

UPDATED-INITIAL ENVIRONMENTAL EXAMINATION

**ADB LOAN NO.3368-LAO
ROAD SECTOR GOVERNANCE AND MAINTENANCE PROJECT
LOCAL ROAD 9001, ATTAPEU PROVINCE**

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Prepared by the Project Management Unit of DOR/MPWT, Lao PDR for the Asian Development Bank

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AIDS	Acquired Immune Deficiency Syndrome
BOD	Biochemical Oxygen Demand
CEMP	Contractor's Environmental Management Plan
COI	Corridor of Impact
COVID-19	Corona Virus Disease 2019
CW	Civil Work
DBST	Double Bituminous Surface Treatment
DIC	Department of Information and Culture
DOEM	Department of Energy and Mines
DONRE	Department of Natural Resources and Environment
DOR	Department of Roads
DPWT	Department of Public Works and Transport
ECC	Environmental Compliance Certificate
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPL	Environmental Protection Law
EHS	Environmental Health and Safety
GOL	Government of Lao PDR
GRM	Grievance Redress Mechanism
HIV	Human Immunodeficiency Virus
HH	Household
IA	Implementing Agency (DOR/MPWT)
IEC	Information Education Communication
IEE	Initial Environmental Examination
IFAD	International Fund for Agricultural Development
KfW	Kreditanstalt für Wiederaufbau
LR9001	Local Road 9001
MONRE	Ministry of Natural Resources and Environment
MPWT	Ministry of Public Works and Transport
NBCA	National Biodiversity Conservation Area
NSC	National Steering Committee
NTCCPC	National Taskforce Committee for COVID-19 Prevention and Control
OPWT	Office of Public Works and Transport (District)
PBC	Performance Based Contract
PIU	Project Implementation Unit (DPWT)
PDR	People's Democratic Republic
Project	Road Sector Governance and Maintenance Project
PMC	Project Management Consultant
PPTA	Project Preparation Technical Assistance
PWTI	Public Works and Transport Institute
RAC	Regional Advisory Committee
REA	Rapid Environmental Assessment
ROW	Right of Way
RSGMP	Road Sector Governance and Maintenance Project
SSMR	Semi-annual Safeguards Monitoring Report
UXO	Unexploded Ordnance

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I. EXECUTIVE SUMMARY

1. An environmental assessment was conducted initially in 2015 for Local Road 9001 (LR9001) under the Lao Road Sector Governance and Maintenance Project through a Project Preparation Technical Assistance (PPTA) funded by the Asian Development Bank (ADB), and need to be updated in March 2020 by the Road Sector Governance and Maintenance Project funded by ADB Loan No.3368-LAO, because there are the additional works for emergency works of 7 locations and road pavement in Chalernxai village works for LR9001. The Project is expected to contribute to the social and economic development through improved conditions for road transport in Lao People's Democratic Republic (PDR). This updated IEE also incorporate the Health and Safety Measures on COVID-19.

2. The environmental examination made use of the Rapid Environmental Assessment (REA) Checklist for Roads and Highway Sector developed by ADB. Based on the REA Checklist, LR9001 in Attapeu Province is classified as Category B under ADB Safeguard Policy Statement (2009) (SPS) and therefore will not be subject to a full Environmental Impact Assessment (EIA) procedure. Instead, an Initial Environmental Examination (IEE) report with Environmental Management Plan (EMP) and monitoring plan is required.

3. Under Lao PDR country system, the following regulations are applied for this Project, for both original works and additional works:

- Decree on Environmental Impact Assessment, No.21/GOL, Vientiane Capital, dated 31 January 2019 (Article 10: Type of Environmental Impact Assessment);
- Decision on Approval and List of Project Investment and Activities for categorizing types and scales of project be conducting IEE or EIA, No. 8056/MONRE, dated 17 December 2013 (Article 4.12: Any scales of rehabilitation or maintenance national, provincial, district, local, special national road project shall be conducted only IEE);
- Ministerial Instruction on the Process of Initial Environmental Examination (IEE) of the Investment Projects and Activities, No. 8029/MONRE, dated 17 Dec 2013.

4. The impact classification system under the above regulations have two main categories: Category 1 requires the preparation of IEE, and Category 2 requires the preparation of EIA. Based on the above documents, the Project, both original works and additional works is classified as Category 1. Previous version of EIA Decree no.112/PM02/2010 was applied for the original scope of works.

5. This report is the updated IEE taking account of the additional emergency works of 7 locations¹, the additional road pavement in Chalernxai village works (Total length is approximately 1.6 Km)², and the adding Double Bituminous Surface Treatment (DBST), bitumen handling and storage in Environmental Mitigation Measures.³

6. **Project Description.** The LR9001 Road Maintenance Project starts from its junction with National road 18B in Saysetha District and continues to Sanxai District over a total distance of 54 km. The additional emergency works of 7 locations on LR9001 are at Km 9+100, Km 17+701, Km 25+744, Km 30+775, Km 34+516, Km 35+325 to Km 36+360, and Km 38+567. The additional road pavement in Chalernxai village works start at the end of the Project Road CW5-LR9001 in Sanxai District of Attapeu Province. The original scope of maintenance works is being implemented for a period of three years from September 2018 to December 2021 through a performance-based contract (PBC) and community-based contracted efforts. The original works started on the site by the contractor in October

¹ Adding the additional emergency works of 7 locations to avoid further damages caused by the rain, those were severely damaged by the erosion caused by the last heavy rain in August and September 2018.

² Adding the additional road pavement in Chalernxai village works (Total length is approximately 1.6 Km) because the existing village road condition is unpaved which makes a difficulty for the villages and it is muddy during rainy season and dusty during dry season. Therefore, villagers of Chalernxai village strongly request to pave the road with DBST.

³ Adding DBST, bitumen handling and storage in this report.

2018. The additional works will start after the ADB and DONRE approved the updated IEE. Lao version of the update IEE needs to be submitted to DONRE soon after ADB has approved the English version.

7. **Environmental and Socio-economic Conditions.** Attapeu Province has five districts (Samakkixay, Saysetha, Sanamxay, Sanxai and Phouvong). There are 10 villages located within the LR9001 road corridor and the population along the project road is 11,166 persons. The land use along the road is dominated by deforested land converted to agricultural use for upland rice, corn and vegetables. Vacant areas of land are predominantly covered with shrubby vegetation and native grass species, with some trees dispersed along the road alignment. Rice is the staple food for the local population, and it is predominantly grown during the monsoon months. Rice production is based on a system of minimum inputs - fertilizer applications are considered to be low and pesticide use is negligible. In addition to rice cultivation, vegetables and commercial crops are also grown, among them cash crops such as coffee, mug-beans, soybeans, peanuts.

8. **Impacts and Environmental Management Plan (EMP).** A comprehensive screening for impacts was made for LR9001 including the additional works. For the pre-implementation phase, there are eight potential impacts identified during the pre-implementation of maintenance works. The potential impacts are the followings: 1) Inappropriate/ Incomplete Road Design, 2) Improper implementation of the Project Environmental Management Plan, 3) Lack of consultation with affected people during project implementation, 4) Complaints due to project-related impacts, 5) Disruption of utilities/services, 6) Improper disposal of excavation spoils and removed pavement, 7) Social Conflict, 8) UXO Safety Risk to Workers.

9. During rehabilitation/maintenance works implementation phase: the screening identification of potential environmental impacts are minor as summarized below: 1) Impact to flora and fauna, 2) Potential damage to archaeological and cultural sites, 3) Increase in noise levels, 4) Dust annoyance & air pollution, 5) Landslides, erosion of excess and open soils and deposition of rocks on road shoulders and ditches, 6) Damage to productive land and deterioration of water quality due to operation of borrow pits, 7) Generation of oil and other hazardous materials, 8) Deterioration of water quality due to wastewater discharge from construction works and facilities, 9) Siltation and blockage of water flow/flooding, 10) Traffic congestion and public access obstruction, 11) Public safety, 12) Borrow Area, 13) Workers' protection, health and sanitation, 14) Workers' Health and Safety regarding COVID-19, 15) Solid waste, 16) Damage to properties and community facilities, 17) Need for implementation of additional environmental mitigation measures, 18) Hunting of wildlife and cutting of wood by contractor, 19) Improper closure of construction sites.

10. During operation phase, potential environmental impacts are: 1) Road safety and traffic management: Increase in road and vehicular accidents, 2) Increase in noise, vibration and air pollution along the road corridor. However, rehabilitating LR9001 and the additional works will also bring positive impacts to the communities, will provide them better access to markets, schools, medical facilities, and will create economic opportunities for them to sell their products.

11. An EMP for LR9001 has been developed to effectively manage the environmental issues during pre-implementation, rehabilitation/maintenance works implementation and operation phase. The plan includes: (i) mitigating measures to be implemented; (ii) required monitoring associated with the mitigating measures; and (iii) institutional arrangements. The project's executing agency is the Ministry of Public Works and Transport (MPWT), while provincial Department of Public Works and Transport (DPWT) Attapeu is the implementing units. DOR has the overall coordination responsibility and will work closely with DPWT to implement the Project, Regional Advisory Committee (RAC) set up for consultation of provincial issues. For the overall management of the project, a National Steering Committee (NSC) has been established on 11 July 2017 to oversee project implementation and provide policy guidance at the national level. The Contractor will have the responsibility to implement the mitigation measures identified in the EMP. The Public Works Transport

Institute (PWTI) and DPWT staff will be responsible in coordinating with the Environmental Inspecting Agencies for environmental inspection, and with the Provincial Department of Natural Resources and Environment (DONRE) for compliance monitoring of the project.

12. Consultation and Participation:

- The public consultation meeting for the original scope of the maintenance works was conducted initially in 2015 for LR9001 under the Lao Road Sector Governance and Maintenance Project through a PPTA funded by ADB on 26 January 2015. Further public consultation meeting for the original scope of the maintenance works was conducted on 27 September 2019 prior to issue ECC for LR9001.
- The public consultation meeting for the additional road pavement in Chalernxai village works (Total length is approximately 1.6 km) was conducted on 17 July 2019 at Chalernxai village office.⁴

13. Grievance Redress Mechanism (GRM). Prior to commencement of site maintenance works or other project activities, the Project Manager (DOR/MPWT) for RSGMP and the Contractor have established a system with assistance of the Project Management Consultant that allow for receiving/recording and immediately responding to any project-related complaints from directly of complaints or village authority official. The field office of the Contractor should serve as the office to receive the complaints of the project-affected person or group of persons and the members of the communities along the project road maintenance. At road maintenance sites, the Contractor will install notice boards to publicize the name and telephone numbers of the Contractor, DOR and DPWT. The Contractor, in coordination with the environmental officer of DPWT, will record and document all the complaints received by the Contractor's field office. The Contractor and DPWT's environmental officer should immediately process and resolve the complaints, disputes or questions received about the road maintenance. Any individual, household or organization can lodge a complaint either to the contractor(s), DOR or DPWT if her/his or their properties/life/ business/health are compromised or damaged by the maintenance activities or if s/he has any other complaints regarding the environmental issue of the Project. The existence of the Contractor's field office should not impede the complainant's access to the Government's judicial or administrative remedies.

14. Conclusion and Recommendation. Based on the REA Checklist, LR9001 in Attapeu Province is classified as Category B under ADB Safeguard Policy Statement (2009) (SPS) and therefore will not be subject to a full Environmental Impact Assessment (EIA) procedure. Instead, an Initial Environmental Examination (IEE) report with Environmental Management Plan (EMP) and monitoring plan is required.

15. Under Lao PDR country system, the following regulations are applied for this Project, for both original works and additional works:

- Decree on Environmental Impact Assessment, No.21/GOL, Vientiane Capital, dated 31 January 2019 (Article 10: Type of Environmental Impact Assessment);
- Decision on Approval and List of Project Investment and Activities for categorizing types and scales of project be conducting IEE or EIA, No. 8056/MONRE, dated 17 December 2013 (Article 4.12: Any scales of rehabilitation or maintenance national, provincial, district, local, special national road project shall be conducted only IEE);
- Ministerial Instruction on the Process of Initial Environmental Examination (IEE) of the Investment Projects and Activities, No. 8029/MONRE, dated 17 Dec 2013.

16. The impact classification system under the above regulations have two main categories: Category 1 requires the preparation of IEE, and Category 2 requires the preparation of EIA. Based on the above documents, the Project, both original works and additional works is classified as Category 1.

⁴ Adding a public consultation for the additional road pavement in Chalernxai village.

17. The project can be implemented in an environmentally acceptable way and will generate both direct and indirect benefits for many people and as the project continues, bring about poverty reduction - an important goal of both the Government of the Lao PDR and of the ADB.

II. INTRODUCTION

1. The purpose of this Project is to strengthening governance and capacity in the planning, financial management and implementation of routine and periodic road maintenance activities within the Ministry of Public Works and Transport (MPWT) and the provincial Departments of Public Works and Transport (DPWTs) of Salavan, Xekong and Attapeu Provinces. The Project is expected to contribute to social and economic development through improved conditions for road transport in Lao PDR.

2. An environmental assessment was conducted initially in 2015 for LR9001 under the Lao Road Sector Governance and Maintenance Project through a PPTA funded by ADB, and need to be updated in March 2020 by the Road Sector Governance and Maintenance Project funded by ADB Loan No.3368-LAO, because there are the additional works for emergency works of 7 locations and road pavement in Chalernxai village works for LR9001.

3. The Project will be implemented in the three southern provinces of Salavan, Xekong and Attapeu. The project includes components for:

- Strengthening the institutional capacity of the MPWT and the provincial
- DPWTs in the undertaking of road maintenance work; and
- Rehabilitation and routine maintenance of selected National and Local road links within the target Provinces.

4. The work in each province will include both national road and provincial/local road maintenance. Project implementation will cover road maintenance requirements definition, identification of the probable contents of future Works contracts and the establishment of appropriate procurement procedures for road maintenance in the Lao context. The responsibility for national roads falls on the MPWT through its Department of Roads (DOR) while corresponding works on local roads are implemented by the individual DPWTs located in the provincial capitals.

5. LR9001 is one of the six shortlisted priority roads proposed under the Lao Road Sector Governance and Maintenance Project. Secondary data gathering, field assessment and environmental examination were conducted to determine the environmental classification of the proposed road project. The review of available project documents and related information included Lao PDR's environmental laws, regulations and applicable environmental standards such as the legal and administrative framework for the approval and issuance of Environmental Compliance Certificate (ECC) for the Project. Data on the physical, ecological, economic and socio-cultural resources, where available, were also collected.

6. Meeting was held with DONRE, Attapeu province and its offices to verify and confirm the procedural steps and new requirements for the application process of the project's IEE Report and approval and issuance of the ECC.

7. The field survey and assessment activities included taking notes on the location/sitting of the road alignments, physical, ecological, presence of protected species and/or endangered species of wildlife along the project roads was investigated.

8. The environmental examination made use of the Rapid Environmental Assessment (REA) Checklist for Roads and Highway Sector developed by ADB. Based on the REA Checklist, LR9001 in Attapeu Province is classified as Category B under ADB Safeguard Policy Statement (2009) (SPS) and therefore will not be subject to a full EIA procedure. Instead, an IEE report with EMP and monitoring plan is required. The REA Checklist for LR9001, the additional emergency works of 7 locations, and the additional road pavement in Chalernxai village works is presented as Appendix A.

9. Under Lao PDR country system, the following regulations are applied for this Project, for both original works and additional works:

- Decree on Environmental Impact Assessment, No.21/GOL, Vientiane Capital, dated 31 January 2019 (Article 10: Type of Environmental Impact Assessment);

- Decision on Approval and List of Project Investment and Activities for categorizing types and scales of project be conducting IEE or EIA, No. 8056/MONRE, dated 17 December 2013 (Article 4.12: Any scales of rehabilitation or maintenance national, provincial, district, local, special national road project shall be conducted only IEE);
- Ministerial Instruction on the Process of Initial Environmental Examination (IEE) of the Investment Projects and Activities, No. 8029/MONRE, dated 17 Dec 2013.

10. The impact classification system under the above regulations have two main categories: Category 1 requires the preparation of IEE, and Category 2 requires the preparation of EIA. Based on the above documents, the Project, both original works and additional works is classified as Category 1.

11. The IEE for LR9001 is updated taking account of the findings of the environmental impacts for the additional emergency works of 7 locations, and the additional road pavement in Chalernxai village works. It is meant to ensure the environmental soundness and sustainability of the Project and to integrate environmental considerations into the Project Design and to the EMP. The IEE was conducted in compliance to the ADB's environmental assessment guidelines and the ADB SPS, and the Decree on EIA and the Environmental Protection Law (EPL, 2013) of the Government of Lao PDR.

III. POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

A. NATIONAL POLICY, LAW, AND REGULATIONS

12. The legal framework for environmental management of development projects is embodied in the National Law 02/1999 or the Environmental Protection Law (EPL) which was approved by the President on 03 April 1999 and amended on 17 January 2013. It mandates a unified environmental management with the aim of preserving the environment and making rational and sustainable use of natural resources.

13. The EPL specifies necessary principles, rules and measures for managing, monitoring, restoring and protecting the environment in order to protect the public, natural resources and biodiversity, and to ensure - sustainable socio-economic development, health and improved quality of life of the nation. The Ministry of Natural Resources and the Environment (MONRE) is responsible for the implementation of EPL.

14. National Environmental Standard, No.81/GOL, on 21 February 2017 defines parameters of chemical and contamination in air, soil and water for environmental and pollution control measurement.

15. The Project is closely aligned with the Lao PDR's decentralization policy and ADB Country Partnership Strategy for Lao PDR 2012 to 2016, both of which support sustainable economic growth and poverty reduction by focusing on rural areas. ADB's 2011 Transport Sector Assessment, Strategy and Road Map for Lao PDR recognize the need to support road maintenance as a key component of ADB's future assistance to the Lao PDR transport sector.

16. The ECC of the original scope of the works LR9001 was approved on 28 October 2019 based on Decree on Environmental Impact Assessment, No.21/GOL, Vientiane Capital (dated 31 January 2019) as shown in Appendix B.

17. For The additional scope of works, Article 16, 17 and 18 of the Decree on Environmental Impact Assessment, No.21/GOL, Vientiane Capital, dated 31 January 2019, requires the IEE to be updated to cover the additional scope. Lao version of the updated IEE needs to be submitted to DONRE for this review and approval before implementation of the additional works soon after ADB has approved the English version. It is estimated that 3 months will be needed including translation into Lao language, while it will take about 40 days for DONRE to approve the updated IEE in accordance with the Article 16 of the Decree.

18. Under Lao PDR country system, the following regulations are applied for this Project, for both original works and additional works:

- Decree on Environmental Impact Assessment, No.21/GOL, Vientiane Capital, dated 31 January 2019 (Article 10: Type of Environmental Impact Assessment);
- Decision on Approval and List of Project Investment and Activities for categorizing types and scales of project be conducting IEE or EIA, No. 8056/MONRE, dated 17 December 2013 (Article 4.12: Any scales of rehabilitation or maintenance national, provincial, district, local, special national road project shall be conducted only IEE);
- Ministerial Instruction on the Process of Initial Environmental Examination (IEE) of the Investment Projects and Activities, No. 8029/MONRE, dated 17 Dec 2013.

19. The impact classification system under the above regulations have two main categories: Category 1 requires the preparation of IEE, and Category 2 requires the preparation of EIA. Based on the above documents, the Project, both original works and additional works is classified as Category 1.

20. Other legal issuances that provide general context and/or basis for some aspects in environmental assessment include the following: (i) the Constitution of Lao PDR, which states that "all organizations and citizens must protect the environment and natural resources: land surfaces, underground [resources,] forests, fauna [animals], water sources

and the atmosphere”. (Article 17 in 1991 Constitution, Article 19 in amended 2003 Constitution); (ii) the Decree 164/PM, 29 October 1993, which established the system of National Protected Areas (NPAs) in Lao PDR, officially referring them as the National Biodiversity Conservation Areas (NBCAs) initially covering 18 areas; (iii) the Law on Forestry, promulgated in 2 November 1996 (No. 125/PDR) and amended on 9 December 2005 (No. 143/PDR), which stipulates the obligations to preserve forests, forest resources, forest lands, water sources, aquatic animals, wildlife and the environment, and classifies forests into protected, conservation, production, rehabilitated, and degraded forests; (iv) the Law on Water and Water Resources (No. 126/PO), promulgated on 2 November 1996, which specifies the obligations to protect/preserve water and water resources against/from depletion, pollution, becoming noxious and damages; (v) the Land Law, 1997, amended in 2003 (No. 04 /NA), which provides that use of land shall not have a negative impact on natural and social environment; (vi) the Law on Urban Planning (No. 03/99/NA), dated 03/04/1999, which specifies for construction and reconstruction works to comply with the prerequisites of urban regulations; (vii) the Regulation 0360/AF on National Biodiversity Conservation Areas, Aquatic and Wildlife Management, dated 8 December 2003; and (viii) the Wildlife and Aquatic Life Law (No. 07/NA), dated 24 December 2007, which stipulates obligations to partake in conservation, protection, development activities of wildlife and aquatic life in accordance with the laws and regulations, and to prevent adverse impacts on wildlife and aquatic life e.g., habitat destruction.

B. PROJECT-RELEVANT INTERNATIONAL ENVIRONMENTAL AGREEMENTS

21. The followings are project-relevant international environmental conventions for the Project: (i) The ASEAN Agreement on the Conservation of Nature and Natural Resources, in 1985; (ii) United Nations Framework Convention on Climate Change, in 1995, and (iii) Convention on Biological Diversity, in 1996, (iv) International Finance Corporation’s Environment, Health and Safety Guidelines of 2007.

C. ADB’S SAFEGUARDS POLICY

22. All ADB financed projects are required to undergo environmental assessment to ensure the environmental soundness and sustainability of the projects. It also aims to support the integration of the environmental considerations in the decision-making process.

23. The ADB’s Safeguard Policy Statement, June 2009 (SPS) clarifies the rationale, scope and content an environmental assessment. The initial screening of the project to determine its environmental category was carried out using the REA Checklist. Accordingly, the proposed project was categorized as a Category “B” project which requires an IEE.

24. The SPS emphasizes the need for effective implementation of the environmental safeguards which are to:

- Avoid possible impacts of projects on the environment and affected people, where possible
- Minimize, mitigate and/or compensate for adverse project impacts on the environment and affected people when avoidance is not possible; and
- Help borrowers/clients to strengthen their safeguard systems and develop the capacity to manage environmental and social risks.

25. The SPS contains several operational principles that include the requirement to ensure that the measures identified during the impact assessment are included in the EMP and are implemented in agreement with the borrower. The borrower/client is required to monitor the progress of implementation of the EMP, document the monitoring results, identify necessary corrective actions and reflect them in a corrective action plan. Periodic monitoring reports on implementation of the EMP are submitted to the ADB on a semi-annual basis during construction of projects with significant adverse environmental impacts and quarterly for highly complex and sensitive projects. During operation, reporting to the ADB for projects with significant adverse impacts is required on an annual basis.

IV. DESCRIPTION OF THE PROJECT

A. LOCATION

26. The LR9001 Road Maintenance Project starts from its junction with National road 18B in Saysetha District and continues to Sanxai District over a total distance of 54 km as shown in Figure 1 and Figure 2.

27. The first 17.0 km of the route up to Ban Paam is surfaced, having a DBST treatment applied under a previous ADB intervention in 2014. For Project design this segment is assigned as Section A. Beyond section A (Section B), the road with gravel surface are rough, gravel surface and about 4-6 m width which was also rehabilitated under ADB financed project in 2004.

28. While Section A is located in flat terrain, Section B becomes progressively steeper and contains some mountainous areas in the latter half of its length where some areas have steep to very steep gradients (15% to 18%). Roadside slope erosion/landslides were identified after rain in August and September 2018 and will have a chance to be damaged further by the future rain at Km 9+100, Km 17+701, Km 25+744, Km 30+775, Km 34+516, Km 35+325 to Km 36+360, and Km 38+567. A total of 10 villages of two districts were noted along the road corridor. Figure 1 and Figure 2 show the original scope for LR9001 in Attapeu Province. Figure 3 and Figure 4 show the location of the additional emergency works to protect the roadside slope at 7 locations and the additional road pavement in Charlernxai village works.

B. MAINTENANCE WORKS AND IMPLEMENTATION (ORIGINAL SCOPE)

29. The original scope of maintenance works is being implemented for a period of three years from September 2018 to December 2021 through a performance-based contract (PBC) and community-based contracted efforts. The original works started on the site by the contractor in October 2018.

30. The project road LR9001 includes two sections, i.e. sections A and B. On section A, the maintenance work activities will include road surface repair/ maintenance and replacement and additional horizontal and vertical signage. The Roadside maintenance will include clearing of vegetation, restoration of erosion control measures and cleaning of pipe culverts and the re-excavation of ditches. Structural work includes routine maintenance of bridges.

31. The works on Section B will be mainly re-grading of the sub-base layers and placement of new base courses. Also, there will be installation of concrete pavement in steep sections and the placement of new DBST surfacing in the northern-most villages and in steep sections. In addition, horizontal and vertical signage will be installed. Roadside maintenance will include extensive clearing of vegetation, restoration of erosion control measures and the cleaning of pipe culverts and repair of ditches, including stone masonry ditch linings. Structural work includes routine maintenance of existing bridges, including attention to joints, bearings and deck drains and the addition of approach fills and guard rails.

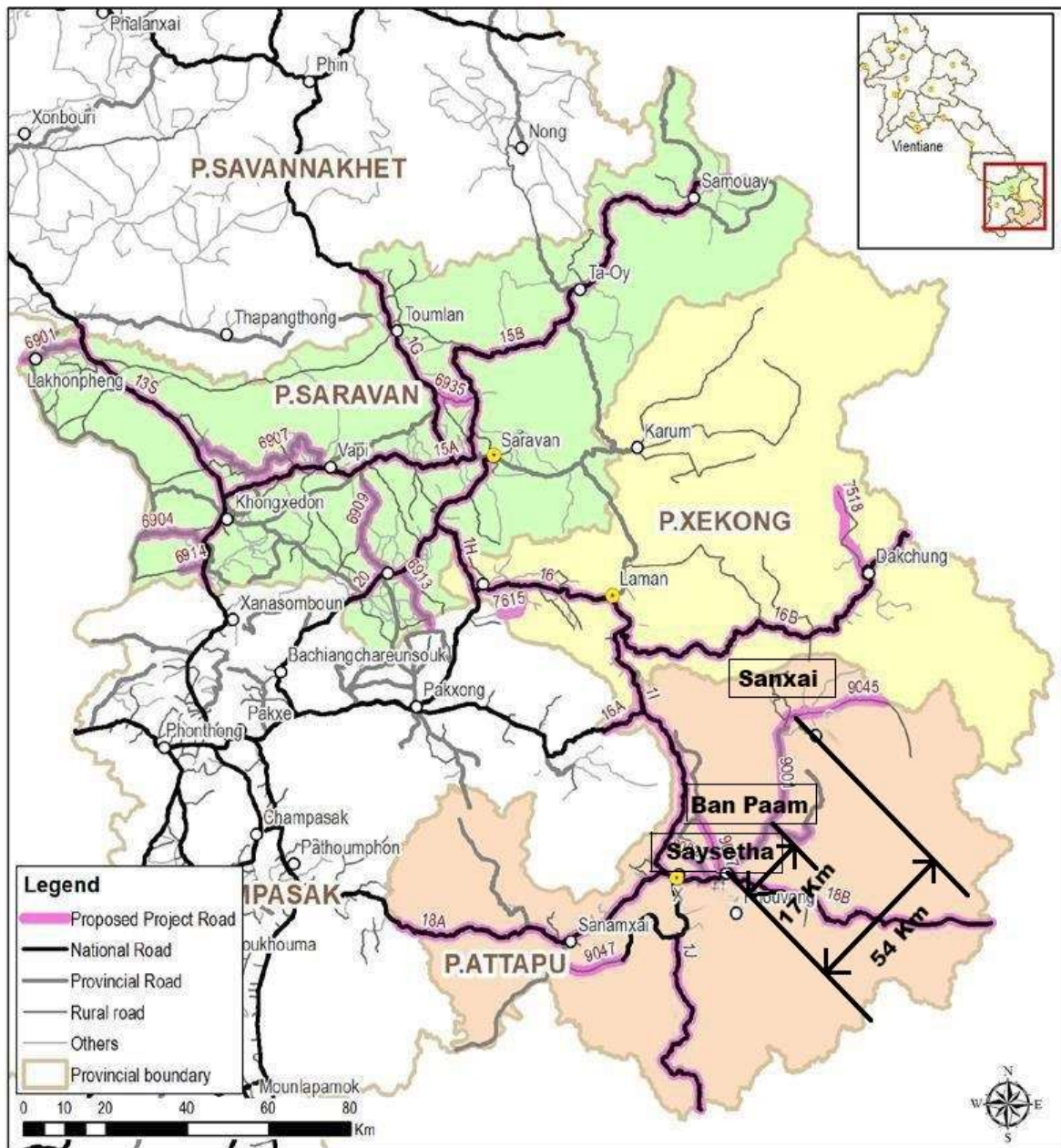


Figure 1: Location map of Project roads

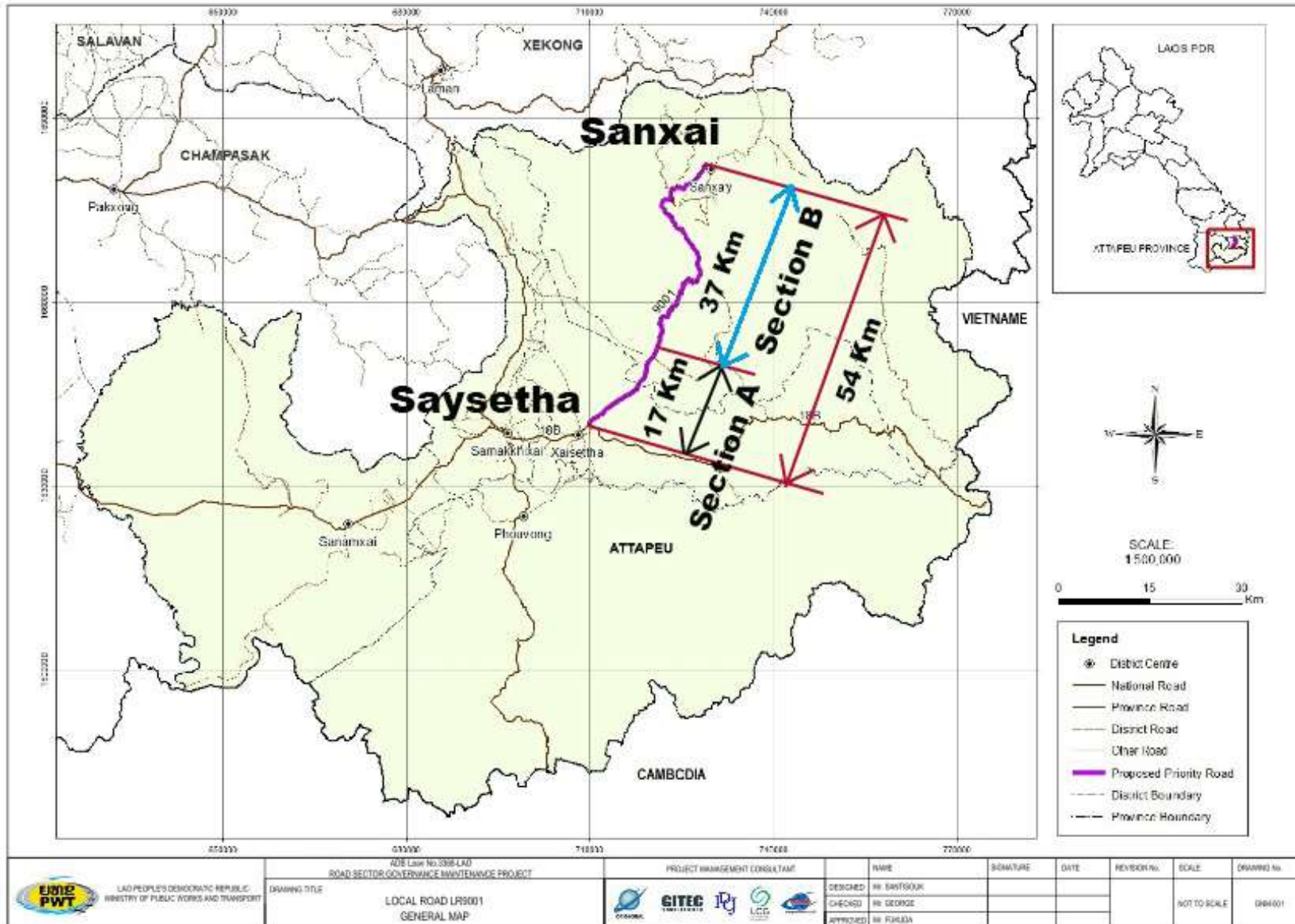


Figure 2: Location map of the original scope for LR9001 in Attapeu Province

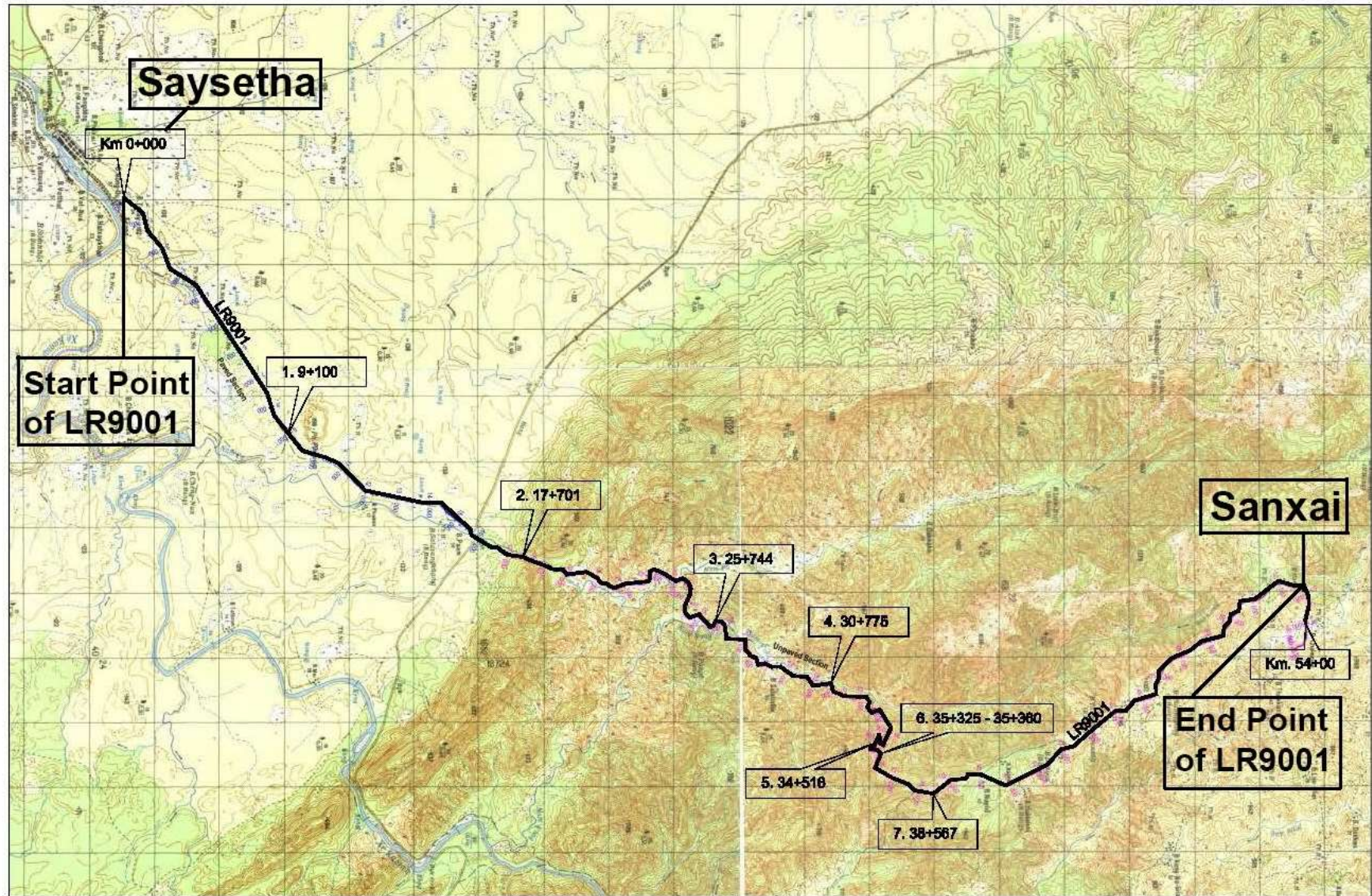


Figure 3: The additional emergency works at 7 locations
 Note: 1,2,3,4,5,6,7 Proposed Emergency Works of 7 Locations.

32. The PBC contracts cover only the road carriage way (excluding the roadside maintenance). The PBC contract will be implemented with the Initial Rehabilitation/Improvement works during the first year of the contract until the road has been “restored” to a condition suitable for regular PBC contracts. The regular performance based routine maintenance will be continued until the end of the 3-year period.

33. The Community-based PBC roadside routine maintenance will include installation of culvert and ditch clearing, clearing under bridges and box-culverts and other activities as part of the CB Maintenance Works and will also be implemented over 3 years. Table 1 below presents the various maintenance works and related activities to be required for LR9001.

Table 1: Maintenance works and activities for LR9001

ROUTINE MAINTENANCE WORKS	MINOR IMPROVEMENT WORKS	PERIODIC MAINTENANCE WORKS
Patching of Potholes in DBST Surface	Repair of Sub-base, including New Material	Replacement of Timber Decks
Crack Sealing - Minor Areas	Repair of Base Course, incl. New Material	Reshaping the Road (incl. ditches)
Grading	Re-gravelling (existing gravel road surface is replaced with new gravel, technically accepted)	
Spot Filling	Prime Coat	
Clearing of Ditches	First & Second Seals	
Clearing of Pipe Culverts	Install new pipe culverts with headwalls	
Repair of Ditch Lining		
Cleaning of Bridge decks Clearing River Channels of Debris	Excavation of unsuitable materials	
Maintenance of parapet rails	Maintenance of joints and bearings	
Grass and bush Cutting	Construction of Scour Checks	
	Riprap, Protection of Banks or Bed,	
	Erosion Protection by Vegetation	
TRAFFIC SAFETY:		
Repair of Signs Repair of Guard Rails	Installation of new signage	
Repair of Guard Posts Painting of line markings	Installation of new features	
Installation of slope stability measures		
The original works being implemented		For a period of three years from September 2018 to December 2021. The works started on the site in October 2018 (The original works started on the site by the contractor in October 2018. The additional works will start after the ADB and DONRE approved the updated IEE.)

C. ADDITIONAL EMERGENCY WORKS OF 7 LOCATIONS⁵

34. There are the additional emergency works at 7 locations on the existing LR9001 which were severely damaged by the erosion/landslide caused by the last heavy rain in August and September 2018. Those locations need to be restored urgently to avoid further damages before coming rain.

35. The additional emergency works activities are at Km 9+100, Km 17+701, Km 25+744, Km 30+775, Km 34+516, Km 35+325 to Km 36+360, and Km 38+567 as shown in Figure 3,

⁵ Adding the additional emergency works of 7 locations to avoid further damages caused by the rain, those were severely damaged by the erosion caused by the last heavy rain in August and September 2018.

and the proposed work activities of emergency works are just restoration of damages of the road side slope which are in the ROW, 15 meters from the center of road.

36. The additional emergency works are to restore to the original conditions of the road and its slope of both side of road which have been severely damaged by the last heavy rain, and the restoration works needs to be done urgently to avoid further damage of the road.

D. THE ADDITIONAL ROAD TO BE PAVED WITH DBST IN CHALERNXAI⁶

37. The additional road pavement in Chalernxai village works (Total length is approximately 1.6 Km) starts at the end of original road LR9001 (Km 54 point) as shown in Figure 4. The existing village road condition is unpaved which makes a difficulty for the villages and it is muddy during rainy season and dusty during dry season. Therefore, villagers of Chalernxai village strongly request to pave the road with DBST. The Location of existing village road is shown below.

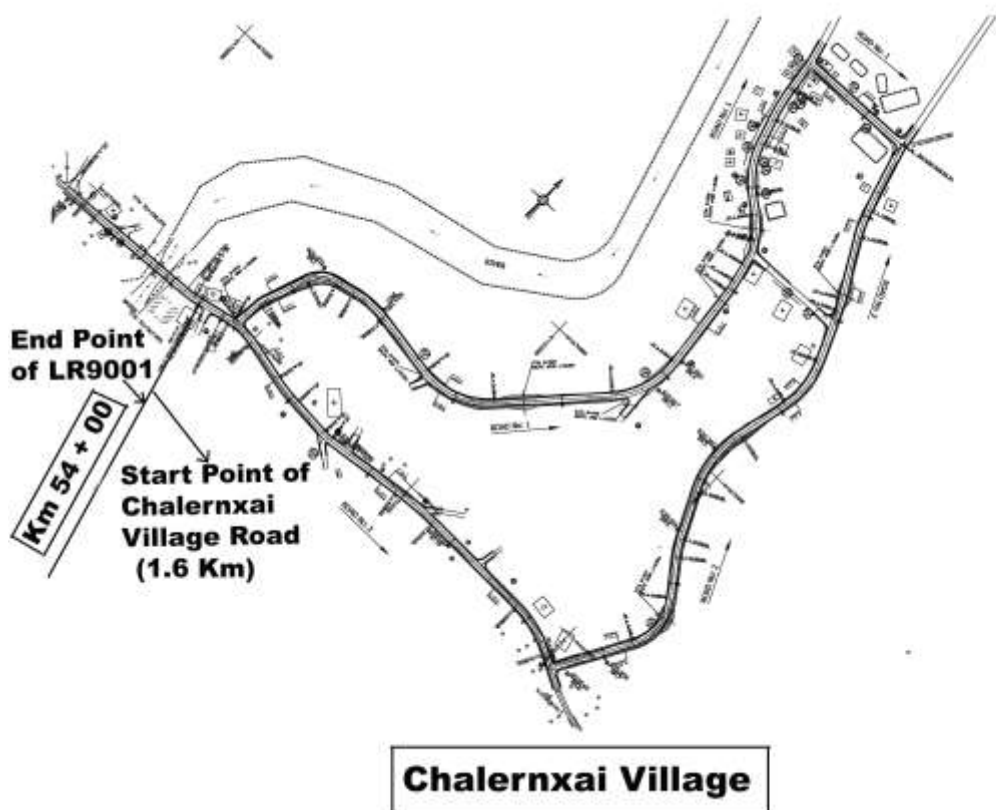


Figure 4: The additional road pavement in Chalernxai village works

38. The works will be covered by sub-base / base-course / DBST on the surface of existing earth / gravel road within the COI without any affects to structures, houses, land for agriculture purpose etc., which need land acquisition and compensation.

⁶ Adding the additional road pavement in Chalernxai village works (Total length is approximately 1.6 Km) because the existing village road condition is unpaved which makes a difficulty for the villages and it is muddy during rainy season and dusty during dry season. Therefore, villagers of Chalernxai village strongly request to pave the road with DBST.

V. DESCRIPTION OF THE ENVIRONMENT

39. Attapeu Province is a southeastern province of Lao PDR covering an area of 10,320 square kilometers with a population of 139,628 as of 2015⁷ based on the latest census; it is composed of 5 districts namely Samakkixay, Saysetha, Sanamxay, Sanxai and Phouvong (See Figure 2).

40. Population along the LR9001 surveyed by the Project in 2017 is 11,166 persons. The project road passes through Saysetha District and Sanxai District including 10 villages.

Table 2: Name of villages and population of Project LR9001 (2017)

No.	Name of villages	No. Households	Total	Female	Male
Saysetha District					
1	Xaiy	447	2065	1,088	977
2	Duay	231	1169	569	600
Sanxai					
3	Phiakeo	98	428	213	215
4	Mixai	269	1,299	644	655
5	Phouxai	180	1,012	522	490
6	Somboun	217	1,045	527	518
7	Darkkied	267	1,424	722	702
8	Vangxai	284	1,526	766	760
9	Chalernxai	119	711	358	353
10	Dakkhanak	88	487	257	230
Total		2,200	11,166	5,666	5,500

Source: Social development team-survey in 2017

41. A brief description of the existing environmental and socio-economic conditions of LR9001 influence area is presented in the following subsections:

A. PHYSICAL RESOURCES

1. Topography

42. Attapeu province is in the transition zone between the Animate Mountain Range in the east and the Mekong Plains in the west, and is considered rugged, wild and scenic. Attapeu is best known for the Bolaven Plateau. Attapeu shares borders with Xekong in the north, Champasak in the west, Vietnam in the east and Cambodia in the south. The Xekong River valley which flows through the middle of the Province is considered the “rice bowl” of Attapeu. It is one of the larger rice growing areas in Lao PDR, although yields are low. Sixty percent is mountainous, seventy percent of which are classified as “very steep”. The capital town, Samakkixay is built in a large valley surrounded by mountains. Attapeu has a virgin lake called Nong Fa located in Sanxai District, northeast of Attapeu.

2. Climate, Rainfall and Temperature

43. The climate is dominated by monsoons, with pronounced wet and dry seasons. Most rain falls during May to September when the prevailing winds blow from the southwest. Annual rainfall ranges from 1,000 mm in the extreme south to 3,000 mm in the north. Mean temperatures range from about 10 C° in January to 38 C° in July, cooler in the north, warmer in the south. There is a marked dry season in Attapeu lasting from November to April, whilst the peak rainfall occurs in August. The climate in Attapeu is noticeably influenced by the Animate Mountain Range, which acts as a barrier. Regions of the Animates where the crest is low receive more rain over a longer season. Climate-Data.Org published in 2019⁸ are referred to this updated IEE for the climate conditions.

⁷ <https://www.tourism Laos.org/southern-provinces/attapeu-province/>

⁸ <https://en.climate-data.org/asia/laos/attapeu/attapeu-1365/>

44. **Attapeu Climate Summary:** The Attapeu lies on 99 m above sea level. Attapeu's climate is classified as tropical. During most months of the year, there is significant rainfall in Attapeu. There is only a short dry season. This climate is considered to be Am according to the Köppen-Geiger climate classification. The average annual temperature is 26.4 °C | 79.5 °F in Attapeu. Precipitation here is about 2517 mm | 99.1 inch per year.

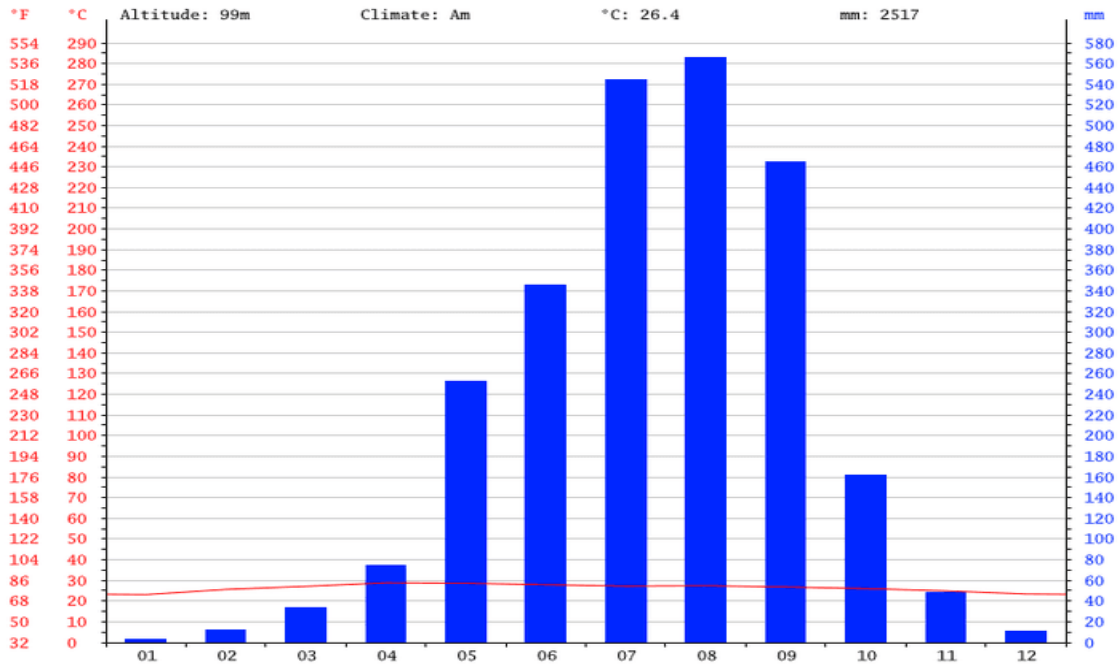


Figure 5: Attapeu climate summary

45. **Attapeu Average Temperature:** At an average temperature of 28.8 °C | 83.8 °F, April is the hottest month of the year. In January, the average temperature is 23.1 °C | 73.6 °F. It is the lowest average temperature of the whole year.

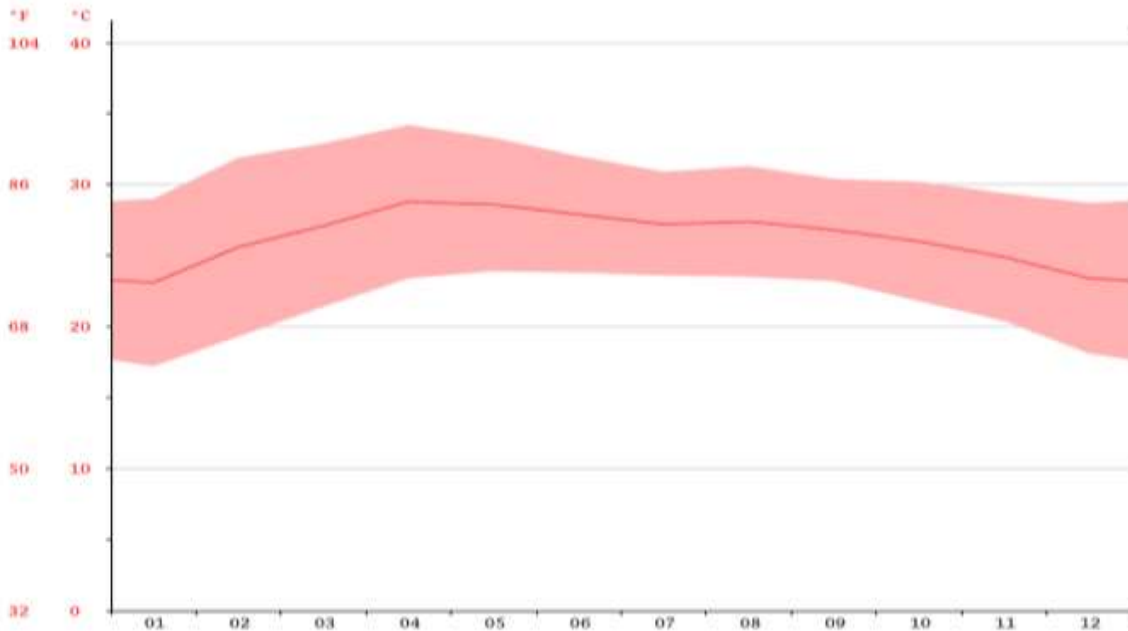


Figure 6: Attapeu average temperature

46. **Attapeu Weather by Month/Weather Averages:** Between the driest and wettest months, the difference in precipitation is 563 mm | 22 inches. The average temperatures vary during the year by 5.7 °C | 42.3 °F.

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	23.1	25.6	27.1	28.8	28.6	27.9	27.2	27.4	26.8	26	24.9	23.4
Min. Temperature (°C)	17.2	19.3	21.4	23.4	23.9	23.8	23.6	23.5	23.2	21.8	20.4	18.1
Max. Temperature (°C)	29	31.9	32.9	34.2	33.3	32	30.9	31.3	30.4	30.2	29.4	28.7
Avg. Temperature (°F)	73.6	78.1	80.8	83.8	83.5	82.2	81.0	81.3	80.2	78.8	76.8	74.1
Min. Temperature (°F)	63.0	66.7	70.5	74.1	75.0	74.8	74.5	74.3	73.8	71.2	68.7	64.6
Max. Temperature (°F)	84.2	89.4	91.2	93.6	91.9	89.6	87.6	88.3	86.7	86.4	84.9	83.7
Precipitation / Rainfall (mm)	3	12	34	74	252	346	544	566	465	162	48	11

Figure 7: Attapeu weather by month/weather averages

3. Soils

47. The soils in the southern part of Lao are generally good and are acid hydromorphic and contain low organic matter and nutrients, which are moderately- well suited to rice production. Aerosols make up 41% of the soil types. In contrast, soils in the Bolaven Plateau are less acidic and have relatively good water retention and drainage capacity. The Xekong River floodplain is a mixture of alluvial sediments and sedimentary rocks and has highly fertile agricultural soil because of regular flooding.

4. River System

48. The Mekong River is the dominant drainage system which reaches Lao PDR from China. It enters Lao PDR, swings eastwards to Luangprabang; then south past Vientiane then to Pakse from where it flows south into Cambodia. The Xekong River Basin is one of the most important Mekong tributaries. Its watershed (28,815 ha) includes all of Attapeu province and parts of neighboring provinces in the country and in Cambodia.

49. The Xekong River valley includes sections of Samakkixay, Saysetha and Sanamxay districts. Attapeu province has at least two wetland regions of global significance: the Xe Pian - Xe Kong (Xekong) Plain Wetlands and the Xe Pian - Xe Khampho wetlands.

50. The urban area of Attapeu straddles the confluence of the Xekong and Nam Xekhaman rivers and a lack of adequate control results in sewage finding its way into the drainage system which thereafter discharged untreated into the Nam Xekong near the central of town.

5. Surface Water and Groundwater

51. The Nam Xekong and Nam Sekhaman rivers are the main river sources in Attapeu. There are no major wetlands or ponds along the corridor which will be affected by the proposed maintenance interventions. The loose soils from the mountains are washed away during the rains and make the surface water turbid. The increased turbidity reduces water quality. The villagers consume less of this water due to the poor quality. The rivers are an important resource to the local population as the water is used as a drinking water source, irrigation for the crops and domestic chores.

6. Air Quality and Noise Levels

52. Air quality levels are quite good in this region as the only polluters are occasional tractors or mopeds and other vehicles. Dust emissions can be attributed to the bad condition of the road. The noise levels along the corridor are very minor as currently there is not much traffic, except for tractors, motorcycles and frequent pickup trucks that add to noise levels. Heavy logging trucks are presently not active in the corridor.

53. Air quality monitoring is still not a routine practice in Lao PDR and there is no information on the concentration of air pollutants. Generally, the air quality appears to be good. Due to lack of equipment and technical expertise there has been no historic collection of data on air quality in Attapeu Province reports on pollution levels remain anecdotal. At the present time air quality is “good” in the Province.

54. There are almost no industries and traffic volumes are currently low. Nevertheless, localized pollution does occur, and the incidences are likely to increase with increased urbanization unless action is taken to prevent or mitigate them. These include: Uncontrolled incineration of garbage; Decaying deposits of uncollected garbage; Wind-blown dust and debris resulting from solid waste transportation; Dust caused by traffic along unsealed roads; and Exhaust from vehicles and motorcycles– exacerbated by poor traffic management.

B. ECOLOGICAL RESOURCES

1. Flora and Fauna

55. Attapeu Province is blessed with rich in natural capital. A number of flora and fauna are associated with wetland species from the Xe Pian-Xe Kong (Xekong) Plain Wetlands and the Xe Pian - Xe Khampho wetlands such as Siamese Crocodile, Purple Heron, Chinese Pond Heron, Red-wattle Lapwing, Masked Fin foot, as well as small populations of Gaur (*Bos frontals*) and Dhole (See Figure 8).

56. There are 14 globally threatened (IUCN) Red List wildlife species and 23 CITES-listed species which have been observed trading in the province. Road improvements are expected to influence market demand and access and increase wildlife trade in the process (Singh et al 2007).

2. Fisheries

57. Fishing is an important secondary activity for many farm households as a source of extra income or to supplement the family’s food supply. Two thirds of farm households in Lao PDR engage in capture fisheries. Of these 92% fish in rivers, 40% in lake and 37% in rice fields. Fisheries are widespread around the country: in Phongsaly in the far north, 79% of farm households fish, in Attapeu in the far south, 74% of farm household fish. Fishing is usually carried out for the household’s own consumption. Only about a thousand aquaculture producers have aquaculture as the main source of income. A third sells some aquaculture products.

3. Protected Areas

58. The Lao PDR Government applies a forest classification system since 1997 based on five types: 1) national, provincial and district conservation forests (designed to protect biodiversity); 2) production areas forest (for timber extraction); 3) protection forest (for watershed protection); 4) regeneration forest; and 5) degraded forest (or forest that has been over harvested and no longer able to regenerate naturally). 60% of Attapeu Province contains medium to low density forest with patches of high-density forest cover while 42% is designated as protected area forest, all project works are only rehabilitation and maintenance within ROW of the existing road and far from the protected area (minimum 9 Km far from the DongAmphanh NBCA where is the nearest protected area) as shown in Figure 8 and Figure 9.

59. The location of DongAmphanh NBCA has covered two provinces; Attapeu and Xekong Province (at the coordination as the latitude: 107° 08’ – 107° 38’; & longitude: 14° 40’ - 14° 19’), it has total area 200,000 hectares. At the area part of Attapeu province, there are still rich of flora resources which types of the protected as shown in Table 3.

60. The road LR9001 including the additional emergency works at 7 locations and the additional road pavement in Charlernxai village works is not in the NBCA and not social sensitive areas. The location is far from Dong Amphanh’s NBCA approximately 9 km west side as shown in Figure 9.

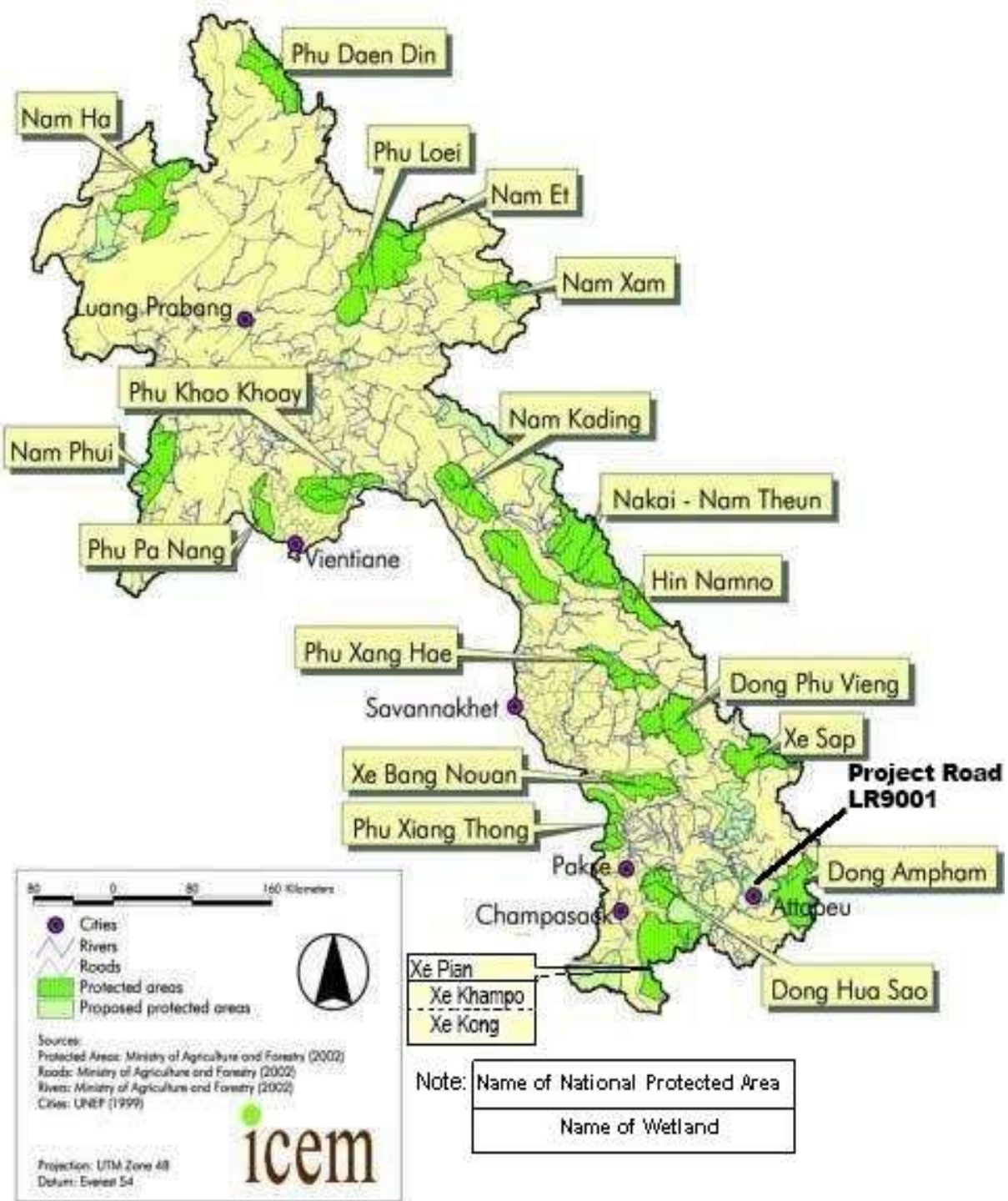


Figure 8: National Protected Areas in Lao PDR.

Table 3: List of wildlife and birds in Dong Amphanh's NBCA

No.	Lao Name	English Name	Scientific Name
Wildlife			
1	ຊ້າງ	Asian Elephant	Elephas maximus
2	ເໝືອຍ	Sun Bear	Ursus malayanus
3	ເຍືອງ	Southern Serow	Naemorhedus caudatus
4	ທະນີ ທຸກຊະນິດ	All gibbon species	Hylobates spp. Nomascus app.
5	ກວາງ	Samber	Cervus unicolor
6	ຟານ	Red Muntjac	Muntiacus vuquangensis
7	ລິງ ທຸກຊະນິດ	All macaques	Macaca sp.
Birds			
8	ນົກແກງ	Oriental Pied Hornbill	Anthracoceros albirostris
9	ນົກສາລິກາ	Hill Myna	Gracula religiosa
10	ນົກເປັດນ້ຳ		

Source: The Management of Forest Protection Unit of Attapeu Province June 2019

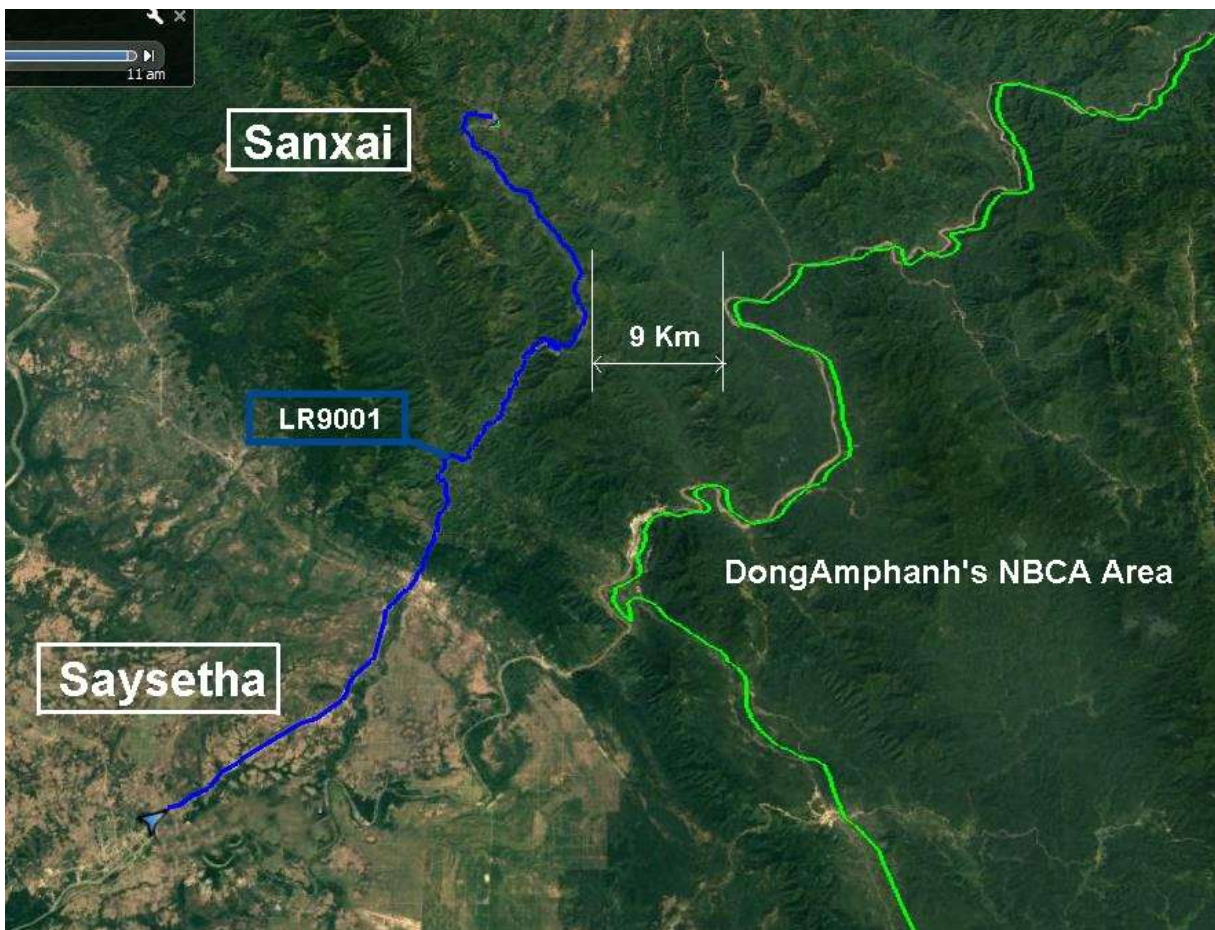


Figure 9: Location of the road LR9001

61. The Medical Biodiversity Conservation Garden (Productive Forestry Area) is located on the east side of the road LR9001 (around at km 17 to km 22 along the road) which was established as medical biodiversity conservation garden by Department of Public Health in 2014 (Figure 10). This area will not be affected by the works as the project activities will be implemented within the right of the existing roadway for the road surface works and do not encroach to outside of road width. The total productive management area is 12,256.10 Ha. The prohibition of activity is cutting grass/tree, burning and privatizing the area.

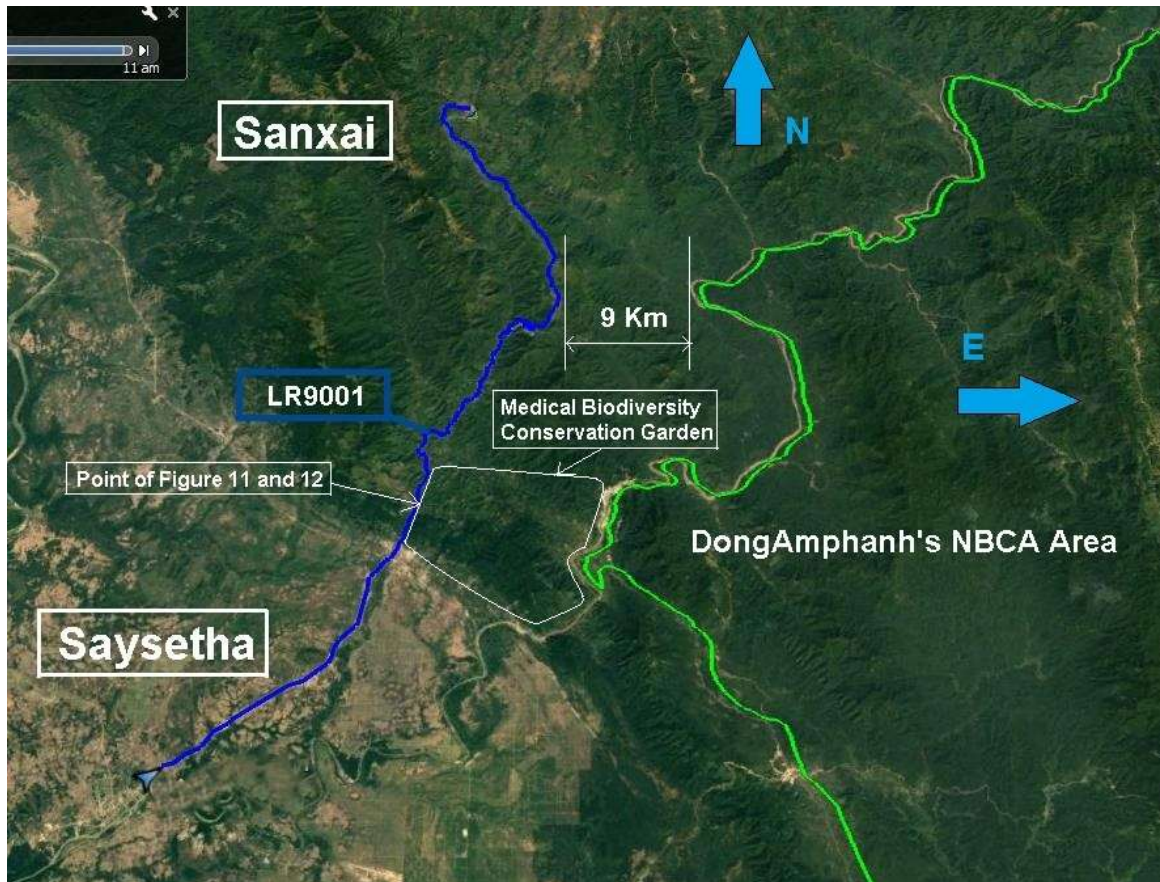


Figure 10: The Location of Medical Biodiversity Conservation Garden



Figure 11: View of the road LR9001 and the signboard of Medical Biodiversity Conservation Garden



Figure 12: Close up shot of the signboard of Medical Biodiversity Conservation Garden

C. ECONOMIC DEVELOPMENT

1. Economy

62. The economy of the province is one of the worst in the country. The province was heavily bombed during the last Indo-China war and the remains of bombs are still found along the former Ho Chi Minh trail. There are only small and medium scale industrial activities. The industries comprise of small-scale furniture factories, sawmills, drinking water factories [including Saksith], rice mills, ice making, meat processing, print shops, television/radio repair shops, watch repair, and garages.

Table 4: Occupations of households along LR9001

Project Road-Attapeu province	House holds	Government Staff (%)	Agriculture (%)			Business (%)	Service	Labour (%)
			Paddy farming	Shifting cultivation	Cash crop			
LR9001	2,200	8.23%	60.77%	12.07%	8.85%	4.30%	1.24%	6.37%

Source: Social development team-survey in 2017

63. Lao PDR is an agricultural economy and this sector contributes more than 60% to the National GDP, as well as Attapeu province that has a mainly economy's income from agricultures products. In year 2017, the project surveyed data of more than half of total households in villages along the project road do the agricultures. The other remaining households will work such the government staff, business service and Labor. The detail could show as Table 4. Rice is the staple food for the local population, and it is predominantly grown during the monsoon months. Traditional varieties of rice are grown in all irrigated areas. Rice production is based on a system of minimum inputs - fertilizer applications are considered to be low and pesticide use is negligible.

64. In addition to rice cultivation, vegetables and commercial crops are also grown in the project area. Among the agricultural products often produced as cash crops are coffee, mung-beans, soybeans, peanuts, tobacco, cotton, sugarcane, coffee, corn, white sesame and tea. The major export products from Laos's agricultural sector are timber, lumber, plywood and coffee. Most of the commercial crops are grown for export to Thailand.

65. Most of the fruit trees found in the area are banana, orange, mango, longan, jack fruit, tamarind, guava and pineapple. People grow vegetable gardens near streams and riverbanks and near their houses to generate income. A variety of vegetables are grown such as cabbage, cucumber, tomatoes, lettuce, chilly eggplant and pumpkin.

66. Rural households raise pigs, goats, cows, and poultry such as chicken, ducks and turkeys and develop fishponds. Buffalos are used to plough the agricultural land. Households maintain 1-2 buffaloes that are used as draft animals in the rice paddy lands. Livestock is sold in the villages and at district markets to provide additional income for the local population.

2. Transportation, Communication, Power and Water

67. Attapeu Province is accessible by land, air and waterways, and accessible by passenger bus, and tour buses from Thailand, Vietnam and Cambodia. The bus terminal in the town center provides service to Vientiane, Savannakhet, Pakse, Thakek and other provinces in southern Lao PDR and international service to Thailand and Viet Nam (Hue, Da Nang and Ho Chi Minh City). Attapeu now has a recently opened airport, located in Nongkhang, in the southern part of the capital town, but currently (2020) there are no scheduled flights to this airport. The nearest airport with scheduled flights is Pakse airport in Champasack province, which operates flights to Savannakhet, Vientiane and Luang Prabang, as well as internationally to Siem Riep, Bangkok and Ho Chi Minh City.

68. There are domestic and international telephone services operating, namely: Laotel, Enterprise of Telecommunications Lao (ETL), and Unitel. Electricity is supplied through a distribution system from hydropower projects such as Xeset, Houayhor and Sekhaman hydropower projects.

69. There is partial piped water supply with the rest of the requirement is met from available surface and ground water sources. Water is extracted by villagers from wells, rivers and streams in areas. The 2017 project survey shows that 86.14 % of the households along the project road LR9001 get water from Nam Papa. Other water sources are shown below.

Table 5: Water supply facilities of households (HHs) along LR9001

Project road	HHS	Nam Papa/ GFS		Well		River	
		HHs access	% of access	HHs access	% of access	HHs access	% of access
LR9001	2,200	1,895	86.14	305	13.86	165	7.5

Source: Social development team-survey in 2017

D. SOCIO-CULTURAL RESOURCES

1. Population and Communities

70. Attapeu Province is inhabited by several ethnic groups such as Lao Loum (lowland Lao) which make up only 38% of the population and the Lao Theung (upland Lao or ethnic minority) which make up 62%. The population in the project road as per the survey conducted by the project in 2017 is 16,322 persons. The corridor contains 10 villages as shown in Table 2.

71. The land use along the road starting at about 7 km from Attapeu town is dominated by re-forestation and rubber and palm oil tree plantations. The plantations extend beyond the new airport area at km 30. Land from about km 52 to the border at km 112 is steeply cross sloped and is therefore difficult to cultivate and as a result, the local population is relatively sparse. A summary of the present use of land adjacent to the roadway is shown below.

Table 6: Adjacent Land Use

Ref. / Type	Length [km]	Residential / Commercial	Agricultural	Forest
LR9001 Section A	17.0	Km 0.5 to km 9-17	Km 0-5 to km9-17	
LR9001 Section B	17-54	Km 53 to km 700	Km 39 to km 53 +700	Km17 to km 39

Source: Project Management Consultant (PMC)

2. Public Health

72. Many women and children in the villages of Saysetha and Sanxai districts have symptoms of severe malnutrition (underweight, stunting, wasting) despite its rich wetland and forest products. Diets are low in proteins and fats. In addition, traditional food behaviors and food taboos are also reasons of malnutrition. For example, newborns are fed with pre-chewed rice, and pregnant and lactating women are not allowed to eat a wide range of meat, fruit and vegetables containing vital nutrients. The 2017 surveyed by the project shows that the households along LR9001 have access to provincial hospital and district hospital and the detail as shown below:

Table 7: Number of household access to primary health care of LR9001

Project Road	Number of Provincial Hospital	Number of District hospital	Number of Dispensaries
LR9001	1	1	1

Source: Social development team-survey in 2017

3. Education

73. Primary and secondary schools are very limited in the project area. Schools are in district headquarters and the bigger villages. There are 11 primary schools, 8 secondary and 3 high schools as project's surveyed in 2017. The major problem encountered in the school system is the inadequate level of training of the teaching staff and the distance needed to travel – often affected by the bad condition of the access roads. Generally, there is no

statistically significant gender gap in primary and secondary education, although the quality of that education is far below the desirable national standard.

VI. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

74. Since the Project is considered environment as Category “B” under the ADB SPS, significant negative environmental impacts are not anticipated. The identification and assessment of impacts associated with the LR9001 project cycle include pre-implementation, implementation of maintenance works activities and operation.

75. The public consultation meeting for the original scope of the maintenance works was conducted initially in 2015 for LR9001 under the Lao Road Sector Governance and Maintenance Project through a PPTA funded by ADB on 26 January 2015. The following comments and concerns were presented:

- Improvement of drainage system to prevent water ponding and flooding;
- Control of land slide, erosion and deposition along the road;
- Installation of traffic safety measures such as barricades or guard rails;
- Public and workers safety during the maintenance works; and
- Road widening in sharp curves.

76. Further public consultation meeting for the original scope of the maintenance works was conducted on 27 September 2019 prior to issue ECC for LR9001. The following comments and concerns were presented below:

- The overall of the meeting agreed to enhance the infrastructure development project especially roads project because Project develops the good transportation, facilities and smooth traveling from village-district-province, neighborhood countries. Also agreed on the content of the IEE report that presented the benefit of project, minor environmental impact, and effective environmental mitigation plan.
- When the Contractor conducts any activities, shall coordinate closely with relevant sections, and provide information on safety within working area.

77. The public consultation meeting for the additional road pavement in Chalernxai village works (Total length is approximately 1.6 km) was conducted on 17 July 2019 at Chalernxai village office. The following comments and concerns were presented:

- Agree to pave road construction project in Chalernxai Village: length is 1,632,12 Km. width is 6 m.
- According to survey indicated that there is not any household's structures impact or any obstacles.
- Village authority will facilitate to project and others as much as possible

A. PRE - IMPLEMENTATION PHASE

78. There are the potential impacts identified during the pre-implementation of maintenance works as the following:

1) Inappropriate/ Incomplete Road Design:

- Missed or exclusion of road design can potentially cause road failure and create flooding.

Mitigation:

- At segment km 34-35, retaining wall or gabion protection will be installed. This will be implemented as the additional works along LR9001 because it was damaged by heavy rain.
- Road will be widened for Bus stop at Km 37+950- Km 38+125.
- Prepare road design by including improvement of drainage system to prevent water ponding. Provisions will be made to control land slide, erosion and deposition along the road by constructing retaining walls or gabions, as necessary.
- Detail design shall be revising & finalize Road Design improvement by PMC
- Drainage system should stable and proper install

- To ensure inlet and outlet of drainage system water flow smoothly
- Material use such as sand, soil should be control properly
- Retaining wall constructs proper at-risk places
- Concrete pave at some risk section of the mountainous area
- Sharp curve should be widening to avoid accident.

2) Improper implementation of the Project Environmental Management Plan:

- Improper implementation of the Project Environmental Management Plan may cause a negative impact.

Mitigation:

- Contractor to engage a full-time environmental Officer who will oversee proper implementation of construction-related aspects of the project EMP and Contractor's EMP.
- Prior to commencement of site works, prepare a CEMP based on the project EMP with details of staff, resources, implementation schedules, as well as monitoring and reporting procedures. The CEMP will also include a construction site health and safety management plan. The plan will provide guidance to the contractor's staff on good work practices and the requirement, specific requirements of occupational health and safety policies and regulations, training requirements, and site safety rules. The CEMP will be reviewed and approved by the Project Management Consultant (PMC). The CEMP will also be reviewed by ADB prior to approval by PMC.

3) Lack of consultation with affected people during project implementation:

- Lack of consultation with affected people during project implementation may cause a negative impact.

Mitigation:

- Stakeholders' consultation will be carried out before start of site works and will be continued throughout the construction phase on an area by area basis to resolve any potential problems. These will be done by MPWT-DPWT, the PMC, and contractors to:
 - (i) inform affected people on the location and schedule of various construction activities
 - (ii) determine concerns of affected people related to such activities, (iii) ensure that appropriate mitigation measures will be implemented to address construction-related environmental issues raised by the affected people.

4) Complaints due to project-related impacts

- The local people may not be aware well of the Project's activities schedule and how to solve their issues by using grievance redress mechanism due to project-related impacts.

Mitigation:

- Prior to commencement of site works, MPWT-DPWT, the PMC and the contractor will undertake the following activities in consultation with local people and local officials:
 - a. Establish a Grievance Redress Mechanism GRM as described in the project's updated Initial Environmental Examination (IEE).
 - b. Publicize the existence of the GRM through public awareness campaigns, billboards, public notifications, etc.
 - c. Ensure that the names and contact numbers of representatives of the contractors, the PMC, and MPWT-DPWT are placed on notice boards at the construction sites.

5) Disruption of utilities/services:

- Disruption of utilities/services may cause a negative impact.

Mitigation:

- Water supply pipelines, power supply, communication lines, irrigation facilities and other utilities that will be affected by construction will be relocated before construction works commence so that interruption of services will be minimized.
- Provision will be made to preserve the operation of current facilities in sufficient quantity and in agreement with the local community.
- Relocation will be undertaken in coordination with the utility company and local authorities.
- Affected households and establishments will be notified in advance of any disruption.
- Replacement structures (e.g., irrigation canals) will be constructed prior to the removal of the existing structure.

6) Improper disposal of excavation spoils and removed pavement.

- There may cause a negative impact such as the road accident and complaint from local people during project implementation.

Mitigation:

- Before commencement of excavation works and removal of pavement, obtain the official approval by regulator of the disposal sites.
- Construction waste disposal will be allowed only in the facilities selected, designed, constructed and operated to ensure environmentally safety disposal and duly approved by regulator of the disposal sites.
- Disposal sites will not be located in protected areas such as the DongAmphan National Protected Area and similar ecologically sensitive sites.
- Disposal sites will be located at least 50 m from watercourses.
- Disposal will not cause sedimentation or obstruction of the flow in watercourses.
- Disposal will not cause damage to productive and forested areas.

7) Social Conflict

- The potential social conflict between the local villagers and non-residents in the area may occur and be a negative impact.

Mitigation:

- Contractor to prioritize hiring of workers local villages particularly woman, but not children under the age 18 years old.
- Confirm proposed emergency works will not incrementally impacts to existing Environments.
- Regularly inform in advance the local officials and affected residents of the location and schedule of construction activities which may cause impacts on the environment and life of people (e.g., road sections to be constructed; roads used for transport, locations of worker camps etc.)
- Locate construction camps away from communities (at least 500 m away) in order to avoid social conflict in using resources and basic amenities such as water supply.
- To conduct educational awareness to all villages understanding of this project and should allow National regulation and Public Work and Transport law.
- Educate to all staff understanding of the project activities, especially traffic signs and regulation and Public Works and Transport (PWT) Law.

8) UXO Safety Risk to Workers

- UXO may cause the unsafe condition area, risk of to be injured and killed by unexploded bombs lying dormant and hidden.

Mitigation:

- Non-Technical Survey to be carried out based on the document/interview as the first stage in UXO Survey and Clearance Process. This should be conducted along the road.

- The UXO technical survey to be carried out based on exploration as the second stage in UXO survey at the proposed areas of excavation works such as the box culvert replacements and the proposed new camp, borrow pits and quarries.
- All UXO clearance activities shall be done according to National Regulatory Authority's regulations and decrees. Inter alia this includes the requirements on accreditation of the UXO clearing company, the accreditation of the clearance team members, as well as the accreditation of the Standard Operation Procedures of the UXO clearance company.
- The National Standard of the National Regulatory Authority has to be complied with regarding the Personnel, Search Instruments, Vegetation Reduction, Search and Clearance Requirements, Quality Control, Standard of Clearance, Storage of Explosives, Documentation, Quality Assurance for UXO Clearance, Safety and Reporting.

B. REHABILITATION/MAINTENANCE WORKS IMPLEMENTATION PHASE

79. Based on the maintenance works and activities to be implemented for LR9001, the potential impacts identified are the followings:

1) Impact to flora and fauna

- As the Project will not involve road widening, only minimal vegetation clearing is expected. However, operation of construction equipment and vehicles as well as improper disposal of spoils may cause damage to existing vegetation.
- Encroachment on precious ecology (e.g. sensitive or protected areas), the Medical Biodiversity Conservation Garden may cause a negative impact.

Mitigation:

- Since the project will not involve widening or realignment, the contractor will not undertake tree cutting.
- The contractors will prohibit hunting of wild animals and cutting of trees for use as fuel and other purposes.
- No construction camps, asphalt mixing plants, borrow pits and other project facilities are located with the DongAmphan National Protected Area.
- Limit the clearing and grubbing of vegetation and debris within the right-of-way of the road, replanting of vegetation, provision of protective cover for exposed soil materials.
- Department of Public Health of the Province⁹ shall be officially notified about the implementation schedule of the maintenance works by DPWT/PMC. Works are within ROW/ existing road and no direct impact.

2) Potential damage to archaeological and cultural sites.

- Improper excavation may cause damage to archaeological and cultural sites.

Mitigation:

- Should any potential items be located, the project management consultant (PMC) and MPWT will immediately be contracted by the contractor and work will be temporarily stopped in that area.
- An officer from the Department of Information and Culture (DIC) will be invited by MPWT to inspect the site and work will be stopped to allow time for inspection.
- Until the DCI has responded to this invitation work, will not re-commence in this location until agreement has been reached between DIC, PMC and MPWT as to any required mitigation measures, which may include structured excavation.

3) Increase in noise levels

⁹ Department of Public Health established the Medical Biodiversity Conservation Garden (Productive Forestry Area) as medical biodiversity conservation garden by in 2014 (para. 61).

- Increased noise and air pollution resulting from traffic volume.
- There could be an increase in noise pollution levels during transport, loading and unloading of materials for road maintenance works; from clearing, grubbing and excavation activities; and from the hauling and transport of maintenance equipment. Noise from the operation of equipment can have a considerable impact on the villagers whose houses are located immediately along the road.

Mitigation:

- Noisy construction activities will be avoided during religious or cultural events in close proximity to the roadside.
- Provide prior notification to the community on the schedule of construction activities.
- Whenever possible, completely enclose noisy equipment to reduce noise levels.
- Position any stationary equipment that produces high noise levels (e.g., portable diesel generators, compressors, etc.) as far as is practical from receptors (e.g., houses, pagodas, etc.)
- Construction traffic police to minimize noise and nuisance.
- When necessary, suitable noise control measures (e.g. noise barriers/walls, noise-reflective panels) will be used as determined by the PMC to reduce construction and equipment noise levels to acceptable levels based on the international Finance Corporation's Environment, Health and Safety Guidelines of 2007, or equivalent guideline, in the vicinity of houses, temples and sensitive receptors.
- Impose speed limits on construction vehicles within the construction sites and through urban areas.
- Locate batching plants, crushers and similar facilities at 300 meters away from residential areas and sensitive receptors.
- Operation of noisy equipment and construction works during night time (19:00 – 06:00) in populated areas and where sensitive receptors are found will only be undertaken after prior notification and construction have been carried out with affected people and local officials, and suitable noise attenuation measures are implemented.
- Restrict use of vibrating rollers and operation of heavy equipment near vibration sensitive structures.
- Ensure noise levels do not exceed 55 dB (A) near residential areas during daylight hours and 45 dB (A) during night hours.
- Undertake noise measurements, as directed by the PMC, to ensure compliance with these requirements.

4) Dust annoyance & air pollution

- There could be an increase in dust/air during transport, loading and unloading of materials for road maintenance works; from clearing, grubbing and excavation activities; and from the hauling and transport of maintenance equipment. Emissions from trucks and other transport vehicles have a considerable impact on the villagers whose houses are located immediately along the road. Emissions of air pollutants including nitrous oxide, carbon monoxide and hydrocarbons are considered minimal to moderate because the number of trucks and equipment required for the maintenance works are small and the construction area is large.
- Operation of the Concrete Batching Plant together with a crushing plant will generate huge amount of dust into the air. Without any mitigating measure, dust generation could be problematic during dry periods and during operation of plant facilities. Prolonged exposure to this type of dust will potentially cause respiratory illness.

Mitigation:

- Locate concrete batching plants, asphalt plants, crushing plants, and materials and spoil stockpiles and other dust sources at least 300 meters away from inhabited areas and sensitive receptors.
- Install appropriate air pollution control equipment and other suitable control measures to minimize dust emission, to avoid nuisance and health risks to surrounding communities.

- Undertake regular water spraying on roads, work areas and other construction-related facilities near or within populated areas and other sensitive receptors.
- Cover or regularly water stockpile areas to minimize dust generation.
- Prohibit use of equipment and vehicles that emit visible smoke in excess of acceptable limits.
- Provide trucks transporting construction materials with covers to minimize spills and dust emission.
- Impose speed limits for project vehicles to minimize dust emission along populated areas and other sensitive receptors.
- Prohibit burning of all types of waste generated at the construction sites, workers' camps, and other project-related facilities and activities.
- Regularly clean roads used by construction traffic to remove mud, cement, etc.
- Ensure that areas with the project area where there is heavy movement of project vehicles are provided with hard standing and kept clear of loose surface material.
- Ensure that cement and other fine-grained materials that are delivered in bulk are stored in closed containers.
- Wheel washing will be undertaken in active construction sites so that haul/delivery trucks can be cleaned of mud and dirt as they exit the work area.

5) Landslides, erosion of excess and open soils and deposition of rocks on road shoulders and ditches

- Landslides, erosion of excess and open soils and deposition of rocks on road shoulders and ditches may cause a negative impact for public transportation.
- Mitigation:
- Erosion Protection by gabions &, appropriate location and storing of works materials, excess soils & materials from grading & excavation should be protected with cover especially during rainfall.
- Excess soils and materials from grading & excavation should be protected with cover and/or bund/berm especially during rainfall.
- Divert storm water flows away from cleared areas.
- Provide sedimentation control structures, as directed by the PMC, adjacent to watercourses within the construction area.
- To prevent the cascading impacts, close supervision of the maintenance works will have to be ensured and proper storage location will be identified for the excess materials for future use and disposal of unsuitable materials. The stockpiling of soils must be located in flat areas and far from drainage routes; settling ponds and temporary drainage ditches for runoff where significant negative impacts will be anticipated; and provision of protective cover for exposed soils particularly during rainfall events.
- On hill slopes and other potentially erodible places along the roadside, appropriate native vegetation that retards erosion will be planted or retaining wall or gabion protection will be installed.
- To install erosion protection in high embankment.
- In mountainous areas needs install traffic signs and barricading installation.
- Spoil disposal shall not cause sedimentation and obstruction of flow of watercourses.
- Spoil and construction materials stockpile area shall be located away from water stagnation and under no circumstances will these materials be dumped into watercourses.
- Dredged and excavated materials shall be reused or provided to local residents as soon as possible, if they require such materials, for land reclamation. The remaining spoils can be disposed into low elevation sites for road construction.

6) Damage to productive land and deterioration of water quality due to operation of borrow pits.

- Contractor campsites, bridge works, stockpiling of construction materials and spoils, use of hazardous materials and earthworks if not properly managed are likely to cause deterioration of surface water quality, flooding and flow obstruction of watercourses.
- The activity will have temporary and minimal effects on the physical properties of the water.
- Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction

Mitigation:

- Borrow pits will be covered by required government permits or approvals.
- Will not be located within 300 meters of any urban area.
- Will not be located with protected area such as the DongAmphan National Protected Area and similar ecologically sensitive sites.
- Topsoil will be saved for rehabilitation during closure of the quarries and borrow pits.
- Will be provided with drainage and sediment flow controls.
- Upon completion of extraction activities, borrow pits will be dewatered, fences and warning signs will be installed, as appropriate to avoid impacts to public health and safety.
- Will be left in a tidy state with stable side slopes and proper drainage.
- Sourcing of quarry and borrow materials from existing licensed sites shall be preferred over establishment of new sites, as much as possible.
- Quarries and borrow pits shall not be established in ecologically sensitive and protected areas.
- Borrow/quarry sites shall not be located in productive land.
- Dust control during excavation and transport (e.g., water spraying on access roads and provision of truck cover) shall be undertaken in areas where there are sensitive receptors such as residential areas, school, hospital, etc.
- Long-term material stockpiles shall be covered to prevent wind erosion.
- The use of riverbed sources shall be avoided, as much as possible. However, if this is unavoidable, the contractor shall minimize use and avoid small rivers and streams. Alluvial terraces or alluvial deposits which lie on the riverbeds but not covered by water in normal hydrological conditions shall be preferred.
- Quarry and borrow sites must be selected amongst those offering the highest ratio between extractive capacity (both in terms of quality) and loss of natural state.
- Quarry and borrow sites lying close to the alignment, with a high level of accessibility and with a low hill gradient, are preferred.
- Upon completion of extraction activities, re-contour borrow/quarry pit wall or fill-up when there are available and suitable materials such as excavation spoils, replace topsoil, and re-vegetate with native species such as grasses and fast-growing shrubs and trees.
- In quarries located in mountainous or hilly areas, or wherever slopes are important, terraces shall be cut after extraction, and drainage system and vegetation cover shall be provided for rehabilitation to enhance slope stability.
- Implement compensatory planting (at least one to one ratio) if trees will have to be removed at quarry and borrow sites.
- Borrow pits will be left in a tidy state with stable side slopes and proper drainage in order to minimize soil erosion, siltation of nearby bodies of water and to avoid creation of water bodies favorable for mosquito breeding. Provide restoration and planting for borrow pits and spoil disposal areas after use, as appropriate.
- To avoid or prevent people from drowning when pits become water-filled, measures such as fencing, providing flotation devices such as a buoy tied to a rope, etc. shall be implemented.

7) Generation of oil and other hazardous waste/materials

- Use of hazardous materials and disposal of hazardous wastes may cause pollution and safety risks
- Land contamination.

- Accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials.

Mitigation:

- Train relevant construction personnel in handling of fuels/hazardous substances and spill control procedures.
- Provide maintenance shops, fuel and oil depot with impermeable flooring and drainage leading to an oil-water separator or sump where oily wash water and sludge can be collected for proper disposal.
- Undertake regular maintenance of oil-water separators/sumps to ensure efficiency.
- Carry out refueling and servicing of equipment only in areas adequately equipped to avoid leaks and spills.
- Limit quantities of chemicals, hazardous substances and fuel on site at any time, and ensure these materials are stored on site on above-ground storage tanks, within an enclosed and covered area that has an impervious floor and impervious surrounding bund, with a capacity at least 120 % of the total capacity of the storage capacity.
- Locate storage areas away from water-courses, flood-prone areas, workers' camps, populated areas and other sensitive sites.
- Collect oil contaminated refuse and disposed of through recyclers/authorized waste handlers and dispose of it in authorized waste facilities.
- Ensure availability of spill cleanup materials specifically designed for petroleum products and other hazardous substances where such materials are being stored and used.
- In case of spills and leaks, immediately implement suitable measures to prevent hazardous materials from spreading. Remove and properly dispose spilled and contaminated materials to avoid further pollution of the environment.
- Ensure all storage containers are in good condition with proper labeling.
- Regularly check containers for leakage and undertake necessary repair or replacement.
- Prohibit discharge of oil-contaminated water into the environment.
- Store waste oil used lubricant and other hazardous wastes in tightly sealed and properly labeled containers to avoid contamination of soil and water resources.
- Ensure that the transport and off-site disposal of hazardous wastes complies with applicable laws and regulations or is in compliance with internationally accepted good practice in the absence of relevant laws and regulations.
- Ensure that the restoration of temporary work sites includes removal and treatment or proper disposal of contaminated soils.
- For bitumen transport, ensure the use vehicles are approved by local authorities for the transport of bitumen and are also in accordance with the bitumen supplier's recommendations for such transport.
- Ensure that truck drivers are familiar with the safe loading and unloading procedures for the bitumen products, including emergency procedures in the event of spillage.
- Ensure that trucks are provided with tools and materials for handling spills.

8) Deterioration of water quality due to wastewater discharge from construction works and facilities

- Contractor campsites, bridge works, stockpiling of construction materials and spoils, use of hazardous materials and earthworks if not properly managed are likely to cause deterioration of surface water quality, flooding and flow obstruction of watercourses.
- The activity will have temporary and minimal effects on the physical properties of the water.
- Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction

Mitigation:

- Prior to operation of concrete batching plants, construct settling/retention ponds with sufficient specifications/capacity for treatment of wastewater.

- Properly operate and maintain setting/retention ponds to reduce the concentration of total suspended solids to acceptable levels.
- Provide adequate surface water discharge drainage, adequate sanitation facilities, adequate water supply, strictly enforce observance of sanitation practices, implement an eco-friendly solid/hazardous waste management: practices waste minimization, reuse and segregation, has adequate covered storage bins/containers.
- There will be no use of chemicals that will pollute the quality of water that serves as the water source of the downstream users.
- Camp wastewater shall be fully treated first before discharged to adjacent or nearby water bodies.
- Spoils, construction wastes and construction materials stockpile area shall be located away from water bodies and under no circumstances will these materials be dumped into watercourses.
- Discharge of oily wastewater, fuel, hazardous substances and wastes, and untreated sewage to watercourses/canals and on the ground/soil shall be prohibited.

9) Siltation and blockage of water flow/flooding

- Siltation and blockage of water flow/flooding due to improper execution of maintenance works and activities can become a regular occurrence.
- The sitting and location and size of pipe culverts and if pipe culverts are broken or deteriorated may other causes of water ponding and flooding.
- Creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents

Mitigation:

- Provide and maintain temporary drainage to prevent local flooding and waterlogging.
- Ensure watercourses are not obstructed or, if obstruction is unavoidable, provide alternative temporary or permanent channels of sufficient capacity to avoid flow restriction.
- Regularly inspect and maintain all drainage channels to ensure that continue to function as required.
- Measures to mitigate ponding and flooding include cleaning and clearing the waterways including pipe culverts, excavation, and sitting of new location to install new culverts. To prevent flooding caused by reduced water outflow, the area will be investigated to determine the best solution to prevent ponds and floods to happen. Good supervision of the maintenance works will be required to prevent workers' activities that may contribute to run offs, erosion and deposition of soils and unsuitable materials to waterways that further leads to water ponding and floods. In addition, stockpiling of soils and excavated materials must be located in flat areas and far from drainage routes. In the absence of suitable ground, settling ponds and temporary drainage ditches for runoff, and provision of protective cover for exposed soils particularly during rainfall events must be set up.
- Provide adequate drainage at the construction sites and other project areas to facilitate the rapid removal of surface water from all areas and to avoid flooding of surrounding areas and accumulation of stagnant water and minimize flow obstruction of existing watercourses.

10) Traffic congestion and public access obstruction

- Road construction works are expected to cause traffic disruption and congestion and obstruction of access to roadside properties and establishments. A traffic slowdown is likely to happen during maintenance work due to temporary closure of road segments.

Mitigation:

- Prepare and, after approval of the PMC, implement, a traffic management and road safety plan for the construction areas and for communities affected by construction.
- Closely coordinate with local authorities for any closure of roads or rerouting of vehicular traffic, if required.

- Ensure access in area to be closed temporarily by provision of temporary bypass roads.
- Schedule construction activities to take into account local events such as festivities, processions, parades, etc. to minimize disruption.
- Regularly monitor traffic conditions along access and Project roads to ensure that project vehicles are not causing congestion.
- Provide sufficient lighting at night within and in the vicinity of construction sites.

11) Public safety

- Movements of construction vehicles/equipment in and out of the narrow access roads and streets, roadside parking of construction vehicles and equipment, stockpiling of aggregates, excavated soils, spoils within access tow ROW. Lack of proper traffic warning signs and other safety measures (e.g., sufficient lighting at night at construction sites, etc.) could cause accidents.
- Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation

Mitigation:

- Install barriers to keep pedestrians away from hazardous areas such as constructions sites and excavation sites.
- Install signage at the periphery of the construction site advising road users that construction is in progress.
- Strictly impose speed limits on construction vehicles along residential areas and where other sensitive receptors such as schools, pagodas and other populated areas located.
- Provide adequate lighting at night within and in the vicinity of construction sites.
- Provide security personnel in hazardous areas to restrict public access.
- If necessary, provide safe passageways for pedestrians crossing the construction site and for people whose access has been disrupted due to construction works.
- Proper placement of traffic and warning signs, fencing, barriers, flag persons for traffic control, signage and road diversions. The diversion signs would be bold and clearly visible particularly at night.
- Reinstate good quality permanent accesses following completion of construction.
- Educate drivers on safe driving practices to minimize accidents and to prevent spill of hazardous substances and other construction materials by providing covers over transporting dump trucks.
- The general public/local residents shall not be allowed in high-risk areas, e.g., excavation sites and areas where heavy equipment is in operation.
- Provide fencing on all areas of excavation greater than 2 m deep.

12) Borrow Area

- There will have the adverse environmental impact, unsafe condition and complaints from the local people.

Mitigation:

- Contractors shall get material only from the Government- permitted source.
- Sourcing of quarry and borrow materials from existing licensed sites shall be preferred over establishment of new sites, as much as possible.
- Quarries and borrow pits shall not be established in ecologically sensitive and protected areas.
- Borrow/quarry sites shall not be located in productive land.

- In case the Project will involve new quarry/borrow sites/spoil disposal sites, such sites shall be located over 500 m away from residential, school, hospital and other sensitive receptors.
- Dust control during excavation and transport (e.g., water spraying on access roads and provision of truck cover) shall be undertaken in areas where there are sensitive receptors such as residential areas, school, hospital, etc.
- Long-term material stockpiles shall be covered to prevent wind erosion.
- During quarry and borrow site operation, provide adequate drainage to avoid accumulation of stagnant water.
- The use of riverbed sources shall be avoided, as much as possible. However, if this is unavoidable, the contractor shall minimize use and avoid small rivers and streams. Alluvial terraces or alluvial deposits which lie on the riverbeds but not covered by water in normal hydrological conditions shall be preferred.
- Confine quarrying of riverbed materials to less than 20% of river width in any location and keep away from riverbanks.
- Protect and reinstate riverbanks if unexpected erosion occurs.
- Quarry and borrow sites must be selected amongst those offering the highest ratio between extractive capacity (both in terms of quality) and loss of natural state.
- Quarry and borrow sites lying close to the alignment, with a high level of accessibility and with a low hill gradient, are preferred.
- Upon completion of extraction activities, re-contour borrow/quarry pit wall or fill-up when there are available and suitable materials such as excavation spoils, replace topsoil, and re-vegetate with native species such as grasses and fast-growing shrubs and trees.
- Upon completion of extraction activities, borrow pits shall be dewatered and fences shall be installed, as appropriate, to minimize health and safety risks.
- In quarries located in mountainous or hilly areas, or wherever slopes are important, terraces shall be cut after extraction, and drainage system and vegetation cover shall be provided for rehabilitation to enhance slope stability.
- Implement compensatory planting (at least one to one ratio) if trees will have to be removed at quarry and borrow sites.
- Borrow pits will be left in a tidy state with stable side slopes and proper drainage in order to minimize soil erosion, siltation of nearby bodies of water and to avoid creation of water bodies favorable for mosquito breeding. Provide restoration and planting for borrow pits and spoil disposal areas after use, as appropriate.
- To avoid or prevent people from drowning when pits become water-filled, measures such as fencing, providing flotation devices such as a buoy tied to a rope, etc. shall be implemented.

13) Workers' protection, health and sanitation

- The main risks during the construction stage may arise from: (a) inadequate sanitation facilities in work camps; (b) failure to implement measures to avoid accidents and injuries involving workers and the public; (c) introduction of sexually transmitted or other diseases by non-local workers, and; (d) outbreaks of diseases such as malaria, diarrhea, etc. in the labor force. In order to minimize these risks, the following measures shall be implemented by the contractor.

Mitigation:

- Appoint an EHS Officer who shall be responsible for training, monitoring and reporting on EHS concerns, and implementation of EMP (18 May 2020).
- Perform a hazard assessment of the workplace to identify and eliminate physical and health hazards.

- Provide personnel with appropriate safety equipment such as safety boots, helmets, gloves, protective clothes, welding helmets, dust masks, goggles, ear protection, safety line, fall prevention measures, etc, broadly referred to as personal protective equipment (PPE). And ensure that these are properly used as required.
- Periodically review, update and evaluate the effectiveness of the PPE program.
- Conduct orientation for construction workers regarding emergency response procedures and equipment in case of accidents (e.g., head injury from falling, burns from hot bitumen, spills of hazardous substances, etc.), fire, etc.; health and safety measures, such as on the use of hot bitumen products for paving of project roads, etc.; prevention of HIV/AIDS, malaria, diarrhea, and other related diseases.
- Measures to prevent malaria shall be implemented (e.g., provision of insecticide treated mosquito nets to workers, spraying of insecticides, installation of proper drainage to avoid formation of stagnant water, etc.).
- Provide workers at construction sites over water with buoyancy devices at all times.
- Provide stable footpaths/access with adequate strength guardrails at bridge work sites.
- Comply with relevant laws and regulations on waterway traffic safety during construction.
- Provide first aid kits at each camp and working sites that are readily accessible by workers. In addition, the contractor shall prepare emergency procedures detailing arrangements with commune health center(s) or nearest hospital(s) to accommodate emergency cases from the work location.
- Provide fire-fighting equipment at the work areas, as appropriate, and at construction camps provide adequate drainage in workers camps.
- Provide adequate, clean and well-ventilated housing, with separate sleeping quarters for male and female workers, at the workers'/construction camps.
- Provide a reliable supply of potable water and water for washing and bathing purposes at the workers' camps.
- Provide separate hygienic sanitation facilities (including pit latrines) and bathing areas with sufficient water supply for male and female works.
- Ensure that all wastewater emanating from workers camps, construction camps and other project-related activities and facilities is passed through gravel/sand beds and all oil/grease contaminants will be removed before wastewater is discharged. Oil and grease residues shall be stored in tightly covered drums. Such wastes shall be disposed consistent with national and local regulations.
- Ensure proper collection and disposal of solid wastes within the workers'/construction camps consistent with local regulations.
- Provide fencing of adequate strength around excavation sites greater than 1 m deep.
- Prohibit workers from entering work sites without the appropriate PPE.
- Install sign boards, lighting system at the construction sites, borrow pits, or places which may cause accidents for vehicle, people and workers.
- Ensure reversing signals are installed on all construction vehicles.
- Implement fall prevention and protection measures for heights greater than 2 m, falling into operating machinery or through an opening in a work surface.
- Ensure that objects cannot fall onto people, vehicles, and properties in adjoining areas.

14) Workers' Health and Safety regarding COVID-19

80. The Project needs to implement strictly preventive measures and monitoring in accordance with the announcement of the Prime Minister's Office Order No.06/PM regarding COVID-19 regulations which was issued on 30 March 2020 and was effective until 19 April 2020. It might be lockdown starting from 30 March 2020. The major points are:

- Public servants except the one who have been authorized to remain at work, are to work from home starting 1 April till 19 April 2020 including Lao New Year Holiday (14-16 April);
- It is prohibited for all people to leave their homes or domiciles except to buy essential good, to perform tasks for businesses permitted to remain open, or to engage in various government authorized tasks;
- It is prohibited for people to travel to other provinces or areas where there are known infected cases or at-risk except necessary purpose to transport goods;
- It is prohibited to organize gatherings of any sort of more than 10 people;
- International, interprovincial and traditional borders must remain closed to all people. Only transport vehicles that have explicit authorization to transport commercial goods may cross these borders;
- The entertainment businesses must remain closed: cinemas, karaoke venues, spa and massage parlors, casinos, night markets, indoor fitness gyms, outdoor team sports venues;
- The following business and services shall be allowed open: bank, agriculture market, convenience stores, supermarkets, fuel station, restaurants, the business must adhere strictly to the task force guidelines so as to lower the chance of infection;
- In practice, administrative bodies may issue their own legislation more detail within their own scope of authority.

81. The Prime Minister's Office extended the lockdown measures until 3 May 2020, and thereafter the notice on 1 May 2020 was issued for easing and continuation of certain lockdown measures. The current notice is effective from 4 to 17 May 2020, and outlines a gradual loosening of lockdown measures, with certain strict measures to remain in place as below:

- Government offices and private sector businesses are permitted to open normally. However, both public and private employees must come to work on a rotational basis. Workplaces must put in place strict disease prevention measures;
- Members of the public may, based on their needs, leave their homes but must remain within their home province. Residents are urged to continue to adhere to preventative measures specified by the NTCCPC. Members of the public may engage in physical exercise and other fitness activities (e.g. jogging, running, biking, aerobics, and golf) in outdoor spaces but must refrain from group sports activities;
- The notice states that inter-provincial travel remains prohibited with the exception of essential and emergency circumstances such as that necessitated by government officers, business owners, students, sick patients, deceased individuals, and commercial goods transportation;
- Members of the public are prohibited from organizing recreational gatherings of more than ten persons or any number of people where they cannot maintain a physical distance of at least one meter;
- Traditional, provincial, and international borders shall remain closed. Only individuals permitted by the NTCCPC and commercial transport vehicles will be allowed to cross these borders, according to the notice. The proper documentation must be provided upon request for crossing the borders;
- Restaurants, convenience stores, barbershops, beauty salons, wet markets, shopping malls, wholesale and retail shops, supermarkets, coffee shops, car care centers, water factories, and ice factories may proceed to operate normally but must all enact strict preventative health measures. Other entertainment businesses are not permitted to reopen at this time;
- The notice states that the easing of restrictions remains temporary. If an infected case is confirmed in a particular province, then stricter measures will be enacted in that province. The provincial taskforce will announce all confirmed cases and measures. If an cluster of cases is found in two bordering provinces, then the country may revert to stricter lockdown measures stipulated under Prime Ministerial Order No. 06/PM.

15) Solid waste

- Solid wastes may be generated during the construction activities. The contractor may resort to indiscriminate dumping and disposal of solid and hazardous waste that could pollute nearby and adjacent water bodies detrimental to aquatic flora and fauna and to the downstream water users.

Mitigation:

- Provide garbage bins and facilities within the project site for temporary storage of construction waste and domestic solid waste.
- Separate solid waste into hazardous, non-hazardous and reusable waste streams and store this temporarily on site prior to final disposal, in secure facilities with weatherproof flooring and roofing, security fencing and access control and drainage systems.
- Ensure that wastes are not haphazardly dumped within the project site and adjacent areas.
- Undertake regular collecting and disposal of wastes to sites approved by local authorities.
- Prohibit burning of wastes.
- Prohibit disposal of solid wastes into canals, rivers, other watercourses, agricultural fields and public areas, and ensure that wastes are not haphazardly dumped within the project site and adjacent areas.
- Recyclables shall be recovered and sold to recyclers.
- Wastes containing a suspected, probable or a COVID-19 confirmed case should be encouraged to segregate all medical waste (face masks, wipes, tissues)¹⁰.
- If dedicated medical waste collection is available, then the double-bagged waste should be disposed of immediately¹¹.
- If no dedicated medical waste collection is available, then the double-bagged waste should be stored for 72 hours before being disposed with the general waste¹².

16) Damage to properties and community facilities.

- Transport of materials and spoils, operation of construction equipment and various construction activities may damage community facilities.

Mitigation:

- Immediately repair and/or compensate for any damage caused by construction works and activities to existing communities and their property and facilities. Adequate compensation shall be paid to affected parties, as necessary.
- Maintain access roads used for transport of construction materials and other construction-related activities are maintained to ensure that they remain in at least in their pre-project condition for the duration of the project. Access roads damaged during transport of construction materials and other project-related activities shall be reinstated upon completion of construction works.
- Apply protection measures in agreement with property owner.
- Proper supervision during maintenance works.

¹⁰ Added for Health and Safety Plan on COVID-19, <https://events.development.asia/learning-events/adb-data-room-managing-infectious-medical-waste-during-covid-19-pandemic>

¹¹ Added for Health and Safety Plan on COVID-19, <https://events.development.asia/learning-events/adb-data-room-managing-infectious-medical-waste-during-covid-19-pandemic>

¹² Added for Health and Safety Plan on COVID-19, <https://events.development.asia/learning-events/adb-data-room-managing-infectious-medical-waste-during-covid-19-pandemic>

- All affected communities will be made aware of the Project GRM and will be provided information in advance on construction activities that may cause public nuisance and disturbance.

17) Need for implementation of additional environmental mitigation measures

- Neglect of additional environmental mitigation measures may cause a serious negative impact.

Mitigation:

- Implement corrective and /or additional measures to avoid, mitigate or compensate for adverse environmental impacts due to construction works and other project-related activities.

18) Hunting of wildlife and cutting of wood by contractor

- Hunting of wildlife and cutting of trees for fuel may not be undertaken by workers and strict prohibitions should be imposed by the contractor.

Mitigation:

- Spoils and all types of wastes shall not be dumped into forested areas.
- Workers shall be prohibited cutting of trees for firewood and for use in construction-related activities and from hunting wild animals. Contractors will be made aware of the presence of The Medical Biodiversity Conservation Garden.
- As the project will not require road widening, ensure that construction works are carried out without unnecessary clearing of roadside vegetation.
- Construction vehicles will operate within the corridor of impact, i.e., approximately within ROW, to avoid damaging soil and vegetation. It will be most important to avoid soil compaction around trees. Generally, the rule will be to avoid driving heavy equipment or trucks anywhere into the 'drip-line' of a tree (defined as imaginary line around a tree where rainwater falls freely to ground unimpeded by the tree's foliage).
- The contractor will not use or permit the use of wood as a fuel for the execution of any part of the Works, including but not limited to the heating of bitumen and bitumen mixtures, and to the extent practicable shall ensure that fuels other than wood are used for cooking, and water heating in all his camps and living accommodations.
- Contractor shall not buy or use wood from the illegal sources (that come from the illegal logging)
- Construction camps, asphalt mixing plants, material storage sites and other project facilities shall not be located in any conservation areas, forest areas and other densely vegetated sites.
- Contractor will take all precautions necessary to ensure that damage to vegetation is avoided due to fires resulting from execution of the works. The Contractor will immediately suppress the fire, if it occurs, and shall undertake replanting to replace damaged vegetation.
- As much as possible, bridge works will be scheduled in dry season to minimize adverse impacts to fishery, river water quality and other aquatic resources.

19) Improper closure of construction sites

- There may be complaints from local people.
- There may be a negative impact on waste management for the village nearby the construction sites including camp.

Mitigation:

- During demobilization, the contractor will remove all wastes from the construction sites and construction-related areas and will undertake restoration of disturbed sites.

C. OPERATIONAL PHASE

82. The potential environmental impacts during the operation phase are the followings and be responsible for the mitigation activity by Local authority (DPWT).

1) Road safety and traffic management: Increase in road and vehicular accidents

- The rehabilitated road is expected to see an increase in the volume of traffic and traffic speed. With increasing speed there will likely be more road accidents

Mitigation:

- Maintain traffic signs, guardrails, with special attention on critical locations.
- Hand over traffic management to local authorities.
- All traffic signs should maintain properly.
- Educate to all communities on road safety especially near schools and other populated public areas.

2) Increase in noise, vibration and air pollution along the road corridor

- Increase in traffic volume and traffic speed will increase the noise, vibration and air pollution during the road operation.

Mitigation:

- Provide signs prohibiting drivers from blowing horns alongside schools, hospitals and other areas with sensitive receptors
- Impose speed limits in populated areas and areas with sensitive receptors.

D. SUMMARY OF MITIGATION MEASURES

83. The corresponding mitigation measures for impacts during the stages of project implementation (i.e. pre-maintenance, maintenance and operation) are given in Table 12. The mitigation measures for each impact are meant to eliminate if not reduce the significance to manageable and acceptable level. Timely implementation of the mitigation measures is important to avoid and control the unwanted or negative effects of project implementation.

VII. INFORMATION DISCLOSURE, CONSULTATION, AND PARTICIPATION

A. PUBLIC CONSULTATION

84. Public consultation meeting conducted initially in 2015 for LR9001, The list of participant and photo are shown in Appendix C. The followings detail comments from affected people and other stakeholders.

Table 8: Summary of comments and response at consultation meeting in 2015

No.	Stakeholders/Affected people	Detail comments	Response by EA/AI
1.	Mr. Phetmixay khampakdy, Director of DPWT	<ul style="list-style-type: none"> - Express that the project will bring more benefit to local communities, therefore, he suggested to all concerned parties should be responsible for maintained and keep the road for long life and convenience for public transportation two seasons per year. He strongly proposed to all participants in the meeting room as below: - The road maintenance project is important for all member communities' easy transportation, poverty reduction and infrastructure development. - During rainy season, several areas at mountainous area has been eroded and road damaged with large quantities. Therefore, the government support budget for maintenance work every year. - To conduct educational awareness to all villages understanding of this project and should allow National regulation and Public Work and Transport law. - He suggested that all communities should participate for maintaining and join social-economic development in this region. The Director informed that the segment km 33 - 36 is mountainous area, during rainy season has several areas eroded and sedimentation, soil slipped down to the road alignment. Improper In existing drainage system from segment km 34-35, this section should construct retaining wall or gabion protection. - The Director of DPWT informed that rural roads in Attapeu province will be improved by other donors besides the ADB Project Road LR9001 as below: <ul style="list-style-type: none"> ➤ KFW: local road improvement other than the ADB Project Road LR9001; ➤ World Bank: feasibility study on road network in Attapeu province; ➤ IFAD: access roads and agriculture roads improvement in Attapeu province, 	<p>The Project will take all comments into implementation of the works properly and complete within the proposed contract period.</p> <p>At segment km 34-35, retaining wall or gabion protection will be installed. This will be implemented as the additional works along LR9001 because it was damaged by heavy rain.</p>
2.	Bounnam Sayphasam, the Vice governor of district	<p>Feel that the public consultation meeting, this project very useful for all staff in Sanxai district. This project will more benefit of the commercial exchange. The government of Sanxai District feels that now many locations of erosion and sedimentation occur at mountainous areas. It is important for economic growth in this region especially vegetable product to the market and easy access to public health and education facilities. In additional, suggested to whom concerns design and monitoring should allow technical standard of Public Work and Transport guideline (PWT), for quality control effectiveness.</p>	<p>The Project will take all comments into implementation of the works properly and complete within the proposed contract period.</p>
3.	Mr. Somevang Keosymungkhoun, the Head of the Planning and Investment of	<p>Express that this public consultation meeting will brings a good and success, he hopes that the project will be implementation in timely and strong support and assistance to be achieve soon and</p>	<p>The Project will take all comments into implementation of the works properly and</p>

No.	Stakeholders/Affected people	Detail comments	Response by EA/AI
	Sanxai district,	<p>understanding main objective and goals of the project. He additional comment raised during the meeting consist of</p> <ul style="list-style-type: none"> - Drainage system should stable and proper install - To ensure inlet and outlet of drainage system water flow smoothly - Material use such as sand, soil should be control properly - Retaining wall constructs proper at-risk places - Concrete pave at some risk section of the mountainous area - Sharp curve should be widening to avoid accident - Educate to all staff understanding of the project activities, especially traffic signs and regulation and Public Works and Transport (PWT) Law. 	complete within the proposed contract period.
4.	Mr. Phetsavanh Sengaloun, the representative of Science and Technology	<p>Raised the need install erosion protection in high embankment, because during heavy rains erosion several areas.</p> <ul style="list-style-type: none"> - Supported and corporation with project during implementation stage. - In mountainous areas needs install traffic signs and barricading installation. - In some area should consideration road widening for BUS stop. 	<p>The Project will take all comments into implementation of the works properly and complete within the proposed contract period.</p> <p>Road will be widened for Bus stop at Km 37+950- Km 38+125.</p>
5.	Mr. Phoutsamai Chaleunsouk, Representative of Agriculture and Forest Department.	<p>Feel that local population can send their children to the schools and the access to the health centers will be improved. In case of emergency they can consult the district hospital which is fairly equipped with the medical equipment. The property prices will also go up by this road.</p>	<p>The Project will take all comments into implementation of the works properly and complete within the proposed contract period.</p>
6.	Mr. Khampheuy Fongphonesana, the Head of PWT Office.	<p>Raised need all peoples concerns living the road project should closely participation with project during construction phase:</p> <ul style="list-style-type: none"> - All traffic signs should maintain properly - Educate to all communities keeping understand and management of road improvement 	<p>The Project will take all comments into implementation of the works properly and complete within the proposed contract period.</p>
7.	Mrs. Phiangmalai, the Head of Woman Union of Sanxai district.	<p>Express that the project which supports ADB will useful for infrastructure development in this region. In additional, she suggested maintaining existing drainage system, observed many locations within Village has been blocked and heavy damaged, every year coming raining period having flooded affected to villagers and other property aspects.</p>	<p>The Project will take all comments into implementation of the works properly and complete within the proposed contract period.</p>
8.	Mr. Vilayken Xayaloth, Leader village of Chaleunxay	<p>Feel that the project will bring a good local production will send to market easily and good road condition will easy for commercial exchange trade between local community and Sanxai District, villagers very happy hearing that the project will implementing as soon as possible, and feel that the good road will take it easy to school, local market and access to hospital</p>	<p>The Project will take all comments into implementation of the works properly and complete within the proposed contract period.</p>
9.	Mr. Khammone, Leader village of Vangxay village.	<p>Informed to the meeting that the issue of flooding during rainy season, because in current Ban Vangxay located lower than existing road, he suggested the project should install drainage properly to avoid flooding to communities and get bad smell to local community pass every year</p>	<p>The Project will take all comments into implementation of the works properly and complete within the proposed contract period.</p>

85. Further public consultation meeting for the Project conducted on 27 September 2019. The list of participant and photo are shown in as shown in Appendix D. The followings detail comments from affected people and other stakeholders.

Table 9: Summary of comments and response at consultation meeting on 27 September 2019

No.	Stakeholders/Affected people	Detail comments	Response by EA/AI
1.	Participants: - District Governor - Project Manager of RSGMP - DONRE Attapeu - DPWT - Provincial People's Assembly, Provincial Administrative Office - Department of Public Health - OPWT - Residence engineering (PMC) - National Environmental Specialist (PMC) - Journalist.	<ul style="list-style-type: none"> - The overall of the meeting agreed to enhance the infrastructure development project especially roads project because Project develops the good transportation, facilities and smooth traveling from village-district-province, neighborhood countries. Also agreed on the content of the IEE report that presented the benefit of project, minor environmental impact, and effective environmental mitigation plan. - The conclusion of the meeting was: I) All of participants agreed to approve the draft of IEE report and EMP for LR9001, II) PMC shall revise some contents in IEE report such as: spelling, grammar, name of villages, and term of decree properly for the reference, III) When the Contractor conducts any activities, shall coordinate closely with relevant sections, and provide information on safety within working area. - The chairman expressed the appreciation for the donor support on the assistance; make more opportunities to the local people for better transportation. 	<ul style="list-style-type: none"> - Project agreed to take these comments for revising the report, and coordinate with the relevant sections, and implement the activity to be compliance with environmental management plan.

86. Public consultation meeting for the additional road pavement in Chalernxai village works (Total length is approximately 1.6 km) conducted on 17 July 2019. The list of participant and photo are shown in as shown in n in Appendix E. The followings detail comments from affected people and other stakeholders

Table 10: Summary of comments and response at consultation meeting on 17 July 2019

No.	Stakeholders/Affected people	Detail comments	Response by EA/AI
1.	Participants: - Chalernxai Villagers. - DPWT - Residence engineering (PMC) - Village Committee - Head of Village Group - Contractor - Woman Union	<ul style="list-style-type: none"> - Agree to pave road construction project in Chalernxai Village: length is 1,632,12 Km. width is 6 m. - According to survey indicated that there is no any household's structures impact or any obstacles. - Village authority will facilitate to project and others if as much as possible 	The Project will implement the additional works to avoid any damages to local roads and villagers.

B. INFORMATION DISCLOSURE

87. This updated IEE will be posted on the ADB and MPWT website¹³. The updated IEE in local language and approved by DONRE will also be posted on the MPWT website. During construction and operation, communities within the impact area of the subproject area will be kept informed of construction activities through billboards or information boards about the construction activities and schedules. Mr. Thongsouk Aphaiyalath (Deputy of DPWT Attapeu, Tel: +85620 22 200 173) is responsible for the Project implementation Unit (PIU: DPWT-Attapeu). GRM Focal Contact Persons and Construction Managers will be prominently displayed in the respective construction areas for the reference of the affected communities/persons. PIU (Project Implementation Unit) and PMC (Project Management Consultant) will, at least once in every six months, interview some affected people and record name, date, time, location and issues by getting from the head of village and affected people. The result will be reported through the semi-annual safeguards monitoring report. Complaints and grievances can be directly filed, both written and verbal, to the concerned entities. This will be an alternative to the village complaint system. All suggestions, opinions and responses from the community on the project should be taken into account and feedback provided on how concerns and recommendations have been addressed.

C. FUTURE CONSULTATION ACTIVITIES

88. The information education communication (IEC) materials such as posters, leaflets, and bluchers etc. are effective to the awareness campaign to prevent HIV/AIDS and human trafficking as well. The PMC conducted the community awareness campaign for the original scope of work of LR9001 in 2017 before the works started and delivered the IEC Materials to the villages and affected people.

89. For the additional works: stakeholders' consultation will be carried out before start of site works and will be continued throughout the construction period to resolve any potential problems. These will be done by MPWT-DPWT, PMC, and contractors to inform affected people of (i) the location and schedule of construction activities (ii) potential impacts, (iii) to identify concerns of affected people related to such activities, (iv) grievance redress mechanism (GRM), (v) to ensure that appropriate mitigations measures which will be implemented to address construction-related environmental issues raised by the affected people.

¹³ <http://www.mpwt.gov.la/lo/projects-lo/3368-rsgmp-menu-lo>

VIII. GRIEVANCE REDRESS MECHANISM (GRM)

90. Prior to commencement of site maintenance works or other project activities, the Project Manager (DOR/MPWT) for RSGMP and the Contractor have established a system with assistance of the Project Management Consultant that allow for receiving/recording and immediately responding to any project-related complaints from directly of complaints or village authority official. The field office of the Contractor should serve as the office to receive the complaints of the project-affected person or group of persons and the members of the communities along the project road maintenance. At road maintenance sites, the Contractor will install notice boards to publicize the name and telephone numbers of the Contractor, DOR and DPWT.

91. The Contractor, in coordination with the environmental officer of DPWT, will record and document all the complaints received by the Contractor's field office. The Contractor and DPWT's environmental officer should immediately process and resolve the complaints, disputes or questions received about the road maintenance. Any individual, household or organization can lodge a complaint either to the contractor(s), DOR or DPWT if her/his or their properties/life/ business/health are compromised or damaged by the maintenance activities or if s/he has any other complaints regarding the environmental issue of the Project.

92. The existence of the Contractor's field office should not impede the complainant's access to the Government's judicial or administrative remedies. Resolution of issues under the GRM will consist of the following steps.

Table 11: Steps for issues redress under the GRM

Grievance Resolution Step	Process
Receiving a Complaint	A complaint may be made verbally or in written form and shall be filed in the field office of the Contractor. A grievance letter can also be sent to the DOT or DPWT office with a copy to the local government units. If the complainant does not know how to send a grievance letter, the assistance of village chief can be tapped to send this letter to the contractor and/or to the DOT and DPW T.
Receive and Register a Complaint	Once a complaint has been received, it is registered by the DOT/DPWT with local officials (Village Chief and Village Environmental Committee) and all concerned parties notified properly. Within a maximum 5 calendar days a reply in written form from the DOT/DPWT or Contractor will be sent back to the complainant with a copy to the local officials.
Screen for Eligibility and Assess the Complaint	DPWT officer, in close coordination with Contractor, should determine if the complaint is attributable to the Project and if it is within the scope of the Grievance Redress Mechanism. It then identifies who will conduct the assessment of the problem. This may include technical officers from the Project team or its consultants and Contractors.
Assess the Problem Caused by the Project maintenance activities	In case the complaint is related to the Project activities, representatives of the DPW T and the chosen assessment unit will visit the complainant and the site where a problem is reported. The assessment should be implemented with participation of the complainant and witnesses, such as local officials and the results of the assessment should be agreed upon and signed by the complainant, representatives of project owner/Contractor, DPWT, assessment unit and local officials. If one side is not satisfied with the assessment results, they can propose another method or another assessment unit to re-assess the impacts until the assessment satisfies both sides.
Select Grievance Resolution Approaches	Resolution of the grievance may be approached several ways. Some common approaches are as follows: a. The complainant proposes a solution, based on their self-evaluation of their impact or damages; b. The project owner/Contractor proposes a solution, based on the legal regulation and their assessment of the damages; c. The complainant and project owner/Contractor negotiate; or d. The two sides defer to a third party (local mediating committee), government agencies with the participation of environmental management units. In case resolution is not achieved by these bodies, both sides may request a court to decide.
Compensate Damages Caused by the Project Activities and Communicate Back to All Parties Involved	After arriving at an agreement, the Contractor will immediately compensate the complainant, if appropriate. The compensation may be in money and/or in kind (for example land, construction materials, house, etc.) depending on the agreement between the two sides or by decision of courts. Compensation also includes restoration of the damaged environment caused by the project activities, if the complainant requires
Closure	A documentation of the process is prepared and signed by the Complainant, representatives of the project owner/contractor and local PC and distributed. The process may be monitored by Community officials/organizations

IX. ENVIRONMENTAL MANAGEMENT PLAN

93. This section addresses the need for mitigation and management measures for LR9001. Information includes: (i) mitigating measures to be implemented, (ii) required monitoring associated with the mitigating measures, and (iii) institutional arrangement for implementation.

94. To ensure funds will be allocated and made available for the implementation of the EMP, provisions in the bid documents should include the cost of implementing the EMP to be borne by the Contractor. Likewise, the Contractor's contract document should also contain the bid prices.

A. ENVIRONMENTAL MITIGATION

95. Mitigation Measures. The corresponding mitigation measures for impacts during the stages of project implementation (i.e. pre-maintenance, maintenance and operation) are given in Table 12. The mitigation measures for each impact are meant to eliminate if not reduce the significance to manageable and acceptable level. Timely implementation of the mitigation measures is important to avoid and control the unwanted or negative effects of project implementation.

B. ENVIRONMENTAL MONITORING

96. The environmental monitoring plan is provided in Table 13. The monitoring plan focuses on the three phases of the project implementation (i.e., Design/pre-maintenance, maintenance works, and operation), monitoring locations, frequency, method of data collection, and responsible institutions. It includes the budget source. The purpose of the monitoring plan is to determine the effectiveness of the impact mitigations, and to document any unexpected negative environmental impacts of the project.

97. The environmental parameters to monitor the project's compliance to the environmental regulations and standards refer to the National Environmental Standards Order No.81/GOL, dated on 21 February 2019.

98. Currently, the air quality of three project provinces in southern Lao PDR is still relatively good. The gaseous pollutants like carbon monoxide, sculpture dioxide; nitrogen dioxide from vehicular traffic is well dispersed in the open terrain and with adequate dispersion in the wide streets of the villages and towns. Dust arises as traffic passes over unsealed shoulders of roads. This condition is common observation along segments of the proposed road project corridor. The areas near the towns also have potential sources of air pollution mainly from domestic sources. These areas are more polluted due to some significant town development as well as emissions from a few low industrial establishments, but these are not yet significant to cause impacts on air quality based on observation. The other source of air pollutant is dust arising from the ground and soil disturbance. Based on observation and as experienced during the environmental assessment, dust concentrations from the shoulders of the road as vehicles pass will be higher within a distance of 10 m. However, the level of concentrations is not high enough to significantly obscure the visibility along the road.

C. REPORTING

99. The monitoring plan spans the project cycle from design/pre-implementation, maintenance works and operational phases of the projects. MPWT will be in charge of project and should oversee the implementation of the monitoring plans by the provincial DPWTs with support provided by the PMC.

100. During the project rehabilitation/maintenance works implementation stage, the EMP monitoring is conducted by DONRE Attapeu with the support of PMC and the contractor. The environmental monitoring report such as the adhoc monitoring report as well as the Semi-annual Safeguards Monitoring Reports (SSMRs) will be submitted to DOR for review and copied to DPWT and DONRE.

101. The DOR with the assistance of PMC is responsible for preparing and submitting the SSMRs on the evaluation and results of the monitoring activities for consolidation and subsequent submission to ADB and disclosure on the ADB project website. Upon submission of the SSMRs to ADB, DOR will disclose relevant information from SSMRs to affected persons on MPWT's website¹⁴.

102. The Project information and monitoring activity including the monitoring results are disclosed. The project information is disclosed and disseminated with booklet and poster to the villagers at the time of project community awareness campaign, and those are accessible at the PMC Project site offices. The monitoring report including the results is also accessible at the PMC Project site offices. In addition, DPWT (OPWT) staff (one staff for one project road) is stationed at the PMC project site office through the project period and visit the sites and villages along the project road daily, and he will communicate closely with villagers (affected people) daily.

103. During the operation phase: the monitoring and reporting will be conducted by PIU (DPWT-Attapeu) with assistance by PMC until loan closing date. PMC will prepare a monitoring template and train the monitoring entity (PIU) so that the PIU can conduct the monitoring and prepare the report.

¹⁴ <http://www.mpwt.gov.la/lo/projects-lo/3368-rsgmp-menu-lo>

Table 12: Summary Matrix of Environmental Mitigation Measures¹⁵

Type of Impact	Mitigation Measures / Actions	Institutional Responsibilities		Budget Source
		Implementation	Monitoring	
Pre-implementation				
1. Inappropriate/ Incomplete Road Design	<ul style="list-style-type: none"> a. At segment km 34-35, retaining wall or gabion protection will be installed. This will be implemented as the additional works along LR9001 because it was damaged by heavy rain. b. Road will be widened for Bus stop at Km 37+950- Km 38+125. c. Prepare road design by including improvement of drainage system to prevent water ponding. Provisions will be made to control land slide, erosion and deposition along the road by constructing retaining walls or gabions, as necessary. d. Detail design shall be revising & finalize Road Design improvement by PMC. e. Drainage system should stable and proper install f. To ensure inlet and outlet of drainage system water flow smoothly g. Material use such as sand, soil should be control properly h. Retaining wall constructs proper at-risk places i. Concrete pave at some risk section of the mountainous area j. Sharp curve should be widening to avoid accident. 	Project Management Consultant (PMC)	MPWT-DOR (IA)	MPWT-Included in the Ministry's budget appropriation; Consultant-included in the consultant's budget.
2. Improper implementation of the Project Environmental Management Plan.	<ul style="list-style-type: none"> a. Contractor to engage a full-time environmental Officer who will oversee proper implementation of construction-related aspects of the project EMP and Contractor's EMP. b. Prior to commencement of site works, prepare a CEMP based on the project EMP with details of staff, resources, implementation schedules, as well as monitoring and reporting procedures. The CEMP will also include a construction site health and safety management plan. The plan will provide guidance to the contractor's staff on good work practices and the requirement, specific requirements of occupational health and safety policies and regulations, training requirements, and site safety rules. The CEMP will be reviewed and approved by the Project Management Consultant (PMC). The CEMP will also be reviewed by ADB prior to approval by PMC 	Contractor	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost
3. Lack of consultation with affected people during project implementation	<ul style="list-style-type: none"> a. Stakeholders' consultation will be carried out before start of site works and will be continued throughout the construction phase on an area by area basis to resolve any potential problems. These will be done by MPWT-DPWT, the PMC, and contractors to: (i) inform affected people on the location and schedule of various construction activities (ii) determine concerns of affected people related to such activities, (iii) ensure that appropriate mitigation measures will be implemented to 	MPWT-DPWT, the PMC, and contractors.	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost

¹⁵ All the mitigation measures included in the EMP of the original IEE are still valid.

Type of Impact	Mitigation Measures / Actions	Institutional Responsibilities		Budget Source
		Implementation	Monitoring	
	address construction-related environmental issues raised by the affected people.			
4. Complaints due to project-related impacts	<ul style="list-style-type: none"> ▪ Prior to commencement of site works, MPWT-DPWT, the PMC and the contractor will undertake the following activities in consultation with local people and local officials: <ul style="list-style-type: none"> a. Establish a Grievance Redress Mechanism GRM as described in the project's updated Initial Environmental Examination (IEE). b. Publicize the existence of the GRM through public awareness campaigns, billboards, public notifications, etc. c. Ensure that the names and contact numbers of representatives of the contractors, the PMC, and MPWT-DPWT are placed on notice boards at the construction sites. 	Contractors	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost
5. Disruption of utilities/services	<ul style="list-style-type: none"> a. Water supply pipelines, power supply, communication lines, irrigation facilities and other utilities that will be affected by construction will be relocated before construction works commence so that interruption of services will be minimized. b. Provision will be made to preserve the operation of current facilities in sufficient quantity and in agreement with the local community. c. Relocation will be undertaken in coordination with the utility company and local authorities. d. Affected households and establishments will be notified in advance of any disruption. e. Replacement structures (e.g., irrigation canals) will be constructed prior to the removal of the existing structure. 	Contractors	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost
6. Improper disposal of excavation spoils and removed pavement.	<ul style="list-style-type: none"> a. Before commencement of excavation works and removal of pavement, obtain the official approval by regulator of the disposal sites. b. Construction waste disposal will be allowed only in the facilities selected, designed, constructed and operated to ensure environmentally safety disposal and duly approved by regulator of the disposal sites. c. Disposal sites will not be located in protected areas such as the DongAmphan National Protected Area and similar ecologically sensitive sites. d. Disposal sites will be located at least 50 m from watercourses. e. Disposal will not cause sedimentation or obstruction of the flow in watercourses. f. Disposal will not cause damage to productive and forested areas. 	Contractors	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost
	Before commencement of excavation works and removal of pavement, undertake inspection of the contractors' disposal sites to ensure that the above EMP criteria (a to f) for such sites are met.	PMC	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of PMC cost
7. Social Conflict	<ul style="list-style-type: none"> a. Contractor to prioritize hiring of workers local villages particularly woman, but not children under the age 18 years old. 	Contractor	MPWT-DOR (IA), DPWT	Part of

Type of Impact	Mitigation Measures / Actions	Institutional Responsibilities		Budget Source
		Implementation	Monitoring	
	<ul style="list-style-type: none"> b. Confirm proposed emergency works will not incrementally impacts to existing Environments. c. Regularly inform in advance the local officials and affected residents of the location and schedule of construction activities which may cause impacts on the environment and life of people (e.g., road sections to be constructed; roads used for transport, locations of worker camps etc.) d. Locate construction camps away from communities (at least 500 m away) in order to avoid social conflict in using resources and basic amenities such as water supply. e. To conduct educational awareness to all villages understanding of this project and should allow National regulation and Public Work and Transport law. f. Educate to all staff understanding of the project activities, especially traffic signs and regulation and Public Works and Transport (PWT) Law. 		(PIU), DONRE, PMC	contractor's cost
8. UXO Safety Risk to Workers	<ul style="list-style-type: none"> a. Non-Technical Survey to be carried out based on the document/interview as the first stage in UXO Survey and Clearance Process. This should be conducted along the road. b. The UXO technical survey to be carried out based on exploration as the second stage in UXO survey at the proposed areas of excavation works such as the box culvert replacements and the proposed new camp, borrow pits and quarries. c. All UXO clearance activities shall be done according to National Regulatory Authority's regulations and decrees. Inter alia this includes the requirements on accreditation of the UXO clearing company, the accreditation of the clearance team members, as well as the accreditation of the Standard Operation Procedures of the UXO clearance company. d. The National Standard of the National Regulatory Authority has to be complied with regarding the Personnel, Search Instruments, Vegetation Reduction, Search and Clearance Requirements, Quality Control, Standard of Clearance, Storage of Explosives, Documentation, Quality Assurance for UXO Clearance, Safety and Reporting. 	Contractor	MPWT-DOR (IA), DPWT (PIU), PMC, UXO clearing company	Part of contractor's cost
Rehabilitation/Maintenance Works Implementation				
1. Impact to flora and fauna	<ul style="list-style-type: none"> a. Since the project will not involve widening or realignment, the contractor will not undertake tree cutting. b. The contractors will prohibit hunting of wild animals and cutting of trees for use as fuel and other purposes. c. No construction camps, asphalt mixing plants, borrow pits and other project facilities are located with the DongAmphan National Protected Area. d. Limit the clearing and grubbing of vegetation and debris within the right-of-way of the road, replanting of vegetation, provision of 	Contractor	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost

Type of Impact	Mitigation Measures / Actions	Institutional Responsibilities		Budget Source
		Implementation	Monitoring	
	<p>protective cover for exposed soil materials.</p> <p>e. Department of Public Health of the Province shall be officially notified about the implementation schedule of the maintenance works by DPWT/PMC. Works are within ROW/ existing road and no direct impact.</p>			
2. Potential damage to archaeological and cultural sites.	<p>a. Should any potential items be located, the project management consultant (PMC) and MPWT will immediately be contracted by the contractor and work will be temporarily stopped in that area.</p> <p>b. An officer from the Department of Information and Culture (DIC) will be invited by MPWT to inspect the site and work will be stopped to allow time for inspection.</p> <p>c. Until the DCI has responded to this invitation work, will not recommence in this location until agreement has been reached between DIC, PMC and MPWT as to any required mitigation measures, which may include structured excavation.</p>	Contractor, MPWT-DPWT, PMC/	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost
3. Increase in noise levels	<p>a. Noisy construction activities will be avoided during religious or cultural events in close proximity to the roadside.</p> <p>b. Provide prior notification to the community on the schedule of construction activities.</p> <p>c. Whenever possible, completely enclose noisy equipment to reduce noise levels.</p> <p>d. Position any stationary equipment that produces high noise levels (e.g., portable diesel generators, compressors, etc.) as far as is practical from receptors (e.g., houses, pagodas, etc.)</p> <p>e. Construction traffic police to minimize noise and nuisance.</p> <p>f. When necessary, suitable noise control measures (e.g. noise barriers/walls, noise-reflective panels) will be used as determined by the PMC to reduce construction and equipment noise levels to acceptable levels based on the international Finance Corporation's Environment, Health and Safety Guidelines of 2007, or equivalent guideline, in the vicinity of houses, temples and sensitive receptors.</p> <p>g. Impose speed limits on construction vehicles within the construction sites and through urban areas.</p> <p>h. Locate batching plants, crushers and similar facilities at 300 meters away from residential areas and sensitive receptors.</p> <p>i. Operation of noisy equipment and construction works during night time (19:00 – 06:00) in populated areas and where sensitive receptors are found will only be undertaken after prior notification and construction have been carried out with affected people and local officials, and suitable noise attenuation measures are implemented.</p> <p>j. Restrict use of vibrating rollers and operation of heavy equipment near vibration sensitive structures.</p> <p>k. Ensure noise levels do not exceed 55 dB (A) near residential areas</p>	Contractor	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost

Type of Impact	Mitigation Measures / Actions	Institutional Responsibilities		Budget Source
		Implementation	Monitoring	
	<p>during daylight hours and 45 dB (A) during night hours.</p> <p>i. Undertake noise measurements, as directed by the PMC, to ensure compliance with these requirements.</p>			
4. Dust annoyance & air pollution	<p>a. Locate concrete batching plants, asphalt plants, crushing plants, and materials and spoil stockpiles and other dust sources at least 300 meters away from inhabited areas and sensitive receptors.</p> <p>b. Install appropriate air pollution control equipment and other suitable control measures to minimize dust emission, to avoid nuisance and health risks to surrounding communities.</p> <p>c. Undertake regular water spraying on roads, work areas and other construction-related facilities near or within populated areas and other sensitive receptors.</p> <p>d. Cover or regularly water stockpile areas to minimize dust generation.</p> <p>e. Prohibit use of equipment and vehicles that emit visible smoke in excess of acceptable limits.</p> <p>f. Provide trucks transporting construction materials with covers to minimize spills and dust emission.</p> <p>g. Impose speed limits for project vehicles to minimize dust emission along populated areas and other sensitive receptors.</p> <p>h. Prohibit burning of all types of waste generated at the construction sites, workers' camps, and other project-related facilities and activities.</p> <p>i. Regularly clean roads used by construction traffic to remove mud, cement, etc.</p> <p>j. Ensure that areas with the project area where there is heavy movement of project vehicles are provided with hard standing and kept clear of loose surface material.</p> <p>k. Ensure that cement and other fine-grained materials that are delivered in bulk are stored in closed containers.</p> <p>l. Wheel washing will be undertaken in active construction sites so that haul/delivery trucks can be cleaned of mud and dirt as they exit the work area.</p>	Contractor	MPWT-DOR, DPWT, DONRE, PMC.	Part of contractor's cost
5. Landslides, erosion of excess and open soils and deposition of rocks on road shoulders and ditches	<p>a. Erosion Protection by gabions &, appropriate location and storing of works materials, excess soils & materials from grading & excavation should be protected with cover especially during rainfall.</p> <p>b. Excess soils and materials from grading & excavation should be protected with cover and/or bund/berm especially during rainfall.</p> <p>c. Divert storm water flows away from cleared areas.</p> <p>d. Provide sedimentation control structures, as directed by the PMC, adjacent to watercourses within the construction area.</p> <p>e. To prevent the cascading impacts, close supervision of the maintenance works will have to be ensured and proper storage location will be identified for the excess materials for future use and disposal of unsuitable materials. The stockpiling of soils must be located in flat</p>	Contractor	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost

Type of Impact	Mitigation Measures / Actions	Institutional Responsibilities		Budget Source
		Implementation	Monitoring	
	<p>areas and far from drainage routes; settling ponds and temporary drainage ditches for runoff where significant negative impacts will be anticipated; and provision of protective cover for exposed soils particularly during rainfall events.</p> <p>f. On hill slopes and other potentially erodible places along the roadside, appropriate native vegetation that retards erosion will be planted or retaining wall or gabion protection will be installed.</p> <p>g. To install erosion protection in high embankment.</p> <p>h. In mountainous areas needs install traffic signs and barricading installation.</p> <p>i. Spoil disposal shall not cause sedimentation and obstruction of flow of watercourses.</p> <p>j. Spoil and construction materials stockpile area shall be located away from water stagnation and under no circumstances will these materials be dumped into watercourses.</p> <p>k. Dredged and excavated materials shall be reused or provided to local residents as soon as possible, if they require such materials, for land reclamation. The remaining spoils can be disposed into low elevation sites for road construction.</p>			
6. Damage to productive land and deterioration of water quality due to operation of borrow pits.	<p>a. Borrow pits will be covered by required government permits or approvals.</p> <p>b. Will not be located within 300 meters of any urban area.</p> <p>c. Will not be located with protected area such as the DongAmphan National Protected Area and similar ecologically sensitive sites.</p> <p>d. Topsoil will be saved for rehabilitation during closure of the quarries and borrow pits.</p> <p>e. Will be provided with drainage and sediment flow controls.</p> <p>f. Upon completion of extraction activities, borrow pits will be dewatered, fences and warning signs will be installed, as appropriate to avoid impacts to public health and safety.</p> <p>g. Will be left in a tidy state with stable side slopes and proper drainage.</p> <p>h. Sourcing of quarry and borrow materials from existing licensed sites shall be preferred over establishment of new sites, as much as possible.</p> <p>i. Quarries and borrow pits shall not be established in ecologically sensitive and protected areas.</p> <p>j. Borrow/quarry sites shall not be located in productive land.</p> <p>k. Dust control during excavation and transport (e.g., water spraying on access roads and provision of truck cover) shall be undertaken in areas where there are sensitive receptors such as residential areas, school, hospital, etc.</p> <p>l. Long-term material stockpiles shall be covered to prevent wind erosion.</p> <p>m. The use of riverbed sources shall be avoided, as much as possible. However, if this is unavoidable, the contractor shall minimize use and</p>	Contractor	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost

Type of Impact	Mitigation Measures / Actions	Institutional Responsibilities		Budget Source
		Implementation	Monitoring	
	<p>avoid small rivers and streams. Alluvial terraces or alluvial deposits which lie on the riverbeds but not covered by water in normal hydrological conditions shall be preferred.</p> <p>n. Quarry and borrow sites must be selected amongst those offering the highest ratio between extractive capacity (both in terms of quality) and loss of natural state.</p> <p>o. Quarry and borrow sites lying close to the alignment, with a high level of accessibility and with a low hill gradient, are preferred.</p> <p>p. Upon completion of extraction activities, re-contour borrow/quarry pit wall or fill-up when there are available and suitable materials such as excavation spoils, replace topsoil, and re-vegetate with native species such as grasses and fast-growing shrubs and trees.</p> <p>q. In quarries located in mountainous or hilly areas, or wherever slopes are important, terraces shall be cut after extraction, and drainage system and vegetation cover shall be provided for rehabilitation to enhance slope stability.</p> <p>r. Implement compensatory planting (at least one to one ratio) if trees will have to be removed at quarry and borrow sites.</p> <p>s. Borrow pits will be left in a tidy state with stable side slopes and proper drainage in order to minimize soil erosion, siltation of nearby bodies of water and to avoid creation of water bodies favorable for mosquito breeding. Provide restoration and planting for borrow pits and spoil disposal areas after use, as appropriate.</p> <p>t. To avoid or prevent people from drowning when pits become water-filled, measures such as fencing, providing flotation devices such as a buoy tied to a rope, etc. shall be implemented.</p>			
7. Generation of oil and other hazardous waste/materials	<p>a. Train relevant construction personnel in handling of fuels/hazardous substances and spill control procedures.</p> <p>b. Provide maintenance shops, fuel and oil depot with impermeable flooring and drainage leading to an oil-water separator or sump where oily wash water and sludge can be collected for proper disposal.</p> <p>c. Undertake regular maintenance of oil-water separators/sumps to ensure efficiency.</p> <p>d. Carry out refueling and servicing of equipment only in areas adequately equipped to avoid leaks and spills.</p> <p>e. Limit quantities of chemicals, hazardous substances and fuel on site at any time, and ensure these materials are stored on site on above-ground storage tanks, within an enclosed and covered area that has an impervious floor and impervious surrounding bund, with a capacity at least 120 % of the total capacity of the storage capacity.</p> <p>f. Locate storage areas away from water-courses, flood-prone areas, workers' camps, populated areas and other sensitive sites.</p> <p>g. Collect oil contaminated refuse and disposed of through</p>	Contractor	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost

Type of Impact	Mitigation Measures / Actions	Institutional Responsibilities		Budget Source
		Implementation	Monitoring	
	<p>recyclers/authorized waste handlers and dispose of it in authorized waste facilities.</p> <p>h. Ensure availability of spill cleanup materials specifically designed for petroleum products and other hazardous substances where such materials are being stored and used.</p> <p>i. In case of spills and leaks, immediately implement suitable measures to prevent hazardous materials from spreading. Remove and properly dispose spilled and contaminated materials to avoid further pollution of the environment.</p> <p>j. Ensure all storage containers are in good condition with proper labeling.</p> <p>k. Regularly check containers for leakage and undertake necessary repair or replacement.</p> <p>l. Prohibit discharge of oil-contaminated water into the environment.</p> <p>m. Store waste oil used lubricant and other hazardous wastes in tightly sealed and properly labeled containers to avoid contamination of soil and water resources.</p> <p>n. Ensure that the transport and off-site disposal of hazardous wastes complies with applicable laws and regulations or is in compliance with internationally accepted good practice in the absence of relevant laws and regulations.</p> <p>o. Ensure that the restoration of temporary work sites includes removal and treatment or proper disposal of contaminated soils.</p> <p>p. For bitumen transport, ensure the use vehicles are approved by local authorities for the transport of bitumen and are also in accordance with the bitumen supplier's recommendations for such transport.</p> <p>q. Ensure that truck drivers are familiar with the safe loading and unloading procedures for the bitumen products, including emergency procedures in the event of spillage.</p> <p>r. Ensure that trucks are provided with tools and materials for handling spills.</p>			
8. Deterioration of water quality due to wastewater discharge from construction works and facilities	<p>a. Prior to operation of concrete batching plants, construct settling/retention ponds with sufficient specifications/capacity for treatment of wastewater.</p> <p>b. Properly operate and maintain setting/retention ponds to reduce the concentration of total suspended solids to acceptable levels.</p> <p>c. Provide adequate surface water discharge drainage, adequate sanitation facilities, adequate water supply, strictly enforce observance of sanitation practices, implement an eco-friendly solid/hazardous waste management: practices waste minimization, reuse and segregation, has adequate covered storage bins/containers.</p> <p>d. There will be no use of chemicals that will pollute the quality of water that serves as the water source of the downstream users.</p> <p>e. Camp wastewater shall be fully treated first before discharged to adjacent or nearby water bodies.</p>	Contractor	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost

Type of Impact	Mitigation Measures / Actions	Institutional Responsibilities		Budget Source
		Implementation	Monitoring	
	<p>f. Spoils, construction wastes and construction materials stockpile area shall be located away from water bodies and under no circumstances will these materials be dumped into watercourses.</p> <p>g. Discharge of oily wastewater, fuel, hazardous substances and wastes, and untreated sewage to watercourses/canals and on the ground/soil shall be prohibited.</p>			
9. Siltation and blockage of water flow/flooding	<p>a. Provide and maintain temporary drainage to prevent local flooding and waterlogging.</p> <p>b. Ensure watercourses are not obstructed or, if obstruction is unavoidable, provide alternative temporary or permanent channels of sufficient capacity to avoid flow restriction.</p> <p>c. Regularly inspect and maintain all drainage channels to ensure that continue to function as required.</p> <p>d. Measures to mitigate ponding and flooding include cleaning and clearing the waterways including pipe culverts, excavation, and siting of new location to install new culverts. To prevent flooding caused by reduced water outflow, the area will be investigated to determine the best solution to prevent ponds and floods to happen. Good supervision of the maintenance works will be required to prevent workers' activities that may contribute to run offs, erosion and deposition of soils and unsuitable materials to waterways that further leads to water ponding and floods. In addition, stockpiling of soils and excavated materials must be located in flat areas and far from drainage routes. In the absence of suitable ground, settling ponds and temporary drainage ditches for runoff, and provision of protective cover for exposed soils particularly during rainfall events must be set up.</p> <p>e. Provide adequate drainage at the construction sites and other project areas to facilitate the rapid removal of surface water from all areas and to avoid flooding of surrounding areas and accumulation of stagnant water and minimize flow obstruction of existing watercourses.</p>	Contractor	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost
10. Traffic congestion and public access obstruction	<p>a. Prepare and, after approval of the PMC, implement, a traffic management and road safety plan for the construction areas and for communities affected by construction.</p> <p>b. Closely coordinate with local authorities for any closure of roads or rerouting of vehicular traffic, if required.</p> <p>c. Ensure access in area to be closed temporarily by provision of temporary bypass roads.</p> <p>d. Schedule construction activities to take into account local events such as festivities, processions, parades, etc. To minimize disruption.</p> <p>e. Regularly monitor traffic conditions along access and Project roads to ensure that project vehicles are not causing congestion.</p> <p>f. Provide sufficient lighting at night within and in the vicinity of construction sites.</p>	Contractor	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost

Type of Impact	Mitigation Measures / Actions	Institutional Responsibilities		Budget Source
		Implementation	Monitoring	
11. Public safety	<ul style="list-style-type: none"> a. Install barriers to keep pedestrians away from hazardous areas such as constructions sites and excavation sites. b. Install signage at the periphery of the construction site advising road users that construction is in progress. c. Strictly impose speed limits on construction vehicles along residential areas and where other sensitive receptors such as schools, pagodas and other populated areas located. d. Provide adequate lighting at night within and in the vicinity of construction sites. e. Provide security personnel in hazardous areas to restrict public access. f. If necessary, provide safe passageways for pedestrians crossing the construction site and for people whose access has been disrupted due to construction works. g. Provide sufficient lighting at night within and in the vicinity of construction sites. h. Proper placement of traffic and warning signs, fencing, barriers, flag persons for traffic control, signage and road diversions. The diversion signs would be bold and clearly visible particularly at night. i. Reinstate good quality permanent accesses following completion of construction. j. Educate drivers on safe driving practices to minimize accidents and to prevent spill of hazardous substances and other construction materials by providing covers over transporting dump trucks. k. The general public/local residents shall not be allowed in high-risk areas, e.g., excavation sites and areas where heavy equipment is in operation. l. Provide fencing on all areas of excavation greater than 2 m deep. 	Contractor	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost
12. Borrow Area	<ul style="list-style-type: none"> a. Contractors shall get material only from the Government- permitted source. b. Sourcing of quarry and borrow materials from existing licensed sites shall be preferred over establishment of new sites, as much as possible. c. Quarries and borrow pits shall not be established in ecologically sensitive and protected areas. d. Borrow/quarry sites shall not be located in productive land. e. In case the Project will involve new quarry/borrow sites/spoil disposal sites, such sites shall be located over 500 m away from residential, school, hospital and other sensitive receptors. f. Dust control during excavation and transport (e.g., water spraying on access roads and provision of truck cover) shall be undertaken in areas where there are sensitive receptors such as residential areas, school, hospital, etc. g. Long-term material stockpiles shall be covered to prevent wind erosion. h. During quarry and borrow site operation, provide adequate drainage to avoid accumulation of stagnant water. 	Contractor	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost

Type of Impact	Mitigation Measures / Actions	Institutional Responsibilities		Budget Source
		Implementation	Monitoring	
	<ul style="list-style-type: none"> i. The use of riverbed sources shall be avoided, as much as possible. However, if this is unavoidable, the contractor shall minimize use and avoid small rivers and streams. Alluvial terraces or alluvial deposits which lie on the riverbeds but not covered by water in normal hydrological conditions shall be preferred. j. Confine quarrying of riverbed materials to less than 20% of river width in any location and keep away from riverbanks. k. Protect and reinstate riverbanks if unexpected erosion occurs. l. Quarry and borrow sites must be selected amongst those offering the highest ratio between extractive capacity (both in terms of quality) and loss of natural state. m. Quarry and borrow sites lying close to the alignment, with a high level of accessibility and with a low hill gradient, are preferred. n. Upon completion of extraction activities, re-contour borrow/quarry pit wall or fill-up when there are available and suitable materials such as excavation spoils, replace topsoil, and re-vegetate with native species such as grasses and fast-growing shrubs and trees. o. Upon completion of extraction activities, borrow pits shall be dewatered and fences shall be installed, as appropriate, to minimize health and safety risks. p. In quarries located in mountainous or hilly areas, or wherever slopes are important, terraces shall be cut after extraction, and drainage system and vegetation cover shall be provided for rehabilitation to enhance slope stability. q. Implement compensatory planting (at least one to one ratio) if trees will have to be removed at quarry and borrow sites. r. Borrow pits will be left in a tidy state with stable side slopes and proper drainage in order to minimize soil erosion, siltation of nearby bodies of water and to avoid creation of water bodies favorable for mosquito breeding. Provide restoration and planting for borrow pits and spoil disposal areas after use, as appropriate. m. To avoid or prevent people from drowning when pits become water-filled, measures such as fencing, providing flotation devices such as a buoy tied to a rope, etc. shall be implemented. 			
13. Workers' protection, health and sanitation	<ul style="list-style-type: none"> a. Appoint an EHS Officer who shall be responsible for training, monitoring and reporting on EHS concerns, and implementation of EMP (18 May 2020). b. Perform a hazard assessment of the workplace to identify and eliminate physical and health hazards. c. Provide personnel with appropriate safety equipment such as safety boots, helmets, gloves, protective clothes, welding helmets, dust masks, goggles, ear protection, safety line, fall prevention measures, etc, broadly referred to as personal protective equipment (PPE). And ensure 	Contractor	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost

Type of Impact	Mitigation Measures / Actions	Institutional Responsibilities		Budget Source
		Implementation	Monitoring	
	<p>that these are properly used as required.</p> <p>d. Periodically review, update and evaluate the effectiveness of the PPE program.</p> <p>e. Conduct orientation for construction workers regarding emergency response procedures and equipment in case of accidents (e.g., head injury from falling, burns from hot bitumen, spills of hazardous substances, etc.), fire, etc.; health and safety measures, such as on the use of hot bitumen products for paving of project roads, etc.; prevention of HIV/AIDS, malaria, diarrhea, and other related diseases.</p> <p>f. Measures to prevent malaria shall be implemented (e.g., provision of insecticide treated mosquito nets to workers, spraying of insecticides, installation of proper drainage to avoid formation of stagnant water, etc.).</p> <p>g. Provide workers at construction sites over water with buoyancy devices at all times.</p> <p>h. Provide stable footpaths/access with adequate strength guardrails at bridge work sites.</p> <p>i. Comply with relevant laws and regulations on waterway traffic safety during construction.</p> <p>j. Provide first aid kits at each camp and working sites that are readily accessible by workers. In addition, the contractor shall prepare emergency procedures detailing arrangements with commune health center(s) or nearest hospital(s) to accommodate emergency cases from the work location.</p> <p>k. Provide fire-fighting equipment at the work areas, as appropriate, and at construction camps provide adequate drainage in workers camps.</p> <p>l. Provide adequate, clean and well-ventilated housing, with separate sleeping quarters for male and female workers, at the workers'/construction camps.</p> <p>m. Provide a reliable supply of potable water and water for washing and bathing purposes at the workers' camps.</p> <p>n. Provide separate hygienic sanitation facilities (including pit latrines) and bathing areas with sufficient water supply for male and female works.</p> <p>o. Ensure that all wastewater emanating from workers camps, construction camps and other project-related activities and facilities is passed through gravel/sand beds and all oil/grease contaminants will be removed before wastewater is discharged. Oil and grease residues shall be stored in tightly covered drums. Such wastes shall be disposed consistent with national and local regulations.</p> <p>p. Ensure proper collection and disposal of solid wastes within the workers'/construction camps consistent with local regulations.</p> <p>q. Provide fencing of adequate strength around excavation sites greater than 1 m deep.</p> <p>r. Prohibit workers from entering work sites without the appropriate PPE.</p>			

Type of Impact	Mitigation Measures / Actions	Institutional Responsibilities		Budget Source
		Implementation	Monitoring	
	<ul style="list-style-type: none"> s. Install sign boards, lighting system at the construction sites, borrow pits, or places which may cause accidents for vehicle, people and workers. t. Ensure reversing signals are installed on all construction vehicles. u. Implement fall prevention and protection measures for heights greater than 2 m, falling into operating machinery or through an opening in a work surface. v. Ensure that objects cannot fall onto people, vehicles, and properties in adjoining areas. 			
14. Workers' Health and Safety regarding COVID-19	<p>Reduce chances of being infected or spreading COVID-19 by taking the following precautions:</p> <ul style="list-style-type: none"> a. Record keeping locations of workers who had visited/lived before and during work implementation. b. Provision and mandatory use of PPE such as facemasks c. Provision of hand washing stations and hand sanitizers at construction sites, offices, yards, and workers camps. d. Regularly and thoroughly clean hands with an alcohol-based hand gel containing at least 70 percent alcohol, or soap and water. e. Regularly perform disinfecting/cleaning offices, yards, stores and camps. f. Daily body temperature checks and other health checks on the work site/camp/office/store. If temperature exceeds 37.5°C, the Contractor must call the 165 or 166 hotlines for further instructions. g. Maintain at least 1 metre (3 feet) distance. When someone coughs, sneezes, or speaks they spray small liquid droplets from their nose or mouth which may contain virus. If too close, can breathe in the droplets, including the COVID-19 virus if the person has the disease. h. Measures will be taken for physical re-planning of workers' camps, to the extent possible, taking into consideration adequate infection prevention and control, social distancing, crowd management and to prevent large gathering of people. i. Avoid going to crowded places. Where people come together in crowds, are more likely to come into close contact with someone that has COVID-19 and it is more difficult to maintain physical distance of 1 metre (3 feet). j. Avoid touching eyes, nose and mouth. Hands touch many surfaces and can pick up viruses. Once contaminated, hands can transfer the virus to eyes, nose or mouth. From there, the virus can enter body and infect. k. Keep up to date on the latest information from trusted sources, such as the National Taskforce Committee for COVID-19 Prevention and Control (NTCCPC), and other relevant local health authorities such as COVID- 	Contractor	Contractor MPWT-DOR (IA), DPWT (PIU), PMC	Part of contractor's cost

Type of Impact	Mitigation Measures / Actions	Institutional Responsibilities		Budget Source
		Implementation	Monitoring	
	<p>19 operation center of the province. Disseminate the updated information with all the workers. Local and national authorities are best placed to advise on what people in area should be doing to protect.</p> <p>i. Make sure, and the people around, follow good respiratory hygiene. This means covering mouth and nose with bent elbow or tissue when cough or sneeze. Then dispose of the used tissue immediately and wash hands. Droplets spread virus. By following good respiratory hygiene, protect the people around from viruses such as cold, flu and COVID-19.</p> <p>m. Stay home and self-isolate even with minor symptoms such as cough, headache, mild fever, until recover. Have someone bring you supplies. If need to leave house, wear a mask to avoid infecting others. Avoiding contact with others will protect them from possible COVID-19 and other viruses.</p> <p>n. Information and education campaign of measures on COVID -19 should be conducted regularly by the Contractor before/during work on the site.</p> <p>o. Take procedures in accordance with the guidance of the NTCCPC in the event any worker is suspected to have contracted COVID-19:</p> <ul style="list-style-type: none"> - If have a fever, cough and difficulty breathing, seek medical attention. The Contractor must call the 165 or 166 hotlines for further instructions. - These individuals may undergo testing for Covid-19 and will be placed in isolation for 14 days at a state-designated quarantine center. <p>a. Get permission for inter-provincial travel from the NTCCPC, or COVID-19 operation center of the province because provincial borders still remain closed even after loosing of lockdown measures.</p>			
15. Solid waste	<p>b. Provide garbage bins and facilities within the project site for temporary storage of construction waste and domestic solid waste.</p> <p>c. Separate solid waste into hazardous, non-hazardous and reusable waste streams and store this temporarily on site prior to final disposal, in secure facilities with weatherproof flooring and roofing, security fencing and access control and drainage systems.</p> <p>d. Ensure that wastes are not haphazardly dumped within the project site and adjacent areas.</p> <p>e. Undertake regular collecting and disposal of wastes to sites approved by local authorities.</p> <p>f. Prohibit burning of wastes.</p> <p>g. Prohibit disposal of solid wastes into canals, rivers, other watercourses, agricultural fields and public areas, and ensure that wastes are not haphazardly dumped within the project site and adjacent areas.</p> <p>h. Recyclables shall be recovered and sold to recyclers.</p>	Contractor	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost

Type of Impact	Mitigation Measures / Actions	Institutional Responsibilities		Budget Source
		Implementation	Monitoring	
	<ul style="list-style-type: none"> i. Wastes containing a suspected, probable or a COVID-19 confirmed case should be encouraged to segregate all medical waste (face masks, wipes, tissues)¹⁶. j. If dedicated medical waste collection is available, then the double-bagged waste should be disposed of immediately¹⁷. k. If no dedicated medical waste collection is available, then the double-bagged waste should be stored for 72 hours before being disposed with the general waste¹⁸. 			
16. Damage to properties and community facilities.	<ul style="list-style-type: none"> a. Immediately repair and/or compensate for any damage caused by construction works and activities to existing communities and their property and facilities. Adequate compensation shall be paid to affected parties, as necessary. b. Maintain access roads used for transport of construction materials and other construction-related activities are maintained to ensure that they remain in at least in their pre-project condition for the duration of the project. Access roads damaged during transport of construction materials and other project-related activities shall be reinstated upon completion of construction works. c. Apply protection measures in agreement with property owner. d. Proper supervision during maintenance works. e. All affected communities will be made aware of the Project GRM and will be provided information in advance on construction activities that may cause public nuisance and disturbance. 	Contractor	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost
17. Need for implementation of additional environmental mitigation measures	<ul style="list-style-type: none"> a. Implement corrective and /or additional measures to avoid, mitigate or compensate for adverse environmental impacts due to construction works and other project-related activities. 	Contractor	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost
18. Hunting of wildlife and cutting of wood by contractor	<ul style="list-style-type: none"> a. Spoils and all types of wastes shall not be dumped into forested areas. b. Workers shall be prohibited cutting of trees for firewood and for use in construction-related activities and from hunting wild animals. Contractors will be made aware of the presence of The Medical Biodiversity Conservation Garden. c. As the project will not require road widening, ensure that construction works are carried out without unnecessary clearing of roadside vegetation. d. Construction vehicles will operate within the corridor of impact, i.e., 	Contractor	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost

¹⁶ Added for Health and Safety Plan on COVID-19, <https://events.development.asia/learning-events/adb-data-room-managing-infectious-medical-waste-during-covid-19-pandemic>

¹⁷ Added for Health and Safety Plan on COVID-19, <https://events.development.asia/learning-events/adb-data-room-managing-infectious-medical-waste-during-covid-19-pandemic>

¹⁸ Added for Health and Safety Plan on COVID-19, <https://events.development.asia/learning-events/adb-data-room-managing-infectious-medical-waste-during-covid-19-pandemic>

Type of Impact	Mitigation Measures / Actions	Institutional Responsibilities		Budget Source
		Implementation	Monitoring	
	<p>approximately within ROW, to avoid damaging soil and vegetation. It will be most important to avoid soil compaction around trees. Generally, the rule will be to avoid driving heavy equipment or trucks anywhere into the 'drip-line' of a tree (defined as imaginary line around a tree where rainwater falls freely to ground unimpeded by the tree's foliage).</p> <p>e. The contractor will not use or permit the use of wood as a fuel for the execution of any part of the Works, including but not limited to the heating of bitumen and bitumen mixtures, and to the extent practicable shall ensure that fuels other than wood are used for cooking, and water heating in all his camps and living accommodations.</p> <p>f. Contractor shall not buy or use wood from the illegal sources (that come from the illegal logging)</p> <p>g. Construction camps, asphalt mixing plants, material storage sites and other project facilities shall not be located in any conservation areas, forest areas and other densely vegetated sites.</p> <p>h. Contractor will take all precautions necessary to ensure that damage to vegetation is avoided due to fires resulting from execution of the works. The Contractor will immediately suppress the fire, if it occurs, and shall undertake replanting to replace damaged vegetation.</p> <p>i. As much as possible, bridge works will be scheduled in dry season to minimize adverse impacts to fishery, river water quality and other aquatic resources.</p>			
19. Improper closure of construction sites	a. During demobilization, the contractor will remove all wastes from the construction sites and construction-related areas and will undertake restoration of disturbed sites.	Contractor	MPWT-DOR (IA), DPWT (PIU), DONRE, PMC	Part of contractor's cost
Operation				
1. Road safety and traffic management: Increase in road and vehicular accidents	<p>a. Maintain traffic signs, guardrails, with special attention on critical locations.</p> <p>b. Hand over traffic management to local authorities.</p> <p>c. All traffic signs should maintain properly.</p> <p>d. Educate to all communities on road safety especially near schools and other populated public areas.</p>	DPWT (PIU)	DOR (IA) and the local villages.	DPWT-included in DPWT's budget allocation village representative-included in the community-based implementation
2. Increase in noise, vibration and air pollution along the road corridor	<p>a. Provide signs prohibiting drivers from blowing horns alongside schools, hospitals and other areas with sensitive receptors</p> <p>b. Impose speed limits in populated areas and areas with sensitive receptors.</p>	DPWT (PIU)	DOR (IA) and the local villages.	DPWT-included in DPWT's budget allocation village representative-included in the community-based implementation

Table 13: Environmental Monitoring Plan

Type of Impact	What to monitor	Location	Method	When to Monitor	Institution	Budget Source
Pre-implementation						
1. Inappropriate/ Incomplete Road Design	Site survey of 7 locations of additional work/ village road in Chalernxai village and desktop design and calculation cost	Office of the consultant	Site survey of 7 locations of additional work/ village road in Chalernxai village and desktop design and calculation cost	Prior to implementation (Design stage)	MPWT-DOR, PMC	<ul style="list-style-type: none"> MPWT-Included in the Ministry's budget appropriation; Consultant-included in the consultant's budget.
2. Improper implementation of the Project Environmental Management Plan.	Compliance EMP. No complain from the residence.	Project's area	Ensure to develop CEMP in accordance with the EMP strictly	Prior to implementation (Preparation stage for civil work)	MPWT-DOR, DPWT, DONRE, PMC	<ul style="list-style-type: none"> Part of contractor's cost
3. Lack of consultation with affected people during project implementation	Affected people's awareness and resolving the potential problems that related with project's implementation. No complain from the residence.	Project's villages	Invite shareholders to attend the consultation meeting	Prior to implementation (Preparation stage for civil work)	MPWT-DOR, DPWT, DONRE, PMC	<ul style="list-style-type: none"> Part of contractor's cost
4. Complaints due to project-related impacts	Affected people's awareness on GRM procedures. No complain from the residence.	Project's villages	Develop GRM system for monitoring	Prior to implementation (Preparation stage for civil work)	MPWT-DOR, DPWT, DONRE, PMC	<ul style="list-style-type: none"> Part of contractor's cost
5. Disruption of utilities/services	The convenience of local villagers on utilizes/service. No complain from the residence.	Project's villages	Coordinated closely with local villagers, utility company and local authorities.	Prior to implementation (Preparation stage for civil work)	MPWT-DOR, DPWT, PMC	<ul style="list-style-type: none"> Part of contractor's cost
6. Improper disposal of excavation spoils and removed pavement.	No complain from the residence. No adverse environmental impact.	All construction sites.	Visual inspection	Prior to implementation (Preparation stage for civil work)	MPWT-DOR, DPWT, DONRE, PMC	<ul style="list-style-type: none"> Part of contractor's cost
7. Social Conflict	Employed workers, Construction	Project's villages	Check contractor's	Prior to	MPWT-DOR,	<ul style="list-style-type: none"> Part of contractor's

Type of Impact	What to monitor	Location	Method	When to Monitor	Institution	Budget Source
	sites/camp/borrow pit and no complain from the residence		record of employed workers and existing conditions	implementation (Preparation stage for civil work)	DPWT, DONRE, PMC	cost
8. UXO Safety Risk to Workers	Conducted the UXO-nontechnical and technical survey	The UXO technical survey should be conducted at all excavation works if there is required	Check Contractor's record of UXO-nontechnical and technical survey	Prior to implementation (Preparation stage for civil work)	MPWT-DOR, DPWT, PMC UXO clearing company	▪ Part of contractor's cost
Rehabilitation/Maintenance Works Implementation						
1. Impact to flora and fauna	- Disposed waste should be treated with environmental accepted manner - Exposed & unprotected construction materials and soils	All construction sites.	Visual inspection	Quarterly/Every 6 months.	MPWT-DOR, DPWT, DONRE, PMC	Part of contractor's cost
2. Potential damage to archaeological and cultural sites.	- Deposit of excess materials from road works (e.g. excavated materials) to private properties	Where the works are implemented on the road and the road corridor	Visual inspection	Quarterly/Every 6 months.	MPWT-DOR, DPWT, DONRE, PMC	Part of contractor's cost
3. Increase in noise levels	- Level of noise and vibrations	- All construction sites. - Transport of materials from road works	Interviewing local people	Quarterly/Every 6 months.	MPWT-DOR, DPWT, DONRE, PMC.	▪ Part of contractor's cost
4. Dust annoyance & air pollution	- Dryness of road surface, and watering frequency of road, to reduce dust;	- All construction sites. - Transport of materials from road works	- Visual inspection - Interviewing local people	Quarterly/Every 6 months.	MPWT-DOR, DPWT, DONRE, PMC.	▪ Part of contractor's cost
5. Landslides, erosion of excess and open soils and deposition of rocks on road shoulders and ditches	- Exposed & Unprotected construction materials and soils - Erosion Protection Excess soils & materials from grading & excavation	All construction sites.	- Visual inspection	Quarterly/Every 6 months.	MPWT-DOR, DPWT, DONRE, PMC	▪ Part of contractor's cost
6. Damage to	- Contractor can get material only from	Construction	Visual Inspections	Quarterly/Every	MPWT-DOR,	▪ Part of contractor's

Type of Impact	What to monitor	Location	Method	When to Monitor	Institution	Budget Source
productive land and deterioration of water quality due to operation of borrow pits.	Government-permitted sources. - No adverse environmental impact.	material source	and discussions with communities that can provide information on the matter.	6 months.	DPWT, DONRE, PMC	cost
7. Generation of oil and other hazardous waste/materials	- Relevant construction personnel received training in handling of fuels/hazardous substances and spill control procedures; contractor's compliance to requirement.	Contractor's facilities	- Visual inspection	Quarterly/Every 6 months.	MPWT-DOR, DPWT, DONRE, PMC.	▪ Part of contractor's cost
8. Deterioration of water quality due to wastewater discharge from construction works and facilities	- Compliance with EMP	At box- and pipe culvert work sites & 30 meters downstream of the existing natural streams.	- Visual observation - Laboratory analysis of water (pH, DO, BOD, Total coliform, Bacteria) if contamination is observed by visual observation. - The cost of lab analysis will be covered by contractor.	Quarterly/Every 6 months.	MPWT-DOR, DPWT, DONRE, PMC	▪ Part of contractor's cost
9. Siltation and blockage of water flow/flooding	- Installation of box culverts and pipe culverts - Excavation of ditches in wrong places - Camber of road surface	Where the works are implemented on the road and the road corridor	Visual observation	Quarterly/Every 6 months.	MPWT-DOR, DPWT, DONRE, PMC	▪ Part of contractor's cost
10. Traffic congestion and public access obstruction	- No complain from the residence. - Contractor's traffic management plan	All construction sites.	Visual observation	Quarterly/Every 6 months.	MPWT-DOR, DPWT, DONRE, PMC	▪ Part of contractor's cost
11. Public safety	- No complain from the residence. - Road accident record	All construction sites.	- Visual observation - Check Road accident record	Quarterly/Every 6 months.	MPWT-DOR, DPWT, DONRE, PMC	▪ Part of contractor's cost
12. Borrow Area	- Getting permission of borrow area from the relevant government offices. - No complain from the residence. - Compliance with EMP.	The Project's Borrow area	- Visual inspection - Interview local people. - Check permission documents issued by the relevant	Quarterly/Every 6 months.	MPWT-DOR, DPWT, DONRE, PMC.	▪ Part of contractor's cost

Type of Impact	What to monitor	Location	Method	When to Monitor	Institution	Budget Source
			government offices.			
13. Workers' protection, health and sanitation	<ul style="list-style-type: none"> - Provision of appropriate workers' camp, protective gears and water supply by the contractor. - No workers' compliance 	All construction sites.	Visual observation	Quarterly/Every 6 months.	MPWT-DOR, DPWT, DONRE, PMC	<ul style="list-style-type: none"> ▪ Part of contractor's cost
14. Workers' Health and Safety regarding COVID-19	<ul style="list-style-type: none"> - Record keeping locations of workers who had visited/lived before and during work implementation. - Provision of PPE - Dissemination of the latest information from trusted sources, such as the NTCCPC, and other relevant local health authorities such as COVID-19 operation center of the province. - Daily body temperature checks and other health checks on the work site/camp/office/store. - Record of information and education campaign (dates, contents, number of participants, etc.) 	All construction sites/camp/office/store.	<ul style="list-style-type: none"> - Use Body Temperature Checking Equipment on the site. If temperature exceeds 37.5°C, the Contractor must call the 165 or 166 hotlines for further instructions. - Check health conditions in hospital in the event any worker is suspected to have contracted COVID in accordance with the guidance of the NTCCPC. - Record all/report the case of symptoms in accordance with the guidance of the NTCCPC. 	Regularly	Contractor, MPWT-DOR, DPWT, PMC	<ul style="list-style-type: none"> ▪ Part of contractor's cost
15. Solid waste	<ul style="list-style-type: none"> - Contractors' waste collection management plan and disposal sites 	All construction sites.	Visual observation	Quarterly/Every 6 months.	MPWT-DOR, DPWT, DONRE, PMC	<ul style="list-style-type: none"> ▪ Part of contractor's cost
16. Damage to properties and community facilities.	<ul style="list-style-type: none"> - Deposit of excess materials from road works (e.g. excavated materials) to private properties 	Where the works are implemented on the road and the road corridor	Visual inspection	Quarterly/Every 6 months.	MPWT-DOR, DPWT, DONRE, PMC	<ul style="list-style-type: none"> ▪ Part of contractor's cost
17. Need for	<ul style="list-style-type: none"> - No complain from the residence. 	All construction	Visual observation	Quarterly/Every	MPWT-DOR,	Part of contractor's

Type of Impact	What to monitor	Location	Method	When to Monitor	Institution	Budget Source
implementation of additional environmental mitigation measures		sites.		6 months.	DPWT, DONRE, PMC	cost
18. Hunting of wildlife and cutting of wood by contractor	- Trading wildlife, hunting activities, cutting of wood for cooking and observation of hunting equipment such as guns	All construction sites.	Visual observation	Quarterly/Every 6 months.	MPWT-DOR, DPWT, DONRE, PMC	Part of contractor's cost
19. Improper closure of construction sites	- No complain from the residence. - All wastes from the construction sites and construction-related areas	All construction sites.	Visual observation	Before closure	MPWT-DOR, DPWT, DONRE, PMC	Part of contractor's cost
Operation						
1. Road safety and traffic management: Increase in road and vehicular accidents	- Repair and installation of traffic signs, guard rails, painting of line making	Along the whole road section but should cover all villages and school zones.	- Interview local people - Check Road accident record which is provided by traffic police office.	Monthly	DPWT (PIU) and members of the local villages.	DPWT-included in DPWT's budget
2. Increase in noise, vibration and air pollution along the road corridor	- Level of noise and vibrations and air pollution	Along the whole road section but should cover all villages and school zones.	- Interviewing local people	Monthly	DPWT (PIU) and members of the local villages.	DPWT-included in DPWT's budget

D. INSTITUTIONAL ARRANGEMENTS

104. MPWT will be the executing agency and its DOR will be the implementing agency for the project. DPWT-Attapeu (and DPWT-Salavan and DPWT-Xekong for other components under RSGMP) will act as project implementing units. DOR will have overall coordination responsibility and will work closely with the provincial DPWTs to implement the project. A project coordination unit (PCU) within MPWT and/or DOR will be established to implement the project. The PCU will comprise a project manager, 3 deputy project managers (one each from the target provinces), 1 social and environmental monitoring officer from the Public Works and Transport Institute (PWTI), 1 axle-load and road-safety officer from the MPWT's Department of Transport (DOT) and supporting staff from DOR and provincial DPWTs.

105. A National Steering Committee (NSC) has been established on 11 July 2017 to oversee project implementation and provide policy guidance at the national level. The steering committee will be chaired by an MPWT vice minister and will be comprised of vice governors from the provinces of Attapeu, Salavan, and Xekong officials from the MPWT, Ministry of Finance (MOF), Ministry of Natural Resources and Environment (MONRE), and Ministry of Planning and Investment (MPI), and representatives from the Department of Finance (DOF), Department of Planning (DOP), DOR, DOT, DPWT-Attapeu (and DPWT-Salavan and DPWT-Xekong for other components under RSGMP).

106. A Regional Advisory Committee (RAC) has been set up for consultation of provincial issues. RAC will be comprised of vice governors from the provinces of Attapeu (and Salavan and Xekong for other components under RSGMP), and officials from provincial DPWTs.

107. DOR has recruited a firm to act as the Project Management Consultant (PMC) for implementation and supervision of the Project including, but not limited to providing capacity building, preparing detailed engineering design and bidding documents, assisting with the procurement of civil works rehabilitation and maintenance contractors, and for supervising the implementation of road rehabilitation and maintenance works.

108. The Contractor of the road maintenance will have the responsibility to implement the mitigation measures identified in the EMP. The DPWT staff should have the duty and responsibility to coordinate with the Environmental Inspecting Agencies to conduct environmental inspections, and with the Provincial DONRE for compliance monitoring of the Project.

Table 14: Project Implementation Organizations – Roles and Responsibilities

Organizations	Management Roles and Primary Responsibilities
Ministry of Finance	Borrower
National Steering Committee (NSC)	<ul style="list-style-type: none"> ➤ Oversight body ➤ Provide project direction and guidance at the national level ➤ Facilitate cooperation and coordination among concerned agencies ➤ Solve potential major problems that may arise during project implementation ➤ Ensure timely implementation of policy and institutional reform requirements ➤ Meet twice a year during the project period, or as necessary to respond to and provide guidance on inter-ministerial or strategic issues
Ministry of Public Works and Transport (MPWT)	<ul style="list-style-type: none"> ➤ Executing agency ➤ Implement project in accordance with the loan and grant agreements ➤ Provide policy guidance to PCU ➤ Review and approve detailed engineering designs and procurement documents
Department of Roads – Project Coordination Unit (PCU)	<ul style="list-style-type: none"> ➤ Implementing agency ➤ Overall management and coordination of the Project ➤ Focal point for inter-agency coordination with ADB and relevant agencies of the Borrower <p>On Environmental Safeguards;</p> <ul style="list-style-type: none"> ➤ Provide assistance and guidance to DPWTs in ensuring compliance with all safeguard policy provisions in accordance with agreed formats and frameworks ➤ Submit to MONRE and/or DONRE the prepared IEEs for approval ➤ Ensure that the project environmental management plan (EMP) included in the IEEs are incorporated in the bid and contract documents for all civil works ➤ Oversee monthly environmental monitoring of the Project and submit semi-annual environmental monitoring reports to ADB for disclosure on ADB's website ➤ Oversee Project with relevant national and provincial government agencies on environmental matters as they arise ➤ Oversee the preparation of contractor's environmental management plans (CEMP) and ensure that these are consistent with the project EMP, standards are feasible, monitored and maintained
Project Implementation Unit (PIU)	<ul style="list-style-type: none"> ➤ DPWT-Attapeu ➤ Principal responsibility for EMP implementation ➤ Conduct the site assessment with the contractor and other local stakeholders to identify the appropriate / suitable of the proposed borrow pit or quarry site before sites approval. ➤ Coordinate with the PCU if there is any grievance raise from the communities. ➤ Coordinate with the Resident Site Engineer for site visit when there is for UXO investigation or clearance ➤ Arranging for site assessment of likelihood of occurrence of physical cultural resource or fossil specimens at excavation sites and arranging for appropriate supervision arrangements to identify/preserve fossil specimens that may appear ➤ Monitoring functions including compliance with EMP
DPWT-Attapeu	<ul style="list-style-type: none"> ➤ Implementing units ➤ Assign counterparts for DOR and the PMC ➤ With assistance of DOR and PMC, the DPWTs will be responsible for day-to-day coordination and supervision of project in the field ➤ Support project planning and detailed design <p>On Environmental Safeguards;</p> <ul style="list-style-type: none"> ➤ Facilitate the DONRE approval of the IEEs ➤ Assist with the implementation and monitoring of the EMP ➤ Assist with the implementation of ECDPs ➤ Assist with monitoring and implementation of activities related to gender and ethnic groups ➤ Record and manage all grievances expressed on the project and/or related safeguards (e.g., monitor and address them) ➤ Participate in training and capacity development activities under the project ➤ Identify poor households in accordance with government policy
Project Management Consultant (PMC)	<ul style="list-style-type: none"> ➤ Assign an environmental safeguard specialist ➤ Ensure that mitigation measures for detailed design phase are incorporated in the project design and; ➤ Ensure that the project EMP included in the IEEs is incorporated in bid and contract documents for all civil works. ➤ Review the contractors' environmental management plans (CEMPs) in order to be compliant with the: (i) environmental requirements of the construction contracts as reflected in the EMP, (ii) environmental laws of the Government, and (iii) ADB's Safeguard Policy Statement (2009); ➤ Within six months from commencement of civil works, design and conduct a training program for MPWT/DPWT staff on how the environmental aspects of the project will

Organizations	Management Roles and Primary Responsibilities
	<p>be monitored, giving emphasis on CEMP evaluation; environmental monitoring of construction activities and preparation of corresponding reports; supervision responsibilities and interaction with contractors; and documentation, resolution and reporting of non-compliance issues and complaints;</p> <ul style="list-style-type: none"> ➤ Conduct orientation sessions with the contractors on the environmental mitigation measures to be implemented, environmental monitoring system to be used, notification of non-compliance, and the process of requiring contractors to do corrective measures when necessary; ➤ Before excavation works and removal of the existing pavement commences, undertake an inspection of and approval the contractors' disposal sites to ensure that the EMP criteria for such sites are met. ➤ Coordinate and work closely in all of the above issues with the staff from the Division of Environmental Management under the Public Works Transport Institute (PWTI) of the MPWT. ➤ Require and provide guidance to the contractors in update their respective CEMPs should there be adverse impacts not addressed in the current CEMP; ➤ Undertake the following compliance review tasks: <ul style="list-style-type: none"> - Develop a standardized environmental monitoring/audit form to document results of environmental performance and environmental quality monitoring; - Undertake monthly monitoring and inspection of construction sites and all construction-related facilities (workers' camps, asphalt batching plants, concrete batching plants, borrow pits, disposal sites for spoil and unsuitable materials, equipment maintenance areas, fuel and materials storage sites, project-specific quarries and crushers, etc.) to assess the contractors' compliance with the CEMP and Project EMP, and provide guidance to contractors on the implementation of corrective measures, as necessary. The above tasks will be undertaken in coordination with DPWTs. - Consolidate the results/findings of each monthly monitoring activity into a semi-annual environmental monitoring report to be submitted to ADB one month from end of each semi-annual period. - Undertake environmental quality monitoring (ambient monitoring) as required in the project EMP. - Advise on potential climate change adaptation measures, as necessary. - Review monthly and semi-annual environmental supervision/performance monitoring reports and environmental quality monitoring reports to identify progress with implementation of EMP; - Identify key issues and actions taken and compliance performance; - Identify any non-compliance issues and focal areas for site audits, - As part of the environmental monitoring reports, document environmental issues and complaints and maintain a photographic record of key issues identified and actions and timescales agreed upon for their resolution; - Document in the semi-annual environmental monitoring reports training/capacity building activities conducted for MPWT and DPWT, as well as orientation activities conducted for contractors; - Review compliance with EMP, highlight areas of good practice and make recommendations on areas where performance could be improved;
Contractor(s)	<ul style="list-style-type: none"> ➤ Appoint an Environmental Health and Safety (EHS) Officer who shall be responsible for training, monitoring and reporting on EHS concerns and implementation of EMP. ➤ Implement the relevant mitigation measures during construction ➤ Following the award of the construction contracts, prepare subproject CEMPs which detail the means by which the contractors will comply with the EMP ➤ Identify a lead focal point for environmental issues (e.g. Chief Site Engineer) ➤ Implement the CEMPs ➤ Take all reasonable measures to minimize the impact of construction activities on the environment ➤ Undertake daily inspections on EMP implementation, including the environmental monitoring plan and record the findings ➤ Based on the inspections, submit monthly environmental records to the PMC and PCU ➤ Report any spills, accidents, fires and grievances received, and take appropriate action
Regional Advisory Committee (RAC)	<ul style="list-style-type: none"> ➤ The Advisory Committee will meet twice a year during the project period, or as necessary to respond to and provide guidance on provincial issues
ADB	<ul style="list-style-type: none"> ➤ Provides financing ➤ Monitors project implementation ➤ Undertakes project review missions

XI. CONCLUSION AND RECOMMENDATIONS

109. The environmental examination made use of the Rapid Environmental Assessment (REA) Checklist for Roads and Highway Sector developed by ADB. Based on the REA Checklist, LR9001 in Attapeu Province is classified as Category B under ADB SPS and therefore will not be subject to a full EIA procedure. Instead, an IEE report with EMP and monitoring plan is required.

110. Under Lao PDR country system, the following regulations are applied for this Project, for both original works and additional works:

- Decree on Environmental Impact Assessment, No.21/GOL, Vientiane Capital, dated 31 January 2019 (Article 10: Type of Environmental Impact Assessment);
- Decision on Approval and List of Project Investment and Activities for categorizing types and scales of project be conducting IEE or EIA, No. 8056/MONRE, dated 17 December 2013 (Article 4.12: Any scales of rehabilitation or maintenance national, provincial, district, local, special national road project shall be conducted only IEE);
- Ministerial Instruction on the Process of Initial Environmental Examination (IEE) of the Investment Projects and Activities, No. 8029/MONRE, dated 17 Dec 2013.

111. The impact classification system under the above regulations have two main categories: Category 1 requires the preparation of IEE, and Category 2 requires the preparation of EIA. Based on the above documents, the Project, both original works and additional works is classified as Category 1.

112. The following Institutional arrangement is proposed as a recommendation for the implementation of the EMP and monitoring plan as follows:

113. The Project's executing agency is MPWT; DOR is the implementing agency for the Project. While provincial DPWT Attapeu is the implementing unit. DOR has the overall coordination responsibility and will work closely with DPWT to implement the Project, Regional Advisory Committee (RAC) set up for consultation of provincial issues.

114. For the overall management of the project, a National Steering Committee (NSC) has been established on 11 July 2017 to oversee project implementation and provide policy guidance at the national level.

115. The Contractor of the road maintenance will have the responsibility to implement the mitigation measures identified in the EMP. The DPWT staff should have the duty and responsibility to coordinate with the Environmental Inspecting Agencies to conduct environmental inspections and with the Provincial DONRE for compliance monitoring of the Projects.

116. It is concluded that the Project will create opportunities for generating both direct and indirect benefits for many people and as the project continues, to bring about poverty reduction - an important goal of both the Government of the Lao PDR and of the ADB.

Appendix

**Appendix A: Rapid Environmental Assessment (REA)
Checklist for LR9001 (including the
additional Emergency Works, and the
additional road pavement in Chalernxai
village), Attapeue province**

**Rapid Environmental Assessment (REA) Checklist
for LR9001 (including the additional Emergency Works, and the additional road
pavement in Chalernxai village), Attapeue province.**

Instructions:

- (i) The project team completes this checklist to support the environmental classification of a project.
- (ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.
- (iii) Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Screening Questions	Yes	No	Remarks
A. Project Siting Is the project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Cultural heritage site		X	All work is within the right of way (ROW)/existing road.
▪ Protected Area		X	The activity is only along the existing road. The nearest protected area DongAmphanh's NBCA is approximately 9 km west side of the Project area.
▪ Wetland		X	There are no major wetlands or ponds along the corridor which will be affected by the proposed maintenance interventions.
▪ Mangrove		X	All work is within the right of way (ROW)/existing road. There is no mangrove in/around the Project site.
▪ Estuarine		X	All work is within the right of way (ROW)/existing road. There are no estuaries in/around the Project site.
▪ Buffer zone of protected area		X	All work is within the right of way (ROW)/existing road.
▪ Special area for protecting biodiversity	X		The Medical Biodiversity Conservation Garden is the productive forestry area is located on the east side of the road LR9001 (around at km 17 to km 22 along the road. Department of Public Health of the Province shall be officially notified about the implementation schedule of the maintenance works. Works are within ROW/ existing road and no direct impact.
B. Potential Environmental Impacts Will the Project cause...			
▪ encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries?		X	Works are within ROW/ existing road
▪ encroachment on precious ecology (e.g. sensitive or protected areas)?	X		Medical Biodiversity Conservation Garden might be impacted such as cutting grass/tree, burning, and privatizing the area. But the EMP/CEMP for this project road shall be addressed.
▪ alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?	X		The EMP/CEMP for this project road shall be addressed.
▪ deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?	X		The EMP/CEMP for this project road shall be addressed.
▪ increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt	X		The EMP/CEMP for this project road shall be addressed.

Screening Questions	Yes	No	Remarks
processing?			
▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation during project construction and operation?	X		The EMP/CEMP for this project road shall be addressed.
▪ noise and vibration due to blasting and other civil works?	X		The EMP/CEMP for this project road shall be addressed.
▪ dislocation or involuntary resettlement of people?		X	Works are within ROW/ existing road
▪ dislocation and compulsory resettlement of people living in right-of-way?		X	Works are within ROW/ existing road
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		X	Disproportionate impact is not anticipated.
▪ other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress?	X		The EMP/CEMP for this project road shall be addressed.
▪ hazardous driving conditions where construction interferes with pre-existing roads?	X		The EMP/CEMP for this project road shall be addressed.
▪ poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases (such as STI's and HIV/AIDS) from workers to local populations?	X		The EMP/CEMP for this road project shall address. Worker's camp sanitation and solid waste disposal and management be properly done.
▪ creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents?	X		The EMP/CEMP for this project road shall be addressed.
▪ accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials?	X		The EMP/CEMP for this project road shall be addressed.
▪ increased noise and air pollution resulting from traffic volume?	X		The EMP/CEMP for this project road shall be addressed.
▪ increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road?	X		The EMP/CEMP for this project road shall be addressed.
▪ social conflicts if workers from other regions or countries are hired?	X		The EMP/CEMP for this project road shall be addressed.
▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		X	There will be maximum 80 workers who will be mobilized for works from outside of the project area which is in total 54 Km length of the road, and it would not big burden on social infrastructure and services.
▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?	X		The EMP/CEMP for this project road shall be addressed.
▪ community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning.	X		The EMP/CEMP for this project road shall be addressed.

A Checklist for Preliminary Climate Risk Screening

Country/Project Title: ADB TA8492 Lao: Road Sector Governance and Maintenance Project (47850-001)

Sector: Roads and Highways

Subsector:

Division/Department:

Screening Questions	Score	Remarks ¹⁹
Location and Design of project	1	- There were severely damaged to road, slope and drainage caused by the last heavy rain in August and September 2018, and restoration works will be needed to avoid further damage. - In a future, might have similar impacts if heavy rain would occur.
	0	
Materials and Maintenance	1	- There were severely damaged to road, slope and drainage caused by the last heavy rain in August and September 2018, and restoration works will be needed to avoid further damage. - The Project plan to implement the additional works for emergency works of 7 Locations on the original project road. - In a future, might have similar impacts if heavy rain would occur.
	1	- There were severely damaged to road, slope and drainage caused by the last heavy rain in August and September 2018, and restoration works will be needed to avoid further damage. - In a future, might have similar impacts if heavy rain would occur.
Performance of project outputs	0	

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a **score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category**. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response will be categorized as high-risk project.

Result of Initial Screening (Low, Medium, High): Medium

Other Comments: _____

Prepared by: Mr. Phasouk MANIVANH (Environmental Specialist of PMC)

¹⁹ If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

Appendix B: The Previously Environmental Compliance Certificate for LR9001



ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ
ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນະຖາວອນ

—000—

ແຂວງ ອັດຕະປື

ພະແນກ ຊັບພະຍາກອນທຳມະຊາດ ແລະ ສິ່ງແວດລ້ອມ

ເລກທີ: 1393/ພຊສ

ອັດຕະປື, ລົງວັນທີ: 28 ຕຸລາ 2019

ໜັງສືຢັ້ງຢືນ

- ອີງຕາມ: ກົດໝາຍ ວ່າດ້ວຍການປົກປັກຮັກສາສິ່ງແວດລ້ອມ (ສະບັບປັບປຸງ) ເລກທີ 29/ສພຊ, ລົງວັນທີ 18 ທັນວາ 2012.
- ອີງຕາມ: ດຳລັດ ວ່າດ້ວຍການປະເມີນຜົນກະທົບຕໍ່ສິ່ງແວດລ້ອມສັງຄົມ ແລະ ທຳມະຊາດ, ສະບັບເລກທີ 21/ລບ, ລົງວັນທີ 21 ມັງກອນ 2019.
- ອີງຕາມ: ຂໍ້ຕົກລົງວ່າດ້ວຍ ການປະກາດໃຊ້ບັນຊີໂຄງການລົງທຶນ ແລະ ກິດຈະການຕ່າງໆທີ່ຈະຕ້ອງດຳເນີນການສຶກສາເບື້ອງຕົ້ນ ກ່ຽວກັບຜົນກະທົບຕໍ່ສິ່ງແວດລ້ອມ ຫລື ການປະເມີນຜົນກະທົບຕໍ່ສິ່ງແວດລ້ອມສັງຄົມ ແລະ ທຳມະຊາດ, ສະ ບັບ ເລກທີ 8056/ກຊສ, ລົງວັນທີ 17/12/2013.
- ອີງຕາມ: ໃບສະເໜີຂອງກົມຂົວທາງ ກະຊວງໂຍທາທິການ ແລະ ຂົນສົ່ງ ສະບັບເລກທີ 0054/ສຕຫ ລົງວັນທີ 22/10/2019.

ພະແນກ ຊັບພະຍາກອນທຳມະຊາດ ແລະ ສິ່ງແວດລ້ອມແຂວງຕົກລົງ:

1. ເຫັນດີຮັບຮອງເອົາບົດສຶກສາເບື້ອງຕົ້ນກ່ຽວກັບຜົນກະທົບຕໍ່ສິ່ງແວດລ້ອມ ຂອງໂຄງການ ສ້ອມແປງ ແລະ ຄຸ້ມຄອງຂະແໜງຂົວທາງ ທາງທ້ອງຖິ່ນ 9001 ສະບັບເດືອນ ຕຸລາ 2019 ຊຶ່ງໂຄງການດັ່ງກ່າວແມ່ນຕັ້ງຢູ່ ເມືອງໄຊເສດຖາ ຫາ ເມືອງຊານໄຊ ມີຄວາມຍາວ 54 ກມ ຢູ່ແຂວງອັດຕະປື ໂດຍແມ່ນ ກົມຂົວທາງ ກະຊວງໂຍທາທິການ ແລະ ຂົນສົ່ງ ເປັນເຈົ້າຂອງໂຄງການ.
2. ໃຫ້ເຈົ້າຂອງໂຄງການ (ກົມຂົວທາງ ກະຊວງໂຍທາທິການ ແລະ ຂົນສົ່ງ) ຕ້ອງປະຕິບັດຕາມເງື່ອນໄຂດັ່ງນີ້:
 - ຕ້ອງຮັບຜິດຊອບຄວາມຖືກຕ້ອງຂອງບັນດາຂໍ້ມູນທີ່ໄດ້ເຮັດການສຶກສາໃນບົດລາຍງານສຶກສາເບື້ອງຕົ້ນກ່ຽວກັບຜົນກະທົບຕໍ່ສິ່ງແວດລ້ອມສັງຄົມ ແລະ ທຳມະຊາດ ສະບັບເດືອນ ຕຸລາ 2019 ຢ່າງເຂັ້ມງວດ.
 - ໃຫ້ເອົາໃຈໃສ່ເປັນພິເສດໃນການຈັດຕັ້ງປະຕິບັດຕາມມາດຕະການປ້ອງກັນ, ຫຼຸດຜ່ອນ ແລະ ແກ້ໄຂຜົນກະທົບຕໍ່ສິ່ງແວດລ້ອມໃນໄລຍະດຳເນີນການກໍ່ສ້າງ ແລະ ດຳເນີນກິດຈະການ ກໍລະນີຫາກມີຜົນກະທົບເກີດຂຶ້ນທີ່ບໍ່ໄດ້ເຮັດການສຶກສາທາງເຈົ້າຂອງໂຄງການຕ້ອງມີແຜນການ ແລະ ວາງງົບປະມານໃນການແກ້ໄຂໃຫ້ພຽງພໍ ແລະ ຖືກຕ້ອງຕາມເຕັກນິກວິຊາການ.
 - ຕ້ອງໃຫ້ຄວາມຮ່ວມມື, ອຳນວຍຄວາມສະດວກ ແລະ ຕອບສະໜອງງົບປະມານໃນການລົງຕິດຕາມກວດກາໃຫ້ແກ່ພະນັກງານທີ່ກ່ຽວຂ້ອງຂັ້ນແຂວງ, ຫ້ອງການທີ່ກ່ຽວຂ້ອງຂັ້ນເມືອງ ແລະ ອຳນາດການປົກຄອງບ້ານ ໃນການລົງ ຕິດຕາມກວດກາພ້ອມທັງເຮັດບົດສະຫຼຸບລາຍງານຜົນການຕິດຕາມກວດກາ ສົ່ງໃຫ້ພະແນກຊັບພະຍາກອນທຳມະຊາດ ແລະ ສິ່ງແວດລ້ອມແຂວງ ແລະ ຫ້ອງການ ຊັບພະຍາກອນທຳມະຊາດ ແລະ ສິ່ງແວດລ້ອມເມືອງໄຊເສດຖາ ແລະ ເມືອງຊານໄຊ ເປັນປົກກະຕິ 3 ເດືອນ, 6 ເດືອນ ແລະ ປະຈຳປີ ແລະ ປະຕິບັດລະບຽບກົດໝາຍທີ່ກ່ຽວຂ້ອງຂອງລັດຢ່າງເຂັ້ມງວດ.
3. ໃບຢັ້ງຢືນສະບັບນີ້ ມີອາຍຸນຳໃຊ້ໄດ້ຈົນສຳເລັດໂຄງການ ແລະ ມີຜົນສຶກສິດນັບແຕ່ມີລົງລາຍເຊັນເປັນຕົ້ນໄປ.

ຫົວໜ້າພະແນກ
ຊັບພະຍາກອນທຳມະຊາດ ແລະ ສິ່ງແວດລ້ອມ



ສັດສະໝີ ວັນໄຊ

ECC Translation of CW6-LR9001

Lao People's Democratic Republic
Peace Independence Democracy Unit Prosperity

Attapeu Province

Department of Natural Resources and Environment (DONRE)

No. 1393/DONRE

Attapeu, date 29 Oct 2019

Environmental Compliance Certificate (ECC)

- According to Environmental Protection Law, revised on No. 29/NA, Dated in 18/12/2012;
- According to Decree on Environmental Impact Assessment, Vientiane Capital, No. 21/GoL, dated on 31 January 2019.
- According to the Decision on Approval and List of Project Investment and Activities for categorizing types and scales of project are conducting IEE or EIA, No. 8056/MONRE, and dated 17 December 2013:
- According to Proposed letter's Department of Roads, Ministry of Public Works and Transport, No. 0054/RSGMP, Dated 22/10/2019.

Department of Natural Resources and Environment agreed:

1. Agreed to approve the Initial Environmental Examination Report's Road Section Governance & Maintenance Project on LR9001, version October 2019 which the project is based in Saysetha District to Sanxai District, the length is 54 Km, Attapeu province is under by Department of Roads, Ministry of Public Works and Transport (the Project Owner).
2. The Project Owner (Department of Roads, Ministry of Public Works and Transport) shall implement as following conditions below:
 - To be responsible for all information in IEE version October 2019 report strictly.
 - To pay attention how to measures mitigation, protection and negative environmental impact during construction and activities. In case, there might be impact occurs without IEE study. The Project Owner shall provide the plan, efficient budget and properly technical method.
 - To give good cooperation, facilitate and provide the budget on environmental monitoring for relevant provincial, district, and village staffs when they work. Also submit the report of environmental monitoring to Department of Natural Resources and Environment, The Natural Resources and Environment office (District level) in 3 months, 6 months and annually report. And follow the relevant laws strictly.
3. This Environmental Compliance Certificate can be used until the project completion and effective since this date of signature.

Signed by:

Mr. Latsamee Vanxai

Head of Department of Natural Resources and Environment, Attapeu Province

**Appendix C: Public Consultation Meeting for LR9001
on 26 Jan 2015**

Photo and List of Participant for LR9001, Attapeu Province



Photo-1: Mr. Phetmixay , Director of DPWT Attapeu and Vice Governor,



Photo-2: Participants of the Public Consultation for LR9001, Attapeu Province



Photo-3: Participant giving comments and suggestion for the Road Maintenance Project



Photo-4: Group picture of the attendees with the DPWT Director and Deputy Governor

LITS OF PARTICIPANTS

ADB TA-S492: LAO Road Maintenance Project
Public Consultations on 26th January, 2015- Provincial Road 9001, Attapeu Province

No	Name & Surname ຊື່ ນາມ ທີ່ເຮັດງານ	Position/Organization ຕຳແໜ່ງ/ອົງການ	Contract/Email ລູກຄ້າ/ອີເມວ	Signature ຊື່ເຕັມ
1	ນ. ສິມສິດ ສິມສິດ	ຮັບຮຽນ ອົງການ	Unit - 06/pch	[Signature]
2	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	99990949	[Signature]
3	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	98055639	[Signature]
4	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	98998622	[Signature]
5	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	82292339	[Signature]
6	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	55734126	[Signature]
7	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	98974448	[Signature]
8	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	982256	[Signature]
9	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	55924992	[Signature]
10	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	99497888	[Signature]
11	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	25267071	[Signature]
12	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	22792289	[Signature]
13	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	0909928102	[Signature]
14	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	91610628	[Signature]
15	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	99852274	[Signature]
16	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	22724096	[Signature]
17	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	9166435	[Signature]
18	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	090249471	[Signature]
19	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	95373413	[Signature]

LITS OF PARTICIPANTS "CONTINUES"

20	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	090249471	[Signature]
21	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	08600067	[Signature]
22	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	78238267	[Signature]
23	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	016200259	[Signature]
24	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	0309712160	[Signature]
25	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	08745845	[Signature]
26	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	99920336	[Signature]
27	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	0880711	[Signature]
28	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	98765412	[Signature]
29	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	18851077	[Signature]
30	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	97828552	[Signature]
31	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	16201668	[Signature]
32	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	5895966	[Signature]
33	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	9664132	[Signature]
34	Marcelo Balda	ນັກຮຽນ ອົງການ		[Signature]
35	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	22200102	[Signature]
36	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	Source: apd/yanee.com	[Signature]
37	ນ. ສິມສິດ ສິມສິດ	ນັກຮຽນ ອົງການ	2827334	[Signature]
38				
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**Appendix D: Public Consultation Meeting for
LR9001 ON 27 September 2019**

ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ
ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນາຖາວອນ

ໃບລົງຄະບຽນ

ຜູ້ແທນເຂົ້າຮ່ວມກອງປະຊຸມປຶກສາຫາລື ຜ່ານສ່າງປົກສຶກສາຄົ້ນຄວ້າສິ່ງເວດຜ່ອມເບື້ອງກິນ(ບສກສ)ຂອງໂຄງການສ້ອມແປງເສັ້ນທາງກ່ອງຖິ່ນ9001 ຂອງວັດຖຸດິບ
ຄື່ງວັນທີ 27 ກັນຍາ 2019 ທີ່ຫ້ອງປະຊຸມ(ຊີນ2)ແຜນກາ ຊສ ຂອງ

ນາກສ່ວນ ໄດ້ສົ່ງຜູ້ແທນໂຄງການ ຂະນະ ໄດ້ສົ່ງ ສື່ປຶກສາຄົ້ນຄວ້າ

ລ.ດ No	ຊື່ ແລະ ນາມສະກຸນ Name & Surname	ມາຈາກນາກສ່ວນ From the Section	ຕົວຢ່າງຜິດຊອບ Responsible	ເບີໂທລະສັບ Mobile Number	ລາຍຊື່ Signature
1	ທ. ເອກະລາດ ມະນີວິໄນ	ອົງການ	ທ. ສິມສິມ ບຸນທວນ	23290104	
2	ທ. ສິມສິມ ບຸນທວນ	ອົງການ	ທ. ສິມສິມ ບຸນທວນ	55707112	
3	ທ. ສິມສິມ ບຸນທວນ	ອົງການ	ທ. ສິມສິມ ບຸນທວນ	22028697	
4	ທ. ສິມສິມ ບຸນທວນ	ອົງການ	ທ. ສິມສິມ ບຸນທວນ	22000133	
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6					

ຜູ້ປຶກສາ

ສອມລະຫວັນ ສິມສິມສວງສຸກ

ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ
ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນາຖາວອນ

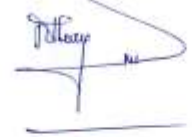
ໃບລົງຄະບຽນ

ຜູ້ແທນເຂົ້າຮ່ວມກອງປະຊຸມປຶກສາຫາລື ຜ່ານສ່າງປົກສຶກສາຄົ້ນຄວ້າສິ່ງເວດຜ່ອມເບື້ອງກິນ(ບສກສ)ຂອງໂຄງການສ້ອມແປງເສັ້ນທາງກ່ອງຖິ່ນ9001 ຂອງວັດຖຸດິບ
ຄື່ງວັນທີ 27 ກັນຍາ 2019 ທີ່ຫ້ອງປະຊຸມ(ຊີນ2)ແຜນກາ ຊສ ຂອງ

ນາກສ່ວນ ໄດ້ສົ່ງຜູ້ແທນໂຄງການ ຂະນະ ໄດ້ສົ່ງ ສື່ປຶກສາຄົ້ນຄວ້າ

ລ.ດ No	ຊື່ ແລະ ນາມສະກຸນ Name & Surname	ມາຈາກນາກສ່ວນ From the Section	ຕົວຢ່າງຜິດຊອບ Responsible	ເບີໂທລະສັບ Mobile Number	ລາຍຊື່ Signature
1	ທ. ສິມສິມ ບຸນທວນ	ອົງການ	ທ. ສິມສິມ ບຸນທວນ	22290104	
2	ທ. ສິມສິມ ບຸນທວນ	ອົງການ	ທ. ສິມສິມ ບຸນທວນ	55707112	
3	ທ. ສິມສິມ ບຸນທວນ	ອົງການ	ທ. ສິມສິມ ບຸນທວນ	22028697	
4	ທ. ສິມສິມ ບຸນທວນ	ອົງການ	ທ. ສິມສິມ ບຸນທວນ	22000133	
5					
6	ທ. ສິມສິມ ບຸນທວນ	ອົງການ	ທ. ສິມສິມ ບຸນທວນ	22028697	
7	ທ. ສິມສິມ ບຸນທວນ	ອົງການ	ທ. ສິມສິມ ບຸນທວນ	22000133	
8					
9					
10					
11					
12					
13					

ລ.ດ No	ຊື່ ແລະ ນາມສະກຸນ Name & Surname	ມາຈາກພາກສ່ວນ From the Section	ຕໍາຫຼ່ືອນຜິດຊອບ Responsible	ເບີໂທລະສັບ Mobile Number	ລາຍເຊັນ Signature
14	ຫ້າວນ				
15	ຫ້າວນ				
16	ຫ້າວນ				
17	ຫ້າວນ				
18	ຫ້າວນ				
19	ຫ້າວນ				
20	ຫ້າວນ				
21	ຫ້າວນ				
22	ຫ້າວນ				

ຜູ້ປັບປຸງ



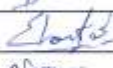

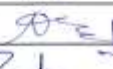







ພອນສະຫວັນ ສິສະເຫວງສຸກ

ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ
 ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນາຖາວອນ
 ໃບລົງທະບຽນ

ຜູ້ແທນເຂົ້າຮ່ວມກອງປະຊຸມປຶກສາຫາລື ຜ່ານຮ່າງປົກສັກສາຜົນກະທົບຕໍ່ສິ່ງແວດລ້ອມເບື້ອງຕົ້ນ(ບສກສ) ຂອງໂຄງການສ້ອມແປງເສັ້ນທາງທ້ອງຖິ່ນ 9001 ແຂວງອັດຕະປື

ຄັ້ງວັນທີ 27 ກັນຍາ 2019 ທີ່ຫ້ອງປະຊຸມ(ຊັ້ນ2)ແຂວງ ສຸຂ ແຂວງ

ພາກສ່ວນ ແຂວງ

ລ.ດ No	ຊື່ ແລະ ນາມສະກຸນ Name & Surname	ມາຈາກພາກສ່ວນ From the Section	ຕໍາຫຼ່ືອນຜິດຊອບ Responsible	ເບີໂທລະສັບ Mobile Number	ລາຍເຊັນ Signature
1	ຫ້າວນ				
2	ຫ້າວນ ສຸກວິໄນ ຜິວິວິ	ພູ 5	ສຸກ ພອນ ທາກ	55603316	
3	ຫ້າວນ ສອນສາ ທອນ ຫ້າວນ ພິວິ	ພູ 5	ສຸກ ພອນ ທາກ	99942277	
4	ຫ້າວນ ປິນິດ ວິໄນ ພອນ	ບ ຫ 2	-	58876220	
5	ຫ້າວນ ສຸກວິໄນ ຫ້າວນ ພິວິ	ສາ ພາ ຫ້າວນ ພິວິ	ສຸກ ພອນ ທາກ	90042256	
6	ຫ້າວນ ຫ້າວນ ສິວິ ສິວິ	ພູ 5	ສຸກ ພອນ ທາກ	55899540	
7	ຫ້າວນ ສຸກວິໄນ ພິວິ	ພູ 5	ສຸກ ພອນ ທາກ	97489999	
8	ຫ້າວນ ຫ້າວນ ສິວິ ສິວິ	ພູ 5	ສຸກ ພອນ ທາກ		
9	ຫ້າວນ ຫ້າວນ ສິວິ ສິວິ	ພູ 5	ສຸກ ພອນ ທາກ	98810959	
10	ຫ້າວນ ຫ້າວນ ສິວິ ສິວິ	ພູ 5	ສຸກ ພອນ ທາກ	89167244	
11	ຫ້າວນ ຫ້າວນ ສິວິ ສິວິ	ພູ 5	ສຸກ ພອນ ທາກ	922972799	
12	ຫ້າວນ ຫ້າວນ ສິວິ ສິວິ	ພູ 5	ສຸກ ພອນ ທາກ	95956853	

ລ.ດ No	ຊື່ ແລະ ບຸນລາຍ Name & Surname	ມາຈາກພາກສ່ວນ From the Section	ຜູ້ທີ່ຮັບຜິດຊອບ Responsible	ເບີໂທລະສັບ Mobile Number	ລາຍເຊັນ Signature
13	ທ່ານ ສິມມິດ ງຽມສາວ	ພຽງ	ສິມມິດ	99944990	
14	ທ່ານ ສິມມິດ ທິ ງຽມສາວ	ພຽງ	ສິມມິດ	55659959	
15	ທ່ານ ສິມມິດ ພຽງສາວ	ພຽງ	ສິມມິດ	5674785	
16	ທ່ານ				
17	ທ່ານ				
18	ທ່ານ				
19	ທ່ານ				
20	ທ່ານ				
21	ທ່ານ				
22	ທ່ານ				

ຜູ້ບັນທຶກ

ພອນສະຫວັນ ສິສະແກວງສຸກ

Photo of IEE Consultation Meeting in DONRE Attapeu Building



Appendix E: Public Consultation Meeting for the additional road pavement in Chalernxai village Attapeu province.

1) Minutes of Consultation meeting

