



LAO PEOPLE'S DEMOCRATIC REPUBLIC
PEACE INDEPENDENCE DEMOCRACY UNITY PROSPERITY
MINISTRY OF PUBLIC WORKS AND TRANSPORT
DEPARTMENT OF ROADS

◀ ສາວລາວ ບຸກ ສາວລາວ ▶

Climate Resilient Improvement of National Road 13 South Project
Package 3
Km 190 – Km 268, Length 78 Km

Environmental and Social Management Plan
(ESMP)

(Volume I – Main Text)

(Draft)

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July 2020

LTEC CODE: SD-283-19

EXECUTIVE SUMMARY

1. The Government of Lao PDR (GOL) has prepared this Environmental and Social Management Plan (ESMP) for Package 3 of the Climate Resilient Improvement of National Road 13 South Project (the proposed project), in order to address the adverse environmental and social impacts that may be caused by the proposed project.

2. The GOL through the Ministry of Public Works and Transport (MPWT) and with assistance from the Asian Infrastructure Investment Bank (AIIB), World Bank (WB) and European Investment Bank (EIB) is planning to implement a program namely Climate Resilient Improvement and Maintenance of National Road 13 South (NR-13S) from kilometer (km) 71 to km 346. The Project Road will be divided into four improvement and maintenance contracts (or packages) with specific financing by WB, EIB, and AIIB while the Government of Lao's Road Management Fund (RMF) will provide the counterpart funds. The AIIB is considering the financing of Package 3 from km 190 to km 268 of the NR-13S under the proposed project.

Key Objective of ESMP

3. The key aim of this document is to provide details of the environmental and social commitments, management and monitoring requirements that will need to be carried out by the MPWT and its contractors throughout the life of the project in order to achieve the following objectives:

1. Strive to prevent or mitigate potentially adverse environmental or social impacts that may result from Project implementation;
2. To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize, and, where residual impacts remain, compensate/offset for risks and impacts to workers, affected communities, and the environment;
3. Maximize beneficial impacts and minimize unavoidable negative impacts to an acceptable level for the receiving environment and communities;
4. Meet environmental and social commitments and measures as well as relevant policies and environmental management systems; and
5. Comply with national legislation as well as AIIB Environmental and Social Policy and Standards.

Project Description

4. The road improvement works under the proposed project will include pavement with asphalt concrete of the 12m wide two-lane road and climate resilient improvement of vulnerable road sections, e.g., construction of additional and larger culverts with appropriate inlets and outlets, side ditches and canals to drain water, and slope protection. The design will ensure that water can flow to the natural reservoirs, minimizing the impact to the road and adjacent surroundings. The road profile will be raised in flood-prone sections.

5. The proposed project will improve many bridges and culverts to allow traffic flow and ensure road safety. The culverts will be installed and/or added to appropriate flooding sections. However, the associated grading activities and cutting leading to the removal of land cover, natural vegetation and landscapes will likely alter flow rate and pathways upstream by introducing the possible widening of wetlands and other natural waterways.

6. The proposed Project Road is located in a flat and low-lying zone (called Mekong Plain) between the Mekong River and the mountains of the road corridor. The existing road is a 2-lane road, formation width of 9 meters in non-community area and 10 meters in community area, except the section through Paksan town (provincial capital of Borikhamxay (BKX) province) and Thakhek town (provincial capital of Khammouane (KM) province) where the existing road is wider than 10 meters.

Proposed Standard Design

7. The proposed design of the road is based on the terms of reference (TOR) and Road Design Manual of the Ministry of Public Work and Transport officially issued in August 2018. The Project Road will be split into three sub-sections with different road classes as the following:

- From km 71 to km 145, Class II in Level terrain;
- From km 150 to km 346, Class III in Level terrain; and
- For the sections through Paksan Town and Thakhek Town, shall be classified as urban and semi-urban road.

Analysis of Associated Activities

8. The salient information on the other packages of the NR-13S project being financed by WB and EIB is provided below. These packages (or sections) are considered as Associated Facilities of the proposed project, in accordance with the AIIB Environment and Social Policy (ESP).

Section	Financing	Project Activities	Environmental and Social Documents
Section 1 km71-km111	WB	<ul style="list-style-type: none"> • Expansion from 9m to 12m for a section from km 71+km111; • Raising at 6 sections; • Improvement of 4 box culverts • Improvement of 4 bridges and construction of 2 new bridges • Construction of ten bus stops 	<ul style="list-style-type: none"> • ESMP and Resettlement Action Plan (RAP) have been approved and published on MPWT website; • Pre-bid meeting has been conducted in May 2020.
Section 2 km111-km190	EIB	<ul style="list-style-type: none"> • Overlay existing pavement at 9m; • Expansion from 9m to 12m for 5 sections; • Raising at two sections; • Improvement of 6 box culverts 	<ul style="list-style-type: none"> • Final ESMP and RAP have been submitted for official clearance; • Ethnic Groups Engagement Plan

Section	Financing	Project Activities	Environmental and Social Documents
		<ul style="list-style-type: none"> • Improvement of 9 bridges • Construction of 44 bus stops 	(EGEP) has been drafted; <ul style="list-style-type: none"> • Bidding documents have been approved; • Pre-bid meeting is expected in end of June May 2020.
Section 4 km268-km346	EIB	<ul style="list-style-type: none"> • Overlay existing pavement at 9m; • Expansion from 9m to 12m for 12 sections; • Raising at 2 sections; • Improvement of 18 box culverts • Improvement of 5 bridge; • Construction of 36 bus stops 	<ul style="list-style-type: none"> • Final ESMP and RAP have been submitted for official clearance; • EGEP has been drafted; • Final bidding documents have been submitted.

Overall Impacts

9. The overall impacts of the proposed Project will be positive in improving road accessibility, road safety, flooding resilience, and well-being of the local people. Spot improvements of critical sections aim to improve the road’s climate resilience that include elevating flood prone road sections, paving road sections with steep gradients and sections passing through large communities, drainage improvement/construction, and slope improvement/ stabilization. The Project will also provide significant capacity building through on-the-job training, the introduction and implementation of Output- and Performance-Based Road Contract (OPBRC) on road improvement, and the environmental and social planning and management that goes along with the Project activities.

10. Negative environmental impacts during the construction phase are likely to include noise, dust and air emissions, disposal of solid and hazardous wastes, water contamination, siltation of water bodies, blockage of drainage, soil erosion and contamination, and removal of vegetation, caused by various construction activities, batching and asphalt plants, contraction camps, heavy machinery use, and site management issues related to influx of workers (e.g. hygiene and sanitation, community health and safety), traffic disruption and traffic safety during construction, and occupational health and safety (OHS) risks for the construction workers. Similarly, air and noise emissions due to increased traffic flows, waste generation from road users, traffic safety, and OHS risks for workers are the potential environmental impacts during the O&M phase. Pollution may also be induced by road incidents or accidents during both construction and O&M phases. Given that the Project is going through the catchment of Mekong River and several of its first order tributaries, special attention will be paid to impacts on surface water during both construction and O&M phases. These impacts are likely to be site-specific and limited to the Project areas and surroundings.

11. Adverse social risks and impacts during the construction phase include temporary business disruption due to land closure or restricted access, temporary restriction of access to houses, shops, temples and graves, temporary disruption of the water and electricity supplies, impacts on schools and healthcare facilities, in terms of noise and vibration, safety and access, potential labor influx and the conduct of road workers during construction, and health and safety issues for the communities along the road. The negative social impacts and risks during the operation and maintenance phase are mostly associated with noise and road accidents. The ESMP, mentioned earlier, includes measures to address the above impacts, including a chance finds procedure for archaeological, historical and sacred sites. In addition, to address any impacts on the ethnic minorities that exist in the area, the EGEP proposes appropriate mitigation measures to be implemented during the construction as well as O&M phases.

Grievance Redress Mechanism

12. A Grievance Redress Mechanism (GRM) will be established to help record, assess, and resolve grievances and complaints during the implementation of the proposed project.

Community Engagement and Consultation

13. The consultation on the draft Environmental and Social Management Framework (ESMF), Resettlement Policy Framework (RPF), and Ethnic Groups Engagement Framework (EGEF) were conducted in BKX province during 15-19 August 2019 and in KM province during 20-21 August 2019. This was to inform the local communities, public, key agencies, and local civil society organizations about the objectives and scope of the NR-13S Project, potential impacts (both positive and adverse) as well as the proposed mitigation measures to be incorporated into the ESMPs and the Alignment Sheets for the project. Further consultations will be carried out with the stakeholders to disclose the draft versions of ESMP, RP and EGP, during RP implementation, and also during the project implementation.

ESMP Implementation Budget

14. The ESMP implementation cost will be part of the Project cost. It comprises (a) cost for implementation of the mitigation measures during road rehabilitation and maintenance which will be part of the Project construction cost; (b) cost of land acquisition and/or compensation of assets or relocations; (c) cost of unexploded Ordinance (UXO) clearance (if required); (d) cost for monitoring, reporting, and training; and (e) cost for consultation with ethnic group and implementation of EGEP. At present, it has been agreed that the cost for (a) and (c) will be incorporated into the works contract cost while the cost for (b) will be part of GOL cost (RMF). Costs for (d) and (e) have been allocated as part of ESMF implementation to be carried out by Public Works and Transport Research Institute (PTRI) of Environmental Research and Disaster Prevention Division (EDPD).

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ACRONYMS AND ABBREVIATIONS

AF	Additional financing	MWG	Monitoring working group
AIIB	Asian Infrastructure Investment Bank	KM	Khammouane (province)
ADPC	ASEAN Agriculture Development Planning Centre	km	Kilometer
ARAP	Abbreviated Resettlement Action Plan	LFND	Lao Front for National Development
AH	ASEAN Highway	LRSP-2	Lao Road Sector Project 2
AHs	Affected Households	LTEC	Lao Transport Engineering Consultant
ASEAN	Association of South East Asian Nations	LWU	Lao Women Union
AWPB	Annual Work Plan and Budget	MAF	Ministry of Agriculture and Forestry
BD	Bidding Document		
BKX	Borikhamxay (Province)	MCIT	Ministry of Cultural, Information and Tourism
CD	Contact Document	MOH	Ministry of Health
C-ESMP	Contractor-Environment and Social Management Plan	MOF	Ministry of Finance
COI	Corridor of impacts	MONRE	Ministry of Natural Resources and Environment
COC	Code of conduct	MPI	Ministry of Public Investment
CSC	Construction Supervision Consultant	MPWT	Ministry of Public Works and Transport
DCC	Department of Climate Change	NBCA	National Biodiversity Conservation Areas
DD	Detailed Engineering Design	NGOs	None Government Organizations
DMS	Detailed measuring survey	PA	Protected Areas
DNEP	Department of Natural Resources and Environment Policy	PFA	Protection Forest Area
DOF	Department of Forest	NR	National Road
DONRE	District Office of Natural Resources and Environment	NRA	National Regulatory Authority
DOR	Department of Roads	NR-13S	National Road 13 South
DOT	Department of Transport	NTFP	Non-Timber Forest Products
DPI	Department of Planning and Investment	OCHSP	Occupational and Community Health and Safety Plan
DPWT	Provincial Department of Public Works and Transport	OP/BP	Operation Policy/Bank Procedure

DRC	District Resettlement Committee	OPBRC	Output- and Performance-Based Road Contract
EA	Environmental Assessment	OPWT	District Office of Public Works and Transport
ECC	Environmental Compliance Certificate	ODX	Oudomxay (Province)
EGs	Ethnic Groups	O&M	Operations and maintenance
ESCOP	Environmental and Social Code of Practice	PAHs	Project Affected Households
EDPD	Environmental Research and Disaster Prevention Division	P3	Package 3
EG	Ethnic Groups	PBC	Performance-based contract
EGEF	Ethnic Groups Engagement Framework	PCR	Physical Culture Resources
EGEP	Ethnic Groups Engagement Plan	PDR	People's Democratic Republic
EHS	Environmental Health and Safety	PM	Prime Minister
EIB	European Investment Bank	PONRE	Provincial Office of Natural Resources and Environment
EIA	Environment Impact Assessment	PMU	Project management unit
EPL	Environmental Protection Law	PRC	Provincial Resettlement Committee
ESCOP	Environmental and Social Code of Practice	PTRI	Public Works and Transport Research Institute
ESHS	Environmental, Social, Health and Safety	RAP	Resettlement Action Plan
ESHS	Environmental Social Health and Safety	RP	Resettlement Plan
ESMF	Environmental and Social Management Framework	RMF	Road Maintenance Fund
ESIA	Environmental and Social Impacts Assessment	RMS	Road Management System
ESP	Environmental and Social Policy	ROW	Right of ways
ESMP	Environmental and Social Management Plan	RP	Resettlement Plan
ESS	Environmental and Social Safeguards / Standards	RPF	Resettlement Policy Framework
ESU	Environmental and Social Unit	SA	Social Assessment
FE	field engineer	SS-ESMP	Site specific-ESMP

FI	Financial Intermediary	SIA	Social Impact Assessment
GBV	Gender based violence	SOP	Standard operating procedures
GCLS	Grievance and Complaints Logging System	STD	Sexually transmitted disease.
GDP	Gross Domestic Product	TA	Technical assistance
GOL	Government of Lao People's Democratic Republic	TOR	Terms of Reference
GCLS	Grievance and Complaints Logging System	UNDP	United Nation Development Program
GRC	Grievance Redress Committee	UNCBD	United Nations Convention on Biological Diversity
GRM	Grievance Redress Mechanism	UXO	Unexploded Ordinance
		VAC	Violence against children
IBA	Important Bird Area	VRC	Village Resettlement Committee
IDA	International Development Association	WB	World Bank
IEE	Initial Environmental Examination	WBG	World Bank Group
INDC	Intended Nationally Determined Contribution	WHO	World Health Organization
IUCN	International Union for Conservation of Nature		
KBA	Key Biodiversity Area		

1. INTRODUCTION

15. The Government of Lao PDR (GOL) has prepared this Environmental and Social Management Plan (ESMP) for Package 3 of the Climate Resilient Improvement of National Road 13 South Project (the proposed project), in order to address the adverse environmental and social impacts that may be caused by the proposed project.

16. The GOL through the Ministry of Public Works and Transport (MPWT) and with assistance from the Asian Infrastructure Investment Bank (AIIB), World Bank (WB) and European Investment Bank (EIB) is planning to implement the National Road 13 South (NR-13S) Improvement Project from kilometer (km) 71 to km 346. The Project Road will be divided into four improvement and maintenance contracts (or packages) with specific financing by WB, EIB, and AIIB while the Government of Lao's Road Management Fund (RMF) will provide the counterpart fund. The AIIB is considering the financing of Package 3 from km 190 to km 268 of the NR-13S under the proposed project. The work for this section in some part will be widening of existing road alignment from 9m to 12m where feasible and where resettlement impacts and land acquisition are either unanticipated or minor but some part will keep the original size of 9m without any expansion.

1.1 PROJECT BACKGROUND

17. The National Road 13 (NR-13) is the most important highway in Lao Peoples Democratic Republic (Lao PDR), connecting Lao with China in the north and Cambodia in the south, for a total length of 1,500 kilometers (km). The National Road 13 South (NR-13S) starts from Vientiane Capital and continues to southern part of Lao PDR and ends at Cambodia border. The NR-13S links with other projects of land transport modes, including the expressway project (called Vientiane Hanoi Expressway), and also connects to others east-west corridors and International Mekong Bridges namely NR8 (AH15), NR12 (AH131), Third Mekong Friendship Bridge (Thakhek – Nakhon Phanom), and Fifth Mekong Friendship Bridge (Paksan “Laos” – Bueng Kan “Thailand”).

18. The widespread flooding occurred in the 2018 rainy season confirmed that Lao PDR needs to take serious actions to build resilience, especially for its road infrastructure. The post disaster needs assessment, which was carried out after the 2018 flooding, showed that the total damages and losses are estimated at \$371 million (M), which is 2.1% of gross domestic product (GDP) and 10.2% of annual budget in 2018. The country needs US\$520M for disaster recovery with more climate resilience of its infrastructure and other economic activities. The transport sector accounted for more than 50% of the total need for the recovery. To support Lao PDR efforts in implementing the disaster recovery, the World Bank (WB) has allocated \$50M from its Crisis Response Window of which US\$25M will be used to improve climate resilience of existing NR-13S from Bolikhamxay (BKKX) province to Khammouane (KM) province and the other half for flood protection in Lao PDR through another WB funded project.

1.2 Project Implementation

19. The Project will be implemented through an Output- and Performance-Based Road Contract (OPBRC) similar to that being used for NR13 North, with a 10-year contract life. The OPBRC expands the role of the private sector from a simple execution of works to a management and maintenance of road assets and the contractor is paid through a combination of output payments for defined improvement works along with periodic performance-based lump-sum payments for bringing the road to a certain service level and then maintaining it at that level for a relatively long period. The 10-year OPBRC will comprise the first 2- or 3-year construction/periodic maintenance period (called the “Construction Phase”) and follow-up operations and maintenance (O&M) which may begin from the start of the contract and extend for 7 or 8 years beyond completion of the Construction Phase. The payments for the Construction Phase will be made if the contractor meets or exceeds the performance indicators for defined fully finished road sections (“milestones”), and against works certification issued by the ISWS consultant.

20. The Department of Roads (DOR), under MPWT, is responsible for implementation of this Project including overall technical oversight, execution, and management of the Project and has appointed a dedicated team (Project Management Unit - PMU) to be responsible for the day to-day implementation, and operation of the project, including contracting and supervision of all consultants. The Environment Research and Natural Disaster Prevention Division (EDPD) of the Public Works and Transport Institute (PTRI) under MPWT is responsible for monitoring and supervision of environmental and social safeguards (ESS) and providing technical assistance and capacity building.

1.3 Environmental and Social Assessment

21. As part of the WB funded Lao Road Sector Project 2 – Additional Financing (LRSP2-AF), to avoid and mitigate the potential negative impacts of the works during construction and maintenance services, an Environment and Social Management Framework (ESMF), an Ethnic Group Engagement Framework (EGEF), and a Resettlement Policy Framework (RPF) were prepared and approved by the WB and they were publicly disclosed. For Package 3 to be financed by the AIIB, an Environment and Social Management Plan (ESMP) (the present document), a Resettlement Plan (RP) and an Ethnic Group Engagement Plan (EGEP) have been prepared in accordance with AIIB’s Environmental and Social Policy (ESP). More details are provided later in the document.

22. ***The present ESMP of the Project Road (NR-13S) covers Package 3, from km 190 to km 268, supported by AIIB.*** ESMP is prepared to be applied under project to manage and mitigate potential environmental and social impacts and risks associated the project works. The ESMP describes (1) Introduction; (2) brief description of the NR-13S Project; (3) the AIIB’s ESP and GOL legal requirements are to be applied; (4) the general environment and social conditions of the province/project area; (5) the potential negative impacts and mitigation measures; (6) grievance redress mechanism (GRM); (7) Analysis of the Associated Facilities; (8) community engagement; and (9) ESMP implementation and budget. The ESMP also includes 10 Attachments covering the (1) the Project background concerning road conditions and specific locations of Project sites and material sources; (2) traffic survey and safety risk assessment; (3) applicable GOL regulations;

(4) maps in forests in BKX and KM provinces; (5) key issues and mitigation measures for site specific ESMP (SS-ESMP) and the Alignment Sheet for Package 3 to be financed by AIIB; (6) Project environmental and social code of practices (ESCOP); (7) Project code of conduct (COC) and action plan to prevent gender-based violence (GBV) and violence against children (VAC); (8) accident reporting procedure and forms; (9) grievance redress mechanism (GRM); and (10) Summary of Consultation Meeting in August 2019.

23. The Alignment Sheet provided in Attachment 5 (Table A5.2) focuses on the Package 3 starting from Km 190 in Pakkading District, Borlikhamxay Province to Km 268 in Hinboun District, Khammouane Province with a total length of 78 Km.

2. PROJECT DESCRIPTION

24. The National Road NR 13 South Improvement and Maintenance Program will start from km-71 from Tha Prabath District of BKX province to km-346 in Thakhek District of KM province, covering approximately 275 km in length. The project road works are divided in four sections and runs through two provinces. Section 1 starting from km71 to km111 will run through Borikhamxay province. Section 2 starting from km111 to km190 will run through Borikhamxay province. Section 3 starting from km190 to km268 will run through Borikhamxay and Khammouane provinces. Section 4 starting from km268 to km346 will run through Khammouane province.

25. The present ESMP is for Section 3, from km190 to km268. The Section 3 runs through 19 villages in two districts and two provinces (14 villages in Pakkading district, Bolikhamxay province and 7 villages in Hinboun district, Khammouane Province). **Figure 2.1** shows location of the proposed Project Road. It is expected that this Project Road will be a continuation of an investment from another project to be financed by AIIB for the NR13 South improvement and maintenance section from Vientiane Capital at km 21 to km 71 (Tha Prabath District, Bolikhamxay Province).

26. The improvement works under the proposed project will include pavement with asphalt concrete of the 12m wide two-lane road¹ and climate resilience improvement of vulnerable road sections, e.g., construction of additional and larger culverts with appropriate inlets and outlets, side ditches and canals to drain water, and slope protection.² The design will ensure that water can flow to the natural reservoirs, minimizing the impact to the road and adjacent surroundings. The road alignment will be raised in flood-prone sections.

27. The proposed project will improve many bridges and culverts to allow traffic flow and ensure road safety. The culverts will be installed and/or added to appropriate flooding sections. However, the associated grading activities and cutting leading to the removal of land cover, natural vegetation and landscapes will likely alter flow rate and pathways upstream by introducing the possible widening of wetlands and other natural waterways. Additionally, filling of sections along the right of way (ROW) will further contribute to the change in flow and pathways similarly to the way that backfill occurred in wetlands for settlement. The change in flow and pathways will likely lead to increase the downstream area vulnerability to flooding as well as increasing the frequency of flooding in existing high-risk areas.

28. Site visits were carried out during the week of 28th – 30th August 2019 and also during June 2020. The road conditions (Plates 2-1 to 2-16 in Attachment 1) and types of heavy vehicles (Plate 2-17 to 2-20) along the road corridor were recorded during these visits. For this section, the road width is generally 9 meters with unpaved shoulder on both sides. Shoulders are used as parking places and lack of drainage is one of the main constants. Attachment 1 (a, b, and c) presents picture of existing road conditions; locations of bridges, culverts, and draining and flooding point expected

¹ Some road sections such as from Km 91+700 to 92+200 will include overlaying with asphalt concrete of the 9m existing width to limit the relocation impacts.

² For options to increase infrastructure resilience, see for example: Lifelines - The Resilient Infrastructure Opportunity. <http://hdl.handle.net/10986/31805>

to be conducted; and locations of the material sources to be used during the implementation of the Project.

29. It is also expected that bio-engineering solutions, such as grass and tree planting will be used to improve road slope protection. The OPBRC covering both road improvement and maintenance will be used to address inefficiencies in road planning and maintenance. The improvement will also address traffic safety issues through paving shoulders (e.g., for motorcycle traffic), installation of road signs, road marking, temporary parking space along the road, and installation of solar cell street lighting. In addition, the Project will also explore the opportunity to introduce electrical vehicles.

30. The detailed design consultant (Lao Transport Engineering Consultant - LTEC) also conducted a traffic survey and a road safety assessment and the key findings (Attachment 2a and b) identify different types of heavy vehicles (trucks with tandem axle, single axle, double and triple axles) along the Project Road corridor and the results of a road safety assessment and recommendations. Since the NR-13S road is a key connection to China, Vietnam, Thailand and other parts of Lao PDR, it is expected that heavy traffic will be increased when the ASEAN Road Networks are completed. The road design has taken this into consideration during traffic forecast for the design period.

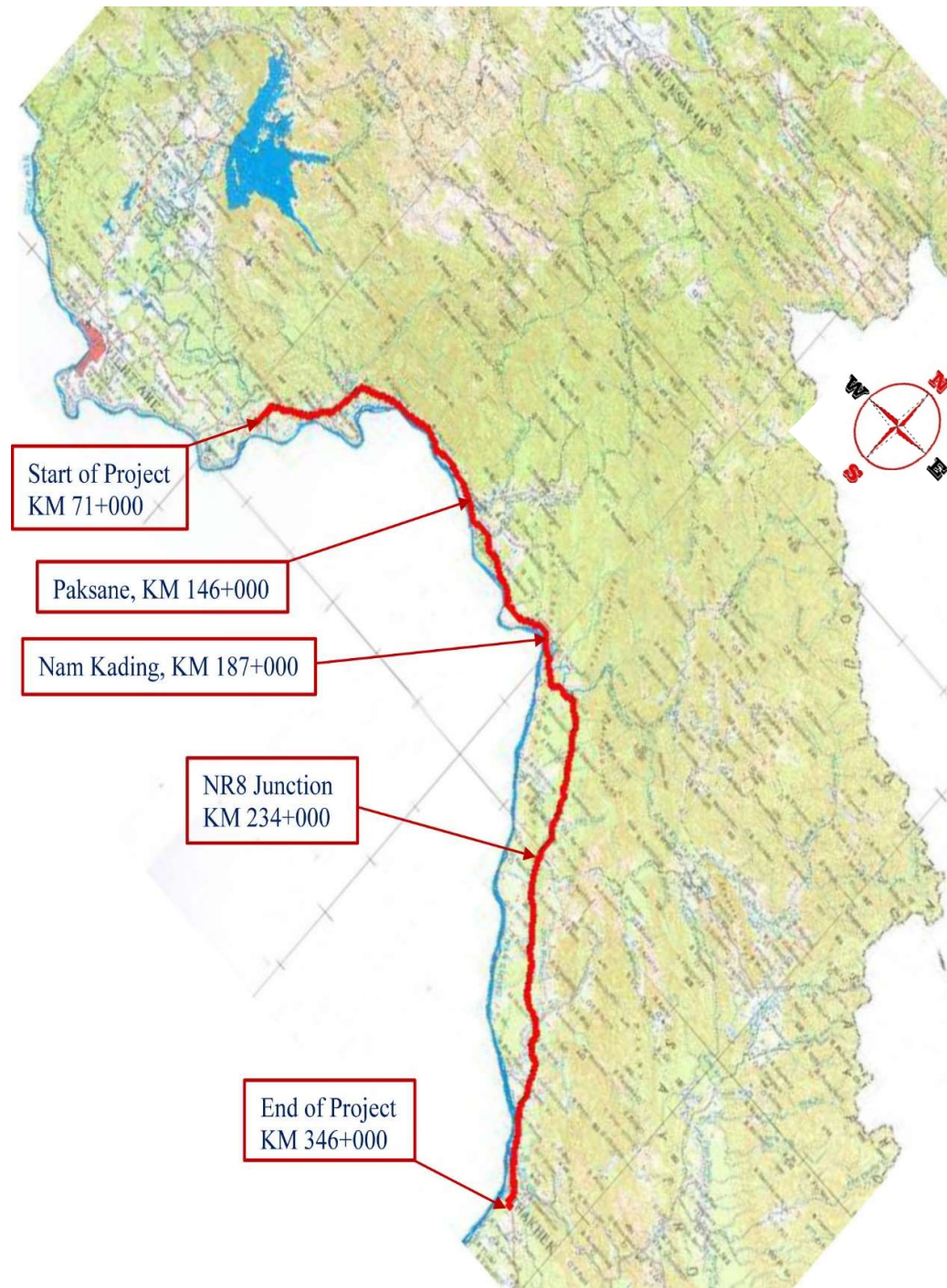


Figure 2-1 Project Location

2.1 Right of Way

31. The Right of Way (ROW) consists of the area of existing road components/infrastructure that has been legally defined. This includes: the main road body (carriageway and shoulder) from one embankment toe to another, flyovers, junctions, tunnels, viaducts, accessory/connector roads, and vehicular bridges/underpasses. Other road infrastructure such as pedestrian crossings, service stations/rest areas and workers accommodation camps have not yet been finalized, but their

establishment and management are discussed in subsequent sections and chapters. The proposed Project Road activities will be carried out in the existing ROW except the Project sites for borrow pits and construction materials. There are areas with encroachment of activities and structure (permanent and temporary) located in the ROW of the Project and a separate survey has been made on types and nature of the encroachment and structures.

32. The work for this section in some part will be widening of existing road alignment from 9m to 12m where feasible and where resettlement impacts and land acquisition are either unanticipated or minor but some part will keep the original size of 9m without any expansion.

2.2 Environmental Setting and Road Conditions

33. The proposed Project Road is located in a flat and low-lying zone (called Mekong Plain) between the Mekong River and the mountains of the road corridor. The existing road is a 2-lane road, formation width of 9 meters in non-community area and 10 meters in community area, except the section through Paksan town (provincial capital of BKX province) and Thakhek town (provincial capital of KM province) where the existing road is wider than 10 meters and to be improved as similarly to urban road. The existing pavement is paved by double bituminous surface treatment. The latest improvement was undertaken during the Year 1990s under the Road 13 South Improvement Project (Vientiane to Pakkading and Pakkading to Savannakheth). The condition of existing road surface is evaluated in the range of low level to medium level deteriorated. Side ditches are mainly filled by soil and vegetation, cross drain structures are mainly in a good condition but need the maintenance and extension the length of structures to accommodate with new road width for the section of widening to 12 meters. Some of those culverts have insufficient capacity; the structures are deteriorated and need to be replaced by new. Traffic signs, traffic signals, road markings, guideposts, and guard rails are needed to improve the traffic safety. Evidence is shown in Attachment 1.

2.3 Proposed Design Standard

34. The criteria for the proposed pavement design have been established based on existing data, traffic data, the requirement of TOR, initial surveys and site investigation undertaken on the project during the inception period.

35. The proposed design of the road is based on the TOR and referred Road Design Manual of the Ministry of Public Work and Transport officially issued in August 2018. Referred to the design standard of ASEAN Highway (AH) and TOR, this Project Road will be split into three sub-sections with different road classes as the following:

- From km 71 to km 145, Class II in Level terrain;
- From km 150 to km 346, Class III in Level terrain; and
- For the sections through Paksan Town and Thakhek Town, the road shall be classified as urban and semi-urban road.

3. POLICY, LEGAL, AND INSTITUTIONAL SETTINGS

3.1 National Laws and Regulations Related to Safeguards

36. In Lao PDR, there are many laws and regulations govern the utilization and management of natural resources management (land, forest, water, aquatic and wildlife, etc.) established in late 1990's and many have been updated and/or revised. The Environmental Protection Law (EPL) established in 1999 and revised in 2012, describes the principles, regulations and measures for managing, monitoring, restoring, and protecting the environment including the pollution control and the impact assessment processes. In late 2013, two regulations on the Environment and Social Impact Assessment (ESIA) and an Initial Environmental Examination (IEE) were established. However, they have been upgraded to a decree level and the decree has been approved by the Prime Minister (EIA decree No 21, date January 31, 2019). Similarly, the compensation and resettlement decree established in 2005 (Decree 192/PM) was also revised and approved in 2016 (Decree 84/PM) and it has been reviewed in light of the WB's comment and the promulgation of several related laws during 2017-2018. A number of decrees, regulations, and guidelines established and applied during 2000's is being reviewed and revised. In late 2016, GOL also issued an order requiring all investment projects to take actions to reduce risk due to unexploded ordnance (UXO) before commencing the project activities.

37. From institutional aspect, the Ministry of Natural Resources and Environment (MONRE) is the lead ministry responsible for implementation of the EPL and its regulations and/or guidelines. MONRE is also responsible for management of water, land, and environmental management while the Ministry of Agriculture and Forest (MAF) is responsible for management of protected area (PA) and protection forest area (PFA)³. The 2012 EPL assigns the provincial office of natural resources and environment (PONRE) and the Vientiane Capital to be responsible for review and monitoring of the IEE process while MONRE is responsible for review and monitoring of the EIA. During 2016-2018, significant institutional changes within and between MONRE, MAF, and other sector ministries occurred. However, at present, MONRE is responsible for ensuring effective management of EIA/IEE processes and for ensuring effective management of pollution control and inspection. Attachment 3 summarizes key GOL regulations that are applied to this Project.

3.2 AIIB Environmental and Social Policy

38. The proposed project is being financed by AIIB and therefore its Environmental and Social Policy and Environmental and Social Exclusion List will be applicable to the project.

3.2.1 Key Elements of Environmental and Social Policy

39. **Overarching Policy.** The objective of this overarching policy is to facilitate achievement of these development outcomes, through a system that integrates sound environmental and social management into Projects. The overarching policy comprises Environmental and Social Policy (ESP), and Environmental and Social Standards (ESSs).

³ In mid2016 the department of Forest Resources Management (DFRM) was moved from MONRE to MAF.

Environmental and Social Policy

40. The ESP sets out mandatory requirements for the Bank and its Clients relating to identification, assessment and management of environmental and social risks and impacts associated with Projects supported by the Bank.

Environmental and Social Standards

41. The environmental and social standards (ESSs) set out more detailed mandatory environmental and social requirements, as described below.

42. **Environmental and Social Standard 1 (ESS 1).** The ESS-1 aims to ensure the environmental and social soundness and sustainability of Projects and to support the integration of environmental and social considerations into the Project decision-making process and implementation. ESS 1 is applicable if the Project is likely to have adverse environmental risks and impacts or social risks and impacts (or both). The scope of the environmental and social assessment and management measures are proportional to the risks and impacts of the Project. ESS 1 provides for both quality environmental and social assessment and management of risks and impacts through effective mitigation and monitoring measures during the course of Project implementation. The ESS 1 defines the detailed requirements of the environmental and social assessment to be carried out for any project to be financed by the Bank.

43. **Environmental and Social Standard 2 (ESS 2).** The ESS 2 is applicable if the Project's screening process reveals that the Project would involve Involuntary Resettlement (including Involuntary Resettlement of the recent past or foreseeable future that is directly linked to the Project). Involuntary Resettlement covers physical displacement (relocation, loss of residential land or loss of shelter) and economic displacement (loss of land or access to land and natural resources; loss of assets or access to assets, income sources or means of livelihood) as a result of: (a) involuntary acquisition of land; or (b) involuntary restrictions on land use or on access to legally designated parks and protected areas. It covers such displacement whether such losses and involuntary restrictions are full or partial, permanent or temporary. The ESS 2 defines detailed requirements of resettlement planning of the projects involving involuntary resettlement.

44. **Environmental and Social Standard 3 (ESS 3).** The ESS 3 is applicable if Indigenous Peoples are present in, or have a collective attachment to, the proposed area of the Project, and are likely to be affected by the Project. The term Indigenous Peoples is used in a generic sense to refer to a distinct, vulnerable, social and cultural group possessing the following characteristics in varying degrees: (a) self-identification as members of a distinct indigenous cultural group and recognition of this identity by others; (b) collective attachment to geographically distinct habitats or ancestral territories in the Project area and to the natural resources in these habitats and territories; (c) customary cultural, economic, social or political institutions that are separate from those of the dominant society and culture; and (d) a distinct language, often different from the official language of the country or region. In considering these characteristics, national legislation, customary law and any international conventions to which the country is a party may be considered. A group that has lost collective attachment to geographically distinct habitats or ancestral territories in the Project area because of forced severance remains eligible for coverage, as an Indigenous People, under ESS 3. The ESS 3 defines the detailed requirements of People planning, in case such groups are present in the project area and are likely to be affected by the project.

3.2.2 Applicability of ESF for Proposed Project

45. The applicability of ESP and ESSs for the proposed project is presented in **Table 3.1**.

Table 3-1: The applicability of ESP and ESSs for the proposed project

Environmental and Social Standards		Applicability	Triggering Status
ESS 1	Environmental and Social Assessment and Management	ESS 1 is applicable if the Project is likely to have adverse environmental risks and impacts or social risks and impacts (or both)	Yes, since the proposed project is likely to have negative environmental and social impacts. The present ESMP has been prepared in response to the ESS 1.
ESS 2	Involuntary Resettlement	ESS 2 is applicable if the project is likely to cause involuntary resettlement impacts.	Yes. The project involves land acquisition and disruption of economic activities during the construction phase of the roadway and pavement, which are temporary and reversible in nature. Given such impacts, though low intensity in nature, ESS 2 is triggered.
ESS 3	Indigenous Peoples	ESS 3 is applicable if Indigenous People are present in the project area and they are likely to be affected by the project.	Yes, ethnic groups as defined in the ESS 3 are present in the project area.

3.2.3 Screening and Categorization Requirements

46. All AIIB-financed projects are required to be screened and categorized in order to determine the nature and level of the required environmental and social reviews and assessment, type of information disclosure and stakeholder engagements for the respective project. The project's category is determined by the category of the project's component that presents the highest environmental or social risk, including direct, indirect, cumulative and induced impacts, as relevant, in the project area. AIIB assigns each proposed project to one of the four categories as described in **Table 3.2** below.

Table 3-2: Screening and Categorization of AIIB Projects

Category		Applicability for the Proposed Project
Category A	A project is categorized as 'Category A' if it is likely to have significant adverse environmental and social impacts that are irreversible, cumulative, diverse or unprecedented.	Not applicable

Category		Applicability for the Proposed Project
Category B	A project is categorized as ‘Category B’ when it has a limited number of potentially adverse environmental and social impacts; the impacts are not unprecedented; few if any of them are irreversible or cumulative; they are limited to the project area; and can be successfully managed using good practice in an operational setting.	Considering the potential negative and positive environmental and social impacts of this proposed project and their management, it is appropriate to fit the Project into Category B under AIIB ESF categorization. This is because most of the impacts are temporary, reversible and bound to occur in the Project area and the impacts are manageable with proposed mitigation and monitoring measures.
Category C	A project is categorized as ‘Category C’ when it is likely to have minimal or no adverse environmental and social impacts.	Not applicable
Category FI	A Project is categorized FI if the financing structure involves the provision of funds to or through a financial intermediary (FI) for the project, whereby the Bank delegates to the FI the decision-making on the use of the Bank funds, including the selection, appraisal, approval and monitoring of Bank-financed sub-projects.	Not applicable

47. For Category B Projects, AIIB determines the appropriate environmental and social assessment documentation required on a case-by-case basis. In the case of this project, the present ESMP has been prepared.

4. ENVIRONMENT AND SOCIAL CONDITIONS

4.1 General Environment Profile

4.1.1 Topography, Geology, Climate, River/Stream, Land Use, Geological and Mineral

48. The Sectio-3 is located in BKX and KM provinces. BKX province is located in the central part of the country. The province covers an area of 14,863 square kilometers. It shares borders with Xiengkoung province to the northwest, Vietnam to the east, KM province to the south, and Thailand to the west. BKX and KM provinces include the Annamite Range, stretching east to Vietnam, and the flat plain of the Mekong River and along border with Thailand in the west. Lao PDR is considered a center for ecotourism activities with its two national protected areas and extensive system of wetlands. The altitude ranges from 140-1,588 meter (m).

49. Between chainage Km 190 – Km 268 under Package 3, the main catchment for surface water is the Mekong River and several of its first order tributaries including the Nam Kading River. In addition to this and a few smaller rivers, both BKX and KM provinces have many perennial, seasonal and ephemeral streams, and wetlands such as Namthone. Lao PDR tributaries make large contribution to the seasonal river flow into the Mekong River. Average contributions range from more than 75% during the low-flow months in April and May, to more than 50% during the peak-flow months of July, August, and September (Adamson et al., 2009). The list of water bodies is provided in table 4.1 below and river map is shown in Attachment 1B.

Table 4-1 List of Rivers and Streams

No.	Name	Chainage
1	NAM KADING	km 189+040
2	HOUAY NGOUGNAI	km 192+551.167
3	HOUAY NGOUNOI	km193+501.501
4	HOUAY HADSAIKHAM	km 194+584.695
5	HOUAY NANGMONG	km 202+018.195
6	STREAM	km 203+229
7	HOUAY XAMBOUNGNAI	km 204+012.554
8	STREAM	km 209+868
8	STREAM	km 217+149
10	HOUAY DEUA2	km 217+604.594
11	STREAM	Km 218+575
12	HOUAY NATHAT	km 219+709.592
13	NAM KHOU RIVER	km 221+246.451
14	STREAM	km 227+734
15	STREAM	km 228+580
16	STREAM	km 229+142
17	NAM SANG RIVER	km 231+212.858

No.	Name	Chainage
18	NAM THONE RIVER	km 239+991.091
19	STREAM	km 242+169
20	STREAM	km 244+300
21	STREAM	km 247+635
22	STREAM	km 248+156
23	HOUAY MENG	km 257+626.260
24	HOUAY HEA	km 267+700.725

50. BKX and KM provinces are located in a tropical climate. Weather is dominated by monsoons, which divides the year into clearly defined wet and dry periods. The wet season begins from May and extends until October, while the dry season runs from November to April. Geological structures in the BKX and KM provinces seem to indicate joints and fractures of rock formations, which suggest seismic activity in the past. Mineral resources which occur in BKX province are tin ore, limestone, gypsum, clay, fossil and minerals.

4.1.2 Physical Environment

Air Quality

51. Due to its distance from major population centers and industry, the baseline air quality between Km 190 – Km 268 is considered good for the majority of the year. Sources of ambient air pollution in this area include vehicular traffic on NR-13S, dust from community unsealed roads and particulates from vegetation burning activities associated with site preparation for agricultural plots. Particulate matters generated from the NR 13 South was low as the existing road is already paved though some main communities (e.g. Ban Thongnamy and Ban Namthone) had experienced higher dust particles. However, particulate concentrations may be quite high for adjacent unsealed roads during the dry season (refer to results below).

52. Smoke due to burning activities for agricultural site preparation in this region can be a major source of respirable particulates PM₁₀ and PM_{2.5}, exceeding international health criteria (WHO, 2013), as can indoor cooking fires and outdoor waste burning.

53. During the two-day consecutive monitoring period in Ban Namthone (km 240), Pakkading District – a sampling location with approximately 15 m from the centerline of the NR 13S, during 21 – 23 December 2019, very high particulate readings were recorded (Figure 4-1 and Table 4-2), which are attributed to high traffic volume passing on the NR 13S. Measured particulates in the Ban Namthone settlement indicate that Total Particulates are comprised of large and smaller diameter particulates, with average PM_{2.5} concentrations contributing 33% of total particulate matter (TPM) on Day 1 and 21% on Day 2 of monitoring (Table 4-2). For both PM_{2.5} and PM₁₀, concentrations are above Lao National Ambient Air Quality Standards and WHO Guidelines for periods during each day.

54. Poor air quality at the monitoring site likely reflects the high number of traffic vehicles particularly heavy trucks on the NR 13S (Plate 5 7). Other primary sources of ambient air pollution include dust from unsealed roads. Smoke from agricultural burning and charcoal production can

be a major source of respirable particulates PM₁₀ and PM_{2.5}, exceeding international health criteria (WHO, 2013).

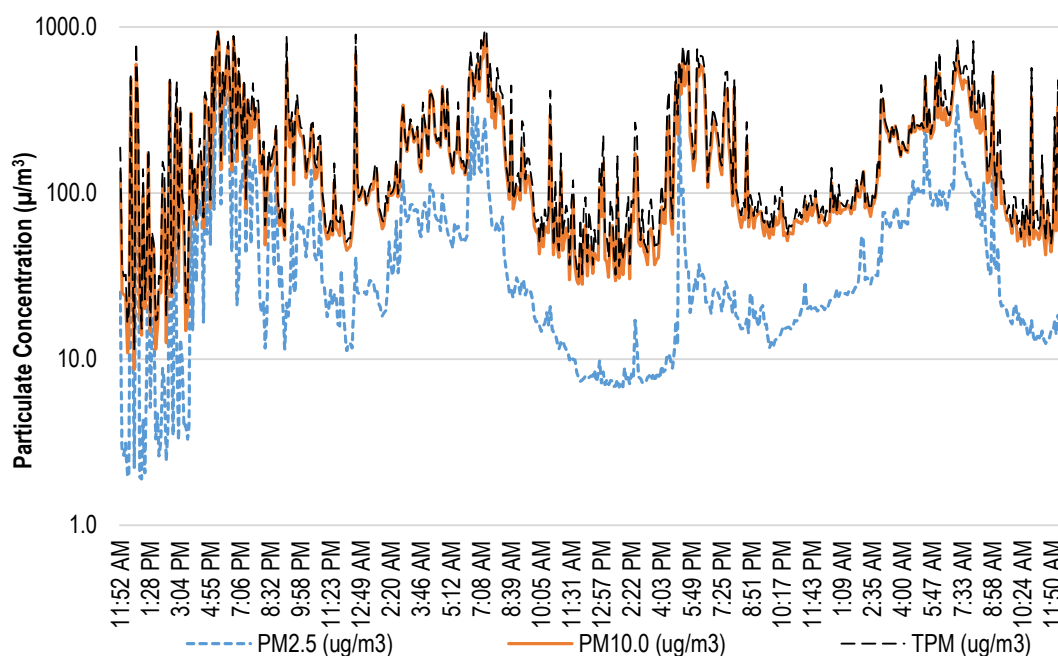


Figure 4-1: Ambient PM_{2.5}, PM₁₀, and TPM concentrations at Ban Namthone, 21-23 December 2019

Table 4-2: PM_{2.5}, PM₁₀, and Total Particulate Matter baseline concentrations at Ban Namthone (Km 240)

Parameters	Measure	Day 1 (21/22 Dec)	Day 2 (22/23 Dec)	Guideline Levels	
				Lao PDR Ambient Air Quality (µg/m ³)	WHO Criteria (µg/m ³)
Particulate Matter <2.5 microns (PM _{2.5})	Minimum	1.9	6.8	50	25
	Mean	73.4	40.2		
	Maximum	674.7	417.5		
Particulate Matter <10 microns (PM ₁₀)	Minimum	8.7	28.3	120	50
	Mean	192.1	160.3		
	Maximum	932.5	713.4		
Total Particulate Matter	Minimum	11.4	32.3	N/A	N/A
	Mean	220.4	190.8		
	Maximum	964.3	829.9		

Ambient Noise from NR-13S

55. Monitoring of road noise was conducted between 21 – 23 December 2019, adjacent to and in the vicinity of NR-13S, approximately 15 m and 122 m from the road centerline respectively. The results of noise monitoring are presented in Table 4-3 and Figure 4-2. Noise monitoring results indicate the primary noise source for sensitive receptors is road noise, with the highest noise levels

recorded at the monitoring site positioned 6 m from the road centerline. This shows that peak noise emissions are significantly lower for sensitive receptors that are situated more distant from the NR13 (Table 4-3).

Table 4-3: Emissions recorded at variable distances from National Road 13

Distance from NR13	6 meters	15 meters	122 meters
Sampling Duration	10 hours	22 hours	17 minutes
Maximum dB(A)	88.0	81.0	73.4
Average dB(A)*	58.2	45.4	47.8
LAeq (dBA)	70.2	61.8	47.8

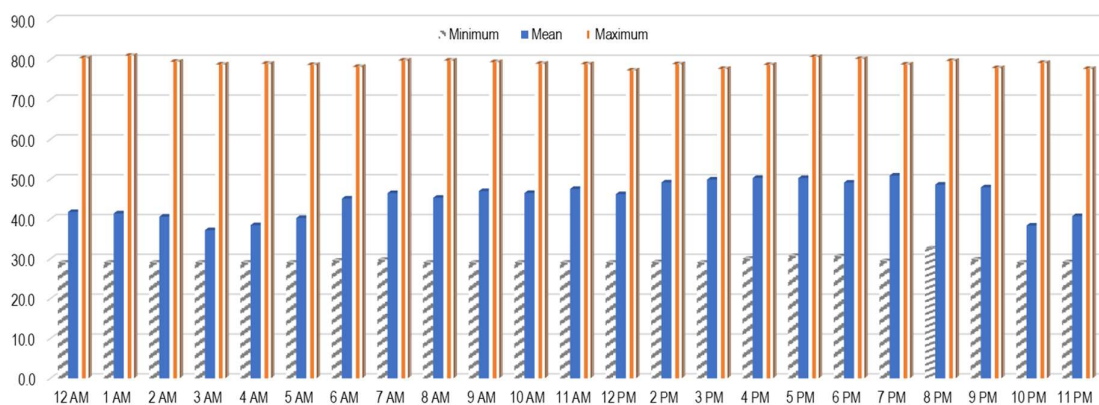


Figure 4-2: Noise emissions (dB(A)) 15 meters from centerline of National Road 13

56. Noise emissions recorded 15 m from the centerline of NR-13S were equal to or greater than 55 dB(A) (IFC daytime noise level guidelines) for 21% of the recordings (Figure 4-3). Average noise emissions from traffic are greater during the daylight hours than night-time hours. However, maximum noise emissions recorded were nearly equal for each hour throughout the day and night, indicating 24-hour road usage (Figure 4-2).

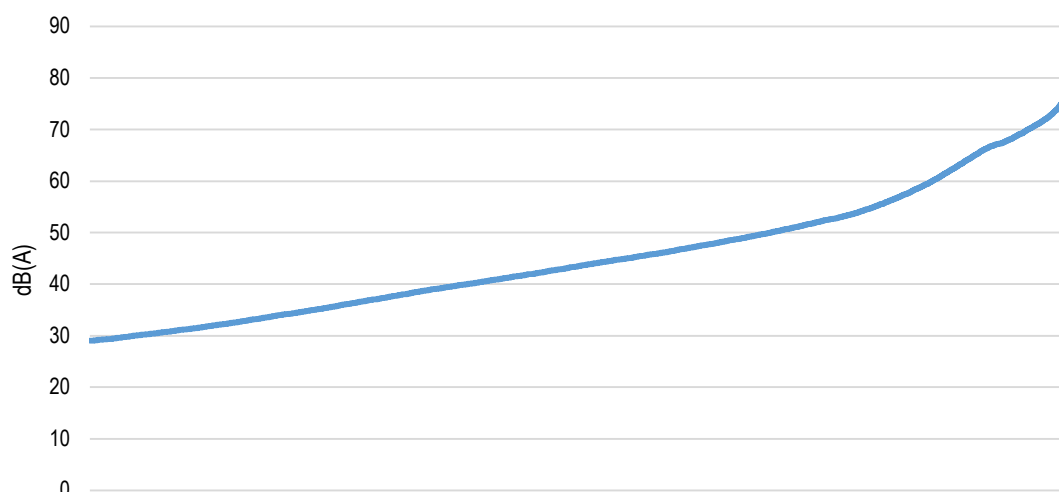


Figure 4-3: Range of noise emissions 15 meters from centerline of National Road 13 (recorded for 22 hours)

Water Quality

57. Water quality monitoring of field parameters was conducted on 21 December 2019. The results for field water quality sampling are provided in Table 4-44. The results of the two Nam Kading (Km 189+040) and Namthone river (Km 239+700) field water quality sampling sites were similar. The notable exception was the rise in water temperature at Namthone sampling site. At the Nam Kading, the sampling site is near the bridge with good riparian vegetation. At each site, pH is moderately neutral to slightly acidic, with low electrical conductivity and dissolved solids. Higher turbidity readings at Nam Kading were the result of some disturbance of the sediment in the shallow sampling site during monitoring. Turbidity values were likely <1 FNU during the sampling event (dry season).

Table 4-4: Field parameter measurements for Nam Kading and Namthone

Parameter	Unit	Sample Values	
		Nam Kading	Namthone
pH	mg/L	6.01	6.78
Electroconductivity	μS /cm	30	31
Total Dissolved Solids	mg/L	15	15
Dissolved Oxygen	ppm	6.06	6.04
Turbidity	FNU	5.5	0.1
Water temperature	mg/L	20.4	29.5
Oxygen Reduction Potential (ORP)	mg/L	158	152

4.1.3 Biological Resources

58. The Project is situated in the Central Indochina Dry Forests ecoregion, which (prior to intensive disturbance) was largely dominated by Deciduous Dipterocarp Forest (also referred to as Semi-Evergreen Dipterocarp Forest) in the lowland positions of the Mekong Corridor with

Mixed Deciduous Forest on ridges of small hills in the plain and foothills to the east of the Mekong Corridor.

59. Habitats surrounding the Project footprint are also fragmented and many are degraded by human activities, particularly habitats not afforded protection. Deciduous and Semi-Evergreen Forest located in the vicinity of the Project have been almost entirely degraded and a significant proportion has been converted to modified habitat types including cultivated land (i.e. rice fields). Natural regeneration of Semi-Evergreen Deciduous Forest is slow / non-existent to the extent that high quality examples of this forest type in the vicinity of the Project are extremely limited. Mixed Deciduous Forest has also been highly disturbed throughout the greater Project region, but this forest community regenerates relatively rapidly following disturbance (i.e. from logging and shifting cultivation) and through natural succession, may meet the Lao definition of the forest community within a decade. The entire Project footprint is dominated by modified habitats.

(a) National Protected Area Network

60. Lao PDR has an extensive network of National Biodiversity Conservation Areas (NBCA) covering more than 21% of the country's land cover. The closest and most relevant NBCA to the Project are listed as follows:

- ▶ **Nam Kading NBCA:** Situated in BKKX, about 40 km east of Paksan and approximately 5km away from NR-13S between km 200 to km 240 in central Lao PDR. Approximately 80% of the site is dominated by native forest habitats including Evergreen Forest and Dry Mixed Deciduous Forest and is bisected by the Nam Kading River, a significant tributary of the Mekong River. Nam Kading NBCA supports a wide diversity of aquatic and terrestrial species including 256 plant species, 43 mammal species and 234 birds. Several globally rare and threatened species inhabit this site including red-shanked douc langurs (*Pygathrix nemaeus*; Endangered), rufous-necked hornbill (*Aceros nipalensis*; Vulnerable), pale-capped pigeon (*Columba punicea*; Vulnerable) and crested argus (*Rheinardia ocellata*; Near Threatened). Evidence of large-antlered muntjac (*Muntiacus vuquangensis*; Critically Endangered) has also been found in Nakai–Nam Theun NBCA and the wider region (IUCN, 2017). **Phou Hin Poun NBCA:** Located in Central Lao PDR in KM province, and approximately 10km from NR-13S between km250 and km346. The north-western and southern extents of this protected area are dominated by sparsely vegetated limestone formations of the Annamite Range, while the central area (often referred to as the 'central forest area') comprises a mosaic of Semi-Evergreen Forest and Mixed Deciduous Forest on non-calcareous substrate (Timmins, 1997; Thewlis *et al.*, 1998). This diverse landscape supports at least 113 species of mammal, 160 species of bird, 81 species of reptile, 47 species of amphibian and 145 species of fish including the Sooty Babbler (*Stachyris herberti*), which is endemic to areas of limestone karsts. This site supports a number of IUCN (2017) Red List Near Threatened species including Assam Macaque (*Macaca assamensis*), black giant squirrel (*Ratufa bicolor*), Chinese serow (*Capricornis milneedwardsii*). Steinmetz (1998) also recorded Asian elephant (*Elephas maximus*; Endangered) activity in the central forest area.

- ▶ **Phou Khao Khoay NBCA:** located approximately 40 km northeast of Vientiane and covers an area of 2,000 km². The nearest border of Phoukhao Khoay to the NR-13S is approximately 5km away. Phou Khao Khoay NBCA encompasses a large stretch of mountain range (the Phou Khao Khoay massif) with sandstone cliffs, river gorges and three large rivers with tributaries which flow into the Mekong River. Dry Dipterocarp Forest and bamboo scrub dominate gentle sloping sandstone shelves and stands of Mixed Deciduous Forest occur near pools and streams. The area is of importance for its bird life and is known to support a significant population of the globally Endangered Green Peafowl (*Pavo muticus*) (Birdlife International, 2017).

(b) Provincial Protected Areas

61. Provincial Protected Areas have been designated for conservation or protection as they provide locally significant watershed or conservation value (ICEM, 2003). Several of these sites are located in proximity to Project corridor as follows:

- BKX province: Houay Ngoua, Phou-Ngou, Phou-Kadan, Phou-Kout; and
- KM province: NameSNam, Pathambing.

62. Phou-Ngou Provincial Protected Area is located parallel to the NR 13S from Pakkading to Hinboun districts. At Pakkading bridge (km 189+100) the NR 13S cuts through the Phou-Ngou PPA on the left bank of Namkading. From km 190+500 the NR 13S runs parallel to the Phou-Ngou PPA with a distance of 1 km or more.

63. Other national and provincial protected areas identified above are located at least 5 km from the NR-13S.

64. Attachment 4 shows maps of forests in BKX and KM provinces.

(c) Important Bird Areas (IBA)

65. A total of 27 Important Bird and Biodiversity Areas (IBAs) have been designated in Lao PDR with a total surface area of 2,384,985 hectare (ha). These sites have been awarded IBA status in recognition of their international significance for the conservation of birds and other biodiversity. Many sites support globally threatened birds, restricted range and biome-restricted birds and congregatory species of bird. Furthermore, a total of 47 Key Biodiversity Areas (KBA) have been designated in Lao PDR which are 'sites contributing significantly to the global persistence of biodiversity', in terrestrial, freshwater and marine ecosystems. IBAs and KBAs are not statutory designated sites and as such are not offer legal protection in Lao PDR unless they overlap nationally protected areas.

66. The Project NR-13S from km71 to km346 lies entirely outside the boundaries of IBAs and KBAs. The closest and most relevant IBAs and KBAs to the Project are listed below.

- ▶ Khammouane Limestone IBA – a Key Biodiversity Area that overlaps the Phou Hinboun National Protected Area;
- ▶ Nakai Plateau IBA - partly included within Nakai-Nam Theun National Protected Area and Key Biodiversity Area;

- ▶ Hin Namno IBA – A Key Biodiversity Area that overlaps Hin Namno National Protected Area;
- ▶ Phou Khao Khoay IBA - located in the south-western periphery of Phou Khao Khoay National Protected Area and designated Key Biodiversity Area;
- ▶ Eastern Bolikhamxay Mountains; and
- ▶ Nam Kading Key Biodiversity Area.

4.1.3 Point of Interests and Landscape

67. According to the official website of the government, the following places could be visited https://www.tourismlaos.org/show_province.php?Cont_ID=395:

- ▶ Tad Xai - Cascading over seven steps, Tad Xai is the most beautiful waterfall in the Phou Khao Khouay NBCA. It is particularly attractive during the rainy season, and can be easily reached by a nice boat and trekking tour from Ban Hadkhai village, near Tad Lerk in Thaphabath District of BKX province.
- ▶ Tad Lerk – From Wat Phabath 16 km and 20 km in from the South 13 Road in Thaphabath District. Located in Phou Khao Khouay NPA. This beautiful waterfall is the most accessible attraction in the park and ideal for relaxing, swimming, camping and trekking, Tad Lerk had a Visitor Centre and a "Nature Trail".
- ▶ Tad Yog (Yong Rapids) - This fantastic rapid along the Yong River is located in Thaphabath District; near Tad Leuk, from Vientiane capital 99 km to the south and turn left to Phou Khao Khouay NPA 5.4 km, turn left 2.6 km to Yangkheua Village, and take a boat 20 minutes (5.5 km). See views along the Yong River, picnic at the rapids and tourists can swim and trek. This attraction can be easily reached, and is suitable for a one-day tour.
- ▶ Tad HeuaHak - Located in Xaisavang Village in Paksan District, there are many waterfalls and rapids surrounded by green nature. Its name means "wrecked boat" which comes from a local tale. Located in 15 km on South 13 Road from Pakxan Town.
- ▶ Tad Nam Pa - Travelling by boat starting from a nice sandy beach on the bank of Ban Nam Pa, a fairly typical Lao Village, you will see the exciting nature view of Tad Nam Pa Waterfall. Ban Nam Pa is just 25-minute drive from Paksan on the Route 4B in Pakxan Town. The village also has handicraft products made by local people.
- ▶ Tad Thong Waterfall - This significant waterfall in Nam Kading NPA is located in Naphong Village, Pakkading District; trek 7 km start at Naphong Elephant Rock. Suitable for 2 days tour, tourists can choose both trekking tour and camping overnight or taking home-stay in the village and start trek in the morning, it takes three hours to reach the waterfall and the last one kilometer is quite steep.

68. These natural important landscapes are located at least 10 km from the NR-13S and would not have direct impact from the Project improvement activities. During operations, however they

are likely to have indirect impacts through the increased accessibility and potential spin off opportunity on the site development in the future.

4.2 Social and Economic Profile

4.2.1 Socio-Economic Resources

69. BKK and KM provinces cover a total area of 14,863 km² and 16,315 km² respectively. The region is characterized by high population growth, a growing cash economy, commercialized agriculture, rapid industrial growth, and increasing competition for land resources. Table 4-1 provides a summary of key socio-economic and land use indicators within the Project Districts.

70. Population density in the Project Districts varies widely and is especially high in the capital districts of Paksan (in BKK) and Thakhek (in KM province). The region has developed relatively quickly in the last decade, with most districts having experienced decreased incidences of poverty. Most district family poverty rates are below the national average.

71. Key agricultural areas are located in Paksan, Hinboun and Thakhek Districts where approximately 25%, 75% and 15.3% of land respectively is used for growing rice and cash crops. Large forested areas are more common in Pakkading, and Thapabath and Mahaxay Districts (70% and 80% of land area respectively) where two large national protected areas (Nam Kading and Phou Khao Khoay) are located. The limestone mountainous region (western Annamite Range) is a key feature of the Project Districts.

72. It should be noted that during the preparation of this ESMP, the field data collection teams have completed the survey for three Districts of Thapabath, Paksan and Pakkading of Bolikhamxay Province while survey activities were on-going in Hinboun and Thakhek District of Khammouane Province. Once, the survey teams completed the survey works, the socio-economic information will be updated.

73. The Project alignment passes through villages generally having moderate population density, located within relatively easy access of district centers (less than an hour). Project villages residing along the NR13 South in Bolikhamxay Province vary in population size, ranging from 9,387 people in Ban Thongnamy, Pakkading District to 495 people in Ban Hatsaikhoun in Paksan District, with an average village size of 750 people. Average household size is 5.34 persons per household and overall sex ratio is 0.99 (male to female).

74. Most of the population in the Project Area is situated in the lowland zone. Population density is greater in villages in Paksan, Pakkading, and Thakhek Districts, particularly along the NR13 South. Villages in Thapabath and Hinboun districts have lower population densities.

75. Further information on demographic indicators in the Project Area is presented in Table 4.5 and overview of key socio-economic indicators in Project Districts is outlined in Table 4.6.

Table 4-5 Demographic indicators of Project villages (Section 3)

Province / District	Number of villages surveyed	Population in surveyed villages			Average village size	Average HH size	Sex ratio (males to females)
		No. Households	Population	Females			
<i>Bolikhamxay Province</i>							

Province / District	Number of villages surveyed	Population in surveyed villages			Average village size	Average HH size	Sex ratio (males to females)
		No. Households	Population	Females			
Pakkading	17	5,997	34,684	17,413	2,040.2	5.78	0.99
<i>Khammouane Province</i>							
Hinboun	19	2,009	21,058	10,562	1,108	10.48	0.99

Table 4-6 Overview of key socio-economic indicators in Project Districts (Section 3)

Provinces / Districts	Population		No of Villages in District	# HHs	Total Land Area (ha)	Population Density	Main Ethnic Groups	Agro-Ecological Zones (AEZs)	Topography	District Poverty Incidence (2015) (% of families)	Accessibility	
	Total	Female									Major Roads	No of Rural Village with no Road
<i>Bolikhamxay Province</i>												
Pakkading	51,958	25,859	48	9,385	241,000	22	Mainly Lao and Tai, 8% Hmong and 4% Khmu	Northern Lowland Paddy Areas	Mainly plains, some mountain plateau areas	4.38	National Road No. 13S and 8A	-
<i>Khammouane Province</i>												
Hinboun	51,252	25,500	103	9,430	201,500	25	Mainly Bor and Yor	Mekong Corridor	Mix of plains, plateau areas and limestone cliffs	<1	National Road No. 13 and No. 11	3.20%

Source: KM-DPI, 2015; BLX's District Government Offices – SEDP, 2016

4.2.2 Economy and Livelihoods

76. Key economic indicators for Project Districts are presented in Table 4-7. Most districts have a relatively high GDP with the exception of Mahaxay District. Being the two capital districts of the Project Provinces, Paksan and Thakhek Districts have the highest GDP in the Project Area. Agriculture remains the primary economic activity in the Project Districts, although the region is transitioning to more market-based economies, particularly in the Vientiane Plains, the Mekong Corridor and areas along the National Highway 13.

77. The region is also experiencing a growing industry sector, especially in Project Districts in Khammouane Province. This has been attributed to the establishment of the Special Economic Zones / Areas near the capital district (Thakhek) and the development of the East-West link where the Thakhek Friendship Bridge was built and completed in 2011.

78. The main primary livelihood activities in the Project Districts include a combination of subsistence based and commercial agriculture, livestock raising, industry plantations, natural resource harvesting and cottage industry (e.g. handicrafts). The key cash crops include rice, maize / sweet corn, cassava and sugar cane. Industry plantations include rubber, eucalyptus, teak and agarwood trees. A summary is provided in Table 4.7.

Table 4-7: Economic activity across the Project Region – District level

Province/Districts	GDP	GDP / Person / Year (Mill. LAK)	GDP Growth (%)	Sector Contribution (%)		
	(Bill. LAK)			Agriculture	Industry	Service
<i>Bolikhamsay Province</i>						
Paksan	650.00	14.84	9.00	36.00	39.00	25.00
Thaphabath	374.00	13.39	11.00	51.00	36.00	13.00
Pakkading	N/A	N/A	N/A	N/A	N/A	N/A
<i>Khammouane Province</i>						
Hinboun	352.37	6.98	10.70	69.89	23.17	6.97
Thakhek	1,242.00	14.08	12.73	N/A	N/A	N/A
Mean (District)	654.59	12.32	10.85	52.29	32.72	214.99

Source: BLX DPI, 2015 and KM DPI, 2015

79. Livelihood systems in the Project corridor are based on lowland rice cultivation, animal husbandry, fishing in nearby rivers and streams, collection of non-timber forest products (NTFPs), timber forest products (TFPs) and a variety of non-agricultural activities.

80. The diversity of livelihood systems varies across the Project villages. Some villages are more dependent on land-based livelihoods, whilst others (particularly in the fast-growing areas along the National Road 13) have had the opportunity to diversify their livelihood base with a number of wage employment and non-agricultural activities. Livelihood systems in the Project Area include:

81. The significant difference in the male and female distribution of occupations is seen with farmer, business, state officials, state enterprise officials, and labor work. Males describe themselves as unemployed, none of the women do. More than 50 % of females are engage in different occupation. However, female described themselves household traders and state enterprise official. Males significantly engage in farmer, labor worker, and official government more than females.

4.2.3 Education and Health Infrastructure

82. From the data collected, most villages have primary schools except for Ban Anousonexay and Ban Simongkhoun in Paksan District; and Ban Nakheuanork and Ban Khonesong in Pakkading District. These villages, however, are located in approximately 1-2 km to neighboring schools where children are accessible. The number of primary school classrooms range from three (Ban Hangsingsavang) to 30 classrooms (Ban Phonexayneua, Paksan District). There are 15 schools across 19 villages in two Project Districts as listed in Table 4-8 and Attachment 1E. These school facilities are located along or in close proximity to NR13 South corridor and some parents expressed concerns over safety of their children during travel to and back from schools. There are two health centers located along the Section 3 Project alignment as listed in Table 4-8 and Attachment 1E. This basic infrastructure will not be directly affected, and will not need to be relocated. On the other hand, the project will provide better access to these facilities due to the improved road condition after the completion of the project. However, negative impact might be occurred such as difficulty during the construction, dust, and risk to accident during the traffic. The project will have the impact mitigation and management plan to reduce and mange potential risk that may be occurred during the construction period.

Table 4-8 List of Schools

No.	Chainage	Position	Distance to Road (m)	
			(To Fence)	(To School)
1	KM 195+900	Right	51.715	114.324
2	KM 217+800	Right	141.214	216.765
3	KM 222+225	Left	54.617	169.695
4	KM 225+500	Left	10.419	90.994
5	KM 225+725	Left	12.083	105.024
6	KM 225+725	Right	16.526	92.383
7	KM 239+875	Right	9.118	134.734
8	KM 241+950	Right	8.362	113.472
9	KM 246+200	Left	32.798	152.443
10	KM 249+500	Left	24.212	49.980
11	KM 254+300	Left	13.381	72.202
12	KM 256+975	Right	13.808	33.059
13	KM 259+100	Right	14.431	77.892
14	KM 260+900	Left	55.144	112.746

No.	Chainage	Position	Distance to Road (m) (From New Alignment)	
15	KM 267+800	RT	11.635	82.426

Table 4-9 List of Health Centres

No.	Chainage	Position	Distance to Road (m) (From New Alignment)	
			(To Fence)	(To Health Center)
1	KM 205+500	Right	56.061	29.207
2	KM 205+600	Left	17.716	39.943

83. Based on data provided during the socio-economic data survey all most 100% of population in the affected areas can read and write. Based on data provided during the socio-economic data survey all of PAPs met in the affected areas can read and write, except villagers in Phonsung village in Hinboun district still have about 110 people (75females) cannot read and write. Majority of affected villages graduated from lower secondary school, following by primary school, Hight School and higher diploma. More than half of people who have education are female.

4.2.4 Tradition and Cultural Sites

84. BKK and KM provinces are also rich in tradition and cultural resources. There are 13 temples and six cemeteries as listed in Table 4-9 below and Attachment 1E..

- There are some ethnic tradition and culture such as “Hit 12 Khong 14 of Lao and Leu” (“twelve rites and fourteen traditions”) and refers more explicitly to the yearly ritual cycle. “Kin Chieng” of Hmong, Yoa and Kher; “LaPeup” of Kmu; “Boudockdeng and Bounkalor” of Pri, and they are all celebrate after crop harvest.

Table 4-10 List of Cultural Sites

No.	Chainage	Position	Remark	Distance to Road (m) (From New Alignment)	
				(To Fence)	(To Temple)
1	KM 194+950	RT	Temple	35.980	45.518
2	KM 201+400	LT	Cemetery	7.950	23.600
3	KM 216+425	RT	Temple	40.843	72.745
4	KM 221+650	RT	Temple	48.295	61.278
5	KM 227+300	RT	Cemetery	7.316	27.925
6	KM 230+400	RT	Cemetery	7.622	26.133
7	KM 239+200	LT	Temple	84.918	132.667
8	KM 240+400	RT	Cemetery	12.873	24.909
9	KM 241+700	RT	Cemetery	13.325	41.938
10	KM 241+800	RT	Temple	9.737	35.160
11	KM 245+700	LT	Temple	8.690	17.720

No.	Chainage	Position	Remark	Distance to Road (m)	
				(To Fence)	(To Temple)
12	KM 253+900	LT	Temple	27.770	55.391
13	KM 255+400	LT	Cemetery	9.099	18.854
14	KM 256+600	RT	Temple	7.174	17.800
15	KM 258+600	LT	Temple	41.213	61.371
16	KM 263+000	RT	Temple	51.302	79.410
17	KM 201+400	LT	Temple		
18	KM 267+475	RT	Temple	11.322	49.038
19	KM 267+600	LT	Temple	15.210	19.364

85. According to the discussion during the consultation meeting in each village visited and even more than two ethnic groups are living in the same village, there are no serious conflicts among or between different ethnic groups, they all respect elders who have been selected to be representatives of each ethnic groups, who are very active in representing and are functioning as the grievance and mediation groups for the villages in coordination with village authorities.

86. Agricultural society and main source of income: All of ethnics who are living along the road have similar agricultural society, although gathering, hunting, and fishing are parts of each ethnic lifestyle. They also grow similar crops including rice, cassava, maize, cardamom, jobs tea, galangal, nut and variety of vegetables as well as similar livestock such as large ruminants, small animal (pig, goat...) and poultry are among the income sources of ethnic groups. All ethnic groups visited said that with less agricultural lands to cultivate, they are doing slash and burn in nearby mountain slopes.

4.2.5 Ethnic Groups

87. Lao PDR is a multi-ethnic country with 50 ethnic groups divided into four main language family groups including Lao-Tai, Mon-Khmer, Chino-Tibetan and Hmong- Iw Mien. Lao Tai speaking people account for approximately 65% of the population. Other family groups are generally considered 'ethnic minority' groups. The largest include Mon-khmer and Hmong-Iwien making up 30% and 5% of the population respectively.

88. Typically, the Lao-Tai reside in the agriculturally productive lowland areas and are also primary residents of urban areas. The Mon-Khmer traditionally live in midland rural areas, whilst the Hmong- Iw Mien are generally found in the upland and highland mountains in the north. Further information is presented in **Table 4.11**.

Table 4-11: Summary of the main ethno-linguistic groups in Km 190 – Km 268		
Language Family	Description	Ethnic sub-groups in the Project Area
Lao Tai	Lao-Tai groups (often referred to as Lao Loum) traditionally reside in lowland areas and for the most part cultivate paddy fields, practice Buddhism and are integrated into the national economy. This linguistic family includes 8 ethnic groups - the Lao who are the dominant group, and various related ethnic groups such as Tai Dam, Tai Daeng, Tai Khao, Tai Lue and Tai Phuan.	Lao Loum, Kaleng, Meuy, Yoh/Yho, Bor/Bo, Phu Tai, Tai Phuan, other
Mon-Khmer	The Mon-Khmer (often referred to as Lao Theung) traditionally live in the middle hill areas, are animist, tend to practice swidden agriculture, utilise forest products and are relatively isolated from the dominant lowland culture - although there has been assimilation and integration for centuries. This linguistic family includes 32 ethnic groups and related sub-groups. Their language links them to the Mon (Menam Region) and the Khmer (Cambodia).	Khmu, Makong
Hmong-Mien	The Hmong-Iw Mien migrated from China to Laos in the 19th century and include several ethnic groups: Hmong Ntsoua, Hmong Daw, Iw Mien and Kim Mun. They generally inhabit highland regions, are animist and practice shifting cultivation.	Hmong
Source: Chazee, 1999 and NSC, 2015		

89. The geographical spread of ethnic groups across the Project villages reflects the broader regional trends. In general, the Lao-Tai ethno-linguistic group are the dominant group in the Project Area, comprising 90% of the population. Villages dominated by the Lao-Tai are generally located in the lowland zone. A number of sub-groups including the Lao Loum, Kaleng, Meuy, Bo/Bor, Yoh and the Phu Tai also make up the Lao-Tai population in the Project Area, with the Lao Loum being the largest ethnic group (65% of the population) in the Project Area.

90. The remaining population consists of ethnic minority groups comprising of the Khmu ethnic group from the Mon-Khmer ethno-linguistic family and the Hmong from the Hmong-Mien ethno-linguistic family. There are some villages dominated by ethnic minority groups (e.g Ban Nakhaen in Thaphabath District; Ban Mixay in Paksan District which are dominated by Khmu; Ban Thongnamy is dominated by Hmong). However, Khmu and Hmong populations reside in a number of Lao-Tai dominated villages, including Ban Nam Ngiep in Paksan District, Ban Namdeua in Pakkading District. The details of ethnic groups of the Project Area are given in EGEP and RP/ARP.

91. Approximately 95.33% of people in Project villages in Borlikhamxay Province practice Buddhism, and 4.67% practice Christianity or Catholic. In multi-ethnic villages, a mix of both religions is common.

(a) Khmu and Hmong in the Corridor

92. In Lao PDR, Khmu form the second largest ethnic group. Though the majority of Khmu people are found in the Northern provinces, there are some households migrated to the central and southern provinces during the past 50 years. The Khmu are settled agriculturists and practice swidden farming. Agriculture is the main source of food, supplemented by gathering, hunting, trapping and fishing. Some Khmu keep domestic animals, but these are used for sacrifices more often than for food. Rice is the staple and there are many varieties, all of them glutinous. Other crops include corn, bananas, sugar cane and a wide variety of vegetables.

93. In the Project area, some Khmu ethnic groups are residing in multiethnic villages with Lao Tai and other ethnic groups. These Khmu groups and communities are found in five Project villages).

(b) The Hmong in the Corridor

94. There is one Hmong village located in the project area. Ban Thongnamy is dominated by a Hmong community with more than 837 households (Table 4-12). The main livelihood activity of Hmong community in Ban Thongnamy is agriculture, small vendor owners, and selling agricultural crops and handicrafts. Many street vendors in this village will require removal for the NR13 South widening and compensation will be provided as described in detail in RP.

Table 4-12 Ethnic Groups in Section 3 (Km 190 – Km 268)

No.	Village	Number of houses					Others
		Total	Lao	Khmu	Hmong	Tai	
Pakading District							
1	Donexay	153	153				
2	Hadxaykham	172					172
3	Phonxay	130	39	91			
4	Phonchaleun	922	922				
5	Namdeua	514	351	163			
6	Nakheuanork	155				155	
7	Namkhou	185	120			65	
8	Thongnamy	1,320	438	45	837		
9	Namsang	214	214				
10	Viengkham	730	725	5			
11	Namthone	201	85			116	
12	Khonesong	153	153				
13	Na-In	227	227				
14	Nalieng	115	110	5		110	
	Sub-total	5,191	3,537	309	837	446	172
Hinboun District							
15	Viengthong	148	148				
16	Phonxai	94	94				
17	Laokha	211					211
18	Phonsa art	55	55				
19	Phonsung	75					75
	Sub-total	583	297		-	-	286
	Grand Total	5,774	3,834	309	837	446	458

4.2.6 Gender

95. Similar to the rest of Lao PDR, semi-urban economies in the Project corridor have a gendered division of labor and a gendered division of the income and benefits of labor. Some roles are traditionally undertaken by men (e.g. construction, rubber tapping, etc.) and some roles are traditionally undertaken by women (e.g. handicraft, and livestock rearing). Women undertake most household duties (i.e. cooking and cleaning), including the collection of water for household consumption or usage, and the collection of firewood or fuel and taking care of small livestock.

96. In the surveyed villages, both men and women play a role in agriculture and livelihood activities. Men are generally more involved in the agriculture works; however, women also help with the rice paddies. Women undertake the marketing and sale of their agriculture and livestock products, including selling rice, cassava, vegetables, fish, and livestock, which contribute to household income in combination with handicrafts, undertaking petty trade, and wage labor. Handicraft is also one of the main duties of women in the Project area, which includes weaving, and making brooms, sticky rice boxes, and bamboo fences.

97. Men also sell their labor to make an income. The labor consists of construction works, agricultural work, and mining. In villages near the major city of Paksan, such as Phonemongkhoun, both men and women work for the Government of Lao PDR.

98. All of ethnic women said that their barriers to participation in project activities are language; education; cultural norms; workload; low self-esteem. To empower women to overcome barriers themselves and participate more fully in community development requires both men and community to provide support and acceptance.

99. To address the concerns on the involvement and participation of women, the organization, establishment and development of the road maintenance and other village organizations must consider women representation in leadership and executive committees. Women must also be given equal opportunity to represent the household in meetings, trainings, and similar programs/activities. Women will be also encouraged and provided with employment opportunities to possible degree to work for the project and contractors.

4.3 UXO Risks

100. An unexploded ordinance (UXO) is military ammunition or explosive device which has failed to function as intended when initially deployed. Lao PDR is, per capita, the most heavily bombed country in the world and despite clearing efforts, UXO is still present in much of the country, with approximately 25% of Lao PDR's 10,000 plus villages being UXO contaminated (NRA, 2016). The Lao National Regulatory Authority (NRA) estimate there are 80 million UXO scattered throughout the country, the majority of which are cluster munitions. Much of the data on UXO in the country is supplied by the US military. However, these data are not comprehensive, and bombing undertaken by the Thai and Lao governments has not been fully documented or mapped.

101. In Lao PDR, UXO risk continue to have lethal impact on human and livestock (UNDP, 2010). The presence of UXOs can also impede infrastructure development and prohibit access to areas of land and interrupting transport routes. The density of UXOs is unequally distributed across Lao

with the majority of UXOs found along the border of Lao and Vietnam in the Khammouane, Savannakhet, Saravane, Sekong and Attepeu Provinces.

102. As the proposed NR-13S interventions will focus mostly on surface road upgrade works within the existing ROW, thus the UXO risk is expected to be low. However, there may be some risks during the extraction of materials and new borrow pits and construction sites including the project work camps, thus the contractor will be required to ensure that those sites are free of UXO risk.

4.4 Natural Hazards and Flooding

103. Lao PDR and its inhabitants are highly susceptible to natural hazards including flooding, landslides, storms and typhoon, agricultural pests and infestations, droughts in certain seasons, and epidemics (ADPC, 2016). Table 4-13 shows the frequency, extent, damage and loss of life of recorded natural hazards in Lao PDR from 1960-2018. Note that estimates of total loss of life, number of people affected, and total damages are likely to be an underestimate due to the remote nature of disaster impacts, uncomprehensive surveys of private asset damage, infrequent national data collection and the possible lack of hospitalization or record keeping of disaster victims.

Table 4-13: Summary of natural hazards occurrence, damage and people affected in Lao PDR (1960-2018) (EM-DAT, 2018)

Disaster type	Disaster subtype	Events count	Total loss of life	Total number affected	Total damage ('000 US\$)
Drought	Drought	5	0	4,250,000	1000
Epidemic	Bacterial disease	2	534	8,244	0
	Viral disease	4	285	38,000	0
	Other epidemics	3	44	9,685	0
Flood	Flash flood	1	34	430,000	0
	Riverine flood	12	395	2,181,743	158,128
	Other floods	13	85	1,952,868	12,530
Storm	Tropical cyclone	4	64	1,397,764	103,650
	Other storms	2	8	38,435	302,301

104. In 2018, the Tropical Storm Son-Tinh and Tropical Storm Bebinca events during July to August caused severe damages to many provinces and districts across Lao PDR. Road sector in particular, was damaged significantly and accounted for one-fifth of the country's road network (GOL, 2018), with a total estimate of 822.02 billion Lao Kip.

Table 4-14: Annual Loss of Transport Infrastructure Caused by Natural Disaster

Year	Type of Disaster	Affected Properties	Affected Value in Billion LAK (Million USD)
2011	Flood, Landslide	Roads and Bridges	554.27 (68.43)
2012	Flood, Landslide	Roads and Bridges	402.94 (49.75)
2013	Flood, Landslide	Roads and Bridges	323.79 (39.97)
2014	Flood, Landslide	Roads and Bridges	573.95 (70.86)

Year	Type of Disaster	Affected Properties	Affected Value in Billion LAK (Million USD)
2015	Flood, Landslide	Roads and Bridges	794.15 (98.04)
2018	Flood, Landslide	Road, Bridges and Culverts	1,607 (198.52)

Source: Mainstreaming Disaster and Climate Risks into the Road Sector in Lao PDR, 2017; Post-Disaster Needs Assessment: 2018 Flood, Lao PDR

105. **Flooding.** Road sections in BKX and KM provinces were also affected by the 2018 flood events. The estimate damage values to the road infrastructure was 29.91 billion Kip (in BKX) and 53.05 billion Kip (in KM province). It is estimated that both provinces need short-term and medium-term road maintenance and repair at a total cost of 77.81 billion Kip and 71.74 billion Kip respectively (Lao PDR, 2018). It is expected that the NR-13S Project will potentially reduce the flooding of catchments along the ROW and possibly extend further to residential areas outside of the ROW. Currently, many residential areas currently experience seasonal flooding in association with high rainfall events due to a lack of adequate drainage systems and the implementation of backfill of low-lying regions for urban development. Although the exact height of water table is unknown, it can be considered to be close to the surface within the highly-permeable vadose zone, indicating that that a slight alteration to the existing conditions will have adverse effects. The assessment of existing bridges and culverts was conducted by the design consultant (LTEC) hydrological survey team (see Attachment 1b).

5. POTENTIAL IMPACTS AND PROPOSED MITIGATION MEASURES

5.1 Overall Impacts

106. The overall impacts of the proposed Project will be positive in improving road accessibility, road safety, flooding resilience, and well-being of the local people. Spot improvements of critical sections aim to improve the road's climate resilience that include elevating flood prone road sections, paving road sections with steep gradients and sections passing through large communities, drainage improvement/construction, and slope improvement/ stabilization. The Project will also provide significant capacity building through on-the-job training, the introduction and implementation of OPBRCs on road improvement, and the environmental and social planning and management that goes along with the Project activities.

107. This impact assessment and mitigating measures cover the entire cycle of the Project activities, from design, pre-construction, construction and operation and maintenance. The coverage of the project phases is defined as follows:

- ▶ Preparation phase including time for preparation of Project activities and investment including preparation and completion of the ESMP, EGEP, RP/ARP, detailed engineering design (DD) and preparation of bidding documents (BD) and contract document (CD) including all AIIB clearances.
- ▶ Pre-Construction Phase is the time before the 'Notice to Proceed' is given to the contractor to commence the construction covering the beginning time for bidding and implementation of RP/ARP and EGDP including the time when detailed measurement survey (DMS) and determination of compensation is completed as well as the mobilization of construction supervision consultant.
- ▶ Construction Phase is the period from the completion of the Pre-construction activities time until the issuing of the 'Certificate of Completion'. Payment of compensation for project affected people as per ARP/RP and GOL issuance of the ECCs and other necessary approval must be completed before construction can begin.
- ▶ Operation and Maintenance (O&M) Phase is the time from completion of works (including site clearance) and maintenance activities during the OPBRC period. It is expected that after the OPBRC, the O&M responsibility will be under the responsibility of the DPWT of BKX and KM provinces.

108. Potential impacts of the Project can be classified as:

- ▶ Direct Impacts - i.e., those directly due to the Project itself such as the conversion of land previously used for agricultural purposes to transport use. Direct impacts also include the impact of construction expenditures in the local economy.
- ▶ Indirect Impacts – i.e., those resulting from activities prompted by the Project, but not directly attributable to it. The use of rock for the improved roadbeds, for example, has

an indirect impact of increasing the demand for crushed rock and increased borrow operations.

- ▶ Cumulative Impacts – i.e., impacts in conjunction with other activities. A single road improvement may not exert a significant environmental impact, but if several roads comprising a network are developed in the same area, or are combined with agricultural reform programs in the same general area, the cumulative or additive effect could be large.

109. The nature of risks and impacts on local community and local environment is assessed according to key Project activities on physical, biological, and sociological characteristics of local conditions while the level of impacts can be categorized as short-term or long-term. Both short-term and long-term impacts may be either beneficial or adverse. Short-term positive impacts will include, for example, the generation of employment opportunities during construction period. Long-term benefits will include enhanced development opportunities, improved transport services, easier access to commercial and service facilities; faster communications and commodity transport; improved access to markets and growth centers and increased services and commercial facilities.

110. **Table 5-1** summarizes the assessment of the potential impacts of the proposed Project during rehabilitation and maintenance works

Table 5-1: Summary of Potential Impacts of Project

Aspect	Physical Characteristic					Biological Characteristic			Socio-economic Characteristic							
	Geology	Topography	Soils	Climate and Air Quality	Hydrology	Flora	Fauna	Protected Areas	Infrastructure	Land Use	Waste Management	Socio-economic	Health and Safety	Educational / Health Facilities	PCR	Noise
Land Acquisition										D/L		D/L				
Borrow Pits / Quarries		D/L	D/S	D/S	D/S	D/S			D/S	D/S			D/L			D/S
Asphalt Plants / Batching Plants			D/S	D/S	D/S	D/S			D/S	D/S	D/S		D/S			D/S
Construction Camps			D/S	D/S	D/S	D/S			D/S	D/S	D/S	D/S	D/S			D/S
Storage / Laydown Areas			D/S		D/S	D/S			D/S	D/S	D/S		D/S			D/S
Haulage Routes				D/S					D/S			D/S	D/S	D/S		D/S
Site Clearance			D/L		D/S	D/L	D/L			D/L	D/S		D/S		D/L	D/S
Pavement construction				D/S	D/S				D/S		D/S		D/S			D/S
Bridge construction			D/S	D/S	D/S	D/S	D/S				D/S		D/S			D/S
Culverts & Site drains			D/S	D/S	D/S	D/S					D/S		D/S			D/S
Earthworks		D/L	D/L	D/S	D/S	D/L	D/S		D/S	D/S	D/S		D/S			D/S
Removal of Trees			D/L		D/L	D/L	D/L			D/L		D/S				D/S
Relocation of Services									D/S	D/S		D/S				D/S
Increased traffic				D/L								D/L	D/L	D/L		D/L
Road maintenance			D/S	D/S	D/S						D/S	D/S	D/S			D/S

D = Direct Impact	S =	Short-term Impact	Potential Positive Impact	Potential Low/Medium Impact	Potential High Impact
	L	Long term impact			

111.

5.2 Positive Impacts

112. **Social benefits:** These include (1) Improvement of the economic conditions of beneficiary households; (2) Increase household income and hence, reduce poverty due to (a); potential commercialization of agricultural and non-agricultural production expected to increase in the areas; (b) The buyers can come to collect and buy local products in place with reasonable prices thanks to the improved condition of road; (3) Savings on labor, time and local materials for the beneficiary households from the frequent repair of the road particularly during the wet season; (4) Increased empowerment of ethnic groups and women through their representation in other committees that will be established through the project implementation and project activities.

113. **Individual households (HH) benefits:** Beneficiary households and local people are expected to save time spent to access public services such as health centers, high schools, banks, agricultural technical service center located in the district and provincial towns. The road users could also benefit from improved access to economic domains as they would transport their agricultural and non-agricultural products (such as cassava, rice, maize, cardamom, jobs tea, galangal, ground nuts and variety of vegetables, non-timber products and animal products) to the districts and the provinces market. Their children also can come back from school in the same day or more quickly to help parent do domestic works due to improved condition of the road. They also can use tracks, bikes or carts to carry to the local markets. All those positive impacts mentioned will contribute HHS' improved livelihood and income to finance education for children and HH member health care.

114. In addition, the Project will also support community engagement in road operations and maintenance (O&M) through: (i) establishment and capability development of a road maintenance group that will be responsible for the rehabilitated/improved road system; (ii) collection of funds for the road O&M; (iii) improved management of the road maintenance; and (iv) institutionalized grievance redress mechanism into GoL system. During the consultation, all the participants agreed that the road upgraded is their dream. They all support this project for many positive reasons such as the new and standard road will show a good image of the community as well as the country, better road equals to better transportation, possibly reduces the issues of road accident and better road safety conditions.

115. Results from consultations suggested that the local authorities and communities, including ethnic groups and women, along the project areas expressed full support for the implementation of the road maintenance. Their high expectation is that the road works will happen soon. The communities suggested that additional consultation should be made during the preparation of the detailed design to ensure that their views and expectations are considered. They expressed their commitment to supporting sub-project implementation by: 1) participation in road sub-project preparation, detailed design; and 2) monitoring the implementation of environment and social management plan by the contractor.

5.3 Negative Impacts and Proposed Mitigation Measures

116. **Overall.** Road rehabilitation works may cause involuntary resettlement impacts, disrupt the communities in the vicinity of the right of way, influx of workers, health and safety concerns, increased traffic of heavy machines and possible conflicts with the local population. Consultations

with communities suggested that key concerns include increase in dust, noise, wastes, local traffic, road safety, and nuisance during rehabilitation and road safety during operations. The negative impacts during road rehabilitation will be mostly short-term, localized, and can be mitigated through the application of specific requirements identified in this ESMP. The key issues and proposed measures to mitigate the potential risks and negative impacts of the proposed Project during preconstruction, construction, and operations phases are briefly discussed below while additional details are provided in Attachments 5 to 9. Results from the assessment has suggested that most of the potential negative impacts are considered direct and short term with some long-term risks related to land use, socio-economic, and noise/vibration issues.

(a) Potential negative impacts during preconstruction phase

117. The proposed works to be financed under the project will be carried on existing road and may involve minor realignments and insignificant expansion where necessary and where resettlement impacts and land acquisition are either unanticipated or minimal. The impacts will include small land acquisition of existing and encroaching structures and disruption of economic activities being conducted in the ROW announced before or after the original National Road Law, 1996 and some impacts on ethnic minority groups. Implementation of RP and EGEP will address and mitigate potential negative impacts as summarized below.

- **Land Acquisition:** The potential impacts from the works will mainly be within the existing right of way but will still require acquisition of private and government land which will be confirmed by the survey team. A more detailed measurement survey (DMS) will be conducted following the finalization of the detailed design. Efforts have been made to reduce the width of the Corridor of Impacts (COI) to minimize impacts. In addition, and as part of the project's resettlement strategy, affected households (AHs) will be provided sufficient time to rebuild their homes and shops prior to the commencement of civil works, aside from being able to continue with their present livelihood activities even during project implementation. A Resettlement Plan (RP) has been prepared and the affected households (PAHs) have been informed. Please refer to RP of Package-3 for more details.
- **Ethnic Groups:** This project work will likely have an impact on minority ethnic groups (EGs) such as Khmu and Hmong. Khmu are found in six Project villages in Thaphabath, four villages in Paksan and six villages in Pakkading while Hmong communities have been integrated in several Project villages such as in Ban Nam Ngiep in Paksan District and Ban Thongnamy is dominated by a Hmong community. The common negative impacts on the ethnic groups are likely to include (i) increased human and animals road accidents; (ii) loss of assets (land and crops); (iii) health hazards such as: (a) dust and noise pollution; (b) potential to increase human and animals' diseases (c) risks associated with construction material storage and construction sites; (d) poor sanitation and hygiene from improper waste disposal/ management; (iv) social problems due to (a) beer shops expected to increase while ethnic groups have meetings, lack of basic knowledge on HIV/AIDS/STI prevention and protection; (b) possible increase in illegal trades such as Amphetamine, theft, trafficking of the young people to sell their labors in towns. Road works may also disrupt the communities caused by the influx of workers, increased traffic of heavy machinery and possible conflicts with the local

community. An Ethnic Group Engagement Plan (EGEP) is being prepared to address these impacts.

(b) Potential negative impacts during construction phase

118. Potential negative impacts of the proposed road improvement and rehabilitation activities on local communities and local environment will mostly be limited to road safety issues, community and labor health and safety issues, temporary disruptions of local traffic, impacts on air quality, noise and vibration, water and soil contamination, and change of flooding patterns. These impacts will mostly be short-term, localized, and can be mitigated through the application of specific requirements identified in this ESMP as described in the site-specific mitigation measures identified in the Alignment Sheet and the implementation of ESCOP and COC on GBV/VAC by contractors with close supervision and monitoring of Construction supervision consultants (CSC), DPWT, PONRE, and local communities.

119. The key negative impacts during the proposed rehabilitation works will include, but not limited to, the following activities: (i) establishment and operation of worker camps, including disposal of waste generated from the camp; (ii) establishment and operation of construction materials and equipment yards and access roads, including access tracks/haulage routs; (iii) workers safety and hygienic conditions including hiring skilled workers from outside of the locality and other social issues due to workers; (iv) arranging water for staff and workers consumption and construction, including interruption of water supply; (v) storage of hazardous materials (including wastes); and (vi) other typical construction activities such as excavation, earth work, asphaltting, operation of construction machinery, handling of fuels, oil spill and lubricants, cutting of trees in the right of way, excavation of drainage channels, disposal of excavated material, loss of fertile soil and vegetation and impacts on natural vegetation and embankment erosion, landslide, erosion and water contamination of rivers/streams along the watercourse, dust and smoke emissions, noise pollution, excavation of borrow areas, rehabilitation of borrow pits, encountering archaeological sites during earth works, aesthetic/scenic quality, and disturbance to temples and cemeteries, etc.

120. To mitigate these impacts and facilitate effective implementation, the present ESMP has been prepared by identifying key issues, proposing mitigation measures, and monitoring indicator in the form of an Alignment Sheet (see Attachment 5). In addition, the ESCOP (Attachment 6) identify typical actions/mitigations to reduce impacts such as generation of dust, noise, vibration, safety, waste, and social aspect including “chance finds procedure” and environmental, social, health, and safety (ESHS) aspects while the COC on GBV and VAC (Attachment 7) provide guidance on management of worker behavior to avoid gender-based violence and violence against children in compliance with the guidelines provided in the ESMP. These mitigation measures will be included in the bidding document (BD) and contract document (CD) for the Project Road.

121. The contractors will be required to (a) provide adequate information on the rehabilitation period and contact person in case local community want to complain, (b) pay particular attention to reduce road safety risks during rehabilitation and adequate signs/information will be provided in critical area where high risks are anticipated (see Attachment 2b), (c) conduct/maintain a bi-weekly meeting with local communities to explain the rehabilitation plan/activities, and provide temporary crossing facilities to ensure continued accessibility. These mitigation measures will be included in the bidding document (BD) and contract document (CD) for the Project Road. The

BD/CD will also require the bidder to submit a strategy and plan to implement these measures⁴ while the contractor will be required to prepare and submit their Construction-ESMP (C-ESMP) (or site specific ESMP) as soon as they are on board (within 28 days after the contract is awarded). The construction supervision consultant (CSC) and field engineer (FE) will be required to review and approve the C-ESMP and supervise its implementation on a regular basis. DPWTs and local authorities will be required to monitor the C-ESMP and other ESS activities (implementation of RP and EGEP) on monthly basis while EDPD/PTRI will conduct 6-monthly monitoring and submit the ESS monitoring reports to AIIB.

122. For the OPBRC Package 3 (KM190 to KM268) to be financed by AIIB, the Alignment Sheet to be applied is provided in Attachment 5 (Table A5.2) and this requirement will be included in the BD/CD of the Package 3.

123. Consultation with local community and implementation of grievance redress mechanism (GRM) will also be required. The consultation with local community was carried in August and November 2019 and the result is presented in the Section 7. During construction, CSC and contractor will be required to regularly conduct consultations with local community and report to DPWT as monthly basic. The CSC and contractor will also be required to establish and implemented a GRM system. Monitoring and reporting of contractor performance on the GRM implementation and tracking forms (Attachments 8 and 9) will be provided in the ESS monitoring reports. Grievance related to safeguard issues from communities, ethnic groups and other stakeholders that result from project activities will be resolved by the Grievance Redress Committee (GRC). However, the complainant also retains the right to bypass this procedure and can address a grievance directly to the EDPD/PTRI Office or the National Assembly, as provided for by law in Lao PDR. At each level, grievance details, discussions, and outcomes will be recorded in a grievance logbook. The status of submitted grievances and grievance redress will be reported to Project Manager through the monthly reports.

124. The potential impacts on flooding during construction may include localized flooding and/or road way flooding, and these can be mitigated as follows:

- **Mitigation for localized flooding:** Drainage close to residential areas to be re-routed to appropriate existing drainage infrastructure and / or natural water course that can adequately deal with flows; implementation of temporary flood control measures during the construction phase to safeguard from any unpredicted rainfall events; and flood mapping to be completed to assist with the production of inundation maps for localized area and consequently used for urban planning.
- **Mitigation for roadway flooding:** Stormwater drainage and channels will need to be adequately designed to be able to adequately control flow on a regular basis. This is particularly relevant for urban catchments which, modelling suggests, exhibit a 'peak' response due to the high levels of impermeable surfaces. New drainage infrastructure should be integrated with existing drainage where possible; stormwater drainage and channels will need to be regularly cleared of rubbish and

⁴ This is referred to the ESHS-MSIP in the BD

other debris; construction of overflow drainage systems will need to adequately deal with irregular high rainfall events.

- ***Mitigation for flow alteration:*** Ensure that adequate drainage measures are implemented to approximate natural flow including temporary construction access roads and especially for sections of the road crossing wetlands (box culverts or viaducts recommended); ensure that temporary construction access roads that are no longer required are removed in a timely manner; phased-construction in flow sensitive areas such as wetlands to minimize flow disturbance; and plan construction over flow sensitive areas during low flow to minimize flow disturbance.

(c) Potential impacts during road operations and maintenance phase

125. Potential negative impacts during O&M phase will mainly be associated with increasing risks of road safety and increased noise, vibration, and increased traffic density due to an increase in vehicles traffic and driving speeds as well as on potential change of flooding pattern after completion of the rehabilitation works. However, improving climate resilience and flooding and road safety are the main objectives of the proposed Project and the interventions have been designed to meet the best feasible options to be implemented under the Project. Nonetheless, to further mitigate the potential negative impacts on road safety risk and the change of flooding pattern, additional efforts will be made. The key impacts and mitigation measures are discussed below.

126. Mitigating potential risk on road safety during operations. MPWT through the Department of Transport (DOT) and the DPWTs is making efforts to improve road safety and improve asset management and consideration of mitigation measures for sensitive receptors to be affected by traffic noise (through performance-based maintenance) of the road networks in Lao PDR. For the NR-13S Project, as part of safeguard capacity building. EDPD/PTRI will make an effort to provide knowledge and support to DPWT of BKX province to enhance their capacity on road safety at community level and ensure proper road rehabilitation including clearing vegetation within the Corridor of Impact. In addition, efforts will also be made to conduct road safety campaigns and pilot activities to promote knowledge and understanding of local road users on road safety regulations and good practices as well as to encourage active participation of local community especially children and women in the road safety activities in area near schools and hospitals located along the NR-13S. During Project preparation in late 2019 a survey was made on traffic and road safety assessment and recommendations were provided (see Section 5.4).

127. Mitigating risk due to change of local flooding pattern. Despite the Project benefits of addressing flooding and specific interventions in specific locations, the new road surfaces for NR-13S, road adjustment, and increasing embankment elevation in some areas may increase impervious surfaces and create some changes on flooding pattern along the road embankment. Roads maximize runoff generation during rainfall and introduce high flow velocities and significant flow accumulations at exit channels and culverts. These exit channel and culverts will direct the increased runoff into existing and/or new watercourses and potentially will alter the flow and pathways of natural origins. This is particularly relevant to wetland areas in sections that pass through Thaphabath and Paksan Districts. This increase can also have the capacity to transport debris and waste towards the channels and culverts, leading to blockages that can eventually result in the roadway flooding in other areas. The roadway flooding would potentially cause disruptions

to the daily operations of many communities that would rely on the NR-13S. Additionally, any infrastructure within the ROW may potentially be exposed to the large volume of water causing possible destruction.

128. To mitigate the potential impacts during operations phase, the following measures should be considered during detailed design of the Project:

- Stormwater drainage and channels will need to be adequately designed to be able to adequately control flow on a regular basis. This is particularly relevant for urban catchments which, modelling suggests, exhibit a ‘peaky’ response due to the high levels of impermeable surfaces. New drainage infrastructure should be integrated with existing drainage where possible.
- Stormwater drainage and channels will need to be regularly cleared of rubbish and other debris.
- *Flow alteration:* Construction of overflow drainage systems to adequately deal with irregular high rainfall events. Ensure that drainage infrastructure is regularly inspected and well maintained (cleared of blockages that may occur).

5.4 Safety Risk Assessment

129. In order to facilitate the assessment of present and future traffic demands, for the development of need-based infrastructure accurate information and continuous monitoring of traffic by appropriate methods is necessary. This traffic survey was therefore implemented to ensure that sufficient and appropriate data is available to undertake necessary planning, design, construction and maintenance of the NR13 South, which is aimed at meeting the prevailing traffic flow, future traffic growth and loading without considerable deterioration in the quality of service.

130. A comprehensive traffic survey was conducted manually in six locations for NR-13S Project. All surveys were implemented for three consecutive days from 6:00am – 6:00am of the following day by the design consultant (LTEC) which comprised of two supervisors and 18 enumerators. The traffic flow data collection team stood by the roadside at appropriate straight road section, counting and classifying the vehicles as they passed. The survey recorded all vehicles moving in one particular direction (southbound and northbound). The survey started from 29th October to 16th November 2019 with the use of field forms, photos, and other survey equipment. Results are presented in Attachment 2a (Traffic Survey Results).

Table 5-2: Location of Traffic Survey

No.	Chainage	Location	Survey Time	Duration
1	Km 92+218	Tha Bok Bridge Straight Line 1	6:00AM – 6:00 AM	3 Day
2	Km 140+162	Nam Ngiep Bridge Straight Line 2	6:00AM – 6:00 AM	3 Day
3	Km 189+040	Nam Kading Bridge Straight Line 3	6:00AM – 6:00 AM	3 Day
4	Km 239+700	Nam Thone Bridge Straight Line 4	6:00AM – 6:00 AM	3 Day

No.	Chainage	Location	Survey Time	Duration
5	Km 280+400	Nam Hinboun Bridge Straight Line 5	6:00AM – 6:00 AM	3 Day
6	Km 346+000	Thakhek Straight Line 6	6:00AM – 6:00 AM	3 Day

131. Manual traffic flow count was categorized by a visual assessment of the vehicle size and configuration of axles. This traffic flow data collection however, classified vehicles into 11 categories based on the local and country traffic context as follow: Bicycle; Hand tractor; Motorcycle; Tuk Tuk, Jumbo; Car, taxi, jeep; Pick up, van; Minibus; Medium truck and bus; Heavy truck & bus; Light truck; and Trailer.

132. Safety Risk Assessment was also conducted by LTEC and 25 risk points were identified. Preventive measures/recommendations to each risk points were also identified (see Attachment 2b (Safety Risk Assessment)).

5.5 Site Regulations and Safety

133. The Employer and the Contractor shall establish Site regulations setting out the rules to be observed in the execution of the Contract at the Site and shall comply therewith. The Contractor shall prepare and submit to the Employer, with a copy to the Project Manager, proposed Site regulations for the Employer’s approval, which approval shall not be unreasonably withheld.

134. Such Site regulations shall include, but shall not be limited to, rules in respect of security, safety, traffic control, accident response, gate control, sanitation, medical care, and fire prevention.

5.6 Management of Construction Materials

135. The Project road is predominantly located on existing alignment and substantial sections of the first quarter of the alignment will be built using embankments over swamp and soft ground. Considerable amounts of borrow materials will therefore be needed to improve the swamp ground, including replacement of swamp deposits with rock fill, and in areas of embankment to attain the appropriate height of earthworks on which to form the required road grade. Capping layers may also be required to achieve a uniform roadbed support. The materials required to be sourced locally for road construction include:

- ▶ Natural granular material for possible application as subbase;
- ▶ Borrow materials for embankment fill (typically obtained from nearby NR13 South alignment but from private owned/operate borrow areas in some cases);
- ▶ Quarry stone for production of aggregates for asphalt, crushed stone base, concrete and masonry works; and
- ▶ Sand for concrete and mortar.

136. The possible sources of construction material were previously analyzed for sections of the alignment. Attachment 1c shows locations of the material sources for sand, gravel, borrow pits, and quarries. It is expected that these sites will supply source materials to the closest section of the alignment to minimize the impact of transporting materials.

137. The excavation of material from all sites has the potential to impact on the local environment of the sites and the proposed alignment. This is highly dependent on the methods used to excavate the material such as blasting, drilling and crushing and the transportation and stockpiling of material along the proposed alignment. The potential impacts of material excavation include:

- ▶ Potential UXO risk;
- ▶ Exposure of soil that has the potential to lead to increased erosion and discharge of sediment into waterways;
- ▶ Exposed faces and slopes that may be at risk of landslide or collapse;
- ▶ The dewatering of some areas within source sites has potential to impact on flow activation of potential plumes;
- ▶ Discharge of effluents from aggregate washing and crushing has potential to impact on water quality; and
- ▶ Increased noise, dust and vibrations in the local area surrounding the source sites.

138. It is recommended that prior to any borrow materials, quarry stone and sand, a quick assessment is undertaken for each site to ensure that UXO risk and impacts on local community and local environment are low and appropriate actions will be made by contractor to mitigate these risks/impacts. Obtaining approval letter from local authorities is required before utilization of each site. Each site should have a clear plan for mitigation of erosion and/or sedimentation measures including construction of drainage controls and sedimentation ponds, daily deployment and maintenance of sediment control devices such as silt fences and jute netting, and planning of quarrying operations to minimize long-term exposure of erosive materials. It is expected that each quarry will also have a rehabilitation plan for the closure of the site after the sourcing of materials.

5.7 Management of Contractor

5.7.1 Site Clearance

139. During carrying out the Contract works, the Contractor shall keep the Site reasonably free from all unnecessary obstructions, store or remove any surplus materials, clear away any wreckage, rubbish or temporary works from the Site, and remove any Contractor's Equipment no longer required for execution of the Contract.

140. Clearance of Site after Completion: After Completion of all parts of the Works and Services, the Contractor shall clear away and remove all wreckage, rubbish and debris of any kind from the Site, and shall leave the Site and the Road clean and safe.

5.7.2 Key ESS Requirements

141. Since this is a 10-year OPBRC, the contractors will be responsible for implementation of the mitigation measure during the first 2-3 year construction phase as well as the following 7-8 year operations and maintenance (O&M) while the construction supervision consultant (CSC) and/or field engineer will be responsible for day-to-day monitoring of the C-ESMP implementation and ensure compliance. The implementation cost of the C-ESMP will be part of the OPBRC cost while

that for RP and EGEP will be financed by GOL. The ESS requirements described in this ESMP⁵ as well as GOL requirements/ conditions during approval of the Initial Impacts Examination (IEE) and issuance of the Environment and Compliance Certificate (ECC) will be considered during the preparation and approval of the C-ESMP and its subplans.

(a) ESS Requirements before commencement of construction

142. Before construction begins at each Project site, all the following requirements will be completed, checked and approved by CSC, DWPT, PONRE and EDPD/PTRI:

- Submission and approval of Contractor Environmental and Social Management Plan (C-ESMP) with adequate measures to mitigate potential negative impacts due to the rehabilitation/maintenance activities including those related to environmental, social, health, and safety, community health and safety and worker behaviors. The C-ESMP will be prepared in line with the site-specific ESMP developed for the Project (see Attachment 5a) by the Contractor within 28 days after contract awarded and it will be reviewed and approved by DPWT and/or the supervision consultant and/or Field Engineers. The approved C-ESMP will be submitted to EDPD/PTRI.
- Recruitment of key ESS staff of the contractor to be responsible for environmental, social and safety aspects.
- Establishment of worker camps with quality health services and sanitary equipment and all required supporting facilities and workshop/material storage area in compliance with section on Labor Management, Worker Camp and Storage Area below. Worker camps and storage areas will be checked and approved by CSC, DPWT and PONRE before moving or utilization of the area. Worker camp management plan may be included in Labor Management Plan.
- Development of Code of Conduct (COC) and Company Project Rules regarding health and safety of workers and local communities to prevent and address potential risks and issues associated with possible labor influx including SEA, GBV and VAC, Development. The contractor will provide training to all project staffs and workers. Code of Conducts and Company Project Rules will be signed and stamped by company management team and all staffs and workers. Attachments 6 and 7 provide guidance on ESCOP and COC on GBV/VAC. COC and Company Project Rules may form part of the Labor Management Plan.
- Provision of a list of Contractor's key staff, engineers, and worker to be working on site. The information will be included, but not limited to, personal data, criminal check and health data to ensure that all employees are free of the following diseases: liver cancer and STDs of the following information: names and surnames, ages, address (village, district, province, contact details, status (single, married), health (good), family information (number of children, name of wife, address and contact

⁵ Attachment 2b (road safety), Attachment 5 (issues and mitigation and the Alignment Sheet, Attachment 6 (ESCOP), Attachment 7 (COC), Attachment 8 (accident report form), Attachment 9 (GRM), and Attachment 10 (community concerns).

details) and among others. The list of employees will need to be attached in C-ESMP and distribute to all project affected communities/villages.

- Consultation with affected communities/villages on project activities, risks/impacts, prevention and mitigation measures and other community health and safety information. Submission of consultation report to DWPT and EDPD/PTRI with list of participation and minutes of consultation.

143. The Contractor will also install signaling of works, ensure no blockage of access to households during construction and/or provide alternative access, provide footbridges and access of neighbors and endure construction of proper drainage on the site. All measures that are identified in the Safety Risk Assessment including, but not limited to, the following:

- ▶ Project sign board will be installed at the beginning and the end sections of the Project.
- ▶ Speed limit signs will be installed at both edges of village, communities, schools, hospitals and other sensitive areas with speed limit between 20-25km/hr;
- ▶ Speed limit and caution signs at both edges of each active construction area;
- ▶ Install signs indicating way to work camps, borrow pits, quarries, etc.,
- ▶ Bypass signs, reflection, etc.,
- ▶ Ensuring that local communities are active involve in the planning and installation of these signs and help preventing damages and/or loss as much as possible.

144. The Contractor will also be required to prepare a plan on occupational and community health and safety (C-OCHSP) and complete at least one training for all contractor staff and workers working for the Project with records of any training and induction. Periodic and follow-up training will be conducted at least 1 time in every 3 months.

(b) ESS Requirements during Construction Phase:

145. The Contractor will be required to implement all measures identified in the ESMP, C-ESMP, Alignment Sheet, and C-OCHSP. The Contractor will also manage all activities in compliance with laws, rules and other permits related to site construction regulations (what is allowed and not allowed on work sites) and will protect public lives and properties. Degradation and demolition of private properties will be avoided. Paying compensation to damage to the public facilities and/or private property will be required. The Contractor will inform PMU of the Project and DPWT on issue and/or damages that may unexpectedly occur.

146. As part of ESCOP, the Contractor is responsible for protection of local environment against dust, air, noise, vibration, exhaust fuels and oils, and other solid wastes generated from the work sites. The Contractor will manage waste properly and will not burn it on site and will also provide proper storage for construction materials, organize parking and displacements of machines in the site. Used oil and construction waste materials must be appropriately disposed off and adequate waste disposal and sanitation services will be provided at the construction site next to the generated areas. In order to protect soil, surface and ground water the Contractor will avoid any wastewater discharge, oil spill and discharge of any type of pollutants on soils, in surface or ground waters, in sewers and drainage ditches. Compensation measures may be required.

147. The Contractor is required to comply with Occupational and Community Health and Safety Plan (OCHSP) as one of main part of overall ESHS requirements. The Contractor is encouraged

to hire local labors including community and female workers to extent possible. Where local labors are not adequately available in the sub-project sites, labor or camp site management plan and is required to be prepared and implemented and monitored potential external labor influx and associated risks including SEA, GBV and VAC. Code of Conducts (COC) and Company Project Rules regarding health and safety of workers and local communities will be applied by the contractors and their sub-contractors and workers to be hired under the project to manage the risks anticipated.

148. The Contractor will also be responsible for maintaining good hygiene, safety, and social welfare security of the work sites, including protection of and health and safety of staff and workers. The Contractor will prevent standing water in open construction pits, quarries or fill areas to avoid potential contamination of the water table and the development of a habitat for disease-carrying vectors and insects. Safe and sustainable construction materials and construction method should be used.

149. The Contractor will use a quarry of materials according to the regulations and compensate by planting of trees in case of deforestation or tree felling. When possible, the Contractor should develop maintenance and reclamation plans, protect soil surfaces during construction and re-vegetate or physically stabilize eligible surfaces, preserve existing fauna and flora and preserve natural habitats along streams, steep slopes, and ecologically sensitive areas.

150. During construction, the Contractor will specifically take serious actions on the following:

- To control dust by using water or through other means and the construction site will be cleaned on a daily basis;
- To work with local authority and management local traffic effectively and ensure traffic access of road safety of local residents and road users during the works. Speed limit at work sites and community area will be applied to all vehicles and cars. All vehicles and their drivers must be identified and registered, and the drivers are properly trained;
- To respect the cultural sites, ensure security and privacy of women and households in close proximity to the camps and the use of asbestos containing materials is not allowed;
- To conduct daily monitoring and inspection of construction activities to ensure environmental and social impacts are managed and mitigated appropriately in local communities. These potential impacts include wastes, discharge, dust, community health and safety, OCHS, construction waste contaminated on private land, social issues and social security, etc.;
- To implement and maintain a good community-relations in comply with requirements in the section on Community Relation below; and
- To comply with Non-compliance Reporting Procedures as specified in the section below.

151. The Contractor will also be required to submit the Contractor's ESS monitoring report to DPWT and PONRE (with a copy to EDPD/PTRI) on every 25th of each month. The report can be submitted electronically as agreed.

(c) ESS Requirements during Project-Site Closure

152. Before each Project site is considered completed, the following actions will be undertaken:
- Clean up all wastes and disruption and removal of construction equipment, construction waste and general wastes from the Project ROW and all location used by the Project during construction such as worker camps, parking bays, and storage areas, borrow pits, quarries and ancillary facilities.
 - Stabilize all borrow pits or implement all agreed measures in accordance with agreements stipulated in minutes or documents signed between the Contractor and landowners. If needed, signing of a handover documents for borrow pits will be required.
 - Stabilize and/or rehabilitate all project sites to ensure community safety and erosion control.
 - Together with DPWT and PONRE, provide training on road safety to all affected community. All training shall be recorded and affected communities shall sign the training received sheet.
 - Submission of ESS Site Closure Report to DPWT and PTRI/EDPD one month before project completion inspection.

5.7.3 Labor Management, Worker Camp and Storage Area

153. On this aspect, the following, but not limited to, actions will be considered:
- The Worker Camp and workshop storage area will be located on areas far enough from water points, houses and sensitive areas in consultation with the community and the subproject owner. Worker camps shall not be located within 500 meters of any sensitive receptors, urban area and at least 200 meters from any surface water course and not within 2-km of a protected area.
 - Worker camps, cooking facilities, and toilets will be provided with roofs, walls and wooden floors or paved with concrete while the camp yards and storage can be compacted or paved with gravels. The worker camps should be fenced and provided with entrance gates to prevent unauthorized entry. In addition, the worker camps will be provided with storm water drainage system around the camp facilities to prevent flooding, mud, erosion and sediment transport to natural environment.
 - Worker camps will be provided with basic facilities and utilities including but not limited to: office, notice boards and regulations of the company and about the Project, beds, mosquito nets, blankets, clean drinking water and safe portable water, sufficient waste bins, first aid kits and necessary medicines, fire extinguishers, etc.

- For bathing and toilets, the Contractor will ensure that (1) separate toilets for males and females and sewage and wastewater will be retained in sediment pond(s); (2) Toilet chambers will be designed appropriately to be able to treat sludge and sewage prior to discharge to closed retention ponds without exposure to vectors and/or diseases; (3) building of toilet rooms, sewage chambers and retention ponds will be away from natural water bodies, streams, and wetland areas. The floor of retention chambers will be above the aquifer layer.
- Material storage facilities and workshop will be in proximity or within work camp area with fences, compacted ground or paved with gravel and drainage system.
- Hazardous material storage area will be provided with roof, walls and concrete floor and bunds, storm water drainage and oil traps, as well as secondary containment where applicable/required. Engine oil change requires steel trays on the floor to prevent hydrocarbon spills on soils. If spill is found, immediate cleaning is required by collecting contaminated soil and to a temporary container and maintained in hazardous storage area.

5.7.4 Site Specific-ESMP (SS-ESMP) and C-ESMP

154. The Attachment 5 provides guidance for the preparation and approval of the C-ESMP in the form of an Alignment Sheet. Following the award of the contract and prior to construction commencing the Contractor will review the issues identified in the present ESMP (particularly Attachment 5) and develop detailed mitigations in the C-ESMP including identification of key persons who will be responsible for undertaking and supervising the work within the Contractor's team. Details can be presented in a series of site plans covering specific site details during construction phase as agreed with the supervision consultant and/or field engineer (CSC/FE). Priority plans will include, but not limited to, the followings:

- ▶ Waste Management and Recycling Plan;
- ▶ Camp management plan
- ▶ Site Clearance and Restoration Management Plan;
- ▶ General Construction Site Management Plan including spill and emergency response, chance find procedures, etc.;
- ▶ Labor Influx Management Plan which could cover Worker Camp Management Plan;
- ▶ Borrow Pit Management Plan;
- ▶ Environmental Quality Management Plan including water, noise and vibration;
- ▶ Occupational and Community Health and Safety Plan;
- ▶ Traffic Management Plan;
- ▶ and
- ▶ Monitoring and Reporting Plan.

155. These plans will be submitted to and approved by the supervision consultant and/or Field Engineer prior to the Contractor taking possession of any work site. The approved C-ESMP and/or

specific plans will be submitted to EDPD/PTRI for information. CSC will provide technical support to the contractor in preparing and implementing the plans.

156. Attachment 5 Table A5.1 presents the key issues and mitigation measures to be considered during the preparation of C-ESMP while Table A5.2 provides guidance for the preparation of C-ESMP of the Project Package 3 to be financed by AIIB (KM190-KM268). The Tables A5.1 and A5.2 will be included in the BD/CD of the Project Package 3.

5.7.5 Non-Compliance Reporting Procedures

157. The Contractor and its subcontractors if any, must comply with the ESMP, C-ESMP, ESCOP and COC. To ensure that necessary action has been undertaken and that steps to avoid adverse impacts and/or reoccurrence have been implemented, the Project Manager, the ESU/DPWT, and/or the Contractor must advise PMU/DOR, DPWT, EDPD/PTRI, and AIIB within 24 hours of any serious incidents of non-compliance that may have serious consequence. In the event of working practices being deemed dangerous either by the subproject owners, the local authorities, or the other concerned agencies, immediate remedial action must be taken by the Contractors. The Contractor must keep records of any incidents and accident and any corrective/ameliorative action taken. The records of non-compliance that could be practically addressed (not cause serious impacts) will be reported to PMU/DOR and DPWT with a copy to EDPD/PTRI on a monthly basis.

158. The Contractor will be responsible for dealing with any reports/grievance forwarded by the project investment owner, Police or other agencies (by following instruction from the project investment owner representative as appropriate) as soon as practicable, preferably within one hour but always within 24 hours of receipt by either the Contractor. The Project Manager/ESU will monitor and ensure that the Contractor has taken appropriate action. Where appropriate, approval remedial actions may require an agreement from the local authorities and/or other Government agencies. Procedures should be put in place to ensure, as far as is reasonably practical, that necessary actions can be undertaken to avoid recurrence and/or serious damage (see form in Attachment 8).

5.7.6 Community Relations

159. The Contractor will assign one community-relation personnel, who will focus on engaging with the community to provide appropriate information and to be the first line of response to resolve issues of concern. Contractor will take reasonable steps to engage with residents of ethnic backgrounds and residents with disabilities (or other priority groups as appropriate), who may be differentially affected by construction impacts.

160. The Contractor will ensure that local residents nearby the construction sites will be informed in advance of works taking place, including the estimated duration. In the case of work required in response to an emergency, local residents shall be advised as soon as reasonably practicable that emergency work is taking place. Potentially affected residents will also be notified of the 'Hotline' number, which will operate during working hours. The "Hotline" will be maintained to handle enquiries regarding construction activities from the general public as well as to act as a first point of contact and information in the case of any emergency. All calls will be logged, together with the responses given and the callers' concerns action and a response provided promptly. The helpline will be widely advertised and displayed on site signboards.

161. The Contractor respond quickly to emergencies, complaints or other contacts made via the ‘Hotline’ or any other recognized means and liaise closely with the emergency services, local authority officers and other agencies (based on established contacts) who may be involved in incidents or emergency situations.

162. The Contractor will manage the work sites, work camps, and workers in a way that is acceptable to local residents and will not create any social impacts due to workers. Any construction workers, office staff, Contractor’s employees, or any other person related to the Project found violating the “prohibitions” activities listed in Section below may be subject to disciplinary actions that can range from a simple reprimand to termination of his/her employment depending on the seriousness of the violation.

5.7.7 Site Management and Monitoring

163. Following approval of the C-ESMP, the Contractor will be required to attend a series of meetings with the CSC and/or Field Engineers to ensure that all compliance conditions and procedures are clearly understood and actions can be implemented on the ground. As part of the day-to-day supervision of works, CSC/Field Engineers are also responsible for day-to-day supervision and monitoring of compliance of the C-ESMP and report the results in the progress reports. The Contractor will be responsible for ensuring that all sub-contractors abide by the conditions of the ESMP, C-ESMP, ESCOP, and COC.

164. CSC shall be responsible for conducting the instrument monitoring and will engage external service from a certified laboratory for air quality, noise and water quality, as and when required (see **Table 5-3**). During the O&M phase, CSC will be responsible for the monitoring; after the expiry of their contract, PTRI will be responsible for this task (see **Table 5.4**). The monitoring shall be carried out in compliance with best international practices. The location and number of monitoring sites as well as frequency of monitoring can be adjusted as required.

Table 5-3 Monitoring Plan – Construction Phase

Aspect/Impact	Parameters	Frequency	Location	Responsibility	
				Monitoring	Checking/ Verification
Air quality	PM _{2.5} and PM ₁₀ , Dust deposition rates	Quarterly	Near key sensitive receptors (schools and health care facilities). Minimum 5 sites along alignment. Sites should be moved progressively along alignment as construction progresses. Sites should also include receptors near quarries and borrow pits.	CSC	DPWTs
Noise and vibration	Noise levels in dB(A) LAeq (daytime and night-time), Airblast dB(L), Ground vibration peak particle velocity (PPV)s	Quarterly	Near key sensitive receptors (schools and health care facilities). Minimum 5 sites along alignment. Sites should be moved progressively along alignment as construction progresses. Sites should include	CSC	DPWTs

Aspect/Impact	Parameters	Frequency	Location	Responsibility	
				Monitoring	Checking/ Verification
			receptors near quarries and borrow pits.		
Water Quality	Field water parameters (pH, Redox potential (ORP), Dissolved Oxygen (DO), Electrical conductivity (EC), Total Dissolved Solids (TDS), Turbidity and temperature) Laboratory testing for pH, EC, Total Dissolved Solids (TDS) & Total Suspended Solids (TSS), Total alkalinity (or acidity), bicarbonate alkalinity, carbonate alkalinity & total hardness as CaCO ₃ , Nutrients, Cations & anions, and Total & Dissolved metals	Quarterly; and before, during and after construction of bridges over water bodies	Rivers, creeks and wetlands upstream and downstream of construction areas main watercourses with active construction sites.	CSC	DPWTs
Wastewater and effluents	Field measurements. Laboratory analyses: Total and fecal coliforms, total nitrogen, total phosphorous, COD, and BOD	Monthly	Waste water discharges from camps and offices	CSC	DPWTs
Erosion and Sediment transport	Bed scour, bank failure, maintenance requirement for erosion / sediment control (visual inspection)	Weekly	Diversion channels, culverts, temporary water diversion structures, outlet protection, construction sites (slop), quarry and borrow pits.	CSC	DPWTs
Waste management (general waste and hazardous waste)	Use of appropriate waste bins, separation and proper disposal of waste (visual inspection)	Weekly	Workers' camps, Construction areas, ancillary facilities, operational infrastructure	CSC	DPWTs
Workers' camp management	General housekeeping, OHS, COC (Visual inspection)	Monthly	Workers' camps	CSC	DPWTs

Aspect/Impact	Parameters	Frequency	Location	Responsibility	
				Monitoring	Checking/ Verification
Implementation of C-ESMP	Compliance with all environmental, occupational, health and safety measures as specify in Attachment 5,6,7	Daily	Construction sites, camps and affected communities, other project sites	CSC	DPWTs
Grievance monitoring	Complaint log book and comment box	Monthly	Affected villages and workers' camps	CSC	DPWTs

Table 5-4: Monitoring Plan (O&M Phase)

Aspect/Impact	Parameters	Frequency	Location	Responsibility	
				Monitoring	Checking/ Verification
Air quality	PM2.5 and PM10, Dust deposition rates	Six Monthly	Near key sensitive receptors (schools and health care facilities). Minimum 5 sites along alignment.	CSC / PTRI	DPWTs
Noise	Noise levels in dB(A) LAeq (daytime and night-time), Airblast dB(L), Ground vibration peak particle velocity (PPV)s	Six Monthly	Near key sensitive receptors (schools and health care facilities). Minimum 5 sites along alignment.	CSC / PTRI	DPWTs
Water Quality	Field water parameters (pH, Redox potential (ORP), Dissolved Oxygen (DO), Electrical conductivity (EC), Total Dissolved Solids (TDS), Turbidity and temperature) Laboratory testing for pH, EC, Total Dissolved Solids (TDS) & Total Suspended Solids (TSS), Total alkalinity (or acidity), bicarbonate alkalinity, carbonate alkalinity & total hardness as CaCO ₃ , Nutrients, Cations & anions,	As required	Rivers, creeks and wetlands near any maintenance works	CSC / PTRI	DPWTs

Aspect/Impact	Parameters	Frequency	Location	Responsibility	
				Monitoring	Checking/ Verification
	and Total & Dissolved metals				
Wastewater and effluents	Field measurements. Laboratory analyses: Total and fecal coliforms, total nitrogen, total phosphorous, COD, and BOD	Six Monthly	Discharges from camps and offices	CSC / PTRI	DPWTs
Waste management (general waste and hazardous waste)	Use of appropriate waste bins, separation and proper disposal of waste (Visual inspection)	Monthly	Workers' camps, operational infrastructure	CSC / PTRI	DPWTs
Workers' camp management	General housekeeping, OHS, COC (Visual inspection)	Monthly	Worker camps	CSC / PTRI	DPWTs
Implementation of C-ESMP	Compliance with all environmental, occupational, health and safety measures as specify in Attachment 5,6,7	Daily	Construction sites, camps and affected communities, other project sites	CSC / PTRI	DPWTs
Grievance monitoring	Complaint log book and comment box	Monthly	Affected villages and workers' camps	CSC / PTRI	DPWTs

5.7.8 Reporting

165. Contractors Reporting - The Contractor will prepare two levels of environmental reports:

- Weekly Environmental Checklists – These will be prepared weekly by the Contractor's ESS management (ESSM) team and the checklist will be submitted to the CSC/Engineer on a weekly basis. EDPD/PTRI will provide a sample for the checklist.
- Monthly Summary Report - in respect of compliance with C-ESMP will be submitted to the PMU/DOR through CSC/Engineer. The report will be in line with the ESHS requirements as described in the BD Part II Section IX - Particular Conditions of Contract.
- CSC will report any incidents/accidents that may have impacts on the safety, health, environment or community, or any activity resulting in regulatory non-compliance or breach of GoL or AIIB's policies, standards or commitments. CSC/Engineer will need to develop an incident/accident reporting system to document any reportable events such as injury, hazardous spills, or community incidents (e.g. private property damage). The reporting system should record the following events:
 - Injury, illness or accident;

- Near miss (with serious or major potential for loss);
 - Non-contained fires within or near operational areas;
 - Chemical spills;
 - Uncontrolled gas emissions;
 - Spills of fuel or oil greater than 50 L within bunded workshop or other operational areas (safety and environmental incident);
 - Spills of fuel or oil outside of bunded areas greater than 10 liters (environment incident);
 - Community incidents (e.g. private property damage, injury to livestock);
 - Any other environmental incident involving damage to the environment.
- Accidents / incidents will be classified according to their actual and potential safety, environmental or social impacts using a standard consequence matrix to ensure consistency. The system will need to record the following types of auditable information into a report:
 - Description of the incident / accident/event and its causes;
 - Risk rating of the event (according to a standard rating system / consequence matrix);
 - Root cause analysis
 - Description of appropriate corrective and preventative actions and their proposed timeline for implementation;
 - Status of corrective actions (to be updated once closed out); and
 - Actual or estimated costs of repair, clean-up or other remedial measures.

6. ANALYSIS OF ASSOCIATED FACILITIES

166. According to AIIB’s ESP, Associated Facilities are activities that are not included in the description of the Project set out in the agreement governing the Project, but which, are: (a) directly and materially related to the Project; (b) carried out, or planned to be carried out, contemporaneously with the Project; and (c) necessary for the Project to be viable and would not be constructed or expanded if the Project did not exist.

167. As stated earlier, the NR-13S road works are divided in four sections. The present ESMP is for Section 3, from km190 to km268. The remaining three sections are considered Associated Facilities of the Section 3 works in accordance with the above definition. Salient data of the Associated Facilities is tabulated below.

Table 6-1 Associated Facilities

Section	Financing	Activities
Section 1 km71-km111	WB	<ul style="list-style-type: none"> • Expansion from 9m to 12m for a section from km 71+km111; • Raising at 6 sections; • Improvement of 4 box culverts • Improvement of 4 bridges and construction of 2 new bridges • Construction of ten bus stops
Sections 2 and 4 km111-km190; km268-km346	EIB	<ul style="list-style-type: none"> • Overlay existing pavement at 9m; • Expansion from 9m to 12m for 17 sections; • Raising at 4 sections; • Improvement of 24 box culverts • Improvement of 14 bridges • Construction of 80 bus stops

168. In light with the requirements of AIIB’s ESP, this ESMP also assesses the potential environmental and social risks and impacts of the Associated Facilities.

169. WB prepared Section 1 of NR-13S as an Additional Financing of an existing project. The client has prepared an Environmental and Social Management Framework (ESMF), a Resettlement Policy Framework (RPF), and an Ethnic Groups Engagement Framework (EGEP) in 2019 in accordance with WB safeguard policies. These frameworks provide guidelines for environmental and social assessments and plans for the four sections of NR-13S. In this context, the environmental and social safeguard policies applicable to the Associated Facilities are described in the following table.

Table 6-2 Safeguard Policies for Associated Facilities

Section	Financing	Brief Safeguard Requirements/Policies
Section 1 km71-km111	WB	OP/BP 4.01 – Environmental Assessment; OP/BP 4.04 – Natural Habitats; OP/BP 4.11 – Physical Cultural Resources; OP/BP 4.10 – Indigenous People; and OP/BP/4.12 – Involuntary Resettlement.

Section	Financing	Brief Safeguard Requirements/Policies
Sections 2 and 4 km111- km190; km268-km346	EIB	<ul style="list-style-type: none"> • All operations shall comply with national legislation and regulations as well as any obligations and standards in the relevant international conventions and multilateral agreements; • The environmental and social impacts assessment and mitigation plans may be required where investments or projects are likely to have significant effects on the environment, human health and well-being of people within the project areas; • When the EIB is co-financing in partnership with other international finance institutions that have developed, and apply their own environment and social policies, adequate implementation of those policies may be enough to meet the EIB E&S standards, pursuant to EIB's own assessment. Such possibility does not relinquish the EIB's own environmental and social due diligence duty and any gaps between that and other lenders shall be duly accounted for.

Under the ESMF, RPF and EGEP, the safeguard documents prepared/being prepared for addressing environmental and social risks and impacts of the Associated Facilities (Section 1, 2 and 4 of NR-13S), as listed in the table below.

Table 6-3 E&S Documents for Associated Activities

Section	Financing	E&S Documents
Section 1	WB	<ul style="list-style-type: none"> • ESMP and RAP have been approved and published on MPWT website
Section 2 and 4	EIB	<ul style="list-style-type: none"> • Final ESMP and RAP have been submitted for official clearance; • EGEP has been drafted

170. The key environmental and social impacts are assessed and their mitigation measures of the Associated Facilities are proposed in the above listed safeguard documents. Those impacts are likely to be quite similar to the ones that are expected to be encountered for the Section 3. The potential impacts and mitigation measures for Associated Facilities are summarized in the table below.

171. In addition, the arrangement of the implementation of ESMP, RAP and EGEP for Associated Facilities is aligned with the implementation for Section 3. The same PMU/DOR and CSC will be in charge of supervising the implementation of the plans for all four sections.

Table 6-4 Potential Impacts and Mitigation of Associated Facilities

Section	Financing	Key Potential Impacts	Proposed Mitigation Measures
Section 1 km71- km111	WB	Generic Environmental and Social Impacts: <ul style="list-style-type: none"> • The key negative impacts during the proposed rehabilitation 	<ul style="list-style-type: none"> • Implement the mitigation measures and monitoring indicator similar to the ones presented Site Specific

Section	Financing	Key Potential Impacts	Proposed Mitigation Measures
		<p>works will include, but not limited to, the following activities: (i) establishment and operation of worker camps, including disposal of waste generated from the camp; (ii) establishment and operation of construction materials and equipment yards and access roads, including access tracks/haulage routs; (iii) workers safety and hygienic conditions including hiring skilled workers from outside of the locality and other social issues due to workers; (iv) water for staff and workers consumption and construction, including interruption of water supply; (v) storage of hazardous materials (including wastes); and (vi) other typical construction activities such as handling of fuels, oil spill and lubricants, cutting of trees in the right of way, excavation of drainage channels, disposal of excavated material, loss of fertile soil and vegetation and impacts on natural vegetation and embankment erosion, landslide, erosion and water contamination of rivers/streams along the watercourse, dust and smoke emissions, noise pollution, excavation of borrow areas, rehabilitation of borrow pits, encountering archaeological sites during earth works, aesthetic/scenic quality, and disturbance to temples and cemeteries etc.</p> <p>Compensation and Resettlement Impacts:</p> <ul style="list-style-type: none"> • 9 households with a total residential land area of 188 m² 	<p>Alignment Sheet in Attachment 5, the ESCOP (Attachment 6) identify actions to reduce impacts due to typical works such as generation of dust, noise, vibration, safety, waste, and social aspect including “chance finds procedure” and environmental, social, health, and safety (ESHS) while the COC on GBV and VAC (Attachment 7) provide guidance on management of worker behavior to avoid gender-based violence and violence against children in compliance with the guidelines provided in the ESMP.</p> <ul style="list-style-type: none"> • Efforts have been made to minimize the resettlement impacts by analysis of design options to reduce the width of the COIs • Ensure that all persons subjected to adverse impacts (displaced persons or PAPs) are compensated at replacement cost for lost land and other assets and otherwise provided with any rehabilitation measures or other forms of assistance necessary to provide them with sufficient opportunity to improve, or at least restore, their incomes and living standards. • PAHs will be provided with sufficient time and support to rebuild their houses and shops prior to the commencement of civil works.

Section	Financing	Key Potential Impacts	Proposed Mitigation Measures
		<p>in Thaphabath district will be affected.</p> <ul style="list-style-type: none"> • 50 shops with a total area of 1,273 m² in 9 villages in Thaphabath district will be partially affected on its structures. • 2 porches of house with a total area of 97.4 m²; 31 porches of shops with a total area of 1,978 m²; 25 huts with a total area of 627.66 m², and 3 guardhouses in 9 villages in Thaphabath district are expected to be impacted by the project. • Other assets such as brick and wire/wood fences, shop/advertisement signs and concrete slab floors. • 24 public utilities in 7 villages including electricity poles, national fiber optic cable, temple entrance gates, culvert pipes, and signboards. • Livelihood and income sources of people whose lives depend on roadside shops will be temporarily impacted. These include 81 shops with gross earnings of 978 million Kip including 391 million Kip of profits. 	<ul style="list-style-type: none"> • The project will ensure that PAPs are able to continue with access to their houses and their present livelihood activities during project implementation to possible degree. • Impacts on their livelihood and business will be also minimized through close and effective contract management and work supervision by PMU.
Section 2 km111- km190	EIB	<p>Generic Environmental and Social Impacts:</p> <ul style="list-style-type: none"> • Same as above <p>Compensation and Resettlement Impacts:</p> <ul style="list-style-type: none"> • 6 households in four villages in two districts with a total impacted residential land of 79 m². • 15 houses in seven villages in three districts with a total house structure area of 256 m². 	<ul style="list-style-type: none"> • Same as above

Section	Financing	Key Potential Impacts	Proposed Mitigation Measures
		<ul style="list-style-type: none"> • 49 shops in 12 villages in two districts will be affected with a total area of 1,282 m². • 40 porches of houses with a total area of 826 m²; 52 porches of shops with a total area of 1,138 m², and 6 huts with a total area of 96 m² in 11 villages of three districts. • Public utilities including electric poles, water supply and culvert pipes. • Temporary and/or permanent loss of livelihood and income. The RAP indicated that monthly gross income of total affected shops was approximately 2 billion Kip including 453 million Kip profits are expected to be affected primarily during construction phase. • Approximately 63 fruit and commercial trees at different stages of maturity will be also affected. 	
Section 4 Km268- km346	EIB	<p>Generic Environmental and Social Impacts:</p> <ul style="list-style-type: none"> • Same as above • 5 households with 37 m² of residential land in 2 villages in Hinboun district. • 5 houses (122 m²) in 2 villages in Hinboun district will be affected. • 25 shops (410 m²) in Hinboun and Thakhek districts will be affected. • 9 porches of houses (90 m²); 68 porches of shops (964 m²) and 17 huts (471 m²) in 13 villages in Hinboun and Thakhek districts to be affected. 	<ul style="list-style-type: none"> • Same as above

Section	Financing	Key Potential Impacts	Proposed Mitigation Measures
		<ul style="list-style-type: none"> • Other secondary structure including brick, wire/wood fences, pipe culverts, shop signboards and concrete slab floors. • Public utilities including electric poles, water supply systems, and existing streetlights with a total of 2,974 units. • Livelihood and income losses due to potential project impacts on 93 roadside shops. Expected total monthly income from these shops was approximately 742 million Kip with approximately monthly profits of 231 million Kip will be temporarily impacted during construction. • 12 commercial and fruit trees will be also affected. 	

7. GRIEVANCE REDRESS MECHANISM (GRM)

7.1 Introduction

172. A Grievance Redress Mechanism (GRM) that helps record, assess, and resolve grievances and complaints during the implementation of a project in as efficient, effective, and transparent manner as possible is essential to the success of the project. GRM also informs the Government and donors/financiers of design and implementation changes that can be used to improve the systems, as well as helping to meet the ‘Citizen Engagement’ as requirements for AIIB financed projects.

173. The GRM prepared for the proposed project is based on key principles that protect the rights and interest of affected stakeholders, ensure that their concerns are addressed in a prompt and timely manner, and that entitlements are provided in accordance with GOL and AIIB ESS policies. The safeguards unit of Project Management Unit (ESU/PMU) will ensure that communities directly affected by the Project have a full understanding of the GRM and ways to access it especially on: (i) the concept of compensation for any involuntary acquisition of land and/or assets; and (ii) ensuring environmental and social mitigation measures in this ESMP’s are implemented as planned.

174. The GRM procedures to be followed have been translated into Lao language and it will be prepared in local language as needed so that they are easily accessible to all stakeholders and made available by the PMU. Information on the steps to be followed in handling grievances has been incorporated into the consultation process with local community.

175. The Project will use the ‘Grievance and Complaints Logging System’ (GCLS) which has been used on multiple WB/AIIB projects to help ensuring that projects are implemented in accordance with appropriate environmental and social practices. The GCLS will be used to record grievances and complaints in a central database, and then to monitor the progress until eventual resolution. It will provide the necessary data to meet the grievance redress indicators. Specifically, it will report on:

- ▶ Grievances registered related to delivery of project benefits that are addressed;
- ▶ Grievances responded and/or resolved within the stipulated service standards;
- ▶ Project-supported organization(s) publishing periodic reports on GRM and how issues were resolved (including resolution rates); and
- ▶ The figure below shows the flow process for the GCLS as part of the GRM.

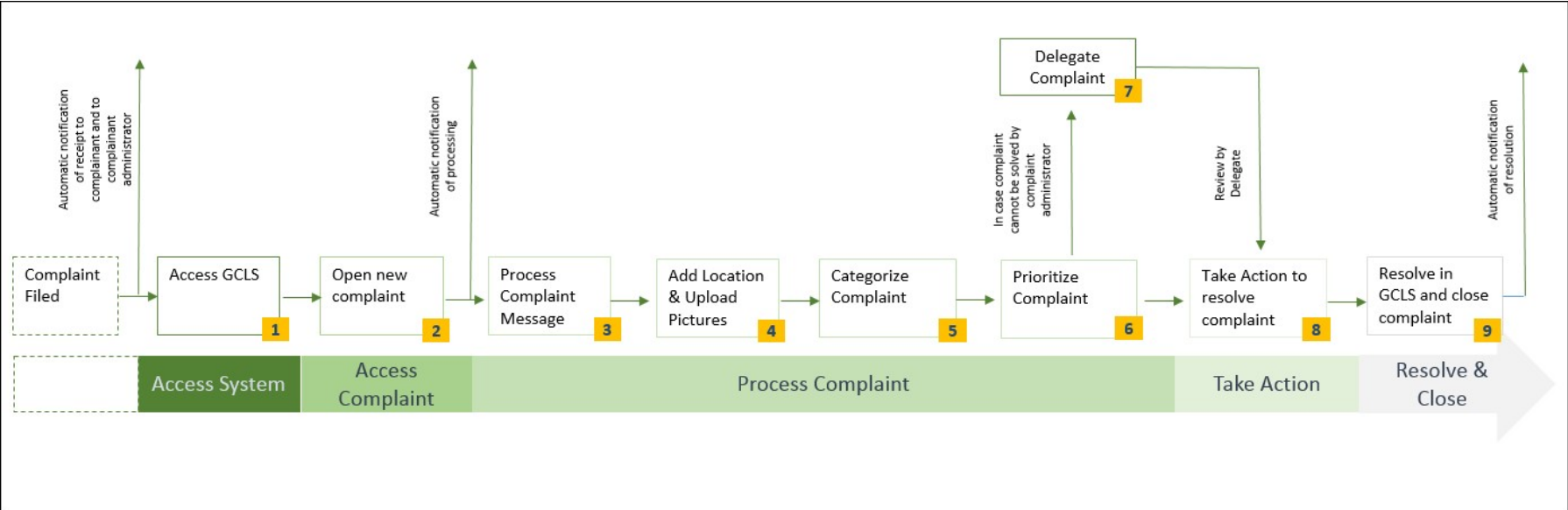


Figure 7-1: GCLS process as part of the GRM

176. The GRM process will operate as follows:

- ▶ The EDPD/PTRI at the MPWT in Vientiane will host the GCLS.
- ▶ In each Project Province, the Environment and Social Unit (ESU) under the DPWT—who is responsible for monitoring contractors—will assemble records of all complaints, and supply them to the EDPD/PTRI either directly, or by entering into the GCLS.
- ▶ For each province, a ‘Grievance Redress Committee’ (GRC) will be established. The GRC will nominate a secretary who is responsible to monitor and facilitate resolution of complaints.
- ▶ The affected peoples (AP) (or his/her representative) may submit his/her complaint in a number of ways e.g. by written letter, phone, SMS messages and email to the GRC or, alternatively, raise his/her voice in a public or individual meeting with project staff.
- ▶ Grievances will be addressed at the village, district, province, and national level. A complainant also retains the right to bypass this procedure and can address a grievance directly to the EDPD/PTRI Office or the National and Provincial Assembly, as provided for by law in Lao PDR. At each level grievance details, discussions, and outcomes will be recorded in a grievance logbook, and the data provided to the GRC for recording in the GCLS. The status of grievances submitted, and grievance redress will be reported to DPWT management through the monthly reporting as generated by the GCLS.

177. The GRC will meet to try and resolve the matter at community level and make a recommendation within 7-10 working days from receipt of complaint. If there is no decision after 10 days, the AP can refer the complaint to the Director of DPWT in the province who will then address the complaint and respond to the complainant within 20 days.

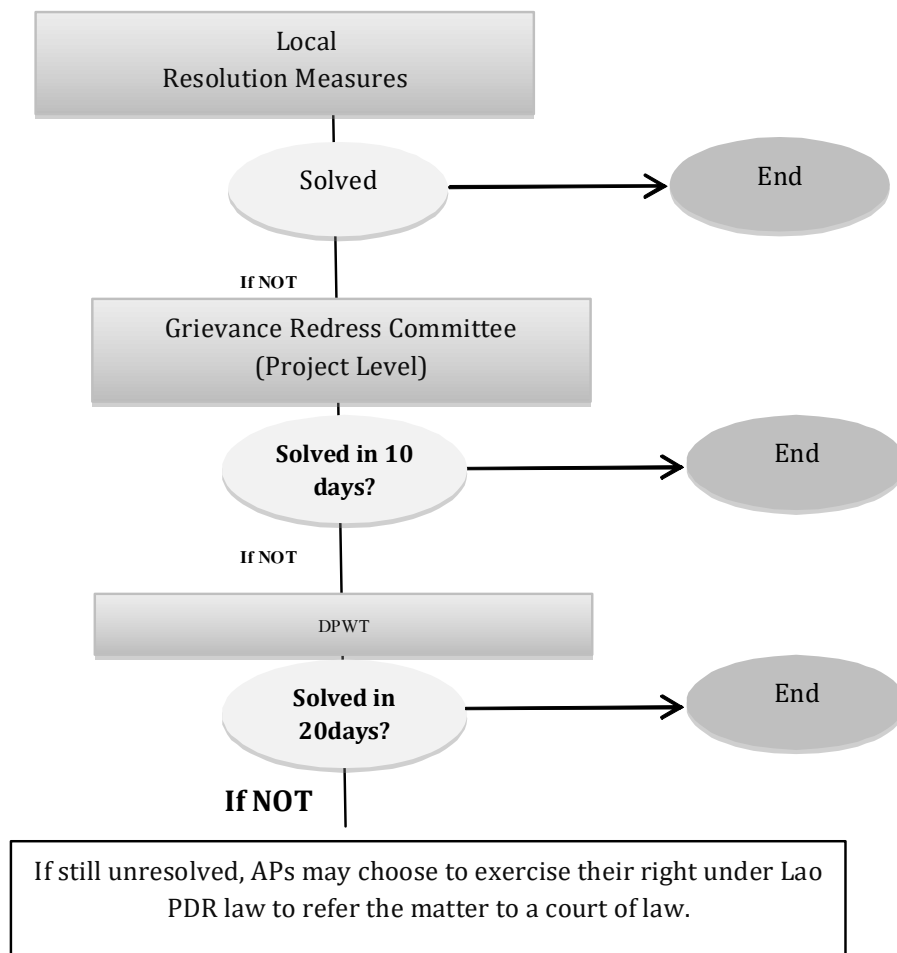


Figure 7-2: GRM Process for the NR13 South Project

178. All submitted complaints and grievances will be entered into the GCLS within two working days of being received by the PMU and ESU/DPWT. Each complaint and grievance will be ranked, analyzed and monitored according to type, accessibility and degree of priority. The status of grievances submitted, and grievance redress will be reported by ESU/DPWT in collaboration with PMU. The GCLS web site will display data on resolution rates which will enable the communities to be kept informed of progress of resolution of grievances. Individuals will be notified within 5 working days of the status of their grievance once it has been addressed by the appropriate parties.

179. If not satisfied with the resolution, the APs may elevate the complaint directly to the EDPD/PTRI at the MPWT in Vientiane or via the Provincial Assembly.

180. The project will also establish user friendly and easily accessible means of communication such the hotline phone call, social media, WhatsApp or Facebook, if and where technologically feasible to facilitate efficient GRM process. GRM procedures and contact detail of responsible staff will be provided in a Project Information Leaflet (PIL) to be prepared and distributed to all project affected villages during the GRM training for village mediation committees for their references.

181. GRM for Workers: Contractor shall place a Comment Box with mobile number(s) of ESU/DPWT at the worker camp so that the worker can make complaints to the PMU/DPWTs.

7.2 AIIB PPM

182. The Project-affected People's Mechanism (PPM) has been established by the Bank to provide an opportunity for an independent and impartial review of submissions from Project-affected people who believe they have been or are likely to be adversely affected by AIIB's failure to implement its ESP in situations when their concerns cannot be addressed satisfactorily through the Project-level GRM or the processes of the Bank's Management. For information on AIIB's PPM, please visit: <https://www.aiib.org/en/policies-strategies/operational-policies/policy-on-the-project-affected-mechanism.html>.

8. COMMUNITY ENGAGEMENT AND CONSULTATION

183. The consultation on the draft ESMF, RPF, and EGEF were conducted in BKX province during 15-19 August 2019 and in KM province during 20-21 August 2019. The objective was to inform the local communities, public, key agencies, and local civil society organizations about the objectives and scope of the NR-13S Project, potential impacts (both positive and adverse) as well as the proposed mitigation measures to be incorporated into the ESMPs and the Alignment Sheets for the project. Information provided and discussed included project objective, description, and components, potential impacts (positive and negative), and the draft ESMF, RPF, and EGEF while the presentation was made in Lao language. Results suggest that most of the local agencies and local people located along NR-13S in BKX and KM provinces fully support the proposed project and consider that the proposed ESMF is appropriate and can be applied on the ground. There were 132 participants and 31 of them were female in the consultation (**Table 8-1**). Summary of the Minutes of the consultation meetings conducted in August 2019 are provided in Attachment 10 while the key findings are described in this section.

Table 8-1 Number of Participants

No	District	Village group	Participated villages	Participants	Females
BKX Province			54 villages	65	15
1	Parkading	Thongnamee	4 villages: Nadeua, Nakeuanok, Namkhou and Thongnamee	19	4
		Pakkading	7 villages: Seansamlane, Paksa, PakkadingNeua, Donexay, Hadsaykham, Phonxay and Phonchalern	22	5
		Viengkham	6 villages: Namsang, Viengkham, Namthon, Khonsong, Na In and Nalieng	24	6
KM Province			37 Villages	67	16
1	Hinboun	Khamkeo	8 villages: Phonthong, Khamkeo, Sysomsuen, Phonsavang, Songhong, Khamkeo, Nonghoi, Vanghaopa	25	7
	Hinboun	NaPho and Hinboun	Napho, 3 villages: MaiNampakan, Nongbouanoy, Xaysomboun and Hinboun 1 village: Phokham	11	1
		Laukra and Paktuk	4 Paktuk villages: Phonsung, Huayhue, Danhy, Lurlung. 4 Laukra villages: Viengthong, Phonsay, Laukra, Phonsaart	31	8
Total for Two Provinces			37 villages	132	31

8.1 Stakeholders' Views on Potential risks and negative impacts

184. Common negative impacts discussed during the consultation meetings were: dust, rubbish, road accident and compensation/relocation issues as a result from road construction. In terms of the dust impact, the participants were aware that it is a common issue during road construction and many of the road construction projects did not have effective solutions to address this issue based on their experiences. The rubbish issues were also experienced by local communities. They explained that many of the road construction projects likely to leave their unused materials in local communities during and/or after the completion of the construction and those materials become rubbish in the communities. Additionally, many female participants claimed that apart from leaving unused materials, rubbish also come from workers during the construction. Sometimes construction workers do not manage their rubbish and throw it in public.

185. Regarding the road accident, based on experiences of the local communities, accidents frequently happen during the road construction period because of inconvenient transportation and ineffective road safety measures in place. Villagers elaborated this point by that many road construction projects were not paying attention to the road accident and the accident issue is like something happening as usual. Sometimes, there were no warning signs that road users need to be aware of and be careful if there is construction in front or there are some holes and ditches excavated on the road, some villagers added.

186. Regarding the noise and dust issues, the participants explained that sometimes the construction took place during the days and nights so villagers' free time or relax time were disturbed and taken. The villagers hope that the project will have some mitigation strategies to deal with these issues.

187. The compensation issue was a popular topic. Concerns were raised whether or not those houses, restaurants or/and other business activities along the NR-13S to be likely affected by the project will be compensated prior to the work and how compensation will be paid. For example, some villagers added whether the affected people and their assets lost will be compensated at the same or higher prices (replacement value). Some others further raised a concern of house broken during the construction because of heavy trucks and/or road compact using heavy machines. This could be an issue on whether and how the broken houses and structures will be compensated.

188. Gender perspective on compensation issues: Different views on gender roles and men and women participations in the project preparation and implementation were discussed during the consultation. Many the female and male interviewees argued that women have more power when talking about financial control and the final decision making. We can say it is equal but in practice women have more power regarding the finance management, many men added. A lady participant said, I agreed women have more power because men are not good at the financial management. When compensation comes, women will take charge to claim money, a man added. However, some others feel that the final decision is jointly made by both husband and wife. Both husband and wife have equal roles and so they share equal responsibilities. Their roles and responsibilities are interchangeable in practice depending on their ability and availability, villagers added.

189. Despite the fact that all of the participants are aware that 25 meters of both side of the NR-13S has been announced and reminded by the government as right of way since 1996 when the

original Road Law was launched, some villagers argued that many villagers established their houses before the 1996 so they should be compensated on an exceptional basis. Villagers claimed that those who have encroached and expanded their restaurants or houses to right of way after the 1996, they should not claim for compensation. This view was supported by many participants.

8.2 Stakeholders' Views on Proposed Mitigation Measures and Actions

190. Overall, both females and males shared similar mitigation measures. Regarding the dust and noise, regular spraying water during the construction is suggested in order to minimize the dust issue. In terms of compensation, the participants suggested that the project committees should come and closely consult with local authorities and affected households and agreement between parties should be made at the local level, villagers claimed. Both project and local communities should be able to reach an agreement of what and how both parties can contribute to the project development, participants added. Once an agreement is established, the parties must stick to it. Some other village interviewees claimed that livelihood restoration is also essential mitigation, particularly those affected families.

191. Mitigation measures were discussed. In terms of road accident, having signal signs/banners posted on the road with wordings saying 'there is constructing in 100 m or more, please reducing speed to 30 km/h) during the construction is needed. Some villagers using their old experiences to explain the fact that sometimes the signal signs were already existing but they were removed or destroyed by road users so the project needs to pay more attention to check regularly in order to avoid or minimize the road accident issue. The participants claimed that it is important to stick on the schedule and villagers should be regularly informed if any changing occurred during the construction.

192. The perception on the disaster issues and mitigation measures: The disaster issue is related to flooding that many local communities have been facing. The flooding was considered from two main causes: The first is because of rising of the Mekong River and the small rivers in the local communities, particularly during the rainy season. Recommended mitigation measures to address this issue are to establish a center for responding the flooding. The refugee center with supporting facilities and necessary assistance equipment should be constructed (such as boats, trucks and communication tools, toilet and kitchen in those places; water rescue unit and ambulance) make sure that villagers can access to these facilities. While having a center is considerably important, many other participants in the group discussion suggested to renovate current existing facilities in local public buildings such as schools, village office or temples and these places can be used during and after flooding issues. Some villages suggested building water gate that can be closed and opened in different seasons, which can solve the flooding issue. Secondly, others claimed that the flooding is because of having small drainage pipes. By having bigger drainage pipes or having a bridge for some cases, it would help the flow of rain water, villagers argued.

193. Looking at specific gender perception, the suggested mitigation measures by males are more related to creating a temporary road during the construction of the main road (if it is possible). Males also proposed to have signal signs close to the construction areas, specific posters with road conditions should be posted before and on the construction area. Additionally, signal lights or posters in curve areas and drainage ways are also suggested. For females, frequent recommended

mitigation is to create pedestrian in the school areas or even building a small bridge across the road sides and drains excavated to ensure continued and safe access to their houses and businesses. The costs for building and installing these accesses and crossing facilities will be included in the BOQ of bidding documents and work contracts.

194. An effective collaboration with different stakeholders (villagers/affected households, local and government authorities, project owners and donors) was strongly suggested by the discussion groups. The participants believe that the project owner is someone who has power to control budget plans and activities. Therefore, a project coordinator should be assigned to be the key contact person working along these diverse beneficiary actors.

195. Recommendations are summarized as below:

- ▶ Compensation issues: The recommendations for this issue are (i) early establishment of a resettlement and compensation committee with sufficient budget to implement their works, (ii) the compensation should be acceptable and transparent, (iii) the compensation should be completed before the project starts and villagers should be informed for at least 2-3 month before construction starts;
- ▶ Information disclosure: it should be detailed and villagers' satisfaction or feedback should be studied and evaluated;
- ▶ Ethnic community along the project should be clearly understood of the project before implementation;
- ▶ Grievance mechanism should be established at the village level with the existing village mediation committees trained and supported to operate and report on status of grievances received and addressed;
- ▶ The main road should higher than the alleyways in villages. The issue is that the alleyways are often not developed by the project so it makes difficulty for the villagers' transportation and most of the time they handle by themselves. Thus, it would be great if the project can develop the alleyways (access road to the village), which is about 5-10 m from the main road;
- ▶ It will be great if the project can construct a bus stop/waiting area;
- ▶ Regular maintenance and timely repair of road after completion of construction or during operation because from the previous experience was that new roads are broken after two years, which is sad, villagers commended;
- ▶ Provide diversion roads or work in half of road to allow traffic flow;
- ▶ Properly install construction signboard, light, fence, etc. where potential accident and sensitive and risk areas;
- ▶ Improve access road to village where it is flooded.

8.3 Consultation with Local Authorities

196. On 20 August 2019, PTRI/EDPD conducted consultation with local authorities in KM and BLKX Provinces. The participants were from EDPD/PTRI, representative from Provincial level such as: provincial administrative office, DPWT, PONRE, Department of Agriculture, Labor and social welfare, Lao front, Lao women and youth union. The participants from district level (Paksan, Thaphabath and Pakkading) included the representative of District Administrative Office, OPWT,

DONRE, Agriculture, Labor, Lao front, Loa women and Lao youth union. In Bolikhamxay Province there were 50 participants (10 were females) and 30 participants (9 were females) in Khamouan Province. The objectives of consultation were to (i) consult on the draft of ESMF, RPF and EGPF; (ii) obtain the perception or opinion of local authority on the implementation of the project; and (iii) exchange working experience with all participants on the implementation of E&S for the road development project. The results of consultation meetings are summarized as follows:

- (i) All the participants agreed and support the project on NR13 S improvement and maintenance which will bring more benefit to their province.
- (ii) All the participants agreed in having the road improvement and maintenance project of NR-13S (Km 71 at Thaphabath district, BLKX to Km 346 ThaKhek district, KM province) and expanding is their dream. They all support this project with many positive reasons such as the new standard road will be a signature of modernity, which shows a good image of the provinces as well as the country, having larger road equals to having better transportation, possibly reduce the issues of road accident and better road safety conditions.
- (iii) Basically, participants are agreed with the draft E&S safeguards frameworks which incorporated safeguard policies and updated Lao legislation. However, during implementation it needs to be well cooperated/coordinated with concerned stakeholders to strictly apply these frameworks. The main concerned of participants were:
 - Resettlement and compensation were a popular topic during discussion. Concerns were related to the question whether or not those villagers having houses, restaurants or/and other business activities next to the NR-13S will be compensated when project is implemented. For example, land compensation, whether villagers will be compensated the same price as they bought or higher or lower? Etc. then the recommend for this issue come as need to set up R&C committee in early state of project and should have budget for this committee to implement their works;
 - Grievance mechanism should be established at the village level;
 - Ethnic community along the project road should clearly understand the project before implementation;
 - The implementation of E&S monitoring and evaluation should be well coordinated between public works sector and other concerned sectors (PONRE, Agriculture, Lao front, mass organization...) in order to ensure proper implementation of mitigation measures;
 - Ensure normal traffic flow by providing diversion road or work in half of road;
 - Properly install construction signboard, light, fence, etc. at potential accident and sensitive areas;
 - The project improves mainly on road but not for bridge so it might pose potential risk of accident. Hence project should carefully take mitigation measure for traffic accidents at the bridge sites, and should improve some bridges where necessary;

- (iv) Gender involvement: Women were happy to participate in this meeting to share knowledge and project should involve Lao women union in every stage of project cycle mainly in community consultation, monitoring and evaluation to protect the right of women and children.
- (v) Disaster risk: The disaster issue is related flooding and many local communities have been facing. The flooding was considered from two main causes:
- The first is because of raise of the Mekong River and the mall rivers in the local communities, particularly during the rainy season. Recommended mitigation measures to address this issue to establish a center for responding the flooding. The center should be provided with facilities and necessary assistance equipment such as boats, trucks and communication tools and make sure that villagers can access to these facilities. While having a center is considerably important, many other participants suggested renovating current existing facilities in local public buildings such as schools, village office or temples including construct toilet, kitchen, water supply or ground water and electricity in these places and these places can be used during and after flooding issues. Some people also suggested constructing water gate that can be closed and opened in different seasons including water pumping which can solve the flooding issue.
 - Secondly, others claimed that the flooding is because of improper design such as having small convert which need to add or having bigger convert for better flow of rain water. For better design the detail design team needs to carefully study and close coordinate with local people who live along the road to provide basic information in the right location.
- (vi) Propose to the project:
- Improve access road to village where it's flood
 - Request the budget to mitigated flood problem such as: boats for moving their property and animals; construct refugee center; renovate or extend village office, school or temple and construct toilet and kitchen in those places; water rescue unit and ambulance.
 - The project should develop the alleyways, which is about 5-10 m from the main road.
 - Compensation should be completed before the project starts and villagers should be informed for at least 2-3 month before construction starts;
 - It will be great if there is a bus waiting area and the project can design bus top areas.

8.4 Future Consultations

197. The consultation with the affected communities and other stakeholders shall be undertaken continuously throughout the construction phase. Consultation report of each consultation shall be

prepared with minutes of meeting along with attendance records and the signatures of all participants. The future consultations are listed in **Table 8-2** below.

Table 8-2 Future Consultations

No.	Consultation	Methods	Implementing Responsibilities	Timeline
	Pre-construction			
1	Preparation of EGEP: Consultation with ethnic groups	Focused Group Discussion and In-depth Interview	PTRI/EDPD and DPWTs	Jul 2020
2	IEE Reports: consultation meeting with concerned local authorities (provincial and district levels) and representatives from affected villages. To obtain comments on the draft IEE reports	Open Meetings	PTRI/EDPD and DPWTs	Jul 2020
	Dissemination of project information in all affected villages	Distribution of PIBs to all affected villages	PTRI/EDPD and DPWTs	Jul 2020
3	RP Implementation: Consultation with concerned authorities and affected households on compensation unit rate, confirmation of loss and compensation amount and method. Also develop GRM in BLKX and KM provinces. Separate consultations may need to be conducted with vulnerable households and individuals to ensure that their concerns and needs have been met.	Meetings and open discussions	PTRI/EDPD and DPWTs	Jul-Oct 2020
During Construction and O&M Phases				
	Consultations with affected communities on project activities, impacts, mitigation measures, GRM, construction schedule and work plan	Open meetings	Contractor, CSC, DPWTs	Throughout construction phase

No.	Consultation	Methods	Implementing Responsibilities	Timeline
	Dissemination of community health and safety precautions and measures with affected communities	Open meeting	Contractor, CSC, DPWTs	Throughout construction phase
	Ad hoc meetings on a need basis where substantial changes have been made or conflict has arisen due to accident, misunderstanding or other causes.	Meeting, Focused Group Discussion and In-depth Interview	Contractor, CSC, DPWTs, PTRI	Throughout construction phase

9. ESMP IMPLEMENTATION AND BUDGET

9.1 Implementation, Monitoring, and Reporting Responsibilities

198. PMU/DOR is responsible for ensuring effective implementation of the ESMP including adequate allocation of budget. PMU/DOR will also ensure that the Construction Supervision Consultant (CSC) and/or Field Engineers responsible for supervision and monitoring of works contracts will also be responsible for approval of the C-ESMP and day-to-day supervision and monitoring of contractor compliance with the C-ESMP. EDPD/PTRI is responsible for providing technical guidance on the ESS requirements and periodical monitoring of the ESS compliance including training, capacity building, and management of the ESMF budget for NR-13S. EDPD/PTRI will conduct 6-month monitoring of ESS compliance and submit a report to AIIB. EDPD/PTRI will also ensure that the Project is also in compliance with GOL requirements regarding ESS.

199. The CSC shall be responsible for day-to-day supervision of Contractor performance and implementation support to DoR/MPWT and EDPD/PTRI during the implementation of the Project (NR-13S) including ensuring full compliance with the ESS measures as required by the AIIB and GOL. The tasks include, but not limited to, the followings:

- i) Review and recommend for approval of the detailed designs as well as the C-ESMP to be prepared and submitted by the contractor (including any adjustments, compliance with design standards and international best-practice in terms of climate resilience, recommendations on road safety from road safety audits, ESS measures especially those related to safety of workers and local communities, etc.) in line with the Project ESMP, RP, and EGEP approved by AIIB and GOL;
- ii) Monitor works progress, compliance with minimum requirement of technical specifications of the works and quality control, as well as ensuring compliance with C-ESMP and other ESS requirements during construction and maintenance works;
- iii) Monitor compliance with service levels of the O&M activities from start up till the end of the Assignment, including providing advice to MPWT on technical issues, contract management, and safeguard activities;
- iv) Supervise and monitor the implementation of mitigation measures to reduce potential negative impacts on local environment and local people during construction and maintenance services as required by the AIIB and GOL, including review, approve, and monitor the C-ESMP to be prepared and implemented by Contractor. Special consideration will be given to ensure effective implementation of the ESHS measures to prevent and address occupational and community health and safety issues of workers and local communities and compliance with the Code of Conduct (COC) related to SEA, GBV, VAC, and the campaigns related to HIV/AIDs awareness and road safety;
- v) Strengthen the capacity of DoR/MPWT to implement and monitor OPBRC contracts and climate resilient roads including those related to ESS measures;
- vi) Arrange management meetings, site inspections and other jobs conferences in liaison with the OPBRC Contractor;

- vii) Engage external service from a certified iRAP (international Road Assessment Programme) consultant to perform baseline and post-construction assessments and star ratings for the Project Road;
- viii) Other tasks as necessary in the project implementation. More details please TOR of CSC (or ISWS).

200. The CSC (or ISWS) shall prepare the following reports:

- i) **Inception Report** (maximum length of 15 pages, excluding annexes). The Inception Report shall include a work plan for the assignment, team composition, challenges anticipated and comments to the TOR, if any. List of people met and minutes of meetings shall be provided in Annexes, if any. The Implementation Work Plan for RP and EGEP shall include content described in Task 25 and 26. The draft Inception Report and Implementation Work plan for RP and EGEP shall be submitted to PMU and ESD/PTRI and the AIIB within two weeks after the date of contract signing. The final Inception Report and the implementation Work Plan shall be submitted within one week after receipt of approval from the PMU and EDPD/PTRI and the AIIB.
- ii) **Monthly Progress Reports:** The Consultants shall prepare a concise monthly progress report, in a format to be agreed with DoR/MPWT. These reports will be sent to DoR/MPWT within one week of the end of the month. Such reports shall summarize the activities of the Consultants including those related to ESS activities, the progress of the OPBRC, all contract variations and design changes, the status of Contractor claims (if any), brief descriptions of the technical and contractual problems being encountered (and solutions recommended) progress and issues related to the implementation of the ESS activities and other relevant information.
- iii) **Quarterly Reports:** The Consultants shall prepare a comprehensive quarterly report summarizing all activities including financial and ESS aspects of the OPBRC, at the end of each quarter (not later than the 14th day of next quarter), and at other times for the Periodic Report when considered necessary by either the Consultants or DoR/MPWT because of delays in the construction works or the occurrence of technical or contractual difficulties. The quarterly report shall also summarize the performance of the Consultant's staff in implementing their monitoring supervision responsibilities. In addition, the report will also include progress and issues related to the implementation of environmental and social safeguards, as well as works' compliance with AIIB requirements.
- iv) **Accident Reports:** Reports of the circumstances of any significant accident occurring on the sites shall be promptly informed to DoR/MPWT, DPWT, and EDPD/PTRI within 24 hours. Specific reports related to the incident will be prepared and submitted as required by the AIIB. The consultant will also conduct root cause analysis, make recommendations to avoid future incidence, as well as monitor and audit implementation of agreed recommendations.
- v) The Consultants shall ensure the immediate reporting to DoR/MPWT, DPWT, and EDPD/PTRI of complaints related to GBV and/or child abuse, any pollution incident/accident, any fatality and/or bodily harm affecting Project (including contractor)

staff or project affected people, any public opposition, and the issuance of any notice or fine for breach of environmental, labor, health or safety laws and regulation.

- vi) Environmental and Social Monitoring Reports (semi-annual and annual):** In close consultation with EDPD/PTRI, the Consultants shall prepare and submit to the MPWT, AIIB and other financiers (within 14 days after the end of the period) a consolidated semi-annual and annual monitoring report summarizing all environmental and social safeguard activities (ESMP, RAPs, EGEP, etc.) including progress and records on GRM and other aspects related to road safety, workers OHS, employment, community health and safety, etc. The report shall also summarize the performance of the Consultant's staff in implementing their supervision responsibilities. Preparation of a separate RP implementation and/or other monitoring reports may also be required during the Assignment as requested by the GOL and/or AIIB.
- vii) RP and EGEP Completion Report.** The draft Completion Report shall be submitted to PMU and ESD/PTRI and the Financiers within two weeks after the completion of the project. The final version shall be submitted within two weeks after receipt of approval from PMU and ESD/PTRI and the Financiers. The reports shall be supported by evidence of compensation, minutes of the important meetings, key technical notes and summary of grievances received and addressed. The consultant will submit 5 packages of deliverables listed above to PMU and ESD/PTRI in both Lao and English languages in hard and electronic copy. One package will be forwarded to AIIB.

201. At provincial level, DPWTs of BKX and KM provinces will assign specific staff and/or engineer (at least one full-time or two part-time) to be responsible (as the ESU/DPWT) for ensuring full compliance with the ESS requirements on the ground and prepare ESS implementation monthly or quarterly monitoring report as agreed with EDPD/PTRI. The ESU/DPWT is considered part of the Project team responsible for ensuring compliance with the ESMP of NR-13S. The contractor is required to prepare and submit monthly, quarterly and pre-site closure reports to DPWT and PTRI/EDPD.

202. The DPWT will also be required to establish a Monitoring Working Groups (MWG) comprising ESU/DPWT, PONRE, LWU, and other related local authorities to be responsible for undertaking periodic monitoring of the ESMP, ARP, and EGEP implementation including GRM tracking and Contractor performance of the approved C-ESMP. For land acquisition and relocation of assets, a Provincial Resettlement Committee (PRC) or District Resettlement Committee (DRC) will be established to be responsible for the review and oversight of RP/ARP implementation. A Village Grievance Committee (VGC) will also be established to be responsible for overseeing the GRM implementation using the existing structures with a village mediation committees and fiduciary agencies (District and Provincial Office of Justice, Provincial Assembly, PWTOs and District Governor Office). EDPD/PTRI will also be required to (a) review/adjust the monitoring and reporting forms to enhance effectiveness of the monitoring and reporting process and (c) ensure that adequate budget can be transferred to the ESU/DPWT and the MWG and timely submission of the ESS monitoring report.

203. **Table 9-1** summarizes key institutional responsibilities for the implementation of the ESMP at various stages of the Project.

Table 9-1 ESMP Implementation

Project Stage	Responsible Institution	Key Responsibilities
Preparation		<ul style="list-style-type: none"> •
Land acquisition and/or relocation of asset (RP/ARP)	PMU/DOR, EDPD/PTRI, and PRC	<ul style="list-style-type: none"> • Secure AIIB clearance of the RP/ARP and • Implement/Monitor/Report the implementation progress of the RP/ARP
Ethnic Group Engagement Plan (EGEP) to be prepared after the detailed design of road works available and cleared by AIIB prior to civil work	EDPD/PTRI	<ul style="list-style-type: none"> • Secure AIIB clearance of the EGEP prior to the commencement of civil work. • Implement/Monitor/report the implementation progress of the EGEP
ESMP for AIIB clearance	EDPD/PTRI assisted by LTEC	<ul style="list-style-type: none"> • Ensure ESMP is cleared by AIIB before bidding
IEE for BKX and IEE for KM	EDPD/PTRI assisted by the in-house consultant	<ul style="list-style-type: none"> • Ensure approval by PONRE BKX and KM before construction begins
Detailed Design and preparation of Bidding (BD) and Contract Documents (CD)	PMU/DOR and EDPD//PTRI with the Detailed Design Consultant and its ESS Team (LTEC).	<ul style="list-style-type: none"> • Avoid and minimize the need for land acquisition and relocation of assets. • Incorporate ESMP mitigation measures into detailed engineering design.
	EDPD/PTRI	<ul style="list-style-type: none"> • Ensure ESMP is incorporated into the BD/CD.
		<ul style="list-style-type: none"> • Review Contractors proposals to ensure that they are aware of the ESMP requirements and that line items for environmental management as per the ESMP are included in the BOQ.
Site Clearance and Construction	Contractor	<ul style="list-style-type: none"> • Prepare C-ESMP in line with the SS-ESMP • Obtain all necessary environmental and social related permits for construction.
	PMU/DOR, CSC/Field Engineer	<ul style="list-style-type: none"> • Review and approve C-ESMP and send a copy of the approved C-ESMP to EDPD/PTRI
	Contractor	<ul style="list-style-type: none"> • Attend periodical meeting on site management and monitoring with CSC/Field Engineer
	Contractor	<ul style="list-style-type: none"> • Daily monitoring of environmental and social issues by the contractor ESSM team.

Project Stage	Responsible Institution	Key Responsibilities
Construction and O&M phases during the OPBRC services		<ul style="list-style-type: none"> • Preparation of weekly environmental and social checklists. • Preparation of Monthly environmental and social monitoring report • Preparing Corrective action plans as needed.
	PMU/DOR and EDPD/PTRI	<ul style="list-style-type: none"> • Periodic site visits (6-months) to monitor Contractors environmental and social performance. • Semi-annual Environmental and Social Monitoring Report and submitted to AIIB.
	CSC/Field Engineer	<ul style="list-style-type: none"> • Weekly monitoring of the Contractors compliance with ESMP / C-ESMP. • Issuing the Contractor with Non-compliance Notices. • Monthly reporting to PMU/PTRI of Contractors performance based on the review of Contractors weekly checklists and weekly site visits and Contractors' Monthly environmental and social monitoring reports. • Quarterly Environmental and Social Reports prepared by the ESS1 and submitted to PMU/PTRI and AIIB. • Preparation of Semi-annual Environmental and Social Monitoring Report and submitted to PMU/PTRI.
3-month monitoring	ESU/PMU and the Monitoring Working Group	<ul style="list-style-type: none"> • Monitor compliance and adequacy of the C-ESMP and ECC to be issued by PONRE of BKX or KM.

9.2 ESMP Capacity Building and Training

204. As part of the LRSP2-AF, through the ESMF implementation budget, about \$0.3M has been allocated for ensuring effective implementation of the ESS requirements for NR-13S. Specific budget has been allocated for (a) ensuring effective monitoring, reporting, and training to ensure full compliance including consultation and implementation of EGEP and (b) technical assistance and capacity building and/or priority action research activities on ESS. Implementation experience of the LRSP2 suggested that more detailed specific guidelines and more extensive training and capacity building on environmental, social, and occupational health and safety (ESOHS) will be necessary to enhance performance on the ground. Improving effective site management, effective

application of Personal Protection Equipment (PPE), active participation of local communities, and effective application of GRM record will be necessary with proper tracking records. The training plan is provided below; it can be revised as per requirements during the project implementation.

Table 9-2 Training Plan

No.	Training Topic	Trainer	Trainee	Timeline
1	Training on the Implementation of RAP and EGEP	PTRI/EDPD	Resettlement Committee	Jul 2020
2	Training of Trainers on environmental, social, and occupational health and safety including monitoring the implementation of C-ESMP, ESCOP, COC on GBV/VAC, and GRM.	PTRI/EDPD	DPWTs	Nov 2020
3	Environmental, social, and occupational health and safety including monitoring the implementation of C-ESMP, ESCOP, COC on GBV/VAC, and GRM	DPWTs/CSC	Contractors	Within 28 days since construction contract awarded; During construction as required
4	C-ESMP implementation, Worker health and safety as required in the ESCOP and COC on GBV/VAC	Contractor	Workers	Before commencement of construction and during construction
5	Community health and safety	DPWTs/CSC	Affected communities	Before commencement of construction, during construction and post-construction completion

9.3 ESMP Implementation Budget

205. The ESMP implementation cost will be part of the Project cost. It comprises (a) cost for preparation and implementation of the mitigation measures during road rehabilitation and maintenance (C-ESMP) which will be part of the Project construction cost; (b) cost of land acquisition and/or compensation of assets or relocations (if any); (c) cost of UXO clearance (if required); (d) cost for monitoring, reporting, and training; and (e) cost for consultation with ethnic group and implementation of EGEP. At present, it has been agreed that the cost for (a) and (c) will be incorporated into the works contract cost while the cost for (b) will be part of GOL cost (RMF). Costs for (d) and (e) have been allocated as part of ESMP implementation responsible by EDPD/PTRI.

10. ATTACHMENTS

206. The ESMP also includes 10 attachments covering the (1) the Project background concerning road conditions and specific locations of Project sites and material sources; (2) traffic survey and safety risk assessment; (3) applicable GOL regulations; (4) maps in forests in BKX and KM; (5) key issues and mitigation measures for SS-ESMP and the alignment sheet for Package 3 to be financed by AIIB; (6) Project environmental and social code of practices (ESCOP); (7) Project code of conduct and action plan to prevent gender-based violence and violence against children (COC on GBV/VAC); (8) accident reporting procedure and forms; (9) grievance redress mechanism; and (10) Summary of Consultation Meeting in August 2019.