

# Updated Environmental Management Plan

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March 2021

Lao People's Democratic Republic: Greater Mekong  
Subregion East-West Economic Corridor Towns  
Development Project

Subproject: Fa Ngum Road II (Additional Works)

Prepared by Provincial Department of Public Works and Transport, Savannakhet Province, Lao  
PDR for the Lao People's Democratic Republic and the Asian Development Bank.

#### **NOTE**

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# Updated Environmental Management Plan

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March 2021

Lao PDR: Greater Mekong Subregion East-West  
Economic Corridor Towns Development Project

Fa Ngum Road Subproject + Additional Work “Fa Ngum  
II road”

Prepared by the Provincial Department of Public Works and Transport, Savannakhet Province, Lao PDR for the Asian Development Bank. This is an updated version of the draft originally posted in Nov 2016 available on <https://www.adb.org/projects/documents/lao-gms-corridor-towns-development-fa-ngum-nov-2016-emp>.

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## CURRENCY EQUIVALENTS

(as of 16 March 2021)

Currency Unit	–	kip (KN)
KN1.00	=	\$0.000107
\$1.00	=	KN9,365

## ABBREVIATIONS

ADB	–	Asian Development Bank
BOD	–	biological oxygen demand
CEMP	–	Contractor's EMP
COD	–	chemical oxygen demand
COVID19		Corona Virus Disease 2019
DED	–	detailed engineering design
DMF	–	Design and monitoring framework
DONRE	–	Department of Natural Resources and Environment
DPH	–	Department of Public Health
DPWT	–	District Public Works and Transport Office
EA	–	Executing Agency
ECC	–	Environmental Compliance Certificate
ECO	–	Environmental Control Officer
EERT	–	External Emergency Response Team
EHS	–	Environmental, Health, and Safety
EIA	–	environmental impact assessment
EMAP	–	environmental management plan
EMoP	–	environmental monitoring plan
EMP	–	environmental management plan
ER	–	Environmental Representative
ERT	–	Emergency Response Team
ERTL	–	Emergency Response Team Leader
ESIA	–	Environment and Social Impact Assessment
ESO	–	environmental site officer
EWEC	–	East-West Economic Corridor
GMS	–	Greater Mekong Subregion
GoL	–	Government of Lao PDR
GRM	–	Grievance Redress Mechanism
GPP	–	Grievance Point Person
IA	–	implementing agency
IEE	–	initial environmental examination
Lao PDR	–	Lao People's Democratic Republic
LAK	–	Lao Currency
MONRE	–	Ministry of Natural Resources and Environment
MPWT	–	Ministry of Public Works and Transport
MRF	–	materials recovery facilities

MRC	–	Mekong River Commission
NTP	–	Notice to proceed
O&M	–	operation and maintenance
PDPWT	–	Provincial Department of Public Works and Transport
PIT	-	Project Implement Team (of District)
PMU	–	project management unit
TSS	–	total suspended solids
UDAA	–	Urban Development and Administration Authority
USD	–	United States Dollar
UXO	–	unexploded ordnance
WREA	–	Water Resources and Environment Agency

## WEIGHTS AND MEASURES

km	–	kilometer
kg	–	kilogram
ha	–	hectare
mm	–	millimeter

## I. BACKGROUND

1. This Updated Environmental Management Plan (EMP) for the Fa Ngum II Road subproject updates the relevant parts of the EMP for Fa Ngum Road Subproject, dated July 2020.
2. The Initial Environmental Examination (IEE) updated version<sup>1</sup>, 2018 considered the preliminary project design, the DED, the baseline environmental conditions, possible impacts and mitigation measures, and institutional arrangements to implement the same. Based on the findings of the updated IEE, the subproject was assigned Category “B” under ADB categorization. The EMP update confirms the original environmental categorization.

### A. Subproject Investments

3. The scope of the Fa Ngum Road subproject is summarized below:

<b>Fa Ngum Road</b>	<ul style="list-style-type: none"><li>▪ Widening and pavement strengthening of 2.2 km Fa Ngum Road. The road consists of Fa Ngum Rd 1 (West) with two lanes and Fa Ngum 2A &amp; 2B (Park) with two-by-two lanes separated by a park.</li><li>▪ Drainage (U-box) and footways.</li><li>▪ 2 m sidewalks on either side of the road.</li><li>▪ Installation of lighting facilities and planting of trees and ornamentals</li><li>▪ Roundabout at junction near Provincial Governor’s office</li><li>▪ Landscaped park and facilities, including shopping facility (kiosk) and public toilets.</li></ul>
<b>Fa Ngum II road</b>	<ul style="list-style-type: none"><li>▪ Upgrading broken DBST to concrete pavement 100 meters length and wideness 230 millimeters, drainages, sidewalks, parking lots, streetlights, and traffic signs for both sides.</li></ul>

4. The duration of project phases is presented below.

Table 1. Duration of project phases

Phase	Duration
Construction (Main subproject) phase	2 years
Defects Liability Period	1 year
Fa Ngum II road Construction	2 months

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<sup>1</sup> The updated IEE version 2018 is available on <https://www.adb.org/projects/documents/lao-43319-022-iee-0>

5. The length and width of sections are presented below.

Table 2. Length and width of the Fa Ngum Roads

Road	Length in meters			Width in meters				
	Main Road	Access Road	Total	Road	Motorbike	Footway	Drainage	Total
Fa Ngum West	647	-	647	2 x 3.75		2 x 2.0	Closed	12.2
Fa Ngum East (Park)	1,494	-	1,494	2 x 3.75		2 x 2.0	Closed	12.2
Fa Ngum II road	100		100	7.5		2	Pipe culvert	

6. The Fa Ngum Rd has two overall sections. An Eastern Section with two by two lanes separated by a park and a western section with two lanes. The figure below presents an overview.

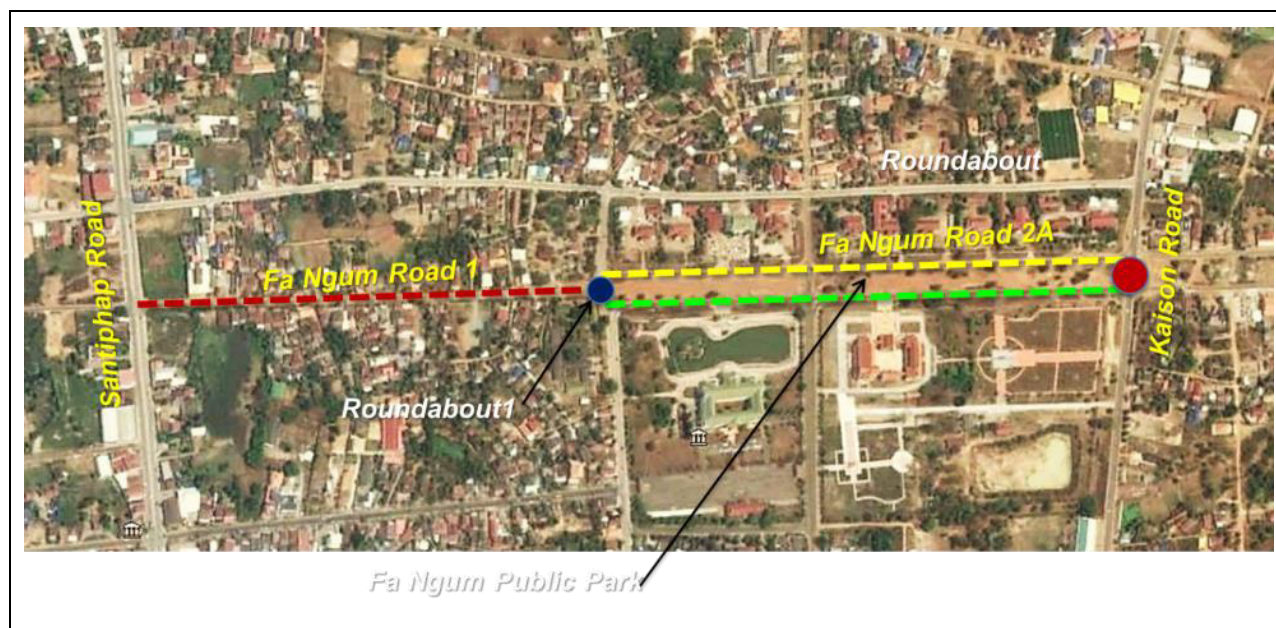


Figure 1. Fa Ngum Road

7. The typical cross sections used in the design as included in the Technical Design Report are presented below.

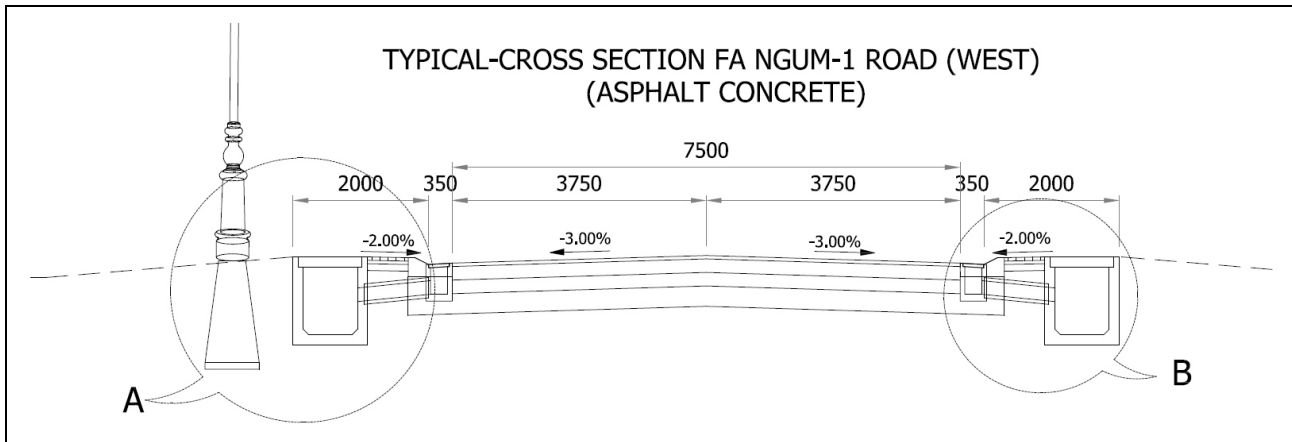


Figure 2. Typical cross-section of Fa Ngum-1 Road (West)

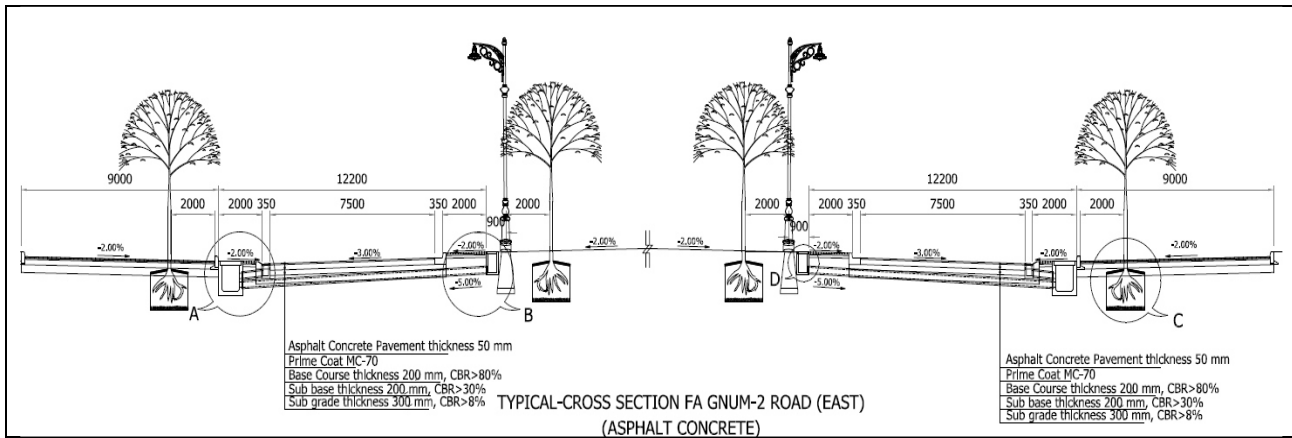
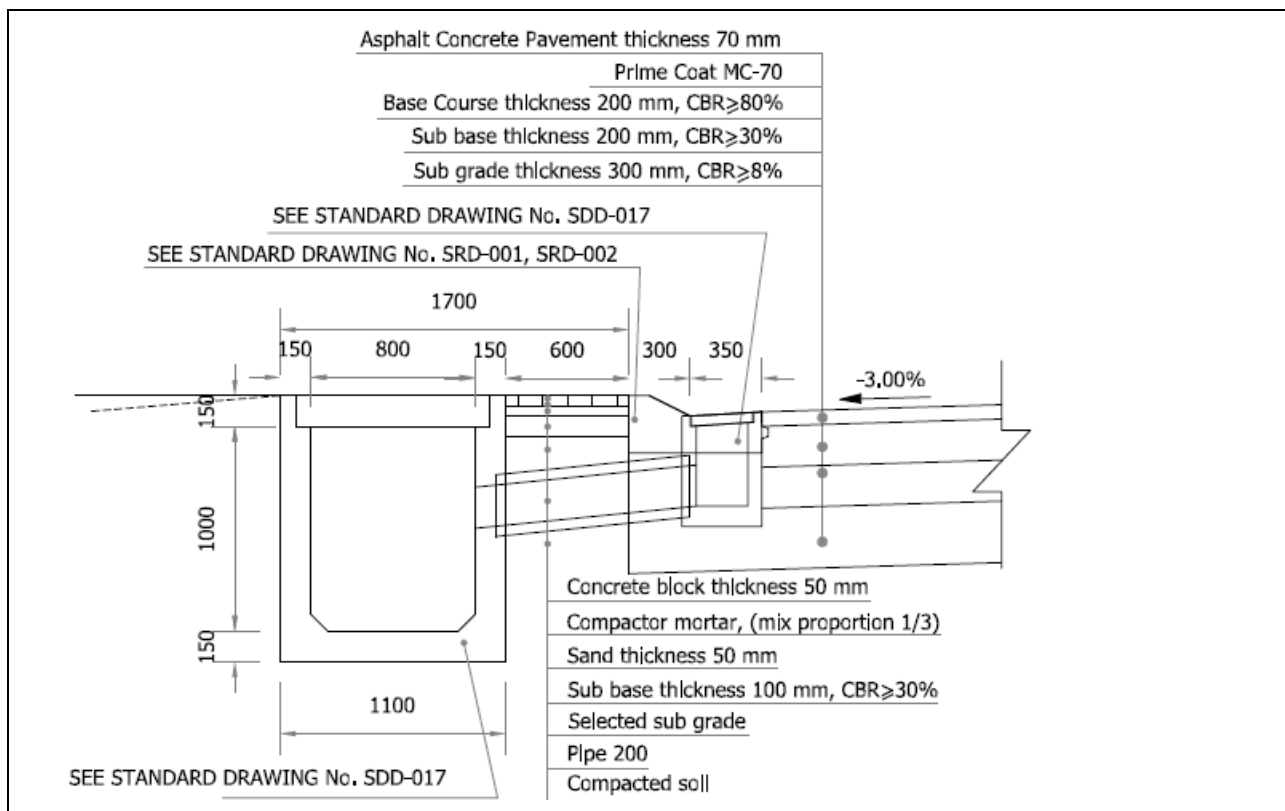
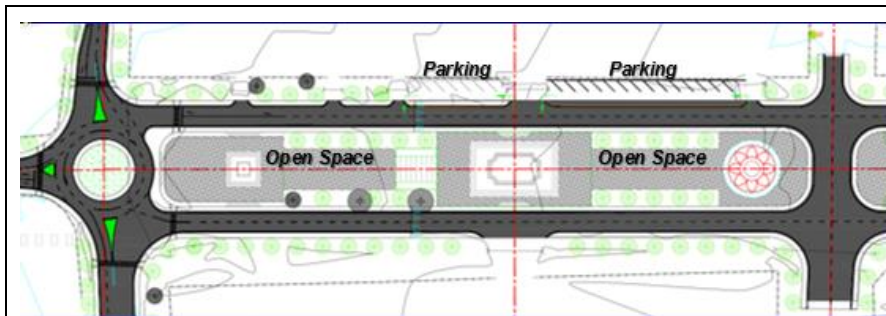


Figure 3. Typical cross-section of Fa Ngum Road (East, Park)

8. The roads will be constructed with gutter along the roadside, kerbs and sidewalks and will have a closed drainage system as presented below.



9. The Fa Ngum public park will be located between the Fa Ngum 2A and Fa Ngum 2B. Design concepts have been developed, while the final design will be decided upon by the PMU in the construction phase, including tree and plant species, landscaping, and final layout. A provisional sum for the construction of the park has been set aside in the construction budget. The design concept for the park includes different sections with varying themes. Designs for public toilets with septic tank and a small shopping area with a kiosk have been prepared.



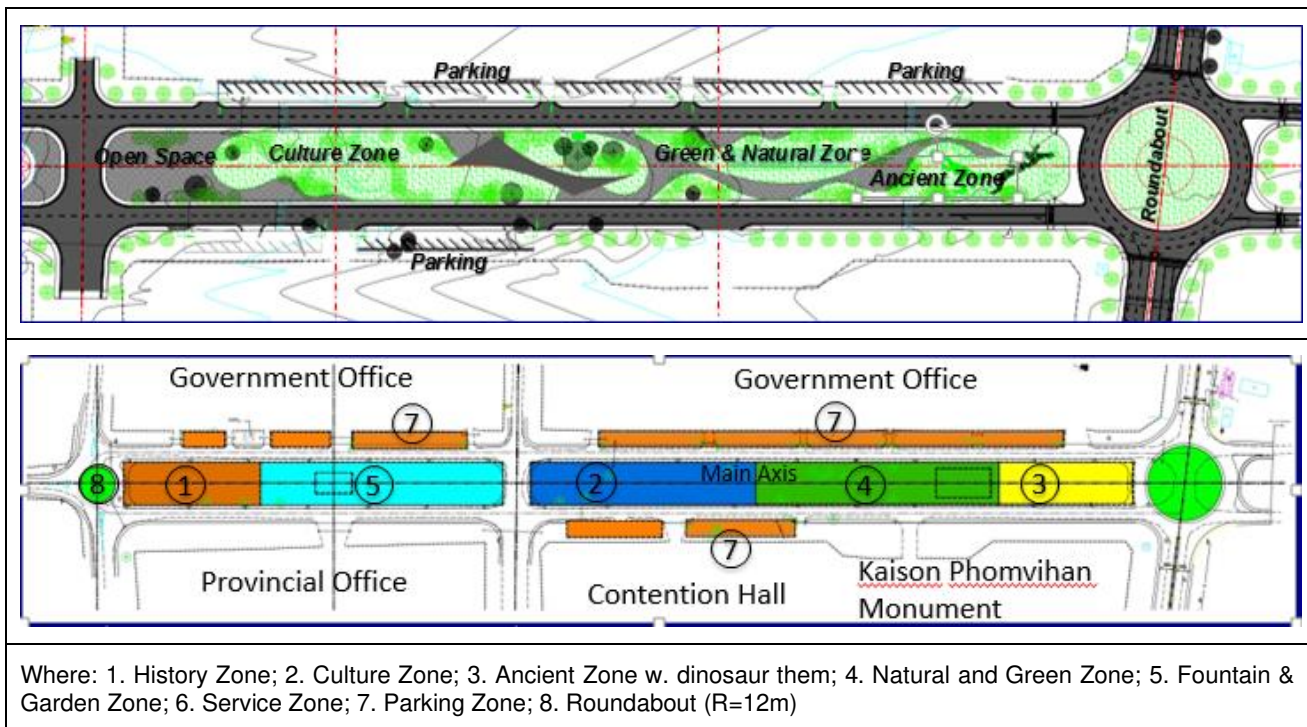


Figure 5. Design concept for the Fa Ngum Public Park

10. Fa Ngum II road is designed for concrete pavement for connecting the Fa Ngum 2A road at the roundabout on the South, and connecting with concrete road on the North, it is 100 meters length from concrete road to roundabout with 7.5 meters wideness, 23 centimeters thickness. 2 meters sidewalk in each side, 600 millimeters diameter pipe culverts for drainage in each side, and 410 square meters for parking lot in the left side and 502 square meters for the parking lot on the right side. The Figure 6, Figure 7 and Figure 8 are presented map of the Fa Ngum II road and Typical Cross Section and Fa Ngum II road that were provided detail of the engineering Design.

Figure 6. Fa Ngum II Road Plan

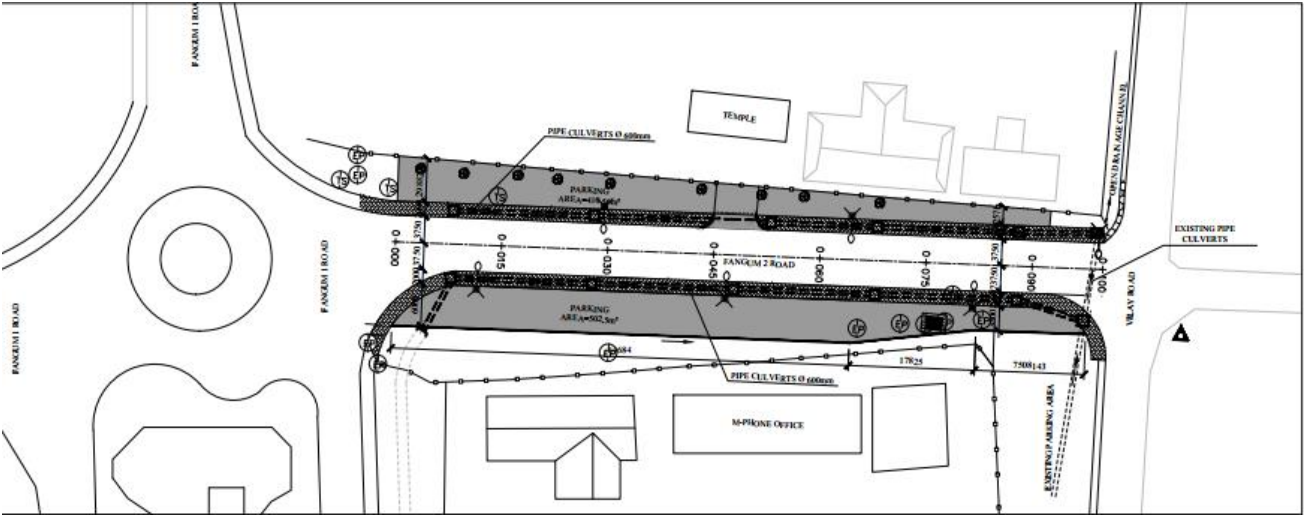
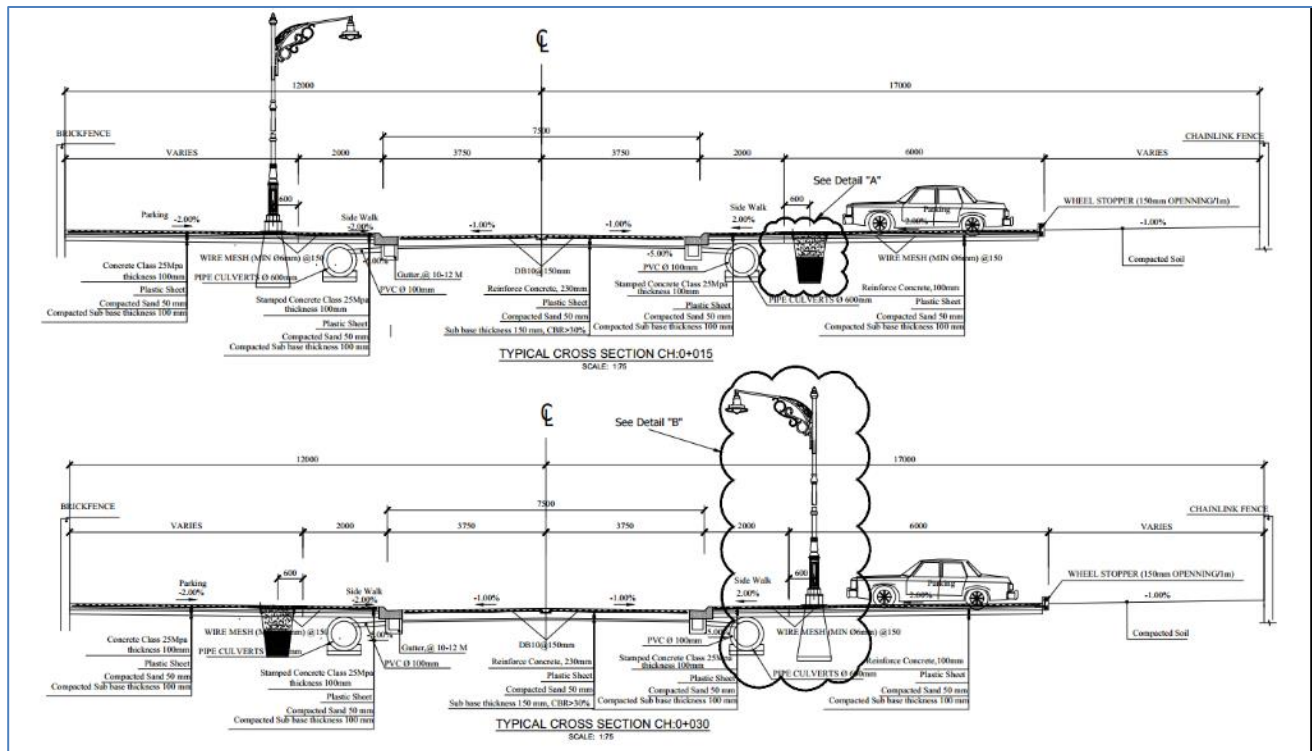


Figure 7. Map of FA NGUM II Road



Figure 8. Fa Ngum II Road Typical Cross Section



## B. Specification of Activities and Facilities

11. The specification of activities and facilities to be implemented by the Contractor is presented in the table below.

Table 3. Specification of activities and facilities

No.	Title	Specification of activities and facilities
1.	General Provisions	<ul style="list-style-type: none"> <li>• Diversion of Traffic</li> <li>• Existing Services, Utilities, Building and Structures, incl. Relocation of Electricity Poles and Removal of Structures</li> <li>• Contractor's Establishment</li> <li>• Field Surveying and Measuring Facilities</li> <li>• Laboratory and Testing Facilities</li> <li>• Engineer's Facilities</li> </ul>
2.	Earth Works	<ul style="list-style-type: none"> <li>• Site Clearance</li> <li>• Excavations (for Roadway, Culverts, and Structures)</li> <li>• Embankment Construction</li> <li>• Earthworks Compaction</li> <li>• Backfill</li> <li>• Borrow Pits</li> <li>• Surplus Materials Disposal</li> <li>• Topsoil Placing</li> <li>• Seeding, Grassing, Sodding, and Turfing</li> </ul>

3.	Pavement Structures	<ul style="list-style-type: none"> <li>• Scarifying existing Pavement</li> <li>• Granular Sub-Base Work</li> <li>• Base Course (Parking Area)</li> <li>• Asphalt Concrete Paving</li> <li>• Reinforced Concrete Pavement, Concrete Curbs, Gutters, and Sidewalk</li> </ul>
4.	Concrete Structures	<ul style="list-style-type: none"> <li>• Clearance and Demolition of Structures on Work Sites</li> <li>• Falsework and Form Work</li> <li>• Steel Reinforcement for Structure Work</li> <li>• Concrete Materials, Production, and Structure Construction</li> </ul>
5.	Drainage, Protection and Strengthening Work	<ul style="list-style-type: none"> <li>• Reinforced Concrete Box Culverts &amp; Pipe Culverts</li> <li>• (Conduits, Fittings and Boxes, Stone Riprap Work, Concrete Slope Protection, Filter Fabrics, and Ditch Protection where needed)</li> </ul>
6.	Road Appurtenances, Special and Miscellaneous Work	<ul style="list-style-type: none"> <li>• Landscaping and Beautification Work</li> <li>• Trees, Shrubs and Hedges</li> <li>• Pavement Markings</li> <li>• Speed Bumps And Rumble Strips</li> <li>• Road Signs</li> <li>• Street Lighting</li> <li>• Toilet facilities in the park</li> </ul>

## II. DESCRIPTION OF THE BASELINE ENVIRONMENT

### A. Baseline Environment

12. A general description of the baseline environment is contained in the IEE. Key points are summarized below and additional information added.

#### a. Climate

13. The climate of Savannakhet is the typical tropical monsoon (wet-dry) climate of the region. During the rainy season (June to October), the winds of the southwest monsoon is responsible for an average monthly rainfall of >200 mm, occasionally reaching >500 mm. The dry season (November to April) is dominated by the northeast monsoon. The average rainfall in Savannakhet is approximately 1,600 mm per year, which is about 170 mm less than the Lao average.

14. The temperatures in Savannakhet range from a minimum low of 13°C in January to a maximum high around 39°C in April. Savannakhet is the hottest and driest province of Lao PDR: the average temperature is estimated to be 26.1 degrees centigrade, which is about 2 degrees higher than the national average. The average number of hours of sunlight per year is estimated to be 2,280, which is about 256.8 hours longer than the national average.

#### b. Elevations

15. The Fa Ngum Road has a positive slope with a plateau after about 100m from the start of the alignment at Kaysone Phomvihane Road in the direction of the Santiphap Road. The remaining section towards Santiphap Road has a negative slope. The sections Fa Ngum 2A and Fa Ngum 2B have a drop of about 10 m from 136 m elevation to 126 m. The Fa Ngum 1 has a drop from 126 m elevation to 117.3 m at the intersection with the Santiphap Road.

### c. Road sections and receptors

16. The Fa Ngum 1 intersects a residential area with residences located on either side of the road from the Santhipap Road in the West and to the junction in the East. The Hospital of Kaysone Phomvihane District and the Wat Phonesavang Tai are located respectively south and north of Fa Ngum 1 at the future roundabout at the junction of Fa Ngum 1 and Fa Ngum 2A and 2B. A vocational training centre for disabled is located in the north-eastern corner of the hospital compound approximately 5m from the road. North of Fa Ngum 2A offices of government institutions and private companies are located at a distance of 30-40m from the road with fences and parking lots between the buildings and the road. South of the Fa Ngum 2B are located the Provincial Administration Office of Savannakhet with a fence and at a distance of approximately 75m from the road, the Kaysone Phomvihane Cultural Hall at a distance of approximately 40m from the road, and the Kaysone Phomvihane Memorial Park at a varying distance of 15-25m from the road and fenced and partly raised above the road. The area lying between Fa Ngum 2A and 2B is presently lying unused with limited vegetation, although with a number of trees.

17. Key cultural resources and sensitive receptors in the area affected by the project includes the Kaysone Phomvihane Memorial Park, the Kaysone Phomvihane Cultural Hall, the Wat Phonesavang Tai, and the Hospital of Kaysone Phomvihane District and vocational training centre for disabled.

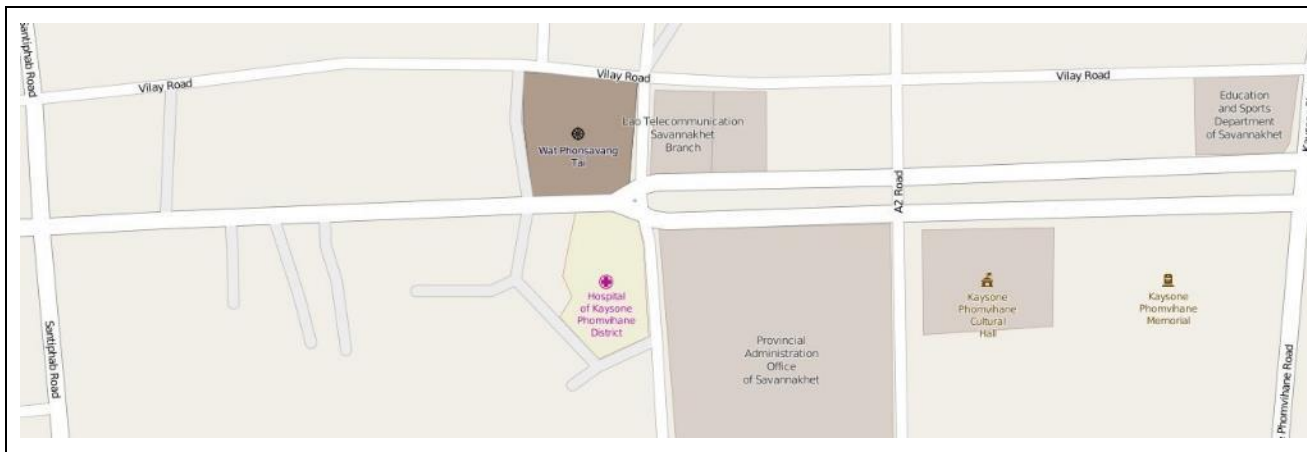


Figure 9. Map of project area showing nearby cultural resources and sensitive receptors

18. In consultations with local residents, it was highlighted that the boundary wall of the Wat should be respected and this was considered in the design. The park and cultural hall have alternative entrances and impacts will be moderated by their distance to the road, boundary wall, and the partly raised location of the park. The vocational training centre located inside the compound of the Hospital of Kaysone Phomvihane District is the most exposed building located close to the road at the future roundabout. Schools and hospitals are in accordance with the Lao PDR noise standard sensitive recipients (refer Noise section below).

### d. Air quality

19. Ambient air quality data for Kaysone Phomvihane has not been reviewed as part of the IEE and no air quality monitoring has been conducted. Considering the project area and the nature of the project, dust and particulate matter are considered the most significant air quality indicators. The

laterite surface on the Fa Ngum 1 and the lack of vegetation cover of the area between Fa Ngum 2A and 2B are additional sources of dust emission in the area. The most critical receptor in the project area is considered to be the Hospital of Kaysone Phomvihane District, including vocational training centre. Air quality monitoring is recommended to establish baseline conditions and monitor against the baseline during construction.

**e. Noise**

20. The project area is located in Kaysone Phomvihane, an urbanized area. Noise monitoring data has not been reviewed or prepared as part of the IEE. The project area is considered a normal urbanized area with respect to noise.

21. Considering location, distance to the road, and features such as boundary wall and landscape, the most critical receptor is considered to be the vocational training centre at the district hospital. According to the Lao PDR noise standards (refer APPENDIX B: Environmental Standards, Table 20), there are stricter ambient noise requirements for areas with schools/hospitals than for residential areas. The noise standard for so-called quiet areas, including schools/hospitals is 50-, 45-, and 40 dB(A) in daytime, evening, and nighttime, while the standard for residential areas is 55-, 55-, and 45 dB(A). As the background noise level is not known, it is recommended that the Contractor establishes a baseline at key receptors against, which noise level can be monitored.

**f. Groundwater and surface water**

22. Kaysone Phomvihane relies on treated surface water as drinking water and there are no groundwater interests or wells in the project area. There are also no surface water bodies in the immediate surroundings of Fa Ngum road, but the city drains to the Mekong River and the Hoauy Longkong. Location of borrow pits will be determined in the construction phase and should consider risks to surface and groundwater.

**g. Road infrastructure**

23. The PDWT is the agency responsible for the road network and transport planning. The IEE indicated a total road network of 192.5 km within the Kaysone Phomvihane Town, with 55 km of paved main roads, 10.5 km of unpaved main roads, 46.6 km of paved minor roads, and 77.4 km of unpaved minor roads. The majority of interior roads have been constructed without drainage structures while other road sections are not properly connected to the drainage channels.

**h. Drainage infrastructure**

24. The UDAA is the agency responsible for operation and management of the drainage system in Kaysone Phomvihane. The drainage system consists of roadside drains and open channels before discharging to the Mekong River. The drainage system receives a significant part of the wastewater from Kaysone Phomvihane, which has no central wastewater collection system, but only simple on-site treatment systems. Greywater is generally discharged to the drainage system without any treatment.

25. The existing drainage infrastructure, including side drains and ditches along the Fa Ngum Road connects at the diagonal roads, Kaysone Phomvihane Road, the diagonal road at the Wat, hospital, and the Provincial Office, and the Santhipap Road. Existing flow directions are indicated on the design drawings and stormwater from the project area is discharged to the drains along the Kaysone

Phomvihane Road in the north and south direction, the road at the roundabout 1 in the south and north direction, and at the Santhipap Road in the north direction.

26. Similar interconnections are included in the design of the new project. No interconnection will be made at the diagonal road at +440, where culverts will connect the side drains along Fa Ngum Road 2A and 2B. At the diagonal road at the roundabout 1 at the Wat and hospital a culvert will run under the road and connect with the side drain along Fa Ngum 1. In addition, an interconnection will connect with the existing side drain in the south direction along the Provincial Office and the existing ditch in the north direction along the telecommunications office.



Figure 10. Location of interconnections with drainage infrastructure in north-south direction and flow directions

#### **i. Flora and fauna**

27. The project affected area is an urban area and characterized as a modified habitat. There are no natural or critical habitats, which may be affected by the project. The area located between Fa Ngum 2A and 2B is not covered by vegetation, but a number of trees are located alongside the road.

### **III. SUMMARY OF ISSUES AND POTENTIAL IMPACTS**

28. The improvement of urban road and drainage structures are undertaken in an urban area. The alignments for drainage and roads already exist and are functioning. No vulnerable ecosystems will be disrupted by this project as the entire implementation will be in an urban setting.

29. The main negative environmental impacts are temporary and short-term impacts during the construction phase associated with the road improvement and upgrade such as noise, dust, solid & liquid waste, construction traffic, and reduced community and commercial access. Construction during the wet season will be associated with additional potential impact associated with storm water runoff from the construction sites. To mitigate these impacts earthworks will not be permitted during the rainy season and should be undertaken in dry weather. Asphalt Concrete plants will be located at approved sites away from all human activity and settlements, and cultural, sensitive (e.g., schools, hospitals), and ecological receptors. The ready-made mix will arrive at the road construction site. Borrow pits will be located at approved sites or existing borrow pits will be used. The Contractor will establish an agreement with the Electricite' Du Lao (EDL) of Savannakhet Branch to execute the removal or relocation of electricity works. The construction related impacts are of limited duration and extent and

can be mitigated through standard methods and procedures of good housekeeping and good engineering practice.

30. Fa Ngum II road additional work is similar to the Fa Ngum road construction, it short-term environment impact during the construction period, approximately 2 months period, the construction of Fa Ngum road construction, the road can be closed, because there are so many alternative roads for passengers to use during the construction.

31. A summary of issues and impacts associated with the urban roads projects are presented in the table below. The potential impacts of the infrastructure developments are primarily construction-related and therefore short-term and can be mitigated.

Table 4. Summary of Potential Environmental Impacts and measures

Issues and Impacts	EMP Measures
<b>I. Pre-Construction Phase</b>	
Land acquisition and resettlement	Addressed in Resettlement Plan
Displacement of people, loss of assets & income	Addressed in Resettlement Plan
<b>II. Construction Phase</b>	
Civil works related environmental impacts	
Land clearing, loss of fruit trees and decorative trees	Tree and vegetation removal, and site restoration actions. Trees to be maintained as much as possible and native species used in replantation.
Dust/suspended particles/air pollution	Dust management plan and monitoring
Noise and vibration	Noise management plan and monitoring
Generation of spoils, solid waste, including hazardous waste	Spoil and waste management plans
Land & surface water pollution	Construction materials, transport, and storage measures; spoil and waste management plans, erosion control measures
Air pollution from asphalt concrete production	Asphalt production, transport, and use measures
Traffic	Traffic plan
Reduced access, disrupted business and community activity	Construction and traffic planning and community engagement
Accidental damage to properties/structures	Good construction practice; protection of cultural and religious sites; access to Grievance mechanism
Community health and safety hazard	Public safety plan
Workers' health & safety hazard	Occupational Health and Safety Plan

<b>III. Operation Phase</b>	
Increased traffic leading to increased air and noise pollution	-
Improved access	-
Reduction in traffic induced dust emissions as road surface is sealed	-
Creation of a landscaped park as a public space	-
Improved traffic safety as a result of pavements, pedestrian crossings, improved signage and speed limit enforcement	-

32. The estimated quantities and volumes are totals including the existing road. The Contractor will submit reports of actual quantities during implementation. The Contractor will source materials from existing borrow pits or establish own borrow pits at approved sites.

Table 5. Estimated total quantities for Fa Ngum Road

<b>No.</b>	<b>Description</b>	<b>Unit</b>	<b>Estimated total quantity, incl. existing rd</b>	<b>Comment</b>
1	Clearing	m <sup>2</sup>	14,900	Area to be cleared for the road upgrade
2	Cut volume	m <sup>3</sup>	14,400	Volume cut from existing road level, i.e. waste/spoil
3	Cut volume (existing Double Bituminous Surface Treatment (DBST))	m <sup>3</sup>	270	Existing Fa Ngum 2A & 2B roads' surface is Double Bituminous Surface Treatment (DBST), hazardous waste to be removed and transported to disposal area as directed by the Project Manager.  Recycling options to be assessed by Contractor.  Note: Road Fa Ngum 1 has laterite surface and is currently not covered with Asphalt.
4	Fill volume	m <sup>3</sup>	2,000	Material sourced from selected borrow pits established by contractor or bought from suppliers
5	Sand	m <sup>3</sup>	200	Material sourced from selected borrow pits established by contractor or bought from suppliers
6	Sub grade	m <sup>3</sup>	5,700	Existing road
7	Sub base	m <sup>3</sup>	4,300	Material from selected borrow pits established by contractor or bought from suppliers, CBR 25%
8	Base Course	m <sup>3</sup>	3,900	Material from selected borrow pits established by contractor or bought from suppliers, CBR 80%
9	Asphalt Concrete 5cm	m <sup>2</sup>	19,500	Mix of bitumen and crushed stones

Table 6. Estimate Quantities of Fa Ngum II road

No.	Description	Unit	Estimated total quantity, incl. existing rd	Comment
1	Clearing include scarifying existing pavement	m <sup>2</sup>	2,152	Areas for parking, drainage and road surface.
2	Cut volume (existing Double Bituminous Surface Treatment (DBST)) and drainage	m <sup>3</sup>	1,373	Remove all material to repair the rural road, local government apply to repair where are necessary
3	Fill volume (soil)	m <sup>3</sup>	1,051	Use the existing Borrow pit from Fa Ngum road subproject
4	Sand	m <sup>3</sup>	78	Local supplier
5	Concrete	m <sup>3</sup>	226	Concrete Mixer factory from supplier in town

#### IV. REGULATORY FRAMEWORK AND GUIDELINES

33. The specific regulations and guidelines are summarized in Table 7. The regulations and guidelines, inter alia, specify how the infrastructure investment should be located, constructed, and managed to prevent or minimize negative impacts on the environment. The complete list of environment-related laws and regulations of GoL are described in Appendix A.

34. ECC is already granted from Savannakhet Provincial Department of National Resource Management and it is valid for 3 years period from February 2021, this ECC is also included the additional work for Fa Ngum II Road, which updated EMP of Fa Ngum Subproject is already endorsed before granted the ECC.

35. Environmental standards are listed in Appendix B. Where Lao PDR regulations differ from the environmental standards provided by the Environmental, Health and Safety Guidelines of the World Bank (2007), the reference will be whichever is more stringent.

Table 7. Regulatory Framework and Guidelines

Urban Road Upgrades
<ul style="list-style-type: none"> <li>• Lao PDR Road Design Manual with reference to AASHTO A Policy on Geometric Design of Highways and Streets, 5th edition.</li> <li>• RDA's Lao Bridge Design Manual, 1998 with reference to AASHTO LRFD Bridge Design Specifications, 4<sup>th</sup>, Edition, 2007</li> <li>• Transport Research Laboratory's (TRL) Road Note 31, 4th edition.</li> <li>• Road Development Authority (RDA's) standards incorporating relevant standards from the AASHTO Highway Drainage Guidelines.</li> </ul>

- MPWT (2006). Specifications for drainage system, culverts, street lighting and tree planting

### **Environmental Standards**

- National Environmental Standard Order No. 2734/PMO-WREA (2009): See Appendix B.
- Law on Roads (1999): Provides directives for transportation of hazardous materials, designates weight limits on vehicles traveling on Lao PDR roads. It states that construction activities that the road contractor shall perform includes protection of the environment (Article 15); Ministry of Public Works and Transport is authorized to manage and use material from borrow pits, quarries, gravel, sand etc., from authorized locations (Article 18); Reasonable compensation must be paid to individuals whose land is expropriated for roads, relocation of replacement structures, and loss of trees and crops (Article 19); and prohibits construction within the road reserve (Article 21).

## **V. CONTRACTOR REQUIREMENTS**

36. In the context of the project the construction Contractor should commit to respect the following during the whole period of the construction activities:

- (i) Establish an operational system for managing environmental impacts;
- (ii) To submit Contractor's Environmental Management Plan (CEMP), addressing at a minimum the subproject EMP, including subplans;
- (iii) Contractor is required to submit the supplemental of CEMP that specific to the Fa Ngum II road construction.
- (iv) To carry out the monitoring and mitigation measures specified in the EMP, to ensure adherence to the EMP throughout the construction stage, and to efficiently implement measures outlined in the EMP;
- (v) To allocate sufficient budget to ensure that such measures are carried out;
- (vi) To prepare and submit environmental monitoring reports as specified in the EMP;
- (vii) To comply with any corrective or preventative actions/measures identified in safeguards monitoring reports or as outcome of audits;
- (viii) Appoint an Environmental Representative to be the primary point of contact within his organization for all matters relating to environmental management;
- (ix) To comply with GoL and ADB requirements and to provide self-monitoring to ensure compliance;
- (x) To prepare a corrective action plan with respect to non-compliance issues identified by the Project Manager and to implement by the date agreed;
- (xi) To participate in pre-construction consultation as and if required by the PMU;
- (xii) To elaborate and manage the Occupational Health and Safety Plan;
- (xiii) To respect internationally recognized good practices;
- (xiv) To provide effective environmental briefing/induction to personnel employed or contracted on environmental issues and the requirements for environmental management, maintain records of attendance of training, and provide ongoing training such as onsite briefings or tool-box meetings;
- (xv) to develop grievance management procedures, signpost contact points signpost contact information
- (xvi) to conduct informal consultations with affected persons and village heads in the project area;

- (xvii) to monitor the construction and impacts and submit regular monitoring reports as specified in the EMP; and
- (xviii) Admit regular monitoring and auditing of activities.

37. All contractual and legal obligations relating to the EMP should apply to both the construction contractors and their subcontractors. It should be the responsibility of the construction contractors to provide adequate resources to ensure effective implementation and control of the EMP. Each subcontractor should be accountable to its respective contractor for compliance with the measures presented in the EMP. Construction contractors and their subcontractors should ensure that the entire project staff is briefed and procedures are understood and followed.

## **VI. MITIGATION MEASURES AND PLAN**

38. Environmental mitigation and management issues concerning the subproject arise almost exclusively in the construction phase. Mitigation should thus be centered on the need to ensure that the Contractor acts in an environmentally responsible way. Therefore, an environmental management plan (EMP) is part of the contract for construction. The EMP specifies the approach to construction site preparation and operation including pollution control and waste management.

39. The mitigation measures of the EMP are presented in a comprehensive mitigation plan for the subproject component summarized in Table 8. The plan includes the environmental issues and concerns raised at the stakeholder meetings. The plan identifies responsible parties, location, and timing.

Table 8. Environmental Impacts Mitigation Measures Plan

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost	Responsibility	
							Super-vision	Implemen-tation
Pre-Construction Phase								
Consultation/ Disclosure, & community engagement	Community grievances	1. Pre-construction consultation with affected people, including dissemination of project level Grievance Redress Mechanism (GRM).	For all construction sites.	Before construction (but not later than 3 months after NTP)	Once, regular GRM reporting	Management cost/ integrated in PMU budget	IA/PMU	PIT/GPP
GoL approvals	-	2. Subproject EMP submitted to DONRE for approval. 3. Updated EMP shall be submitted to EAs/IAs for approval and endorsement to ADB. 4. The Contractor shall ensure that required permits and clearances had been obtained from relevant government agencies.	Entire subproject	Before bidding  Before construction	Once  As required	Management cost/ integrated in PMU budget	IA/PMU	IA/PMU
UXO survey, & removal	Injured worker or public	5. Obtain the appropriate GoL certification on UXO (certificate of UXO clearance or no UXO clearance needed).	All construction sites.	Before construction (but not later than 3 months after NTP)	Once	GoL cost	EA/GoL	GoL
Bid documents	-	6. Updated EMP included in contractor tender documents, and tender documents specify that requirements of EMP must be budgeted. 7. Bid documents specify that contractor must have experience with implementing EMPs, or provide staff with the experience.	Entire subproject	Before bidding	Once	Management cost/ integrated in PMU budget	IA/PMU	IA/PMU
Construction Phase								
Initiate EMP & subplans	Prevent or minimize impacts	8. Contractor to submit Contractor's Environmental Management Plan (CEMP) for approval, addressing at a minimum the subproject EMP, including subplans (refer below).	For all construction sites	Before construction	Once	Integrated in Contractor's contract	CSCS	Contractor

Community engagement	Community grievances	<p>9. Contractor to establish grievance management procedures in line with Project Level GRM and signpost contact information (phone number and website).</p> <p>10. Inform authority of community for announcing the construction and GRM through villager speaker.</p> <p>11. Contractor's Environmental Representative to conduct ongoing consultations with the affected persons in the project area through random site walks and consultations.</p>	For all construction sites	Before construction	Once	Integrated in Contractor's contract	CSCS/G PP	Contractor
Obtain & activate permits and licenses	Prevent or minimize impacts	12. Contractor to comply with all statutory requirements set out by GoL for use of construction equipment, and operation construction plants such as concrete batching.	For all construction sites	Beginning of construction	Once	Integrated in Contractor's contract	CSCS	Contractor
Implement Construction materials acquisition, transport, and storage subplan	Pollution, injury, increased traffic, disrupted access	<p>13. Submit plan for use of borrow pits and quarries for pre-approval. All borrow pits and quarries should be approved by DONRE and established and operated in line with applicable Lao guidelines or IFC EHS Guidelines for Construction Materials Extraction.</p> <p>14. The supplemental to CEMP should be included borrow pits and quarries and concrete mixer plant, transportation routes and mitigation plan as well</p> <p>15. Select pits and quarries in areas with low gradient.</p> <p>16. Pits and quarries should not be located near sensitive surface waters, forested areas, critical habitat for wildlife, or cultural property or values.</p> <p>17. All topsoil and overburden removed should be stockpiled for later restoration.</p> <p>18. All borrow pits and quarries should have a fence perimeter with signage to keep public away.</p> <p>19. After use, pits and quarries should be dewatered and permanent fences installed with signage to keep public out, and restored using original overburden and topsoil.</p> <p>20. Unstable slope conditions in/adjacent to the quarry or pit caused by the extractions should be rectified with tree planting.</p> <p>21. Define &amp; schedule how materials are extracted from borrow pits and rock quarries, transported, and handled &amp; stored at sites.</p> <p>22. All aggregate loads on trucks should be covered.</p> <p>23. Piles of aggregates at sites should be used/or removed promptly, or covered and placed in non traffic areas.</p>	For all construction areas, incl. borrow pits and quarries	Throughout construction phase	Monthly	Integrated in Contractor's contract	CSCS	Contractor

		24. All construction fluids such as oils, and fuels should be stored and handled well away from vegetated areas.						
Asphalt production, transport, and use	Air pollution, land and water contamination, and traffic & access problems	<p>25. Submit plan for asphalt plant including location for pre-approval.</p> <p>26. Locate asphalt plant at approved sites and well away from all human activity and settlements, and cultural, sensitive (e.g., schools, hospitals), and ecological receptors. Bitumen production and handling areas should be isolated.</p> <p>27. Contractors must be well trained in handling and application of bitumen.</p> <p>28. All spills should be cleaned immediately and handled as per hazardous waste management plan, and according to GoL regulations.</p> <p>29. Bitumen should only be spread on designated road beds.</p>	For all construction areas.	Throughout construction phase	Monthly	Integrated in Contractor's contract	CSCS	Contractor
Implement Spoil management subplan	Contamination of land and surface waters from excavated spoil, and construction waste	<p>30. Spoil to be disposed of in GoL-designated sites, which must never be in or adjacent surface waters. Designated sites must be clearly marked and identified.</p> <p>31. Spoil must not be disposed of on sloped land, near cultural property or values, ecologically important areas, surface waters, or on/near any other culturally or ecologically sensitive feature.</p> <p>32. Where possible spoil should be used at spent quarries or borrow pits.</p> <p>33. A record of type, estimated volume, and source of disposed spoil must be recorded.</p> <p>34. Contaminated spoil disposal must follow GoL regulations including handling, transport, treatment (if necessary), and disposal.</p> <p>35. Suspected contaminated soil must be tested, and disposed of in designated sites identified as per GoL regulations.</p> <p>36. Before treatment or disposal contaminated spoil must be covered with plastic and isolated from all human activity.</p>	All excavation areas	Throughout construction phase	Monthly	Integrated in Contractor's contract	CSCS	Contractor
Implement Solid and liquid construction waste subplan	Contamination of land and surface waters from construction waste	37. Management of general solid and liquid waste of construction will follow GoL regulations, and will cover, collection, handling, transport, recycling, and disposal of waste created from construction activities and worker force.	All construction sites and workcamps	Throughout construction phase	Monthly	Integrated in Contractor's contract	CSCS	Contractor

		<p>38. Areas of disposal of solid and liquid waste to be determined in line with regulation.</p> <p>39. Disposed of waste should be catalogued for type, estimated weigh, and source.</p> <p>40. Construction sites should have large garbage bins.</p> <p>41. A schedule of solid and liquid waste pickup and disposal must be established and followed that ensures construction sites are as clean as possible.</p> <p>42. Solid waste should be separated and recyclables sold to buyers in community.</p> <p>43. Hazardous Waste: Collection, storage, transport, and disposal of hazardous waste such as asphalt, used oils, gasoline, paint, and other toxics must follow GoL regulations.</p> <p>44. Final disposal of cut asphalt from existing road surface to be disposed of in line with regulation and at sites approved by the Project Manager.</p> <p>45. Contractor to explore reuse options for cut asphalt.</p> <p>46. Wastes should be separated (e.g., hydrocarbons, batteries, paints, organic solvents)</p> <p>47. Wastes must be stored above ground in closed, well labeled, ventilated plastic bins in good condition well away from construction activity areas, all surface water, water supplies, and cultural and ecological sensitive receptors.</p> <p>48. All spills must be cleaned up completely with all contaminated soil removed and handled with by contaminated spoil subplan.</p>						
Implement Dust subplan	Dust	<p>49. Develop Dust subplan, including review of sensitive receptors, the Wat, the vocational training centre/hospital, residential area, and offices and air quality standard requirements.</p> <p>50. Establish baseline and implement air quality monitoring following a recognized methodology and review results against ambient air quality standard (refer Table 18).</p> <p>51. Organise the construction traffic and access points to construction sites and select truck routes that limit the frequency of passage through the sensitive areas, i.e. the residential area and the hospital.</p> <p>52. Establish dust screens at the hospital/vocation centre and other sensitive recipients and at exposed stockpiles.</p>	All construction sites.	Fulltime	Monthly	Integrated in Contractor's contract	CSCS	Contractor

		<p>53. Regularly apply wetting agents to exposed soil and construction roads.</p> <p>54. Cover or keep moist all stockpiles of construction aggregates, and all truck loads of aggregates.</p> <p>55. Minimize time that excavations and exposed soil are left open/exposed. Backfill asap.</p>						
Implement Noise subplan	Noise	<p>56. Develop Noise Subplan, including review of sensitive receptors, the Wat, the vocational training centre /hospital, residential area, and offices and guideline requirements.</p> <p>57. Establish baseline noise and implement noise monitoring programme following a recognized methodology and review results against noise guideline (refer Table 20).</p> <p>58. Establish a schedule (hours during the day) of construction activities, acknowledging daytime, evening, and night time noise limits and minimize noise intrusive impacts during most noise sensitive hours.</p> <p>59. Restrict working time to daytime near the hospital and in the residential area.</p> <p>60. Organise the construction traffic and access points to construction sites and select truck routes that limit the frequency of passage through the sensitive areas, i.e. the residential area and the hospital.</p> <p>61. Schedule truck loading, unloading, and hauling operations so as to minimize noise impact near noise sensitive locations, incl. the hospital/vocational centre and the residential area.</p> <p>62. Configure the construction site in a manner that keeps noisier equipment and activities as far as possible from noise sensitive locations (the hospital/vocational centre and the residential area) and nearby buildings and reduce the amount of equipment operating in critical areas close to noise sensitive receptors. Orient plant and equipment known to emit noise strongly in a direction away from noise sensitive receptors.</p> <p>63. Establish temporary noise barriers around excessively noisy activity areas. Evaluate the need for a noise barrier or acoustic fence at the hospital/vocational centre.</p> <p>64. Provide acoustic enclosures for diesel generators.</p> <p>65. Minimize the use of impact devices, such as jackhammers (pneumatic drills), and pavement breakers.</p>	All construction sites.	Fulltime	Monthly	Integrated in Contractor's contract	CSCS	Contractor

		<p>66. Equip noise producing equipment such as jackhammers and pavement breakers with acoustically attenuating shields or shrouds.</p> <p>67. Construction equipment manufactured or modified to reduce noise and vibration emissions shall be favoured, such as electric instead of diesel-powered equipment and hydraulic tools instead of pneumatic impact tools.</p>						
Implement Utility and power disruption subplan	Loss or disruption of utilities such as water supply and electricity	<p>68. Establish agreement with Electricite' Du Lao (EDL), Savannakhet Branch to execute the removal or relocation of electricity works.</p> <p>69. Develop carefully a plan of days and locations where outages in utilities and services will occur, or are expected.</p> <p>70. Contact local utilities and services with schedule, and identify possible contingency back-up plans for outages.</p> <p>71. Contact affected community to inform them of planned outages.</p> <p>72. Try to schedule all outages during low use time.</p>	All construction sites.	Fulltime	Monthly	Integrated in Contractor's contract	CSCS	Contractor
Implement Tree and vegetation removal, and site restoration subplan	Damage or loss of trees, vegetation, and landscape	<p>73. Restrict tree and vegetation removal to within RoWs and no unnecessary cutting of trees.</p> <p>74. Within RoWs minimize removals, and install protective physical barriers around trees that do not need to be removed.</p> <p>75. RoWs to be re-vegetated and landscaped. Use native plant and tree species for revegetation.</p>	All construction sites.	Beginning and end of subproject	Monthly	Integrated in Contractor's contract	CSCS	Contractor
Implement Erosion control subplan	Land erosion	<p>76. Berms and plastic sheet fencing should be placed around all excavations and earthwork areas.</p> <p>77. Earthworks not permitted during the rainy season and to be conducted in dry weather.</p> <p>78. Maintain a stockpile of topsoil for immediate site restoration following backfilling.</p> <p>79. Protect exposed or cut slopes with planted vegetation, and have a slope stabilization protocol ready.</p> <p>80. Re-vegetate all soil exposure areas asap.</p>	All construction sites	Throughout construction phase	Monthly	Integrated in Contractor's contract	CSCS	Contractor
Implement worker safety subplan	Worker injury and health	<p>81. Worker safety guidelines of GoL or IFC EHS Guidelines should be followed, whichever is more stringent.</p> <p>82. Elaborate and manage the Plan for Occupational Health and Safety (OHS)) for the works (refer Basic Specifications).</p> <p>83. Worker education and awareness seminars for construction hazards should be given. A construction site</p>						

		<p>safety program should be developed and distributed to workers.</p> <p>84. Appropriate safety clothing and footwear should be mandatory for all construction workers.</p> <p>85. Adequate medical services must be on site or nearby all construction sites.</p> <p>86. Drinking water must be provided at all construction sites.</p> <p>87. Adequate worker facilities, including toilets, rest room, and washing facilities to be provided.</p> <p>88. Sufficient lighting be used during necessary night work.</p> <p>89. All construction sites should be examined daily to ensure unsafe conditions are removed.</p>						
Implement public safety subplan	Public injury, and health	<p>90. Proper fencing, protective barriers, and buffer zones should be provided around all construction sites.</p> <p>91. Sufficient signage and information disclosure, and site supervisors and night guards should be placed at all sites.</p> <p>92. Public safety guidelines of GoL should be followed.</p> <p>93. Speed limits should be imposed on all roads used by construction vehicles.</p> <p>94. Standing water suitable for disease vector breeding should be filled in.</p>	All construction sites	Fulltime	Monthly	Integrated in Contractor's contract	CSCS	Contractor
Implement COVID19 Subplan	Health of workers and public	<p>95. COVID19 information awareness raising (posters, morning talk, monthly meeting)</p> <p>96. Practice social-distancing at least 1 meter</p> <p>97. Provide face mask for the outbreak period or in the crowded people</p> <p>98. Hand washing and sanitation for the workers</p> <p>99. Provide cleanliness and suitable worker's camp during the construction period</p> <p>100. Check the temperature before entry the work place</p> <p>101. Follow and implement based on COVID19 Taskforce regulation strictly.</p>	All construction site	fulltime	Daily	Integrate in the contractor's contract	CSCS	Contractor
Civil works	Degradation of water quality	<p>102. Where relevant, e.g. at borrow pits establish protective coffer dams, berms, plastic sheet fencing, or silt curtains should be placed between all earthworks and surface waters.</p> <p>103. Erosion channels must be built around aggregate stockpile areas to contain rain-induced erosion.</p> <p>104. Earthworks not permitted during the rainy season and should be conducted during dry weather.</p>	All construction sites	Throughout construction phase	Monthly	Integrated in Contractor's contract	CSCS	Contractor

		<p>105. All construction fluids such as oils, and fuels should be stored and handled well away from surface waters.</p> <p>106. No washing or repair of machinery near surface waters.</p> <p>107. No unnecessary earthworks in or adjacent to water courses.</p> <p>108. All irrigation canals and channels to be protected the same way as rivers, streams, and lakes.</p>						
Implement Construction and urban traffic subplan	Traffic disruption, accidents, public injury	<p>109. Schedule construction vehicle activity during light traffic periods. Create adequate traffic detours, and sufficient signage &amp; warning lights.</p> <p>110. Enforce speed limits, and create dedicated construction vehicle roads or lanes.</p> <p>111. Inform community of location of construction traffic areas, and provide them with directions on how to best co- exist with construction vehicles on their roads.</p> <p>112. Establish pedestrian crossings away from construction areas and ensure adequate lighting.</p> <p>113. Plan construction-related activities to reduce impacts on businesses to the extent possible. For example park construction machinery and site works related equipment to avoid blocking access to shops and kiosks.</p> <p>114. Fa Ngum II road Construction will be closed both sides of the entries. Detours, blockades and safety taps, traffic signs will be adequately installed for two months period of the construction, included employ flag person for facilitate the traffic in the case of truck in-out of the construction site.</p>	All construction sites	Fulltime	Monthly	Integrated in Contractor's contract	CSCS	Contractor
Implement Construction Drainage subplan	Loss of drainage & flood storage	<p>115. Provide adequate short-term drainage away from construction sites to prevent ponding and flooding.</p> <p>116. Install temporary storm drains or ditches for construction sites.</p> <p>117. Ensure connections among existing drainage infrastructure and surface waters (ponds, streams) are maintained or enhanced to sustain existing stormwater storage and drainage capacity.</p> <p>118. Where relevant, e.g. at borrow pits, protect surface waters from silt and eroded soil.</p>	All areas with surface waters	Construction phase	Monthly	Integrated in Contractor's contract	CSCS	Contractor
Civil works	Damage to cultural property or values,	<p>119. Ensure protection of cultural and religious sites during construction (for Fa Ngum Rd, the local community indicated in consultations that the boundary wall of the Wat Phonesavang Tai should be respected).</p>	All construction sites	At the start, and throughout	Monthly	Integrated in Contractor's contract	CSCS	Contractor

	and chance finds	<p>120. Chance-finds of valued relics and cultural values should be anticipated by contractors. Site supervisors should be on the watch for finds.</p> <p>121. Upon a chance find all work stops immediately, find left untouched, and PMU notified. If find deemed valuable, provincial cultural authorities must be notified.</p> <p>122. Work at find site will remain stopped until authorities allow work to continue.</p>		construction phase					
<b><i>Post-Construction Operation of all New or Upgraded Roads</i></b>									
Operation of new & upgraded roads in Kaysone	Increased risk of accident or injury.	123. Enforce well marked speed limits and educate public on new road safety.	New or upgraded roads	Fulltime	Biannual	Management cost	IA/PMU	Operation of new & upgraded roads in Kaysone	

## **VII. MONITORING AND REPORTING**

40. The environmental monitoring plan for the EMP is provided in Table 9. The monitoring plan focuses on all the construction and post-construction operation phases of the subproject and consists of environmental indicators, the sampling locations & frequency, method of data collection, and responsible parties. Estimated costs are tabled separately. The purpose of the monitoring plan is to determine the effectiveness of the impact mitigations, and to document any unexpected positive or negative environmental impacts of the subproject.

### **A. Environmental Standards for Subproject**

41. Environmental standards are listed in Appendix B. Where Lao PDR regulations differ from the environmental standards provided by the Environmental, Health and Safety Guidelines (General and applicable) of the World Bank (2007), the reference will be whichever is more stringent.

### **B. Performance Monitoring**

42. Performance monitoring is required to assess the overall performance of the EMP. Select indicators of major components of the environment that will be affected primarily by the construction phase are drawn from the mitigation and monitoring plans and summarized in Table 10.

43. Under the CSCS, Environmental Specialists will be employed to support the implementation of the environmental monitoring program. The IA/PMU and PIT will provide logistical support where necessary for the implementation of the environmental monitoring plan.

44. After the construction phase is completed and the components are in operation the impact of the new infrastructure developments on traffic patterns and urban development should be monitored by the EA.

### **C. Reporting**

45. Regular reporting on the implementation of mitigation measures, and on monitoring activities during construction phase of the subproject is required. Reporting should document progress and the results of mitigation. The Reporting will be conducted at different levels and is the overall responsibility of the PMU. The mitigation and monitoring plans (Table 8 and Table 9) summarize proposed timing of reporting. The Contractor will report on monthly basis on implementation of the mitigation plan and on the monitoring plan. Environmental monitoring reports will be prepared quarterly for the EA by the PMU and PIT supported by the CSCS Environmental Specialists and send to the DONRE and ADB. A semi-annual Safeguards Monitoring Report will be submitted to ADB. A draft format and outline for the Environmental Monitoring Report is provided in the Appendix Draft format for Environmental Monitoring Report.

Table 9. Environmental Monitoring Plan

Aspect/Parameter to be monitored	Location	Means of Monitoring	Frequency	Reporting	Responsibility	
					Compliance Monitoring	Implement
Construction Phase Urban Road Upgrades						
Environmental mitigation implemented according to the CEMP/EMP	All construction sites	Field observations Consulting affected residents Review of grievances	Regular and random Random Regular	Monthly	CSCS	Contractor
Ambient noise levels, baseline and periodically during construction (against GoL standards for day, evening, and nighttime).	Sensitive receptors	Following recognized methodology, method specified in Agreement 2734/PMO, WREA, 2009	Prior to construction (but not later than 3 months after NTP) Quarterly	Before construction Quarterly	CSCS	Contractor
Ambient air quality (TSP and PM10), baseline and periodically during construction (against GoL standards)	Sensitive receptors and control points upwind and downwind of construction site.	Following recognized methodology, method specified in Agreement 2734/PMO, WREA, 2009	Prior to construction (but not later than 3 months after NTP) Quarterly	Before construction Quarterly	CSCS	Contractor
Monthly Environmental Monitoring Report submitted following prescribed outline	Subproject	Review of Contractor's Report	Regular	Monthly	CSCS	Contractor
Lodged grievances acted upon and grievance mechanism observed	Subproject	Review of grievances Consultation with village authorities	Regular Regular	Monthly	CSCS	Contractor
a) Incidence of worker or public accident or injury; b) incidence investigation; c) corrective measures identified; and d) corrective measures implemented.	All construction sites	Review of incidents and sick leave Review of investigation and corrective measures	Regular Regular	Monthly	CSCS	Contractor
a) Environmental	All construction sites	Review of incidents register	Regular	Monthly	CSCS	Contractor

Aspect/Parameter to be monitored	Location	Means of Monitoring	Frequency	Reporting	Responsibility	
					Compliance Monitoring	Implement
incidences/accidents; b) incidence investigation; c) corrective measures identified; and d) corrective measures implemented.		Review of investigation and corrective measures	Regular			
Quarterly Environmental Monitoring Report submitted following prescribed outline	Subproject	Review of Report	Quarterly	Quarterly	DONRE / ADB	PMU/PIT
Semi-Annual Safeguards Monitoring Report submitted following prescribed outline	All subprojects	Review of Report	Semi-Annual	Semi-Annual	ADB	PMU
<b>Operation of New &amp; Upgraded Roads</b>						
Traffic accidents	New or upgraded roads.	Regular record keeping.	Continuously	For each event	IA/PMU based on information from PDPWT	
Incidence of flooding	Adjacent to new or upgraded roads	Surveys, public complaints	Seasonal for 5 years	Seasonal	IA/PMU	

Table 10. Performance Monitoring Indicators for Fa Ngum Road and Fa Ngum II road Subproject

Major Environmental Component	Key Indicator	Performance Objective	Data Source
<b>Pre-construction Phase</b>			
Public Consultation & Disclosure	Affected public & stakeholders	Meetings with stakeholders contacted during IEE & new stakeholders convened for follow-up consultation & to introduce grievance mechanism.	Minutes of meeting, and participants list
Bid Documents	Requirements of EMP (CEMP)	EMP appended to bidding documents with clear instructions to bidders for CEMP.	Bid documents
<b>Construction Phase</b>			
Air quality	Dust and suspended particles from construction sites not exceeding Lao PDR standards at receptors.	Dust monitoring implemented and results in line with standards. Dust control measures implemented.	Contractor and CSCS monitoring reports
Noise	Noise from construction sites not exceeding Lao PDR standards at receptors.	Noise monitoring implemented and results in line with standards. Noise control measures implemented, work scheduling to minimize nighttime work.	Contractor and CSCS monitoring reports
Soil quality	Solid & liquid waste from all construction activities disposed of in line with regulations and requirements.	Rigorous program of procedures & rules to collect and store all waste from sites practiced.	Contractor and CSCS monitoring reports
Hazardous materials & waste	Cut asphalt, oil, gasoline, grease, alum, chlorine, soda disposed of in line with regulations and requirements.	Rigorous program of procedures to manage and store all waste from construction sites practiced.	Contractor and CSCS monitoring reports
Public & worker safety	Frequency of injuries	Adherence to GoL policy and site-specific procedures to prevent accidents. Incidents are investigated and corrective actions identified and implemented.	Contractor reports

Cultural property	Incidence of damage, or complaints	No valued cultural property, or unearthed valuable relic is damaged in any way.	Public input, contractor reports and CSCS reports
Grievances and Grievance Redress Mechanism	Grievances lodged	Lodged grievances are acted upon and the Grievance Redress Mechanism (GRM) is followed.	Hotline number posted at construction site, grievances/complaints received through website, GRM reports.
Traffic	Frequency of disruptions & blocked roadways	Disruptions, stoppages, or detours are managed to absolute minimum.	Public input, contractor reports and CSCS reports
<b>Operation Phase of Components</b>			
Traffic safety	Frequency of accidents	No increase in pre-construction frequency.	PDPWT

### VIII. ESTIMATED COST OF EMP

46. The cost for implementing the EMP include costs for implementing the environmental mitigation, management, and monitoring measures. The costs for implementing impact mitigation measures are integrated in the Construction contract. The costs for implementing monitoring measures should be priced by the Contractor in their bid.

47. The estimated cost for the implementation of the budgeted items of the EMP for Fa Ngum and Fa Ngum II Roads is USD 21,340 (Table 11), excluding the costs that should be are integrated in the Construction Contract, Construction Supervision Contract, or the PMU budget.

Table 11. Cost Estimation of EMP for Fa Ngum Roads

Activity	Indicative Cost (USD)			
	Integrated into Construction Contract	Integrated into Supervision Contract (CSCS)	Integrated into PMU Budget	Training, Technical Assistance & Services Budget
<b>Environmental Mitigation</b>				
<b>Construction Phase</b>				
Implementation of Mitigation Plan	Subproject cost	Subproject cost		
<b>Environmental Monitoring</b>				
<b>Construction Phase</b>				
Monitoring of community & workers' health and safety	Subproject cost	Subproject cost	Subproject cost	
Monitoring of Environmental mitigation and management	Subproject cost	Subproject cost	Subproject cost	

Baseline and quarterly monitoring of ambient noise	Subproject cost	Subproject cost		
Baseline and quarterly monitoring of ambient air quality, incl. TSP and PM10	Subproject cost	Subproject cost		
Subject to complaints/grievances, additional air quality and noise monitoring against standards may be required of Contractors.	Subproject cost	Subproject cost		
<b>Performance Monitoring</b>				
Project audits, including DONRE audit	8,000			
Seminars/Workshops				10,000
Fa Ngum II road Construction during construction period included mitigation and monitoring	800	600		
<b>Sub-Total (USD)</b>	19,400			
Contingency at 10%	1,940			
<b>Total (USD)</b>	21,340			

## IX. INSTITUTIONAL ARRANGEMENTS & RESPONSIBILITIES

48. The primary management framework overseeing the implementation of the environmental management plan (EMP) is defined by the: 1) Ministry of Public Works and Transports (MPWT) who is the executing agency (EA) of the subproject; 2) the Provincial Department of Public Works and Transport (PDPWT) Savannakhet province who is the implementing agency (IA) of subproject; 3) a project management unit (PMU) formed by the IA to oversee implementation of the subproject in Kaysone and the subprojects in Phine and Dansavanh; and 4) the project implementation team (PIT) established in Kaysone Phomvihane, Phine, and Dansavanh to coordinate project activities at the district level.

49. The project has designated an Environmental Control Officer (ECO) in the PMU and PIT, while the construction contractor will nominate an Environmental Representative (ER). A Construction Supervision Consulting Services (CSCS) Consultant with environmental expertise will be appointed. The CSCS will be responsible to ensure that the Contractor implements the EMP during the Contract Period, to establish monitoring programme, review the EMP, and supervise its implementation. During the construction phase, the Contractor will generally be responsible for implementation of the mitigation measures as specified in the mitigation plan and the CSCS will supervise the implementation.

50. The Environmental Control Officer (ECO) will be responsible for monitoring, reviewing, and verifying compliance with the EMP by the construction contractor. In addition, the ECO will be responsible for ensuring that mitigation and compensation measures developed in the EMP are implemented where applicable. Monitoring these measures will also be the responsibility of the ECO, supplemented by additional staff if required. The ECO should be a local government official with the necessary training, equipment, and access to specialist support, if required.

51. The Contractor's Environmental Representative (ER) will be the construction contractor's focal point for all environmental matters and is routinely on-site for the duration of the construction works. The ER is an appropriately briefed technical officer (often the CC

site engineer). The ER carries out regular inspections of the CC activities in relation to environmental issues, and provides day-to-day advice to contractor personnel about environmental issues. The Environmental Representative will have the authority to instruct any area of the Contractor's operations to implement the requirements of the Environmental Management Plan (pre-construction) and any instructions from the Project Manager.

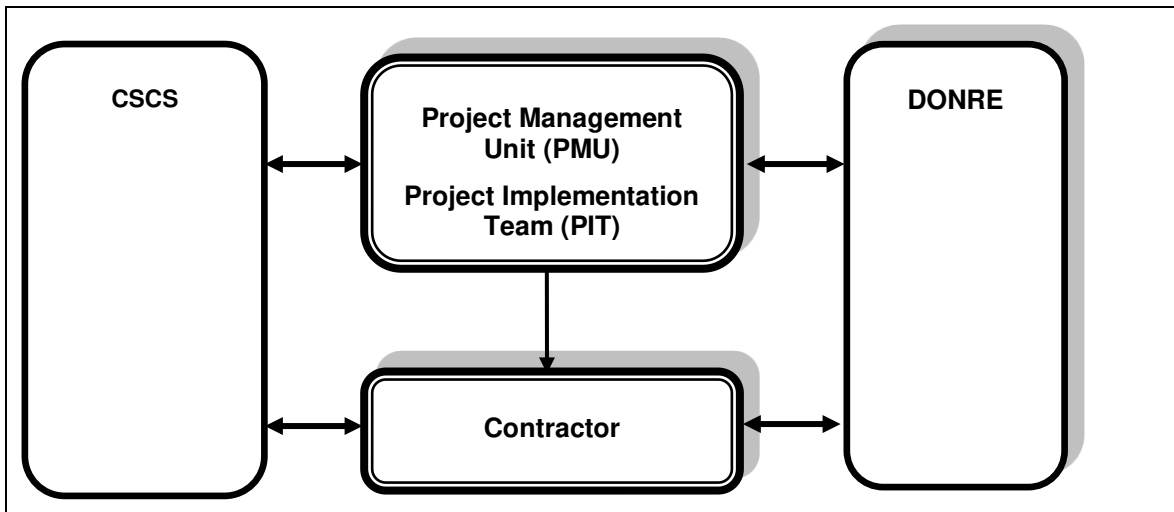


Figure 11. Organizational chart for EMP implementation

52. The responsibilities of the IA/PMU are summarized below:

1. Overall responsibility for project implementation and coordination of project activities;
2. Supervise the activities of the Project Implementation Teams organized within the District Authorities;
3. Undertake procurement of goods, works and services including recruitment of consultants for project management support, capacity development and training, independent audit and safeguards monitoring;
4. Develop and adapt a project performance management system in monitoring project activities using indicators and parameters in the design and monitoring framework;
5. Obtain necessary approvals and clearances of environment and resettlement from MONRE prior to awarding of civil works contracts;
6. Manage separate project financial records and accounts, and prepare financial reports;
7. Supervise the implementation of social and environmental safeguards and including timely disclosure of safeguards documents;
8. Supervise the implementation of the Consultation and Participation Plan, Gender Action Plan, and Stakeholder Communication Strategy;
9. Supervise the implementation of the resettlement plans including adequate measures to mitigate adverse resettlement impacts;
10. Ensure that environment management plans and gender considerations are incorporated in the detailed engineering designs and included in the civil works contracts;
11. Undertake regular quality control inspection of project facilities;

12. Manage the handover of project facilities to agencies responsible for operation and maintenance;
  13. Prepare and submit quarterly and annual physical and financial progress reports to the EA; and
  14. Undertake monitoring of compliance of social and environmental safeguards.
53. The responsibilities of the PIT are summarized below:
1. Coordinate the implementation of project activities at the district level;
  2. Ensure the implementation of the approved work plans and program of activities;
  3. Prepare and submit regular quarterly and annual physical and financial progress reports to the PMU;
  4. Oversee and coordinate civil works and construction activities;
  5. Ensure the implementation of social and environmental safeguards and including timely disclosure of safeguards documents;
  6. Ensure the implementation of the Consultation and Participation Plan, Gender Action Plan, and Stakeholder Communication Strategy;
  7. Ensure implementation of resettlement plans including adequate measures to mitigate adverse resettlement impacts;
  8. Coordinate implementation of environmental management plan, and submit regular monitoring reports to the PMU;
  9. Coordinate the updating of the resettlement plans and monitor implementation of resettlement activities; and
  10. Undertake monitoring of project activities based on the indicators and parameters in the Design and Monitoring Framework (DMF) and prepare regular reports to the PMU on project achievements.
54. The PMU with assistance from the DED ensures that the EMP becomes part of the construction contract and with assistance from the CSCS that the EMP is implemented and that the Contractor abides by the EMP. The ECO should undertake regular site inspections and the results should be recorded and submitted to the relevant authorities as part of progress reporting.

#### **A. Consultation and Public Participation Process**

55. Information disclosure and stakeholder consultations were conducted as part of the environmental assessment process. The consultations involved in-depth key informant interviews with relevant Government agencies and focus grouped discussions.
56. The consultations aimed on environmental issues and concerns affecting the community. Specifically, the objectives of the consultation meetings are the following:
- To present the proposed projects to the stakeholders;
  - To solicit views of the stakeholders relative to the proposed project;
  - To identify the most important project components for the locals;
  - To identify possible environmental issues inherent on the proposed project and
  - to identify mitigation measures to address these issues in the project design.

57. Subsequent information dissemination to, consultation with and participation of affected people and involved agencies will reduce the potential for conflicts and minimize the risk of project delays. Further information and consultations will be carried out before construction starts (during the first year of the project) and during the construction period.

58. Prior to the start of the construction, consultation will be carried out in all the areas where the proposed project activities are anticipated. The objective will be to provide the local population with accurate information on activities to be undertaken, on the schedule of these activities and on the potential nuisances for them during construction. This information stage, which concerns all the project sites, will be carried out jointly with the team in charge of RP preparation in those areas concerned by compensation and/or resettlement.

59. During the construction stage, consultation will be carried out with local population in specific area where construction activities are expected to start within 1 month. This will be carried out through focus group discussion with residents and key stakeholders (police station, ward heads) on possible nuisances (noise, dust, traffic/access constraint, temporary suspension of public utility, etc.), on safety measures they will have to respect (regarding engines under activity, risks of fall in excavations, risks specific to children etc.) and on the detailed schedule of activities.

60. At the end of the construction activities in a dedicated site, inspection of site to ensure cleaning and rehabilitation has been done by the Contractor will include interview of residents to possibly identify non-compliance in the rehabilitation of the site.

## **B. Grievance Redress Mechanism**

61. The PMU will appoint a Grievance Point Person (GPP) to handle environmental grievances lodged prior to construction, during construction and during operation. The PMU will provide sufficient support system, i.e., communication facilities, recording, and reporting system and funds, among others, shall have been set up to sustain the effective implementation of the mechanism. The GPP shall ensure that the mechanism, including names and contact details of responsible persons in the affected villages, PMU, UDAA and DPWT, is publicly disclosed, and posted in the offices of the affected villages and in strategic places of the Project's area of influence. During operation, the GPP will liaise with the Kaysone Phomvihane UDAA and the DPWT (the operators) for the management of the mechanism until loan closure.

62. The affected person lodge complaints to any of the following: i) village officers; ii) Contractor, during construction; iii) DPWT or UDAA; iv) PMU, through its GPP, or v) third parties, e.g., NGO, religious groups. The AP may also lodge complaint through ADB's accountability mechanism. Complaints may be acted on immediately by the responsible party. However, it shall be made a policy that all informally lodged and acted on complaints shall have to be registered with the PMU as soon as possible for record purposes.

63. The Contractor is required to establish grievance management procedures in line with the project level GRM and signpost contact information (phone number and website) on the construction site. The Contractor's Environmental Representative is required to conduct ongoing consultations with the affected persons in the project area through random site walks and consultations.

64. The CSCS and the GPP will conduct site visits and site walks and conduct consultations with affected persons and village heads to obtain information on grievances.

## **X. EMERGENCY RESPONSE PLAN**

66. The Contractor must develop emergency and incident response procedures for the construction phase. In the operational phase the operator/civil authorities will have responsibility for any emergencies or serious incidents. In the construction phase the key players include: a) Emergency Response Team (ERT) of the Contractor as initial responder; b) the District and City fire and police departments, emergency medical service, and the Department of Public Health (DPH), collectively referred to as the External Emergency Response Team (EERT), as ultimate responders. The Contractor will provide and sustain the required technical, human and financial resources for quick response during construction.

Table 12. Roles and Responsibilities in Emergency Incident Response in construction phase

<b>Entity</b>	<b>Responsibilities</b>
Contractor Team (ERT)	<ul style="list-style-type: none"><li>• Communicates/alerts the EERT.</li><li>• Prepares the emergency site to facilitate the response action of the EERT, e.g., vacating, clearing, restricting site.</li><li>• When necessary &amp; requested by the EERT, lends support/ provides assistance during EERT's response operations.</li></ul>
External Emergency Response Team (EERT)	<ul style="list-style-type: none"><li>• Solves the emergency/incident</li></ul>
Contractor Resources	<ul style="list-style-type: none"><li>• Provide and sustain the people, equipment, tools &amp; funds necessary to ensure Subproject's quick response to emergency situations.</li><li>• Maintain good communication lines with the EERT to ensure prompt help response &amp; adequate protection, by keeping them informed of Subproject progress.</li></ul>

67. The ERT will be led by the senior Contractor engineer (designated ERTL) on site with a suitably trained foreman or junior engineer as deputy. Trained first-aiders and security crew will be the core members of the ERT.

68. The Contractor will ensure that ERT members are physically, technically and psychologically fit for their emergency response roles and responsibilities.

69. Prior to the mobilization of civil works, the Contractor, through its Construction Manager, ERTL, in coordination with the PMU, will meet with the ultimate response institutions to discuss the overall construction process, including, but not limited to:

- a) Subproject sites;
- b) construction time frame and phasing;
- c) any special construction techniques and equipment that will be used;
- d) any hazardous materials that will be brought to and stored in the construction premise and details on their applications and handling/management system;
- e) the Contractor's Emergency Management Plan

- f) names and contact details of the ERT members
70. The objective of this meeting is to provide the ultimate response institutions the context for:
- a) their comments on the adequacy of the respective Emergency Management Plans
  - b) their own assessment of what types, likely magnitude and likely incidence rate of potential hazards are anticipated
  - c) the arrangements for coordination and collaboration.
71. To ensure effective emergency response, prior to mobilization of civil works, the Contractor will:
- a) set up the ERT;
  - b) set up all support equipment and facilities in working condition
  - c) make arrangements with the EERT;
  - d) conduct proper training of ERT members, and encouraged and train volunteers from the work force;
  - e) conduct orientation to all construction workers on the emergency response procedures and facilities, particularly evacuation procedures, evacuation routes, evacuation assembly points, and self-first response, among others; and
  - f) conduct drills for different possible situations.
72. To sustain effective emergency response throughout Subproject implementation an adequate budget shall be provided to sustain the capabilities and efficiency of the emergency response mechanism, the emergency response equipment, tools, facilities and supplies. Drills and reminders will take place regularly, the former at least every two months and the latter at least every month.

#### **A. Alert Procedures**

73. Means of communicating, reporting and alerting an emergency situation may be any combination of the following: i) audible alarm (siren, bell or gong); ii) visual alarm (blinking/rotating red light or orange safety flag); iii) telephone (landline); iv) mobile phone; v) two-way radio; and vi) public address system/loud speakers. Some rules relative to communicating/alerting will be:
- a) Whoever detects an emergency situation first shall immediately:
    - Call the attention of other people in the emergency site,
    - sound the nearest alarm, and/or
    - report/communicate the emergency situation to the ERT.
  - b) Only the ERTL and, if ERTL is not available, the Deputy ERTL are authorized to communicate with the EERT. Exceptional cases to this rule may be necessary and should be defined in the Emergency Management Plans.
  - c) When communicating/alerting an emergency to the EERT, it is important to provide them with at least: i) the type of emergency situation; ii) correct location of the emergency; iii) estimated magnitude of the situation; iv) estimated persons harmed; v) time it happened; v) in case of a spill, which hazardous substance spilled; and vi) in case of fire and explosion, what caused it. Such details would allow the EERT to prepare for the appropriate response actions.

74. For an effective reporting/alerting of an emergency situation:
- The names and contact details of the relevant persons and institutions should be readily available in, or near to, all forms of communication equipment, and strategically posted (at legible size) in all Subproject sites and vehicles:
    - Most relevant construction/operations staffs namely, the ERTL, Deputy ERTL, first-aiders, supervising engineers, foremen
    - EERT institutions/organizations
    - Concerned village authority/ies
    - PMU Office, ESMU
  - All Subproject sites should have good access to any combination of audible and visual alarms, landline phones, mobile phones and two-way radio communication at all times.
  - Contractor's construction vehicles should also be equipped with the appropriate communication facilities.

## **B. Emergency Response Situations**

75. The following tables suggest general procedures that will be described in more detail in the Emergency Management Plans of the Contractor.

Table 13. Evacuation Procedure

<b>Procedure</b>	<b>Remarks</b>
<ul style="list-style-type: none"> <li>Move out as quickly as possible as a group, but avoid panic.</li> </ul>	<ul style="list-style-type: none"> <li>All workers/staff, sub-contractors, site visitors to move out, guided by the ERT.</li> </ul>
<ul style="list-style-type: none"> <li>Evacuate through the directed evacuation route.</li> </ul>	<ul style="list-style-type: none"> <li>The safe evacuation shall have been determined fast by the ERTL/Deputy ERTL &amp; immediately communicated to ERT members.</li> </ul>
<ul style="list-style-type: none"> <li>Keep moving until everyone is safely away from the emergency site and its influence area.</li> </ul>	<ul style="list-style-type: none"> <li>A restricted area must be established outside the emergency site, all to stay beyond the restricted area.</li> </ul>
<ul style="list-style-type: none"> <li>Once outside, conduct head counts.</li> </ul>	<ul style="list-style-type: none"> <li>Foremen to do head counts of their sub-groups; ERTL/Deputy ERTL of the ERT.</li> </ul>
<ul style="list-style-type: none"> <li>Report missing persons to EERT immediately</li> </ul>	<ul style="list-style-type: none"> <li>ERTL/Deputy ERTL to communicate with the EERT</li> </ul>
<ul style="list-style-type: none"> <li>Assist the injured in evacuation &amp; hand them over to the ERT first-aiders or EERT medical group</li> </ul>	<ul style="list-style-type: none"> <li>ERT to manage injured persons to ensure proper handling.</li> </ul>
<ul style="list-style-type: none"> <li>If injury warrants special care, DO NOT MOVE them, unless necessary &amp; instructed/directed by the EERT.</li> </ul>	<ul style="list-style-type: none"> <li>ERTL/Deputy ERTL communicates with EERT to get instructions/directions in handling the injured.</li> </ul>

Table 14. Response Procedure During Medical Emergency

Procedure	Remarks
<ul style="list-style-type: none"> <li>Administer First Aid regardless of severity immediately.</li> </ul>	<ul style="list-style-type: none"> <li>Fundamentals when giving First Aid:</li> <li>Safety first of both the rescuer and the victim.</li> <li>Do not move an injured person unless:</li> <li>victim is exposed to more danger when left where they are, e.g., during fire, chemical spill it would be impossible for EERT to aid victims in their locations, e.g., under a collapsed structure instructed or directed by the EERT.</li> <li>First AID to be conducted only by a person who has been properly trained in giving First Aid.</li> </ul>
<ul style="list-style-type: none"> <li>Call the EERT emergency medical services &amp;/or nearest hospital.</li> </ul>	<ul style="list-style-type: none"> <li>ERTL/Deputy ERTL or authorized on-site emergency communicator</li> </ul>
<ul style="list-style-type: none"> <li>Facilitate leading the EERT to the emergency site.</li> </ul>	<ul style="list-style-type: none"> <li>ERTL/Deputy ERTL to instruct:</li> <li>an ERT member on- site to meet EERT in access road/strategic location. He/she shall hold orange safety flag to get their attention &amp; lead them to site.</li> <li>Other ERT members to clear access road for smooth passage of the EERT.</li> </ul>
<ul style="list-style-type: none"> <li>If applicable, vacate site &amp; influence area at once, restrict site, suspend work until further notice.</li> </ul>	<ul style="list-style-type: none"> <li>Follow evacuation procedure</li> </ul>

Table 15. Response Procedure in Case of Fire

Procedure	Remarks
<ul style="list-style-type: none"> <li>Alert a fire situation.</li> </ul>	<ul style="list-style-type: none"> <li>Whoever detects the fire shall immediately:</li> <li>call the attention of other people in the site,</li> <li>sound the nearest alarm, and/or</li> <li>Foreman or any ERT member among the construction sub-group contacts the fire department (in this case it should be agreed on that it is alright for any ERT member in the sub-group to alert the fire department)</li> <li>report/communicate the emergency situation to the ERTL/Deputy ERTL.</li> </ul>

<ul style="list-style-type: none"> <li>• Stop all activities/operations and evacuate.</li> </ul>	<ul style="list-style-type: none"> <li>• All (non-ERT) workers/staff sub-contractors, site visitors and concerned public to move out to safe grounds following the evacuation procedure.</li> </ul>
<ul style="list-style-type: none"> <li>• Activate ERT to contain fire/control fire from spreading.</li> </ul>	<ul style="list-style-type: none"> <li>• Guided by the training they undertook, ERT members assigned to mitigate the fire shall assess their own safety situation first before attempting to control fire spread.</li> </ul>
<ul style="list-style-type: none"> <li>• Call the nearest fire &amp; police stations &amp;, if applicable, emergency medical services.</li> </ul>	<ul style="list-style-type: none"> <li>• When alerting the EERT, ERTL will give the location, cause of fire, estimated fire alarm rating, any injuries.</li> </ul>
<ul style="list-style-type: none"> <li>• Facilitate leading the EERT to the emergency site.</li> </ul>	<ul style="list-style-type: none"> <li>• ERTL/Deputy ERTL to instruct:</li> <li>• an ERT member to meet the EERT in the access road or strategic location and lead them to the site. He/she shall hold the orange safety flag to get their attention and lead them to the site.</li> <li>• some ERT members to stop traffic in, &amp; clear, the access road to facilitate passage of the EERT.</li> </ul>
<ul style="list-style-type: none"> <li>• ERT to vacate the site as soon as their safety is assessed as in danger.</li> </ul>	<ul style="list-style-type: none"> <li>• Follow appropriate evacuation procedure.</li> </ul>

## XI. APPENDIX A: ENVIRONMENTAL PROTECTION LAWS & STRATEGIES

Law or Decree	Article	Relating To	Content
Constitution of the Lao PDR People's Democratic Republic (1991, amended 2003)	17	Environment in general	"All organizations and citizens must protect the environment and natural resources: land, underground, forests, fauna, water sources and atmosphere."
Environmental Protection Law (2013) Revised version)	5	Environmental Protection Policy(s) (new)	The State promotes protection and rehabilitation of social and natural environment through dissemination of regulations and Environmental information, building of awareness and knowledge, training and conducting campaigns for individuals and organizations; both domestic and international, to recognize importance of social and natural environment in daily livelihoods and in strictly implement the Environmental protection regulations, methods and measures.
	10	Impact on Social Environment (new)	An impact on social environment is an adverse impact on human life and health, properties and livelihoods, including shelters of people, and on cultural and historical heritages.
	11	Impact on Natural Environment (new)	An impact on natural environment is an adverse impact on natural ecological fundamentals, natural resources, biodiversity, arable land, water sources, climate change and natural heritages.
	13	Environmental Protection Practices (new)	Environmental protection consists of these key following practices: (i) Environmental prevention(ii) Pollution control(iii) Toxic chemical control and waste disposal (iv) Environmental certification and permission (v) Promotion and public participation
	14	Environmental Prevention (revised)	Environmental prevention is an action of safeguarding and preventing against any natural or manmade events, which may possibly happen, are happening or already happened, leading to damages or depletions of social and natural environment
	19	Strategic Environmental Assessment (new)	<p>A strategic environmental assessment (SEA) is a process of anticipating an impact that may affect social and natural environment, while developing policies, strategic plans, and programs, including considerations towards impacts of climate change. This impact assessment shall determine methods and measures to avoid or mitigate impacts on social and natural environment in order to accomplish sustainable development goals.</p> <p>While developing the policies, strategic plans, and programs, particularly of energy and mining, agriculture and forestry, industry and commerce, public works and transportation, post-telecommunication and communication, information-culture and</p>

			tourism sector, a strategic environmental assessment shall be conducted, except a plan, which applies to uses of small-scale areas and subject to the Integrated Spatial Plans.
21	Initial Environmental Examination (new)		Initial Environment Examination (IEE) is a data examination, exploration and analysis to anticipate possible minor environmental impacts, while identifying appropriate methods and measures to prevent, avoid or mitigate environmental impacts from investment projects or activities including considerations of climate change.
22	Environmental Impact Assessment (revised)		Environment Impact Assessment (EIA) shall be a process of addressing an issue in order to anticipate impacts that may affect the environment, society and nature, derived from investment projects or activities, along with considerations related to climate change in Lao PDR, and development of reports. Apart from reporting, there shall  be development of Environmental Social Management and Monitoring Plans. Both the report and the plan shall be approved by MONRE prior to functioning investment projects and activities. The process of assessing impacts from the investment project and the activity on the environment, society and nature, shall comply with the specific regulations.
29	Pollution control (revised)		Pollution is a chemical substance, radiation, dust, smoke, including noise, light, odour, vibration and heat mixing in the air, soil, and water with concentration exceeding the National Environmental Quality Standards or National Pollution Control Standards, as the results of manmade or nature, affecting human life and health, animals, plants, other living creatures and ecosystem
32	National Pollution Control Standards (new)		The National Pollution Control Standards are identification of pollutant concentrations emitted by persons, legal entities and organizations with permission, from any sources into the air, soil or water. The Government shall identify the National Pollution Control  Standards based on the proposal from MONRE upon coordinating with line sectors.
36	Toxic Chemical Control		The natural resources and environmental sector is directly responsible in coordinating with other line sectors for inspection and endorsement of toxic chemical lists, which are under periodical  Management by the sector.
38	Waste Disposal (new)		Disposal of general wastes, particularly rubbish, shall be separation for different purposes such as recycle, reuse, reprocess as new products and elimination with methods and techniques within identified areas based on regulations.
55	Responsibilities in Environmental Rehabilitation (new)		Persons, legal entities or organization implementing investment projects or activities, which create environmental and social impacts, shall correct, improve, rehabilitate and remunerate damages within the affected areas.

		Environmental Protection Fund (revised)	The State promotes establishment of the Environmental Protection Fund used in environmental researches, prevention, correction, and rehabilitation.  Implementation and performance of the EPF shall be stipulated by the specific regulations.
Water and Resources Law 24/Dec-2007	4	Rights to use water resources	Defines rights, obligations, and procedures to gain approval for use of water resources
	18	Permission for use	Stipulates that medium and large scale uses require feasibility studies, EIAs, and mitigation plans, before permission is granted for use of the resource
	22	Principles in water resource development management	Stipulates that water resource development must be consistent with national and sector plans, must ensure preservation of the natural beauty of the resources, and must protect against harmful effects of water
Lao Forestry Law (amended 24-Dec-2007)	5	Policy on forest and forest land	The GOL has the policy to preserve, regenerate, and develop forests and forest land to help preserve the environment, water resources, biodiversity, and people's livelihoods.
	9 to 13	Forest types	Classify the various types of forests according to use, including forests for village use
	26	Preservation of water resources in forest zones	Stipulates the preservation of water resources in forest zones for those areas where waterways originate and flow, including strict management and regulations to control logging, shifting cultivation, and destructive forest uses
	70	Conversion of forestland	Stipulates that forestland can be converted to other land type if it brings a high level of benefits to the nation and to livelihoods of the people, and is included in the national development plan
	71	Types of converted forestland	Stipulates that for uses such as dam construction, the timber and forest resources to be harvested in those areas are property of the State
Wildlife and Aquatic Law (24 Dec-2007)	31	Use for Household purposes	Allows use by village households of wildlife and aquatic species in the common and general category list in particular seasons or permitted areas, using tools or equipment that do not adversely affect habitats or compromise the species population.
	32	Customary Use	Allows use of wildlife or aquatic species in the common and general category list by village households for "necessary cultural beliefs."
	52	Prohibitions	Prohibits taking of wildlife, including parts of the animals, from their habitats; tormenting wildlife and aquatics; illegal catching, hunting, trading and possession; catching aquatic and hunting in conservation zones, in breeding season, or when pregnant; devastation of habitats and feeding zones.
Land Law (2003)	6	Protection of Land and Environment	Declares that all individuals and organizations are obliged to protect the land from degradation,
	14	Changes in Land Category	Land use can be changed if it does not cause social or environmental harm and if prior approval is obtained from the authorities.

Decree on Land Lease or Concession (2009)	39	Obligation of Person or Legal Entity Who Leases or Obtains Concession	The person or legal entity that leases land or obtains a concession is obligated, among other things, "not to cause any damage to the quality of land and negative impact to the natural environment and the society."
Road Law (1999)	15	Public Road Construction	The public road contractor shall perform the work in accordance with design documents, and shall ensure quality, safety and environmental protection.
	19	Compensation for Land Acquired for Public Road Activities	If, in the construction of various kinds of public roads, it is necessary to use land that is legally owned by a private person or by an organization, the owner of the expropriated land used for public road construction shall receive reasonable compensation
Prime Ministerial Decree No. 112/PM on Environmental Impact Assessment (2010)		Stipulates the need for Environmental Impact Assessment	Stipulates rights of those affected by projects, and need for participation. Outlines the process of conducting the EIA, preparing environmental management and monitoring plans, social management and monitoring plans, issuing environmental compliance certificates, monitoring compliance with the various plans, establishing the institutional framework including grievance procedures.
Ministerial Instruction on the Process of Initial Environmental Examination of the Investment Projects and Activities. No. 8029/MONRE, 17 December 2013		The process of Initial Environmental Examination of investment projects and activities.	Instruction for implementing and extending the provisions prescribed under Article 21 of the Law on Environmental Protection (Amended) No. 29/NA, Dated 18 December 2012.
Ministerial Instruction on the Process of Environmental and Social Impact Assessment of the Investment Projects and Activities. No. 8030/MONRE, 17 December 2013		The Process of Environmental and Social Impact Assessment of the Investment Projects and Activities.	Instruction for implementing and extending the provisions prescribed under Article 22 of the Law on Environmental Protection (Amended) No. 29/NA, Dated 18 December 2012.
Ministerial Agreement on the Endorsement and Promulgation of List of Investment Projects and Activities Requiring for Conducting the Initial Environmental Examination or Environmental and Social Impact Assessment. No. 8056/MONRE, 17 December 2013	1	Screening decision on conduct of IEE or ESIA	To endorse and promulgate a list of Investment Projects and Activities which shall conduct the Initial Environmental Examination or Environmental and Social Impact Assessment (Amended).

## XII. APPENDIX B: ENVIRONMENTAL STANDARDS

Environmental standards are presented below. Where Lao PDR regulations differ from the environmental standards provided by the general and applicable Environmental, Health and Safety Guidelines of the World Bank (2007), the reference will be whichever is more stringent.

The basis for the Lao PDR standards are:

- Environmental Protection Law No. 02/99/NA, dated 3 April, 1999.
- The Agreement on National Environment Standards in Laos, No 2734, December 7, 2009. Prime Minister Office and WREA (now MONRE) in Lao PDR.
- Decree on mandate of Water Resources and Environmental Administration dated 149/PM, dated 10 May 2007.

Table 16. Surface water quality standards in Lao PDR

No	Substances	Symbol	Unit	Standard Value	Method of Measurement
1	Color, Odor and Taste	-	-	Natural level	-
2	Temperature	t	°C	Natural level	Thermometer
3	Potential of Hydrogen	pH	-	5-9	Electronic pH Meter
4	Dissolved Oxygen	DO	mg/l	6	Azide Modification
5	COD	COD	ml/l	5	Potassium permanganate
6	BOD <sub>5</sub>	BOD <sub>5</sub>	mg/l	1,5	Azide Modification at 20 degrees C, 5 days
7	Total Coliform Bacteria	Coliform Bacteria	MPN/100 ml	5000	Multiple Tube Fermentation
8	Fecal Coliform Bacteria	Fecal Coliform	MPN/ 100 ml	1000	
9	Nitrate-Nitrogen	NO <sub>3</sub> -N	mg/l	<5.0	Cadmium Reduction
10	Ammonia-Nitrogen	NH <sub>3</sub> -N	mg/l	0.2	Distillation Nesslerization
11	Phenols	C <sub>6</sub> H <sub>3</sub> -OH	mg/l	0.005	Distillation, 4-Amin anti-pyrenne
12	Copper	Cu	mg/l	0.1	Atomic Absorption Direct Aspiration
13	Nickel	Ni	mg/l	0.1	
14	Manganese	Mn	mg/l	1.0	
15	Zinc	Zn	mg/l	1.0	
16	Cadmium	Cd	mg/l	0.005	
17	Chromium, Hexavalent	Cr <sup>6+</sup>	mg/l	0.05	
18	Lead	Pb	mg/l	0.05	
19	Mercury	Hg	mg/l	0.002	Atomic Absorption Cold Vapor
20	Arsenic	As	mg/l	0.01	Atomic Absorption Direct Aspiration

21	Cyanide	CN <sup>-</sup>	mg/l	0.005	Pyridine-Barbituric
22	Alpha $\rightarrow$ Radioactive	$\alpha$	Becquere l/l	0.1	Counting machine
23	Beta $\rightarrow$ Radioactive	$\beta$	Becquere l/l	1.0	
24	Total Organochlorine	-	mg/l	0.05	Gas Chromatography
25	DDT	C <sub>14</sub> H <sub>9</sub> Cl <sub>5</sub>	mg/l	1.0	
26	Alpha -BHC	$\alpha$ BHC	mg/l	0.02	
27	Dieldrin	C <sub>12</sub> H <sub>8</sub> Cl <sub>6</sub> O	mg/l	0.1	
28	Aldrin	-	mg/l	0.1	
29	Heptachlor and Heptachlor Epoxide	-	mg/l	0.2	
30	Endrin	-	mg/l	None	

Source: The Agreement of National Standards of Environment in Laos, March 2009. Prime Minister

Office and WREA

Table 17. Soil Quality Standards for Residential and Agriculture

No.	Substances	Symbol	Unit	Standard Value	Method of Measurement
<b>I. Volatile Organic Compound</b>					Gas Chromatography or Gas Chromatography/. Mass Spectrometry (GC/MS) or other methods approved by DONRE
1	Benzene	C <sub>6</sub> H <sub>6</sub>	mg/kg	0.5	
2	CarbonTetrachloride	CCl <sub>4</sub>	mg/kg	89	
3	1,2 Dichloroethane	CH <sub>2</sub> Cl- CH <sub>2</sub> Cl	mg/kg	230	
4	1,1 Dichloroethylene	CCl <sub>2</sub> =CH <sub>2</sub>	mg/kg	1,700	
5	Cis 1,2 Dichloroethylene	CHCl=CHCl	mg/kg	57	
6	Trans-1,2- Dichloroethylene	CHCl=CHCl	mg/kg	520	
7	Dichloromethane	CH <sub>2</sub> Cl <sub>2</sub>	mg/kg	28	
8	Ethylbenzene	IC <sub>2</sub> ClC-CH <sub>3</sub>	mg/kg	630	
9	Styrene	C <sub>6</sub> H <sub>5</sub> - CH=CH <sub>2</sub>	mg/kg	8.4	
10	Tetrachloroethylene	C <sub>2</sub> Cl <sub>4</sub>	mg/kg	210	
11	Toluene	C <sub>6</sub> H <sub>5</sub> -CH <sub>3</sub>	mg/kg	6.5	
12	Trichloroethylene	Cl <sub>2</sub> C=CHCl	mg/kg	2.5	
13	1.1.1 Trichloroethane	Cl <sub>3</sub> C-CH <sub>3</sub>	mg/kg	3.5	
14	1.1.2 Trichloroethane	Cl <sub>2</sub> CH- CH <sub>2</sub> Cl	mg/kg	43	
15	Total Xylenes	(CH <sub>3</sub> -C <sub>6</sub> H <sub>4</sub> - CH <sub>3</sub> )	mg/kg	63	
<b>II. Heavy Metals</b>					Inductively Coupled Plasma-Atomic Emission Spectrometry or Inductively Coupled Plasma-Mass Spectrometry or Atomic Absorption, Gaseous Hydride or Atomic Absorption, Borohydride Reduction or other Methods Approved by DONRE
1	Arsenic	As	mg/kg	3.9	
2	Cadmium and its compounds	Cd	mg/kg	37	

3	Hexavalent Chromium	Cr <sup>+6</sup>	mg/kg	300	Coprecipitation or Colorimetric or Chelation/ Extraction or other Methods Approved by DONRE
4	Lead	Pb	mg/kg	400	Inductively Coupled Plasma-Atomic Emission Spectrometry or Inductively Coupled Plasma-Mass Spectrometry or Atomic Absorption, Direct Aspiration or Atomic Absorption, Furnace Techniques or other Methods Approved by DONRE
5	Manganese and its compounds	Mn	mg/kg	1,800	
6	Mercury and its compounds	Hg	mg/kg	23	
7	Nickel, soluble salts	Ni	mg/kg	1,600	Inductively Coupled Plasma-Atomic Emission Spectrometry or Inductively Coupled Plasma-Mass Spectrometry or Atomic Absorption, Direct Aspiration or Atomic Absorption, Furnace Techniques or other Methods Approved by DONRE
8	Selenium	Se	mg/kg	390	
III. Pesticides					
1	Atrazine	C <sub>8</sub> H <sub>14</sub> ClN <sub>5</sub>	mg/kg	22	Gas Chromatography or other Methods Approved by DONRE
2	Chlordane	-	mg/kg	16	Gas Chromatography/ Mass Spectrometry (GC/MS) or other Methods Approved by DONRE
3	2,4 D	-	mg/kg	690	Gas Chromatography or High Performance Liquid Chromatography/ Thermal Extraction/ Gas Chromatography/Mass Spectrometry (TE/GC/MS) or other Methods Approved by DONRE
4	DDT	DDT	mg/kg	17	Gas Chromatography or Gas Chromatography/ Mass Spectrometry (GC/MS) or other Methods Approved by DONRE
5	Dieldrin	C <sub>12</sub> H <sub>8</sub> Cl <sub>6</sub> O	mg/kg	0.3	
6	Heptachlor	Cl <sub>7</sub>	mg/kg	1.1	
7	Heptachlor Epoxide	-	mg/kg	0.5	
8	Lindane	-	mg/kg	4.4	
IV. Others					
1	Benzo(a)pyrene	-	mg/kg	0.6	Gas Chromatography/ Mass Spectrometry (GC/MS) or Thermal Extraction Gas Chromatography/ Mass Spectrometry (TE/GC/MS) Chromatography/ Fourier Transform Infrared (GC/FT-IR) Spectrometry or other Methods Approved by DONRE
2	Cyanide and its compounds	CN <sup>-</sup>	mg/kg	11	Total and Amenable Cyanide: Distillation, or Total Amenable Cyanide (Automated Colorimetric, with off-line Distillation), or Cyanide Extraction Procedure for Solids and Oils or other Methods Approved by DONRE
3	PCBs	-	mg/kg	2.2	Gas Chromatography or other Methods Approved by DONRE
4	Vinyl Chloride		mg/kg	1.5	Gas Chromatography or Gas

					Chromatography/ Mass Spectrometry (GC/MS) or other Methods Approved by DONRE
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Table 18. Ambient Air Quality Standard

Parameters	Symbol	Average Time Unit: mg/m3					Method of Measurement
		Hours			1 month	1 year	
		1 hr	8 hr	24 hr			
Carbon monoxide	CO	30	10.26	-	-	-	Non dispersive infrared detection
Nitrogen dioxide	NO2	0.32	-	-	-	-	Chemilumine scene method
Sulphur dioxide	SO2	0.78	-	0.30	-	0.10	UV Fluorescence (1hr, 24hr, 1yr) or Pararosaniline (1hr,4hr)
Total Suspended Particulate	TSP	-	-	0.33	-	0.10	Gravimetric
Particulate Matterless than 10 microns	PM-10	-	-	0.12	-	0.05	Gravimetric or Beta Ray or Taper Element Oscillating Microbalance or Dichotomous
Ozone	O3	0.20	-	-	-	-	Chemiluminescence or UV Absorption Phoptometry
Lead	Pb	-	-	-	1.5	-	Atomic Absorption Spectrometer

Table 19. Noise Standard

Standards	Method of Measurement
Maximum Sound Level (L <sub>max</sub> ) should not exceed 115 dB(A)	Equivalent Sound Level (L <sub>eq</sub> ) from Fluctuating Noise
L <sub>eq</sub> 24 hour not exceeding 70 dB(A)	Equivalent Sound Level (L <sub>eq</sub> ) from Steady Noise

Table 20. Ambient Noise Standard, Lao PDR

Type of Area	Standard Value in dB(A)		
	6.00-18.00	18.00-22.00	22.00-6.00
Quiet areas: hospitals, libraries, treatment places, kindergarten and schools	50	45	40
Residential areas: hotels and houses	55	55	45
Commercial and service areas	70	70	50
Small industrial factories located in residential areas	70	70	50

### **XIII. APPENDIX C: PROJECT LEVEL GRIEVANCE REDRESS MECHANISM**

#### **Purpose of the Mechanism**

The grievance redress mechanism (or, the mechanism) is meant for persons seeking satisfactory resolution to their complaints on the environmental performance of the Subproject. The mechanism will ensure that: i) the basic rights and interests of every person affected by poor environmental performance of a Subproject are protected; and ii) their concerns arising from the poor environmental performance of a Subproject during the conduct of pre-construction, construction and operation activities are effectively and timely addressed.

#### **Access to the Mechanism**

Any person who has complaint regarding the environmental performance of the Subproject during pre-construction, construction and operation phases shall have access to the mechanism free of charge. The Project Management Unit (PMU), through its Grievance Point Person (GPP), shall ensure that the mechanism, including names and contact details of responsible persons in the affected villages, PMU, UDAA and DPWT, is publicly disclosed, and posted in the offices of the affected villages and in strategic places of the Project's area of influence so that the mechanism is accessible to all segments of the affected villages.

#### **The Grievance Redress Mechanism**

Grievances raised on environmental impacts are critical to the health and wellness of APs. Hence, prompt responses/actions are critical to avoid prolonging the misery of affected persons (APs). Prior to the public disclosure of the mechanism, the PMU shall have engaged/designated a Grievance Point Person (GPP) to handle environmental grievances lodged prior to construction, during construction and during operation. Sufficient support system, i.e., communication facilities, recording, and reporting system and funds, among others, shall have been set up to sustain the effective implementation of the mechanism. During operation, the GPP will liaise with the Kaysone Phomvihane UDAA and the DPWT (the operators) for the management of the mechanism until loan closure.

Informally, an AP can approach or call the village heads, Contractor, the PMU, UDAA or DPWT to raise his/her complaints/concerns. Complaints may be acted on immediately by the responsible party. However, it shall be made a policy that all informally lodged and acted on complaints shall have to be registered with the PMU as soon as possible for record purposes. If informally lodged complaint is not acted on promptly, or if AP is not satisfied with the resolution undertaken, he/she can then avail of the formal mechanism, as follows:

##### **Step 1: Lodging complaint**

It is possible that APs lodge complaints to any of the following: i) village officers; ii) Contractor, during construction; iii) DPWT or UDAA; iv) PMU, through its GPP, or v) third parties, e.g., NGO, religious groups. The AP may also lodge complaint through ADB's accountability mechanism<sup>2</sup>.

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<sup>2</sup> ADB's accountability mechanism provides a forum where people adversely affected by ADB-assisted projects can voice and seek solutions to their problems and report alleged noncompliance of ADB's operational policies and procedures. It consists of two separate but complementary functions: problem solving and compliance review function. Complaints must be in writing and addressed to the Complaints Receiving Officer. More information can be found at: (<http://www.adb.org/site/accountability-mechanism/main>).

## Step 2: Grievance Documentation/Registration

The GPP as appointed by the PMU will be responsible for documenting and registering complaints received during construction. In operation the responsibility will be of the DPWT and UDAA depending on the asset. Other potential complaint recipients shall make sure that the received complaints are directed to, documented by, and registered with, the GPP as soon as possible. The GPP shall make sure that documented/registered complaints are acknowledged, duly referenced.

## Step 3: Screening of complaint

The AP shall immediately be informed if the grievance is within, or outside, the purview of the mechanism. If it is outside the scope, AP shall be directed to the proper institution and/or proper mechanism for the complaint.

## Step 4: Reviews, Investigation and Discussion

If it is covered by the mechanism, the AP shall be informed/reminded of the expected action timelines as set forth in the established mechanism. If both the AP and the other party, Contractor or PMU, are available, the complaint shall be immediately reviewed, investigated and discussed. If not, the review, investigation and discussion should immediately take place on the next day. The discussion will center on the measures to implement based on the review and investigation.

## Step 5: Action/Resolution

If complaint is minor, the Contractor/DPWT/UDAA shall immediately act on the complaint. Minor complaint will be those impacts/issues that would not require thorough review and investigation and will be easy to resolve. If impact/issue will need thorough review and investigation, more work to be done, and/or supplies/parts to be procured, to resolve, the Contractor/DPWT/UDAA shall immediately provide the most suitable interim measure to reduce the magnitude of the impact; and to start work on the final measure not later than 5 days from the day discussion meeting is held.

## Step 6: Acceptance of Resolution

If, according to the AP, the impact has been resolved satisfactorily, the GPP shall obtain a written confirmation of satisfaction from the AP, which will form part of the grievance documentation.

## Step 7: Monitoring and Evaluation

For at least a week after closure of grievance (that is, when action implemented has been satisfactorily confirmed in writing by the complainant), the GPP shall monitor the effectiveness of the resolution. Monitoring and evaluation shall be properly documented and included in the Project Environmental Monitoring Report of the PMU.


## Step 8: Lodging of Appeal by Dissatisfied APs

In the event the issue/impact persists, AP can lodge an appeal to his/her village head. The village head shall immediately: (i) record the appeal; (ii) contact the GPP, Contractor/DPWT/UDAA and provide them with copy of the appeal; and (iii) call for a meeting to review the history of the grievance and discuss the appeal and quick resolution of the issue. If the agreed on action/measure has not started within 5 days from the time of formal lodging of the appeal, or if the issue still persists despite the second action, AP can seek assistance from village head to raise the grievance to the District Court. It is highly

unlikely that grievance redress process will reach the level wherein APs need to go through the “appeal” stage.

#### XIV. APPENDIX D: ECC EXTENSION FOR IEE

Copy of Environmental Compliance Certificate for IEE and English translation, 2021:



**ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ**  
**ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນະຖາວອນ**

ພະແນກຊັບພະຍາກອນທຳມະຊາດ ແລະ ສິ່ງແວດລ້ອມແຂວງ ເລກທີ 1140-ວ  
ສະຫວັນນະເຂດ, ລົງວັນທີ 06 AUG. 2020



**ໃບຢັ້ງຢືນສິ່ງແວດລ້ອມ**

- ອີງຕາມ ກົດໝາຍ ວ່າດ້ວຍການປົກປັກຮັກສາສິ່ງແວດລ້ອມສະບັບປັບປຸງ ເລກທີ 29/ສພຊ, ລົງວັນທີ 18/12/2012;
- ອີງຕາມ ຄຳແນະນຳ ຂະບວນການສຶກສາເບື້ອງຕົ້ນ ກ່ຽວກັບ ຜົນກະທົບຕໍ່ສິ່ງແວດລ້ອມ ຈາກໂຄງການລົງທຶນ ແລະ ກິດຈະການຕ່າງໆ ສະບັບເລກທີ 8029/ກຊສ, ລົງວັນທີ 17/12/2013;
- ອີງຕາມ ຂໍ້ຕົກລົງວ່າດ້ວຍ ການຈັດຕັ້ງ ແລະ ການເຄື່ອນໄຫວ ພະແນກຊັບພະຍາກອນທຳມະຊາດ ແລະ ສິ່ງແວດລ້ອມແຂວງ/ນະຄອນຫຼວງ ສະບັບເລກທີ 3171/ກຊສ ລົງວັນທີ 1 ສິງຫາ 2017;
- ອີງໃສ່ ໜັງສືສະເໜີ ຂໍຕໍ່ໃບຢັ້ງຢືນລວມສິ່ງແວດລ້ອມ(IEE) ໂຄງການພັດທະນາຕົວເມືອງ ຕາມແລວທາງ ເສດຖະກິດ ຕາເວັນອອກ-ຕາເວັນຕົກ ອະນຸພາກພື້ນແມ່ນ້ຳຂອງ ສະບັບເລກທີ 0732/ຍທຂ.ສຂ, ລົງວັນທີ 12 ພຶດສະພາ 2020 ແລະ ແຜນຄຸ້ມຄອງສິ່ງແວດລ້ອມຂອງໂຄງການ.

**ພະແນກຊັບພະຍາກອນທຳມະຊາດ ແລະ ສິ່ງແວດລ້ອມ ຕົກລົງ:**

1. ຮັບຮອງເອົາ ແຜນຄຸ້ມຄອງສິ່ງແວດລ້ອມຂອງໂຄງການພັດທະນາຕົວເມືອງ ຕາມແລວທາງເສດຖະກິດ ຕາເວັນອອກ-ຕາເວັນຕົກ ອະນຸພາກພື້ນແມ່ນ້ຳຂອງ ພະແນກໂຍທາທິການ ແລະ ຂົນສົ່ງແຂວງ;
2. ເຈົ້າຂອງໂຄງການ ຕ້ອງປະຕິບັດຢ່າງເຂັ້ມງວດ ບັນດາເງື່ອນໄຂ ທີ່ໄດ້ກຳນົດໄວ້ໃນ ເອກະສານຊ້ອນທ້າຍຂອງ ໃບຢັ້ງຢືນກ່ຽວກັບສິ່ງແວດລ້ອມ ສະບັບນີ້;
3. ໃບຢັ້ງຢືນ ກ່ຽວກັບ ສິ່ງແວດລ້ອມ ສະບັບນີ້ ມີຜົນສັກສິດ ນັບຕັ້ງແຕ່ວັນລົງລາຍເຊັນເປັນຕົ້ນໄປ ແລະ ໃຫ້ເຈົ້າຂອງໂຄງການ ຕໍ່ອາຍຸຂອງໃບຢັ້ງຢືນ ທຸກໆ 3 ປີ ເພື່ອຮັບຮອງເອົາແຜນການຄຸ້ມຄອງ ແລະ ຕິດຕາມກວດກາສິ່ງແວດລ້ອມ ສັງຄົມ ແລະ ທຳມະຊາດ ຊຶ່ງຕ້ອງໄດ້ປັບປຸງ ຈົນຮອດໄລຍະເວລາສິ້ນສຸດອາຍຸສຳປະທານໂຄງການ.

**ຫົວໜ້າພະແນກ**  
**ຊັບພະຍາກອນທຳມະຊາດ ແລະ ສິ່ງແວດລ້ອມແຂວງ**

**ພູທອນ ຍອດບຸນເຮືອງ**



Lao People's Democratic Republic  
Peace Independence Democracy Unity Prosperity

Department of Natural Resource and Environment

Ref. No. 1140/PoNRE SVK

Savannakhet, Date: 06 August 2020

**Environmental Compliance Certification**


- Pursuant to the Law on Environment Protection, Ref. No. 29/NA. Date 18 December 2012
- Pursuant to instruction on IEE of Investment project and other activities, Ref. No. 8029/MNE. Date 17 December 2013.
- Pursuant to Decree on organization and responsibility of Provincial of Natural Resource and Environment (PoNRE), Savannakhet Province, Ref. No. 3171/MNE. Date 01 August 2017.
- Pursuant to application letter on IEE extension of GMS-EWEC Towns Development Project No. 0732/SVK.DPWT, date 12 May 2020 with updated EMP

**Provincial of Natural Resource and Environment agreed that:**

1. Agree to provide Environmental Compliance Certification extension for Initial Environment Examination of GMS-EWEC TDP, Savannakhet Province.
2. The implementing agency should be strictly followed the requirements in the annex of this ECC
3. This certification can be using only 3 years from the date of signature.

Head Provincial of Natural Resource and Environment

Savannakhet Province



**ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ**  
**ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນະຖາວອນ**

ພະແນກຊັບພະຍາກອນທຳມະຊາດ ແລະ ສິ່ງແວດລ້ອມແຂວງ

206 - 21  
ເລກທີ...../ພຊສ.ສຂ  
ສະຫວັນນະເຂດ, ລົງວັນທີ. 1.2.FEB 2021


**ໃບຢັ້ງຢືນສິ່ງແວດລ້ອມ**


- ອີງຕາມ ກົດໝາຍ ວ່າດ້ວຍການປົກປັກຮັກສາສິ່ງແວດລ້ອມສະບັບປັບປຸງ ເລກທີ 29/ສພຊ, ລົງວັນທີ 18/12/2012;
- ອີງຕາມ ຄຳແນະນຳ ຂະບວນການສຶກສາເບື້ອງຕົ້ນ ກ່ຽວກັບ ຜົນກະທົບຕໍ່ສິ່ງແວດລ້ອມ ຈາກໂຄງການລົງທຶນ ແລະ ກິດຈະການຕ່າງໆ ສະບັບເລກທີ 8029/ກຊສ, ລົງວັນທີ 17/12/2013;
- ອີງຕາມ ຂໍ້ຕົກລົງວ່າດ້ວຍ ການຈັດຕັ້ງ ແລະ ການເຄື່ອນໄຫວ ພະແນກຊັບພະຍາກອນທຳມະຊາດ ແລະ ສິ່ງແວດລ້ອມແຂວງ/ນະຄອນຫຼວງ ສະບັບເລກທີ 4983/ກຊສ ລົງວັນທີ 03 ພະຈິກ 2020;
- ອີງໃສ່ ໜັງສືສະເໜີ ແລະ ລາຍງານ ຂອງຂະແໜງສິ່ງແວດລ້ອມ ແລະ ການປ່ຽນແປງດິນຟ້າອາກາດ ວ່າດ້ວຍ ການສະເໜີຂໍ້ຕໍ່ໃບຢັ້ງຢືນສິ່ງແວດລ້ອມ ຂອງໂຄງການເສັ້ນທາງເຈົ້າຟ້າງຸ່ມ (ໂຄງການພັດທະນາຕົວເມືອງຕາມ ແລວທາງເສດຖະກິດ ຕາເວັນອອກ-ຕາເວັນຕົກ ອະນຸພາກພື້ນແມ່ນ້ຳຂອງ ພະແນກໂຍທາທິການ ແລະ ຂົນສົ່ງ); ນະຄອນ ໄກສອນ ພົມວິຫານ ແຂວງ ສະຫວັນນະເຂດ ສະບັບເລກທີ 030/ພຊສ.ຂສກ ລົງວັນທີ 11/02/2021.

**ພະແນກຊັບພະຍາກອນທຳມະຊາດ ແລະ ສິ່ງແວດລ້ອມ ຕົກລົງ:**

1. ຮັບຮອງເອົາແຜນຄຸ້ມຄອງ ແລະ ຫຼຸດຜ່ອນຜົນກະທົບຕໍ່ສິ່ງແວດລ້ອມ ຂອງໂຄງການ (ເສັ້ນທາງເຈົ້າຟ້າງຸ່ມ ນະຄອນ ໄກສອນ ພົມວິຫານ ແຂວງ ສະຫວັນນະເຂດ (ໂຄງການພັດທະນາຕົວເມືອງຕາມແລວທາງເສດຖະກິດ ຕາເວັນອອກ-ຕາເວັນຕົກ ອະນຸພາກພື້ນແມ່ນ້ຳຂອງ ພະແນກໂຍທາທິການ ແລະ ຂົນສົ່ງ);
2. ເຈົ້າຂອງໂຄງການ ຕ້ອງປະຕິບັດຢ່າງເຂັ້ມງວດ ບັນດາເງື່ອນໄຂ ທີ່ໄດ້ກຳນົດໄວ້ໃນ ເອກະສານຊ້ອນທ້າຍຂອງ ໃບຢັ້ງຢືນກ່ຽວກັບສິ່ງແວດລ້ອມ ສະບັບນີ້;
3. ໃບຢັ້ງຢືນ ກ່ຽວກັບ ສິ່ງແວດລ້ອມ ສະບັບນີ້ ມີຜົນສັກສິດ ນັບຕັ້ງແຕ່ວັນລົງລາຍເຊັນເປັນຕົ້ນໄປ ແລະ ໃຫ້ເຈົ້າຂອງ ໂຄງການ ຕໍ່ອາຍຸຂອງໃບຢັ້ງຢືນ ທຸກໆ 3 ປີ ເພື່ອຮັບຮອງເອົາແຜນການຄຸ້ມຄອງ ແລະ ຫຼຸດຜ່ອນຜົນກະທົບຕໍ່ສິ່ງແວດລ້ອມ ຊຶ່ງຕ້ອງໄດ້ປັບປຸງ ຈົນຮອດໄລຍະເວລາສິ້ນສຸດອາຍຸສຳປະທານໂຄງການ.

**ຫົວໜ້າພະແນກ**  
**ຊັບພະຍາກອນທຳມະຊາດ ແລະ ສິ່ງແວດລ້ອມແຂວງ**





**ພູທອນ ຍອດບຸນເວືອງ**



Lao People's Democratic Republic

Peace Independence Democracy Unity Prosperity

Department of Natural Resource and Environment

Ref. No. 206/PoNRE.SVK

Savannakhet, Date: 12 Feb 2021

### **Environmental Certification**

- Pursuant to the Law on Environment Protection, Ref. No. 29/NA. Date 18 December 2012
- Pursuant to implementation of Initiative Environment Examination from Investment project and other activities, Ref. No. 8029/MoNRE. Date 17 December 2013.
- Pursuant to Decree on organization and responsibility of Department of Natural Resource and Environment, Savannakhet Province, Ref. No. 4983/MoNRE. Date 03 Nov 2020.
- Refer to Application letter and report of environment and climate change section for extension Environmental Compliance Certification of the Fa Ngum Road Subproject (GMS-EWEC, Town Development Project, Savannakhet Province of Public Work and Transport Department) in Kaysonephomvihane City, Savannakhet Province Ref No. 030/PoNRE date 11 February 2021.

### **Department of Natural Resource and Environment agreed that:**

1. Accepted and endorsed the Environmental Management and Mitigation Plans of updated Fa Ngum Road subproject in Kaysonephomvihane City, Savannakhet Province. (GMS-EWEC, Town Development Project, Savannakhet Province of Public Work and Transport Department).
2. The project owner must follow to all the articles that mentioned in annex of this Environmental Compliance Certification.
3. This certification is valid only 3 years from the date of signature.

Director of Department of Natural Resource and Environment

Savannakhet Province

Phouthone Yothbounheang

## XV. APPENDIX E: DRAFT FORMAT FOR ENVIRONMENTAL MONITORING REPORT

### 1. Introduction and Project Overview

<b>Project Number and Title:</b>		
<b>Safeguards Category</b>	Environment	
	Indigenous Peoples	
	Involuntary Resettlement	
<b>Reporting period:</b>		
<b>Last report date:</b>		
<b>Key sub-project activities since last report:</b>	<p style="color: red;">This section can include, among others, the following:</p> <ul style="list-style-type: none"> <li>Activities of Proponent</li> <li>Progress of Work (% physical completion)</li> <li>Changes of Surrounding Environment</li> <li>Status of Permits / Consents</li> </ul>	
<b>Report prepared by:</b>		

### 2. Environmental Performance Monitoring

#### a. Summary of Compliance with EMAP Requirements (Environmental Performance)

EMAP Requirements	Compliance Status (Yes, No, Partial)	Comment or Reasons for Non-Compliance	Issues for Further Action
Use environmental impact as main heading and EMAP as listing (see example below)	Use EMoP list as basis for rating/evaluating compliance (see example below)		
Rise of employment opportunities: <ul style="list-style-type: none"> <li>Job openings of the project should give priority to local communities.</li> <li>Recruitment of local laborers should be stipulated in the contract for construction</li> </ul>	<ul style="list-style-type: none"> <li>Field inspections and interviews with communities - DONE</li> <li>Note each complaint case in the field – 3 COMPLAINTS RECEIVED</li> <li>Set up grievance centre and report as part of monitoring action plan – NOT DONE</li> </ul>		

#### b. Issues for Further Action

Issue	Required Action	Responsibility and Timing	Resolution
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Old Issues from Previous Reports			
List of EMoP measures or activities not completed (last column of previous table)			
New Issues from This Report			

c. Other activities

- Other issues not covered by EMAP/EMoP
- Environmental monitoring as required by GOI (e.g., air quality, water sampling)

### 3. Involuntary Resettlement Performance Monitoring

a. Summary of Compliance with RP Requirements

RP Requirements	Compliance status Yes/No/Partial	Comment or Reasons for Compliance, Partial Compliance/Non- Compliance	Issues for Further Action <sup>3</sup>
Establishment of personnel in PMU/PIU			
Public consultation and socialization process		Provide information on: <ul style="list-style-type: none"> <li>• Public consultation, participation activities carried out</li> <li>• Inclusive dates of these activities</li> </ul> To be elaborated on in Item 5	
Land area to be acquired is identified and finalised			
Land acquisition completed			
Establishment of Resettlement Site(s)		Please state: <ul style="list-style-type: none"> <li>• Number of AHs to be relocated as per agreed RP</li> <li>• Number of AHs already relocated</li> <li>• Number of houses built</li> </ul>	

<sup>3</sup> To be elaborated further in table 3.b (Issues for Further Action)

		<ul style="list-style-type: none"> <li>Status of installation of community facilities to be provided as per agreed RP</li> </ul>	
Compensation payments for affected assets is completed		Please state: <ul style="list-style-type: none"> <li>Total Number of Eligible AHs and APs (as per agreed RP)</li> <li>Number of AHs and APs compensated as of this monitoring period</li> <li>Total Budget allocation as per agreed RP</li> <li>Total budget disbursed to AHs as of this monitoring period</li> </ul>	
Transport assistance for relocating affected households		As above	
Additional assistance to vulnerable affected household		Please state: <ul style="list-style-type: none"> <li>Total Number of vulnerable AHs and APs (as per agreed RP)</li> <li>Agreed forms of assistance as per RP</li> <li>Number of AHs and APs assisted as of this monitoring period</li> </ul>	
Income Restoration Program		Please state progress per income restoration feature/activity and actual period of implementation	
Temporary impacts have been addressed (affected properties restored to at least pre-project conditions)		Please state: <ul style="list-style-type: none"> <li>Total Number of AHs affected by temporary impacts as per agreed RP</li> <li>Actual Number of AHs and total area affected by temporary impacts (if this differs from the projected number, such as in cases of unforeseen project impacts)</li> <li>Status of restoring affected property</li> </ul>	
Capacity building activities			

b. Issues for Further Action

Issue	Required Action	Responsibility and Timing	Resolution
Old Issues from Previous Reports			

List of RP activities not completed (last column of previous table)			
<b>New Issues from This Report</b>			

#### 4. Occupational, Health and Safety (OHS) Performance Monitoring

##### a. OHS for worker

Issue	Required Action	Responsibility and Timing	Resolution
<b>Old Issues from Previous Reports</b>			
<b>New Issues from This Report</b>			

##### b. Public Safety

Issue	Required Action	Responsibility and Timing	Resolution
<b>Old Issues from Previous Reports</b>			
<b>New Issues from This Report</b>			

#### 5. Information Disclosure and Socialization including Capability Building

- Field Visits (sites visited, dates, persons met)

- Public Consultations and meetings (Date; time; location; agenda; number of participants disaggregated by sex and ethnic group, not including project staff; Issues raised by participants and how these were addressed by the project team)
- Training (Nature of training, number of participants disaggregated by gender and ethnicity, date, location, etc.)
- Press/Media Releases
- Material development/production (e.g., brochure, leaflet, posters)

## 6. Grievance Redress Mechanism

### Summary:

- Number of new grievances, if any, since last monitoring period: \_\_\_\_\_
- Number of grievances resolved: \_\_\_\_\_
- Number of outstanding grievances: \_\_\_\_\_

Type of Grievance	Details (Date, person, address, contact details, etc.)	Required Action, Responsibility and Timing	Resolution
<b>Old Issues from Previous Reports</b>			
<b>New Issues from This Report</b>			

## 7. Conclusion

- Important results from the implementation of EMAP/EMoP and RP monitoring
- Recommendations to improve EMAP/EMoP and RP management, implementation, and monitoring

## 8. Attachments

- Consents / permits
- Monitoring data (water quality, air quality, etc.)
- Photographs
- Maps