarcated maintenance areas; never dispose spent oils on the ground, in water courses, drainage canals or in sewer systems.
- All spills and collected petroleum products shall be disposed of in accordance with standard environmental procedures/guidelines. Fuel storage and refilling areas shall be located at least 300m from all cross drainage structures and important water bodies.

ECOLOGICAL MANAGEMENT PLAN

Protection of Natural Vegetation

- The Contractor shall be responsible for informing all employees about the need to prevent any harmful effects on natural vegetation on or around the rehabilitation site as a result of their activities;
- Clearing of natural vegetation shall be kept to a minimum;
- Prohibit and prevent open fires during upgrading/rehabilitation and provide temporary firefighting equipment in the work areas, particularly close to forest areas;

Protection of Fauna

- The Contractor shall ensure that no hunting, trapping, shooting, poisoning or otherwise disturbance of any fauna takes place.
- The feeding of any wild animals shall be prohibited;
- The use of pesticides shall be approved by the PDoE/MoE;
- No domestic pets or livestock shall be permitted on site.

SAFETY MANAGEMENT PLAN

Construction Site Safety

The Contractor's responsibilities include the protection of every person and nearby property from construction accidents. The Contractor shall be responsible for complying with all national and local safety requirements and any other measures necessary to avoid accidents, including the following:

- Provide personal protective equipment and clothing (goggles, gloves, respirators, dust masks, hard hats, steel-toed boots, etc.,) for construction workers and enforce their use;
- During heavy rains, accidents, or emergencies of any kind, suspend all work;
- Brace electrical and mechanical equipment to withstand seismic events during the construction;
- Limit the speed of vehicles moving within the construction site;
- Place signs around the construction areas to facilitate traffic movement, provide directions to various components of the works, and provide safety advice and warning;
- Provide post Material Safety Data Sheets for each chemical present on the worksite;
- Require that all workers read, or are read, all Material Safety Data Sheets. Clearly explain the risks to them and their partners, especially when pregnant or planning to start a family. Encourage workers to share the information with their physicians, when relevant;
- Ensure that the removal of asbestos-containing materials or other toxic substances be performed and disposed of by specially trained workers.

Fire Control

- The Contractor shall submit a fire control and fire emergency method statement to the supervision consultant;
- The contractor shall take all reasonable steps to avoid increasing the risk of fire through activities on site;
- The contractor shall appoint a fire officer who shall be responsible for ensuring immediate and appropriate action in the event of a fire;
- The contractor shall ensure that all site personnel are aware of the procedure to be followed in the event of a fire;
- Any work that requires the use of fire may only take place at a designated and must be supervised at all times. Fire-fighting equipment shall be available.

Traffic Management

- Estimate maximum concentration of traffic (number of vehicles/hour);
- Construction vehicles shall comply with speed limits;
- Use selected routes to the project site and appropriately sized vehicles suitable to the class of roads in the area, and restrict loads to prevent damage to local roads and bridges used for transportation purposes;
- Maintain adequate traffic control measures throughout the duration of the construction activities;
- Promote and disseminate traffic safety information to local residents;
- If school children are in the vicinity, include traffic safety personnel to direct traffic during school hours;
- Ensure traffic safety at intersections, especially near sensitive areas (schools, markets, hospitals, and historical, cultural and religious places).
- Maintain a supply for traffic signs (including paint, easel, sign material, etc.), road marking, and guard rails to maintain pedestrian safety during construction;
- Use signs and flagmen for traffic control;
- Materials leaving or entering the construction site shall be transported during non-peak hours in order to minimize traffic noise due to the increase in traffic volume;

Environmental Emergency Procedures

Environmental Emergency procedures are unforeseen events that can occur during the construction or rehabilitation of a road. The Contractor shall be prepared to take any necessary measures to solve such emergencies on a case-by-case basis. Events related to adverse weather conditions shall be addressed as part of the Contractor's Safety Plan, which shall be submitted to the MPWT/PMU3 before commencement of project construction works.

The following environmental emergency procedures shall be implemented during the construction of the Road:

- Training shall be provided to all construction workers and site staff to ensure that they are fully aware of the various possible emergency situations in construction activities, the danger and potential damages caused by the emergency to the environment and the people, as well as the emergency response procedures to be followed;
- If explosive materials are detected during the clearing of construction areas, earth work movements, or any other construction activity, the Contractor shall secure the area and inform the local authorities immediately, which in turn shall contact the local army unit for support;
- If the accidents/incidents generate serious environmental pollution that the incident has the potential of resulting in serious environmental pollution problems (e.g. spillage/leakage of

toxic or chemicals, large scale spillage/leakage, or spillage/ leakage into the nearby water bodies which are used for irrigation/portable water);

- In such cases, the Contractor shall take immediate action to stop the spillage / leakage and divert the spilled / leaked liquid to a nearby non-sensitive areas;
- The Contractor shall arrange maintenance staff with appropriate protective clothing to clean up the chemicals/chemical waste. This may be achieved through soaking with saw dust (if the quantity of spillage/leakage is small), or sand bags (if the quantity is large); and/or using a shovel to remove the topsoil (if the spillage/leakage occurs on bare ground);
- Depending on the nature and extent of the chemical spill, evacuation of the activity site may be necessary. Spilled chemicals must not be flushed to local surface drainage systems. Instead, sawdust or sandbags used for clean-up and removed contaminated soil shall be disposed of by following the procedures for chemical waste handling and disposal already described.
- The Contractor(s) shall prepare a report on the incident detailing the accident, clean-up actions taken, any pollution problems and suggested measures to prevent similar accidents from happening again in future.

COMMUNITY RELATIONS AND HEALTH MANAGEMENT PLAN

Community Relations

The Contractor shall:

- Maintain open communications between the local government and concerned communities;
- Have a mailing list to include agencies, organization, and residents that are interest in the project;
- Disseminate project information to affected parties through community meetings before construction commencement;
- Provide a community relations contact from whom interested parties can receive information on site activities, project status and project implementation results;
- Provide all information, especially technical findings, in a language that is understandable to the general public and in a form of useful to interested citizens and elected officials through the preparation of fact sheets and news release, when major findings become available during project phase;
- Monitor community concerns and information requirements as the project progresses;
- Respond to telephone inquiries and written correspondence in a timely and accurate manner;
- Inform local residents about construction and work schedules, interruption of services, traffic detour routes and provisional as appropriate;
- Provide technical documents and drawings to community, especially a sketch of the construction area and the EMP of the construction site;
- Notification boards shall be erected at all construction sites providing information about the project, as well as contact information about the site managers, environmental staff, health and safety staff, telephone numbers and other contact information so that any affected people can have the channel to voice their concerns and suggestions;
- Limit construction activities at night. When necessary ensure that night work is carefully scheduled and the community is properly informed so they can take necessary measures;

Health Management Plan

The Contractor shall prepare and enforce a Health Management Plan to address matters regarding the health and wellbeing of construction workers, project staff and nearby communities. The contractor shall include in his proposal the outline of the Health Plan. The Contractor shall:

- Require screening of all workers on recruitment and annually;
- Implement a vaccination program including but not limited to vaccination against yellow fever, hepatitis A and B, tetanus, polio, etc.
- Provide periodical health check to construction workers to ensure their health and well-being.
- Provide appropriate information and education to the workforce on basic personal hygiene, prevention of diseases, including respiratory diseases, vector-borne diseases such as malaria and dengue, water and food borne diseases such as diarrhea, tuberculosis, etc; Implement a program for workers and local communities, via an approved service provider, for the prevention, detection, screening, and diagnosis of sexually
- transmitted diseases, especially with regard to HIV/AIDS;
- Implement preventive measures against malaria, if applicable;
- Provide basic first aid services to the workers as well as emergency facilities for emergencies for work related accidents including a medical equipment suitable for the personnel, type of operation, and the degree of treatment likely to be required prior to transportation to hospital;
- Include a Pest Management Program for the construction areas, including construction work areas, in the Health Management Plan. The use of pesticides shall follow procedures acceptable to the World Bank and the government of Cambodia
- Ensure correct maintenance of water and water treatment plants to prevent the breeding of mosquitoes.

APPENDIX 2 : Environmental Supervision for RAMP II-AF (TOR)

To be included in scope of work for construction supervision consultant

Introduction

In order to prevent harm and nuisances on local communities, and to minimize the impacts on the environment during the construction and operation of RAMP II-AF project, the following documents have been prepared which should be adhered to by all Contractors and his employees:

- The Environmental Management Plan (EMP) of RAMP II-AF project including site specific EMP identified in Table 3;
- The Environmental and Social Safeguard Framework;
- The specifications, procedures, and best practices included in the contractor's EMP. These specifications complement any technical specifications included in the work quantities and the requirements of any Cambodian regulations and laws.

Monitoring Objective

The Consultant is to provide professional technical services (“the Services”) to help ensure effective implementation of the Environmental Management Plan (EMP), mitigation measures and the Environmental Specifications during the construction of RAMP II (the Road).

In order to achieve the goal of minimizing the negative environmental impacts of the project, the EMP has been integrated in the design of the Road, and in the technical specifications and contract documents. It will need to be closely followed and implemented by the contractors. The implementation of the EMP will therefore involve three parties:

- The Contractor's Workplace Safety and Environment Officer (SEO) responsible for implementing the EMP and other construction related environmental and safety issues;
- The Construction Supervision Consultant (CSC) who are responsible for supervising and monitoring all construction activities and for ensuring that contractors comply with the requirements of the contracts and the EMP.

Scope of Service

The general services to be provided by the Environmental and Social Safeguards (ESS) are to inspect, monitor and audit the construction activities to ensure that mitigation measures adopted in the EMP are properly implemented, and that the negative environmental impacts of the project are minimized.

The Contractor has the responsibility for ensuring compliance with the project EMP and contract conditions while undertaking the works. This is overseen by the ESS. The ESS is therefore to be an independent monitor to ensure compliance with the EMP and to ensure adequate performance of the Contractors on environmental issues.

The ESS will inspect, monitor and carry out environmental review of all road contracts packages. The ESS shall have extensive knowledge and experience in environmental supervision, monitoring and auditing to provide independent, objective and professional advice to the client on the environmental performance of the project. The ESS team leader shall be familiar with the project works through review of the relevant reports, including the ESSF, EMP as well as project technical specifications and contract documents.

As part of the CSC, the SES is expected to perform the following duties:

I. Preparation

The main objective of is to lay the groundwork for the successful execution of the project. The ESS shall: (i) review the ESSF, EMP, project designs and technical specifications and confirm that there have been no major omissions of mitigation measures; (ii) prepare guides for contractors on implementing the EMP; and, (iv) develop and execute a training program for all involved in construction activities.

The main tasks are:

Review of Project Documents: The ESS shall review the ESSF, EMP, project designs and technical specifications and confirm in writing that there have been no major omissions of mitigation measures. If any issues are identified, the ESS shall propose to the PMU updates to the EMP and the design and technical specifications to address these issues. Once approved by PMU, the ESS shall update the EMP.

Environmental Supervision Checklist: The ESS shall establish a comprehensive checklist which will be used during the construction of the project to monitor the contractor's performance. This shall cover major aspects of the project, required mitigation/control measures and their implementation schedule.

Log-Book: The ESS shall keep a log-book of each and every circumstance or change of circumstances which may affect the environmental impact assessment and non-compliance with the recommendations made by the ESS to remediate the non-compliance. The log-book shall be kept readily available for inspection by all persons assisting in the supervision of the implementation of the recommendations of the ESSF and Contract.

Environmental Training: The ESS shall design and execute a comprehensive training program for all actors: Supervision Engineers, , PMU, SEO, Contractor (and workers as part of the trainings given to the SEO), on the environmental requirements of the project, and how they will be supervised, monitored and audited, giving particular attention to:

- EMP: The requirements of the EMP, the agreed environmental monitoring checklist, the environmental monitoring form, how non-compliance with the EMP will be handled, and all other key issues shall be covered. Particular attention will be paid to the specific provisions in each contract's technical specifications indicating how the EMP is to be complied with;
- Health and Safety: The health and safety requirements of the project shall be clearly identified and communicated with the Contractors and PMU (included in environmental specifications for contractors).

At the conclusion of the training Contractors will also sign a statement acknowledging their awareness of the environmental regulations, the EMP, the compliance framework, and health and safety obligations.

II. Supervision of Construction Activities

On behalf of the PMU3 and the Chief Supervision Engineer, the SES will:

- Review, and inspect in an independent, objective and professional manner in all aspects of the implementation of the EMP;

- Carry out random monitoring checks, and review on records prepared by the Contractor;
- Conduct regular site inspections;
- Review the status of implementation of environmental protection measures against the EMP and contract documents;
- Review the effectiveness of environmental mitigation measures and project environmental performance;
- As needed, review the environmental acceptability of the construction methodology (both temporary and permanent works), relevant design plans and submissions. Where necessary, the ESS shall seek and recommend the least environmental impact alternative in consultation with the designer, the Contractor(s), and PMU.
- Verify the investigation results of any non-compliance of the environmental quality performance and the effectiveness of corrective measures;
- Provide regular feedback audit results to PMU3 and CSC according to the procedures of non-compliance in the EMP;
- Provide training programs to appraise them of issues identified and how to improve environmental compliance;
- Instruct the Contractor(s) to take remedial actions within a specified timeframe, and carry out additional monitoring, if required, according to the contractual requirements and procedures in the event of non-compliances or complaints;
- Instruct the Contractor(s) to take actions to reduce impacts and follow the required EMP procedures in case of non-compliance / discrepancies identified;
- Instruct the Contractor(s) to stop activities which generate adverse impacts, and/or when the Contractor(s) fails to implement the EMP requirements / remedial actions instructed by the ESS.

Review of Site Plans: To ensure consistency across the project, the ESS shall provide the final review of all site plans which may affect the environment. These include, but are not limited to: borrow pit and disposal sites plan. The ESS will review and approve EMP implementation Plan by Contractors. Where these plans are found not to comply with the EMP or ESSF, the ESS shall work with Contractors to establish a suitable solution.

Health and Safety: To ensure consistency across the project, the ESS shall provide the final review and recommend clearance of all Contractors' safety plans and, based on these, prepare an overall project safety plan. The project safety plan (PSP) shall include procedures such as management of explosion, safety during construction, the prevention of soil erosion during raining season, etc. These plans shall be reviewed on an annual basis and updated if necessary.

The ESS shall ensure compliance with the requirements of the health and safety clauses in the contract documents. This shall include, but not be limited to: a. construction activities; b. HIV/AIDS education campaign; c. compliance with Cambodian labor laws; and d. road traffic safety. For HIV/AIDS the focus shall not only on the construction sites themselves, but also on assisting the nearby communities.

Site Inspection: The ESS shall closely audit the construction activities through regular site inspection accomplished through daily site visits, walks and visual inspection to identify areas of potential environmental problems and concerns.

Inspection should be done independently from the Contractor's staff. It is expected that the ESS shall have their own monitoring equipment such as cameras, transport and other resources. Where definitive monitoring is necessary to resolve contentious issues or to impose penalties the ESS may contact third parties to carry out specific monitoring at the location under review.

Where there is infringement of technical specification or condition of contracts, or non-compliance with the EMP, the ESS shall be immediately informed Contractor, supervision engineer and PMU/MPWT. The ESS shall also report all infringements to the PMU as part of the monthly reporting.

Regular joint environmental site inspection (e.g. weekly) should be organized by the ESS and SEO with participant from the Contractor's environmental specialist/officer. These should be used as an opportunity for ESS to further train the SEO and Contractor's officer.

ESS field log-book shall be kept readily available for inspection by all persons assisting in project management. The ESS shall also regularly review the records of the contractors to ensure that they are up to date, factual and meet the EMP reporting requirements (e.g. environmental complaint monitoring records).

Complaints: Complaints will be received by the Contractor's site office from local residents with regard to environmental infraction such as noise, dust, traffic safety, etc. The Contractor's engineer or his deputy, and the ESS shall be responsible for processing, addressing or reaching solutions from complaints brought to them. The ESS shall be provided with a copy of these complaints and shall confirm that they are properly addressed by the Contractors in the same manner as incidents identified during site inspections.

Unforeseen Impacts: IN the event that an incident arises which was not foreseen in the EMP, the ESS shall work closely with the SEO, the Contractors, and the PMU to confirm satisfactory resolution to the incident. The ESS shall then update the EMP and the implementation guidelines, training the Contractors' staff accordingly.

Site Restoration and Landscaping: The ESS shall closely monitor all activities with regards to site restoration and landscaping in areas such as borrow pits, quarries, washing vehicles etc. to ensure that the activities are done to an appropriate and acceptable standard. The ESS will agree with the Contractor on a site decommissioning and restoration plan to be implemented before the completion of the construction.

The ESS is expected to be mobilized at the beginning of the contract to prepare the necessary guidelines, documentation, training, etc.

Reporting: As minimum the ESS shall prepare the following written reports:

- Monthly report of compliance or non-compliance issues;
- Quarterly report covering key issues and findings from reviewing and supervision activities;
- Consolidated summary report from contractor's monthly report

At the end of project, the ESS shall prepare a final report summarizing the key findings from their work, the number of infringements, resolutions, etc. as well as advice and guidance for how such assignments should be conducted in the future.

APPENDIX 3 : Field Pictures and List of People Interviewed



PK22+000, Solid waste on existing drainage



PK19+400, Seller on ROW

PK20+300, Grocery shop in urban area



PK27+000, Waste bin in factory area

PK64+000, Household used water/wastewater-urban area



Public Consultation, Baek Chan urban area



Public consultation, Thnal Totung



Meeting with DoE, Kampong Speu



Meeting DoE, Sihanouk Ville

List of People Interviewed on NR4

No.	Date	Name	Sex	Location
1	17-02-2018	Phan Chum	Male	PK19+000, Angsnoul district
2	17-02-2018	Puov Siden	Male	PK19+800, Angsnoul district
3	17-02-2018	Heang Srey Aun	Female	PK65+000, Phnom Srouch district
4	17-02-2018	Ngan Bunthoeun	Male	PK73+000, Phnom Srouch district
5	18-02-2018	Saing Seab	Male	Prey Nob district
6	18-02-2018	Oeun Sour	Female	PK116+000, Kampong Seila district
7	19-02-2018	Oum Sorphoan	Female	Angsnoul district
8	19-02-2018	Chhoeun Sothon	Male	Director, DoE of Kampong Speu
9	19-02-2018	Doung Chandarith	Male	Officer, DoE, Kampong Speu
10	20-02-2018	Song Kimseng	Male	Officer, DoE, Sihanouk Ville
11	20-02-2018	Meung Sopheap	Male	Deputy Director, DoE, Sihanouk Ville

បញ្ជីចក្កមាន កម្មប្រជុំប្រឹក្សាយោបល់សាធារណៈ

RAMP-II

Attendent List

ទីតាំង (Location) ភ្នំពេញ

កាលបរិច្ឆេទប្រជុំ (Date of meeting) 19-02-2018

ម៉ោងចាប់ផ្តើម (Start time) 14-30 ម៉ោងបញ្ចប់ (End time) 17-00

ល.រ. No	ឈ្មោះ Name	ភេទ Gender	តួនាទី Position	លេខទូរស័ព្ទ Tel:	ហត្ថលេខា Signatures
១	លី ធីតា	ស	លេខាធិការ	093454212	
២	ហ៊ុន ភារ	ស	លេខាធិការ	092949264	
៣	ស៊ុន សុខុម	ស	លេខាធិការ	012342839	
៤	ហ៊ុន គីរី	ស	លេខាធិការ	012443839	
៥	ស៊ុន មហាស័ក	ស	លេខាធិការ	017783080	
៦	ហ៊ុន ភារ	ស	លេខាធិការ	093.962222	
៧	Ea Sophy	M	Env. Sp.	011617766	
៨	Pech Heng	M	PMU3/MPWT	077855456	
៩	ហ៊ុន សុខុម	ស	លេខាធិការ	070 566 998	
១០					

បញ្ជីវត្តមាន កម្មប្រជុំប្រឹក្សាយោបល់សាធារណៈ

RAMP-II

Attendent List

ទីតាំង (Location) ភូមិ បឹងកក់

កាលបរិច្ឆេទប្រជុំ (Date of meeting) 19-02-2018

ម៉ោងចាប់ផ្តើម (Start time) 14.30 ម៉ោងបញ្ចប់ (End time) 17.00

ល.រ. No	ឈ្មោះ Name	ភេទ Gender	តួនាទី Position	លេខទូរស័ព្ទ Tel:	ហត្ថលេខា Signatures
១	អ៊ុំ គុក	ស្រី		-	
២	ចឹង ហួយ	ស្រី		-	
៣	ត្រី ភ័ក្ត	ស្រី		012853871	
៤	ហ៊ុន វណ្ណៈ	ប្រុស		012 768367	
៥	ស៊ុន គីម ឡាន	ស្រី		081383846	
៦	គូ ឃីតិម ណាម	ប្រុស		0121992250	
៧	ស៊ុន គីម	ប្រុស		0977162261	
៨	នុន សុខ	ស្រី			
៩	ចៀវ ចាន់ដា	ស្រី		012344980	
១០	N ណា	ស្រី		015588 838	

ល.រ. No	ឈ្មោះ Name	ភេទ Gender	តួនាទី Position	លេខទូរស័ព្ទ Tel:	ហត្ថលេខា Signatures
១១	ស្រី ឡី	ស្រី		-	
១២	ឡី ណារ៉ុន	ស្រី		០៩៩៥៧២៨០០	
១៣	ស្រី គឹម ធីតា	ស្រី	នគរបាល	០១៦៨២១៦១៧	
១៤	ស្រី គុណ	ស្រី		០១៦ ២១៨៤៨៣	
១៥	ស្រី គុណ	ស្រី		០៩៣ ៣៣៩៣១០	
១៦	ស្រី គុណ	ស្រី		០៦១ ៧១១៦១៦	
១៧	ស្រី គុណ	ស្រី		០៩៧ ១២១៩១២៨	
១៨	ស្រី គុណ	ស្រី		០៩៦ ៦៨១៦១១៨	
១៩	ស្រី គុណ	ស្រី		០៩៧៧៤៤៤៤៤៤	
២០					

ថ្ងៃទី ១១

ខែ កុម្ភៈ ឆ្នាំ ២០១៨

ឈ្មោះ និង ហត្ថលេខា

បញ្ជីវគ្គហាន កម្មប្រជុំប្រឹក្សាយោបល់សាធារណៈ

RAMP-II

Attendent List

ទីតាំង (Location) ក្រុង/ក្រុម

កាលបរិច្ឆេទប្រជុំ (Date of meeting) 19.02.2018

ម៉ោងចាប់ផ្តើម (Start time) 14:30 ម៉ោងបញ្ចប់ (End time) _____

ល.រ. No	ឈ្មោះ Name	ភេទ Gender	តួនាទី Position	លេខទូរស័ព្ទ Tel:	ហត្ថលេខា Signatures
១	សិវ ណារី	M		០១២ ៧២៤១៧១	
២	ឌុន ស៊ីណា	M		០១៧ ៦៤២២៤១៣	
៣	គាល សីហាន	M		០១៦ ២១១១ ១១	
៤	ស៊ុយ ធីតា	M		០១៦ ២៧ ៨០៥៤១	
៥	ហន ធីស័ក្ស	M		០១៦ ៦១ ១៣២២	
៦	ឌីន ភិម្មៈ	M		០៨៧ ៦២ ៦១០៧	
៧	ឌួន លាន់	M		០១២ ៧០ ៥៥៨៦	
៨	យុន គាស៊ីន	F		០១២ ៤៦ ៥៤៦១	
៩	អ៊ុយ សុក	F			
១០	វិហារ ឈន់	M		០៦១ ៤៥ ២៥៨១	

ល.រ. No	ឈ្មោះ Name	ភេទ Gender	តំណែង Position	លេខទូរស័ព្ទ Tel:	ហត្ថលេខា Signatures
១១	ឆន្ទី វិជិត្យ	ស្រី	អ្នកគណនេយ្យ ហត្ថ	016.397.333	
១២	ឆន្ទ ឧបាយក្រ	M			
១៣	ស សុផល	M		017.22.5095	
១៤				0'	
១៥					
១៦					
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១៨					
១៩					
២០					

ថ្ងៃទី 19

ខែ កុម្ភៈ ឆ្នាំ ២០១៨

ឈ្មោះ និង ហត្ថលេខា

បញ្ជីចក្ខុវិស័យ កម្មប្រជុំប្រឹក្សាគោលដៅសាធារណៈ

RAMP-II

Attendent List

ទីតាំង (Location) ភ្នំពេញ - ១០០៧៩

កាលបរិច្ឆេទប្រជុំ (Date of meeting) 19-02-2018

ម៉ោងចាប់ផ្តើម (Start time) ៩-៣០ ម៉ោងបញ្ចប់ (End time) 10-៣០

ល.រ. No	ឈ្មោះ Name	ភេទ Gender	តួនាទី Position	លេខទូរស័ព្ទ Tel:	ហត្ថលេខា Signatures
១	លី ធីតា	ស្រី	អគ្គនាយក	០៩៦៩១១១១	
២	ស្រី ធីតា	ស្រី	អគ្គនាយក	០១២៩៤៩៤៤	
៣	ប៊ិច ហេង	ប្រុស	អគ្គនាយក	០៧៧ ៨៥៥ ៤៥៦	
៤	Ea Saphy	M	Env. Sp.	០១១ ៦១៧៧៦៦	
៥	កែវ ប្រណា	១	អគ្គនាយក	០១២៩៩៣០៥	
៦	ស្រី ធីតា	១	អគ្គនាយក	០១២៩៥៣២០	
៧	ស្រី ធីតា	១	អគ្គនាយក	០១២៨៩៦២៨៩	
៨	ស្រី ធីតា	១	អគ្គនាយក	០៨៩៤៥៧២៩៩	
៩	ស្រី ធីតា	១	អគ្គនាយក	០១២៨២៦៨៩១	
១០					

បញ្ជីវេត្តមាន កម្មប្រជុំប្រឹក្សាឃោមឈប់សាធារណៈ

RAMP-II

Attendent List

ទីតាំង (Location) ភូមិ ២០០៧៧

កាលបរិច្ឆេទប្រជុំ (Date of meeting) 19-02-2018

ម៉ោងចាប់ផ្តើម (Start time) _____ ម៉ោងបញ្ចប់ (End time) _____

ល.រ. No	ឈ្មោះ Name	ភេទ Gender	តួនាទី Position	លេខទូរស័ព្ទ Tel:	ហត្ថលេខា Signatures
១	ស៊ីង ហួន	ប្រុស	ប្រធាន	012729872	
២	ស៊ីង ឈីន	ស្រី		0769096090	
៣	ស៊ីង ឌីន	ប្រុស		078603222	
៤	ស៊ីង ខាណ	ប្រុស		042862986	
៥	ស៊ីង ឈីន	ស្រី		012992058	
៦	ស៊ីង ឌីន	ប្រុស		095745247	
៧	ស៊ីង ឈីន	ស្រី		092802595	
៨	ស៊ីង ឌីន	ប្រុស		012840925	
៩	ស៊ីង ឈីន	ស្រី		092913647	
១០	ស៊ីង ឈីន-ហ៊ាង	- -		011929672	

ល.រ. No	ឈ្មោះ Name	ភេទ Gender	តួនាទី Position	លេខទូរស័ព្ទ Tel:	ហត្ថលេខា Signatures
១១	គុំ សាយ៉ាត	ប្រ		០១៥៧៣៦៤២៧	
១២	ស៊ីម លីង	ប្រ		០៩៦៦៨៦៣៧២	
១៣	ស៊ីម ធាន សីហាន	ប្រ		០៩៦៧៧៧៧០៧៧	
១៤	គី ចាន់	ប្រ		០១២៦៧៧៧៨៤	
១៥	ស៊ីម ធីតា	ប្រ		០១២៨៩០២៥៥៨	
១៦	ចាន់ ច័ន្ទ	ប្រ		០៨៨៥៥៩៦៦៤៣	
១៧	សោភ័ណ ចាន់ធីតា	ប្រ		០៦៦៣៦២៩៥៨	
១៨	ស៊ីម ធីតា	ប្រ		០១៧៧៧៦៣៣៦	
១៩	ស៊ីម ធីតា	ប្រ		០១៨៨២៨៩០១	
២០	ស៊ីម ធីតា	ប្រ		០១២៧៧៧៧០	

ថ្ងៃទី ១១ ខែ កុម្ភៈ ឆ្នាំ ២០១៨
ឈ្មោះ និង ហត្ថលេខា

បញ្ជីវេត្តមាន កម្មប្រជុំប្រឹក្សាយោបល់សាធារណៈ

RAMP-II

Attendent List

ទីតាំង (Location) ក្រុង: កោះកុង

កាលបរិច្ឆេទប្រជុំ (Date of meeting) 19-02-2018

ម៉ោងចាប់ផ្តើម (Start time) 8:30 ម៉ោងបញ្ចប់ (End time) 10:30

ល.រ. No	ឈ្មោះ Name	ភេទ Gender	តួនាទី Position	លេខទូរស័ព្ទ Tel:	ហត្ថលេខា Signatures
១	ហ៊ាន តូច	ប្រុស		099 222 239	
២	សាន់ ណារីត	ប្រុស	ប្រធាន	070 566 998	
៣	ស៊ិន សុភា	ស្រី		016 698 483	
៤	នាយ ស៊ីណា	ប្រុស		097 714 1110	
៥	ស៊ីន តូចា	ប្រុស		093 339 390	
៦	ស៊ីន ធីតា	ស្រី		069 979 9696	
៧	ស៊ីន ណារីត	ប្រុស		097 929 8928	
៨	ស៊ីន ស៊ីណា	ប្រុស		096 689 9998	
៩					
១០					

ល.រ. No	ឈ្មោះ Name	ភេទ Gender	តួនាទី Position	លេខទូរស័ព្ទ Tel:	ហត្ថលេខា Signatures
១១	កែវ ស្រី	ប្រុស		០១៧ ៥៦១៤១៣	
១២	ឃ្លីន សុភ័ក្ត្រ	ប្រុស		០១៧ ៨៧៨៧០០	
១៣	គ្រីស្តា ហាវី	ប្រុស		០១២ ១១២២១០	
១៤	សាយ វី	ប្រុស		០១២ ៤៥០៥៣៤	
១៥	ហួត សុន	ប្រុស		០១៧ ៥៨៤៧៨	
១៦	ស៊ែន សុភក្ត្រ	ប្រុស		០១៥ ៤៤៦៩៣៣	
១៧	និគ សាលីក	ស្រី			
១៨	ថី សារី	ស្រី		០១៧ ៤១១៤១៣៦	
១៩					
២០					

ថ្ងៃទី ១១ ខែ កុម្ភៈ ឆ្នាំ ២០១៨
 ឈ្មោះ និង ហត្ថលេខា

បញ្ជីវត្តមាន កម្មប្រជុំប្រឹក្សាយោបល់សាធារណៈ

RAMP-II

Attendent List

ទីតាំង (Location) ភូមិ វិថី ១០០៧

កាលបរិច្ឆេទប្រជុំ (Date of meeting) 19.02.2018

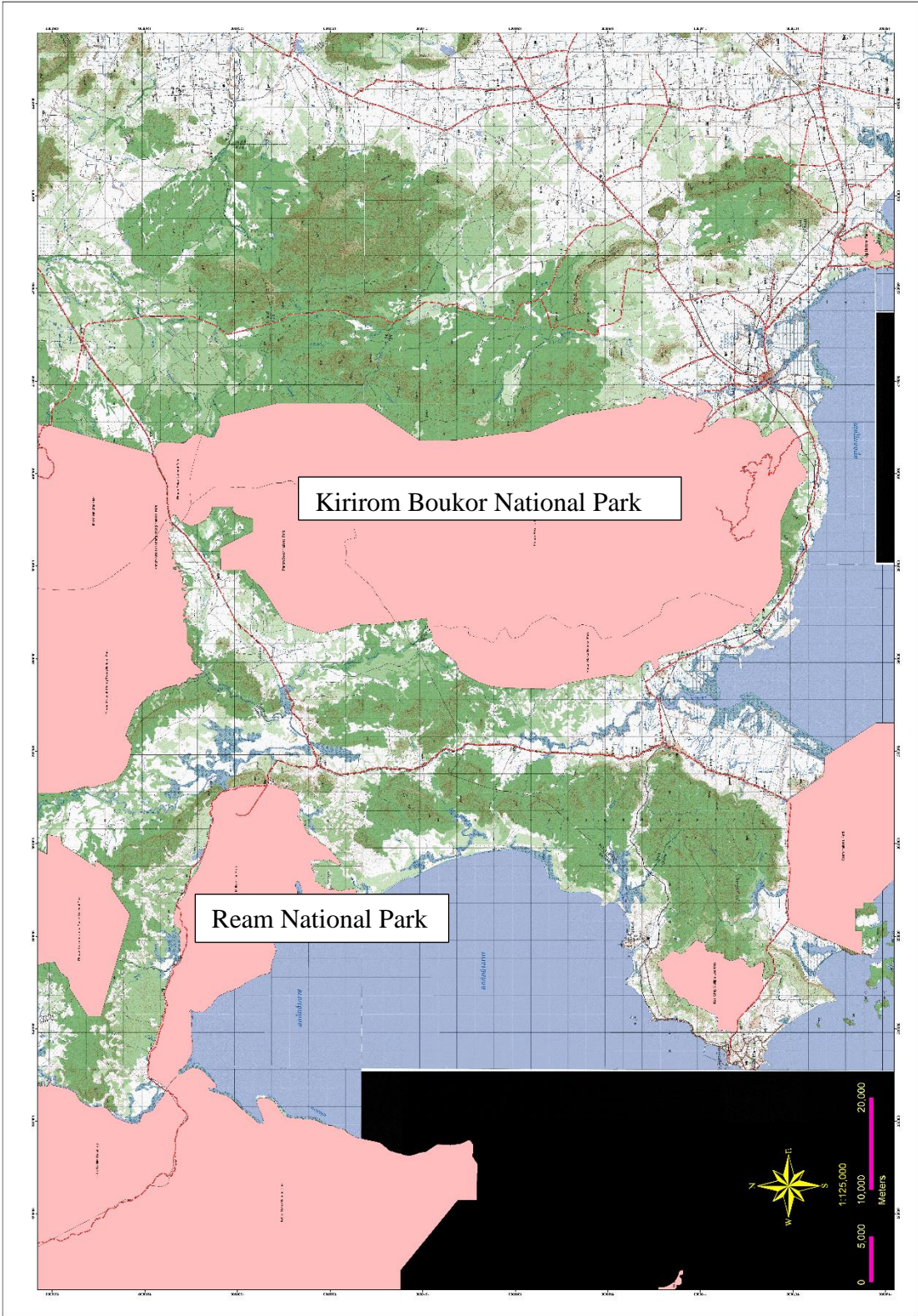
ម៉ោងចាប់ផ្តើម (Start time) ៩-៣០ ម៉ោងបញ្ចប់ (End time) 10-30

ល.រ. No	ឈ្មោះ Name	ភេទ Gender	តួនាទី Position	លេខទូរស័ព្ទ Tel:	ហត្ថលេខា Signatures
១	ខៀវ សំផន	ប្រុស		012992058	
២	ឧត្តម កែវកាណារ	ក		0976115285	
៣	អ៊ុំ សុខា	ក		012913309	
៤	គង់ រតនៈ ធីតា	ក		098828999	
៥	ស៊ី សុផា	ក		011884161	
៦	ស៊ី សុខា	ក		017726326	
៧	ហ៊ុន ណារី	ក		012984413	
៨	លី សុផា	ក		095446933	
៩	ក្រុមប្រឹក្សាភិបាល	ក		012613041	
១០	និត សាម៉េត	ស្រី			

ល.រ. No	ឈ្មោះ Name	ភេទ Gender	តួនាទី Position	លេខទូរស័ព្ទ Tel:	ហត្ថលេខា Signatures
១១	លីន ហង់	ប្រុស		០១២៦១៦២៤៤	
១២	ក្រសួង សំខុណ	ស្រី		០៨១៩៤៧៥១៦	
១៣	លីន ណារី	ស្រី		០១២៩១៨៩៧៣	
១៤	ស៊ីន ស៊ីន	—		០១២១៧៥៨០៦	
១៥	ស៊ីន ស៊ីន	ស្រី		០១២៧៩២៧០៤	
១៦	ឌីន ឌីន	ស្រី		០១៧៤៩៩៤៩៧៦	
១៧	លីន ហង់	ប្រុស		០១២២៩៨៨៨៩	
១៨	ឌីន ស៊ីន	ស្រី		០១២០៨៣១៣៧	
១៩	ស៊ីន ស៊ីន	ស្រី		០១២៦៩៣៧៩២	
២០	ស៊ីន ស៊ីន	ស្រី		០១២១៧៥៨០៦	

ថ្ងៃទី ១៩ ខែ កុម្ភៈ ឆ្នាំ ២០១៨
 ឈ្មោះ និង ហត្ថលេខា

APPENDIX 4 : Map of Kirirom Boukor National Park



Section from PK102+000 to PK109+000 (Kirirom Boukor National Park)
 The Buffer Zone is about 60m from the NR4 Center Line



Note: Together with improved road and the development along the road corridor, residential, structures are built along the National Park section. About 60m from road center line is reserved for the road and development, according to DoE, Kampong Speu. Phum No.6 or Phum Thmei Techo is a new village name in the section, PK105+000.