LAO PEOPLE'S DEMOCRATIC REPUBLIC
PEACE INDEPENDENCE DEMOCRACY UNITY PROSPERITY

MINISTRY OF PUBLIC WORKS AND TRANSPORT
DEPARTMENT OF ROADS

Ref. No. 24592 / DOR
Date : 15 September 2023

REQUEST FOR EXPRESS OF INTEREST (REOI)

FOR CONSULTING SERVICES FOR FEASIBILITY STUDY, DETAIL DESIGN AND ESA STUDY FOR IMPROVEMENT AND MAINTENANCE OF LOCAL ROADS (KHAMMUAN, SAVANNAKHET, AND SALAVAN PROVINCE)

(CONSULTANT FIRM SELECTION - REF. NO. QCBS-01-2023 / AF-C2-25)

The Government of Lao Peoples Democratic Republic (GoL) applied for financing support from the World Bank's (WB) International Development Association (IDA) to implement the Lao PDR Climate Resilient Road Connectivity Improvement Project (CRRCIP) in supporting the GoL in furthering its aim to strengthen its tertiary road network comprising district and rural roads in vulnerable provinces with high poverty districts. The aim is to provide climate-resilient, all-weather paved roads to improve year-around access to markets, educational institutions, health facilities for the rural inhabitants; thus, improving their livelihoods and quality of rural life. The Department of Roads (DOR) under the Ministry of Public Works and Transport (MPWT), the nodal agency of GoL for roads sector development and management, with support from other departments and agencies, will manage this project in coordination/consultation with the provincial level DPWT and the district level offices of Public Works and Transport (OPWT).

The CRRCIP will have the following components: Component 1: Climate Resilient Road Access; Component 2: Institutional Development; Component 3: Contingent Emergency Response Component. The overriding objective of this assignment is to carry out the Detailed Design Feasibility and Engineering Study (DFES) of the component 1 of the project, which would indicatively include the following broad activities:

i. Evolve the most optimal climate resilient design solution for the proposed project roads in terms of alignments and vertical profiles, pavement choices, bridge, and culvert structures so as to maximize road safety and stakeholder satisfaction and minimize costs and to avoid or minimize E&S risks and negative E&S impacts from the road works on the local communities and their environment.
ii. Carry out the preliminary engineering, economic, environmental, and social assessments of the proposed roads by initially carrying out existing document reviews, reconnaissance surveys, stakeholder consultations, inventory surveys and visual road and bridge condition surveys and preliminary traffic studies. After due analyses, confirm with the Client the roads to be taken up for detailed studies keeping budget constraints in mind; and agree all the design parameters options for engineering and E&S aspects.
iii. Carry out, based on agreed parameters, detailed studies of various aspects of engineering designs and road safety; environment and social assessments and prepare site specific ESMP, RAP, LMP, EGDP, SEP, GAP, BWP, following the guidance outlined in the project's Environmental and Social Management Framework (ESMF), Stakeholder Engagement Plan (SEP), which includes Ethnic Group Development Plan (EGDP) and other E&S documents to be completed by a separate team of E&S Consultants before project appraisal. Then prepare the detailed engineering design for the roads and bridge works and prepare detailed cost estimates. Carry out detailed economic and financial analyses and viability of the project based on these final costs.
iv. Assess appropriate approach for road improvement contracts and present the finding to DOR and the Bank for decision.
v. Prepare a procurement plan, contract packaging and further the necessary bidding/contract documentation for International/National Competitive Bidding, including the OPBRC Request for Bids (RFB). Though it may be that the road improvements and maintenance would be implemented through OPBRC contracts road-wise or area-wide, other options like Item-rate contracts cannot be ruled out. The competitive bidding process will be launched upon completion of this consultancy assignment. The contract documentation will also include the environmental, social, health, and safety (ESHS) requirements described in the above-mentioned E&S documents approved by the WB and/or GoL.

The Consultant is expected to start the assignment in parallel with the first OPBRC Contractor, which is planned for March 2024. The duration of the assignment is 8 months. Total budget for the services is estimated at USD 800.000. The detailed Terms of Reference (TOR) for the assignment can be obtained at the address given below.

The Department of Roads (DoR) now invites eligible consulting firms ("Consultants") to indicate their interest in providing the Services. Interested Consultants should provide information demonstrating that they have the required qualifications and relevant experience to perform the Services. The Consultants are required to demonstrate availability of qualified international and national staff to carry out the assignment in Lao PDR. Consultants are strongly encouraged to create JVs or sub-consultancy arrangements in this context. In the case of a joint venture, all the partners in the joint venture shall be jointly and severally liable for the entire contract, if selected. The shortlisting criteria are:

Criterion 1 (20%): Over 10 years of proven experience in carrying out and preparing feasibility studies, environmental and social assessments, and design for road construction/rehabilitation projects.
Criterion 2 (20%): Over 5 years of such experience should be in rural/low volume roads sector. Such international I experience of at least 5 years especially in South/ South East Asia is a strong asset.
Criterion 3 (20%): Minimum 3 contracts carried out in the past 10 years, performing feasibility studies and conceptual and detailed designs for a country's road sector of comparable value, scope and nature.
Criterion 4 (20%): Experience of feasibility studies and design under OPBRC, HPBRC, OPRC, DBMOT, DBFOT, PBMC or similar arrangement, successfully completed in the capacity of Lead Consultant (individually or as lead member of JV) is an asset.
Criterion 5 (20%): Minimum 3 contracts of similar nature performed in the past 10 years for preparation of ESA for national road construction, rehabilitation and maintenance and working on WB/ADB or any other internationally financed projects.

Expressions of Interest (EOIs) shall be submitted in English. Consultants are required to submit a maximum of 20 most (in total, not for each criterion) relevant past contract references for examination. Should the Consultants include more than 20 past references, Client shall examine and score only the first twenty listed references. Key Experts will not be evaluated at the shortlisting stage.

The attention of interested Consultants is drawn to paragraphs 3.14, 3.16 and 3.17 of the World Bank's Regulations - Procurement in Investment Project Financing - Goods, Works, Non-Consulting and Consulting Services (July 2016, revised November 2020 edition), setting forth the World Bank's policy on conflict of interest.

Consultants may associate with other firms to enhance their qualifications, but should indicate clearly whether the association is in the form of a joint venture and/or a sub-consultancy. In the case of a joint venture, all the partners in the joint venture shall be jointly and severally liable for the entire contract, if selected.

A consulting firm will be selected under the method of quality and cost-based selection (QCBS) in accordance with the said WB Procurement Regulations, which can be found at the following website : https://documents1.worldbank.org/curated/en/796061468126898713/pdf/956640PUB0Box3010Revised0July102014. A shortlist of firms will be established based on the submitted expressions of interest and in line with the criteria as outlined above. A shortlist of five to eight best qualified firms/associations shall be selected for the next phase of evaluation, based on the scores obtained. Shortlisted Consultants will be invited to submit full technical and finance proposal.

Further information can be found at the following website: http://mpwt.gov.la, http://ppmd.mof.gov.la or can be obtained at the address below during office hours from 8.00 to 16.00, Monday to Friday.

Expression of interest must be delivered to the address below before 17.00 (Local time of Vientiane Capital, Lao PDR, GMT+7) of 30 September 2023 (electronic submission is acceptable)

Department of Roads, Ministry of Public Works and Transport (DOR-MPWT)
Lanexang Avenue, Phonxai Village, Saysettha District, Vientiane Capital, Lao PDR.

Attention : Mr. Lamphoun Khounphakdy
Deputy Head of Road Adminsitration Division, Department of Roads (DOR-MPWT)
E-mail to : proc.dpf.mpwt@gmail.com with Cc to : k_litta@yahoo.com, lamphounk@yahoo.com and ptisoulitha007@gmail.com

Mr. Litta Khatiya
Director General, Department of Roads (DOR - MPWT)
Head of Project Procurement Committee

TERMS OF REFERENCE

Detailed Feasibility, Technical, Environment and Social Assessment Studies Reference No. AF-C2-25, Component 2 [CRRCIP]

A. BACKGROUND

1. Lao PDR being a land-locked country, the Government of Laos (GOL) has adopted the policy of utilizing this to make it land-linked with all the countries around it. Consistent with this policy is the need to further strengthen and improve the road transport linkages to its hinterlands and the last-mile connectivity to rural areas through climate resilient road network.

2. Road transport is the dominant mode of transport carrying about 86 percent of freight traffic and 98 percent of passenger traffic and is central to the policy of 'landlocked' to 'land linked'. The country's total road network of 59,943 kilometers (km) in 2017 with a paved road network of 9,251 km (15.5 percent). It consists of primary network of 7,515 km of National Roads, secondary network of 8,597 km of Provincial Roads, tertiary network of about 33,318 km of District Roads and Rural Roads, 3,537 km of Urban Roads, and 6,975 km of Special Roads. 15 percent of the total road network is paved, and 40 percent of these paved roads are classified as in poor or bad condition. 85 percent of the total road network is unpaved, and about 40 percent of these unpaved roads are inaccessible during the rainy seasons.

3. This proposed project aided by the World Bank (WB) envisages in supporting the GOL in furthering its aim to strengthen its tertiary road network comprising district and rural roads in vulnerable provinces with high poverty districts. The aim is to provide climate-resilient, all-weather paved roads to improve year-around access to markets, educational institutions, health facilities for the rural inhabitants; thus, improving their livelihoods and quality of rural life.

4. The proposed project will have the following components as detailed below.

- *Component 1: Climate Resilient Road Access:* The project will support (i) improvement of about 300 km of Local Roads (District Roads and Rural Roads) in the provinces of Khammouane, Savannakhet, and Saravan to the standards of Class V/VI roads as per Ministry of Public Works and Transport (MPWT) Road Design Manual and addressing climate and disaster resilience aspects, (ii) construction supervision of the project road improvement works, (iii) financial audit, (iv) technical audit of the project road improvement works during construction, (v) environmental and social monitoring, (vi) road safety audit of the project road designs, (vii) road user satisfaction surveys carried out at the start of implementation, at mid-term, and at the close of the project, (viii) incremental operating costs, and (ix) land acquisition, resettlement, and rehabilitation which will be fully funded by the Government of Lao PDR.
- *Component 2: Institutional Development:* This component will support MPWT in (i) capacity building of local contractors in the areas of Output and Performance-based Road Contracts, climate resilience, road safety, and environmental and social risk management, (ii) capacity building of MPWT and DPWTs (Department of Public Works & Transport) in road inventory data collection, and climate resilient road network planning and prioritization, (iii) preparation of a gender action plan, and (iv) training of MPWT and DPWT staff on cross-cutting issues including road safety, gender, citizen engagement, and climate disaster risk.
- *Component 3: Contingent Emergency Response Component:* This component will support MPWT in case of an Eligible Crisis or Emergency in responding promptly and effectively to it as per the Contingent Emergency Response Manual.

5. *Implementation Arrangements and Procurement:* The Department of Roads (DOR) under MPWT, the nodal agency of GOL for roads sector development and management, with support from DPF, DOT, PTI, DOP, DOI, and CO will manage this project in coordination/consultation with the provincial level DPWT and the district level offices of Public Works and Transport (OPWT). The implementation arrangement for the proposed project will include officials from all these three levels. The MPWT has formed a team which will be responsible for overall coordination for preparation of the project. **The Consultant will report to the Director General of DOR or his designated representatives who will all collectively henceforth be termed as Client for the purposes of this ToR.**

6. The procurement under the project will be carried out in accordance with the Procurement Regulations for Investment Project Finance (IPF) borrowers dated July 1, 2016, revised November 2020. The WB' Systematic Tracking of Exchanges in Procurement (STEP) will be used for all procurement transactions i.e., preparing and updating Procurement Plans and processing, clearing, communicating, and tracking of procurement activities. The DOR under the MPWT will be responsible for the implementation of procurements under the project, and all procurement activities will be conducted at the central level in accordance with the Project Procurement Strategy for Development (PPSD) for the project.

7. The Client has identified a long list of existing district and rural roads (Category V/VI roads as per Road Design Manual of MPWT) with the need to improve and strengthen (including marginal minor widening, rehabilitation, and reconstruction) located in the poor districts of Khammouane, Savannakhet, and Saravan Provinces. The roads in this longlist are being subjected to further prioritization exercise based on some aspects which included (i) passing through a poor district – based on poverty head count, (ii) criticality of the link for climate resiliency of the network, (iii) connectivity to agricultural areas, (iv) population served by the road, (v) traffic level, (vi) minimum length of road, (vii) not passing through environmentally sensitive areas, and (viii) no resettlement of more than 200 people (or 40 households) and/or more than 40 households. Based on this exercise, the Client has prioritized about 300 km of roads – about 100 km in each of the three provinces (refer Annex 1). For further reference these finally selected roads shall henceforth be called Project roads.

8. *Project Road Design Parameters and Contracting*: The project will largely adopt the design standards specified in Client's Road Design Manual (RDM). Deviations from this manual will need to be discussed and agreed with the Client. The Road Design Class is V/VI depending upon the traffic volume in the design year i.e., 100 – 300 passenger car units per day roads as Class V and 50 – 100 passenger car units per day roads as Class VI. The project roads are expected to be in flat or rolling terrain and therefore their geometric design will be for appropriate design speeds. It is expected that the pavements will have Double Bituminous Surface Treatment surfacing except for few stretches which will be laid with a concrete pavement. Many of the cross-drainage structures may need to be replaced with newly constructed concrete bridges or box culverts as the existing structures are in dilapidated condition. The project roads will not have major realignments and generally follow the existing alignments.

9. The following approach may be applied for the road improvement: Output and Performance-based Road Contracts (OPBRC), Hybrid Performance-based Road Contracts (HPBRC) and/or traditional Item-rate contracts based on the results of the present studies and institutional appetite for innovative contracts. Some provinces have expressed interest in adopting area based OPBRCs and these may be feasible if some of the proposed roads for improvement are in the vicinity of each other. The proposed project will improve/construct the pavement, drainage, and structures, and provide road safety appurtenances. The proposed project will have consultants for supervision and monitoring of the works, audits, and stakeholder satisfaction surveys.

10. In addition to the above-mentioned engineering, procurement, and contracting aspects the proposed project will strictly adhere to the environmental and social safeguards guidelines and requirements of the GOL and World Bank's safeguard framework and requirements. The project preparation and implementation will strictly

adhere to the Environmental and Social Management Framework developed by Client for this project, which will be approved by the World Bank. Road-specific ESMP, RAP, EGDP, SEP, LMP, BMP, GAP, and other necessary tools will be developed by the DFES consultant employing appropriate specialists.

B. OBJECTIVES OF THE ASSIGNMENT

11. The overriding objective of this assignment is to carry out the Detailed Design Feasibility and Engineering Study (DFES) of the component 1 of the project which would indicatively include the following broad activities -

i. Evolve the most optimal climate resilient design solution for the proposed project roads in terms of alignments and vertical profiles, pavement choices, bridge, and culvert structures so as to maximize road safety and stakeholder satisfaction and minimize costs and to avoid or minimize E&S risks and negative E&S impacts from the road works on the local communities and their environment.

ii. Carry out the preliminary engineering, economic, environmental, and social assessments of the proposed roads by initially carrying out existing document reviews, reconnaissance surveys, stakeholder consultations, inventory surveys and visual road and bridge condition surveys and preliminary traffic studies. After due analyses, confirm with the Client the roads to be taken up for detailed studies keeping budget constraints in mind; and agree all the design parameters options for engineering and E&S aspects.

iii. Carry out, based on agreed parameters, detailed studies of various aspects of engineering designs and road safety; environment and social assessments and prepare site specific ESMP, RAP, LMP, EGDP, SEP, GAP, BWP, following the guidance outlined in the project's Environmental and Social Management Framework (ESMF), Stakeholder Engagement Plan (SEP), which includes Ethnic Group Development Plan (EGDP) and other E&S documents to be completed by a separate team of E&S Consultants before project appraisal. Then prepare the detailed engineering design for the roads and bridge works and prepare detailed cost estimates. Carry out detailed economic and financial analyses and viability of the project based on these final costs.

iv. Assess appropriate approach for road improvement contracts and present the finding to DOR and the Bank for decision.

v. Prepare a procurement plan, contract packaging and further the necessary bidding/contract documentation for International/National Competitive Bidding, including the OPBRC Request for Bids (RFB)/Request for Proposal (RFP). Though it may be that the road improvements and maintenance would be implemented through OPBRC contracts road-wise or area-wide, other options like Item-rate contracts cannot be ruled out. The competitive bidding process will be launched upon completion of this consultancy assignment. The contract documentation will also include the environmental, social, health, and safety (ESHS) requirements described in the above-mentioned E&S documents approved by the WB and/or GoL.

12. The GOL/MPWT, through the Department of Roads (DOR) and its provincial offices (DPWT), will be the executing agency for the project. The Public Works and Transport Institute (PTI) of MPWT will provide technical guidance on the preparation of E&S instruments. The DOR and PTI, and other agencies concerned with support from the DFS Consultants, will provide the information and assessments necessary for the World Bank appraisal of the proposed Project. In general, as mentioned previously, the agencies of GOL responsible for the planning, design and execution of the project will be henceforth referred as Client.

C. SCOPE OF SERVICES

Task-1: Initial Studies

13. The Consultant shall discuss with Client and review in detail the manuals, codes and specifications used in Laos for design of such low volume rural connectivity roads. The consultant shall review recent study reports on these candidate roads and reports prepared for higher category roads connecting to these roads. Digital maps, departmental databases for these roads (PROMMS), socio-economic study reports, safety assessments, costing

parameters, relevant environmental requirements, guidelines and regulations, meteorological data etc. In addition, the consultant shall take stock of recent practices for local development financed by different development partners and apply what work well and avoid what do not work well.

14. Consultant shall perform a reconnaissance survey and make local enquiries/stakeholder consultations on the candidate roads with special emphasis on roadside habitations, land use patterns, market facilities, schools/colleges, medical centers, logistic centers, sections subjected to submergence, type of traffic and mix, existing right of way (ROW), encumbrances and infringements on ROW, road safety black spots, critical environmental and social issues etc.

15. The Consultant shall make a quick assessment of existing bridges and their conditions. Also check whether any new bridges will be required on the candidate roads at river crossings and new culverts in embankment zones either for water crossing or balancing purposes.

16. The consultant shall have discussions with MPWT/DPWT and other relevant national, provincial, and local government departments and funding agencies to understand the future development plans in the road influence areas which will have an impact on the candidate roads and the proposed project dimensions. The consultant will also identify if there is any presence or potential of **associated facilities**[1] in the proposed project dimensions e.g., if sub-sections of selected project roads are likely to be financed by the government or other funding agencies. The bank Policy requires the associated facilities meet the requirements of environmental and social standards (ESSs) to the extent that the borrower has control or influence over such associated facilities.

17. *Output and timeline:* Inception Report in 1 month summarizing the results and conclusion from above activities, detailed work program of the consultant, staffing plans, allocations and schedules for further tasks outlined below along with any suggestions for modification to scope of work and schedule. The Inception Report will be discussed in detail with the Client and will form the guiding framework for executing the further work program detailed below from Tasks 2 to 5. Maps and other visual charts and images for better appreciation of the project shall also be included as part of this report.

Task 2: Data Collection

18. The Consultant shall review the design standards proposed for recently completed/ ongoing studies for the development of similar roads, and recommend the design standards for the project roads, complying to local requirements, country standards and guidelines, and international best practices.

19. **Classified Traffic Volume Count.** The Consultant shall conduct Manual Classified Traffic Counts (MCCs), classified by vehicle category comprising a minimum of 1 location per road section and if required in more locations too, depending on length and intermediate intersections. The survey shall be conducted continuously for each vehicle type over at least 3 consecutive days covering heavy traffic days of the week and peak hours. The Consultant shall develop appropriate expansion factors to obtain Annual Average Daily Traffic (AADT) and Volume Capacity Ratio (VCR) by applying daily and seasonal factors which would be calculated from past traffic volume data of regular count stations and road capacity. All results shall be presented in tabular and digital format to the acceptance of DOR and compared with prior data, if available with DOR. Variation from available traffic census carried out earlier shall be noted, and reasons for such variation, if any, identified and explained. The Consultant may wish to consider the use of Automatic Traffic Counters (ATC) to provide a more

[1]As per the bank's Environmental and Social Policy, the term "Associated Facilities" means facilities or activities that are not funded as part of the project and, in the judgment of the Bank, are: (a) directly and significantly related to the project; and (b) carried out, or planned to be carried out, contemporaneously with the project; and (c) necessary for the project to be viable and would not have been constructed, expanded or conducted if the project did not exist.

continuous analysis of traffic flows. Consultant should also assess the non-motorized traffic activities and count pedestrians and bicycles where such road users are significant.

20. **Origin/Destination Surveys:** The Consultant shall undertake O-D Surveys via roadside interviews to be conducted alongside the classified traffic counts. The O-D surveys shall capture information such as time of Interview, trip origin and final destinations, trip purpose, vehicle type, commodity and weight of freight/cargo carried, number and purpose of regular trips made. The O-D surveys should be analyzed to arrive at the freight flow routes for different types of freight.

21. **Axle Load Survey.** The Consultants shall review the past survey data on axle loads and summarize its findings. This data shall be verified by additional axle load surveys to be conducted at a minimum of one location per road (location properly chosen through proper consultation) to capture the axle load spectrum for trucks moving to and from different directions. The Consultant is to advise of suitable locations for the installation of permanent weigh-in-motion sites for the monitoring of changes in traffic loading. Such locations should be close to power and internet connectivity, as well as being on nominally straight and flat sections of road where readings are of a higher quality.

22. **Speed Surveys.** The Consultant shall conduct speed and delay survey on any typical day, using moving observer method or equivalent. A minimum of three surveys per direction, during daylight and peak hours, are required. Speed measurements of heavy vehicles on various lengths and grades of hills (up and down grades) shall be measured to inform as to where additional width and parking bays will be required.

23. **Accident/Crash Data.** The Consultant shall collect and review data on traffic crashes over the past 5 years from the relevant bodies. This information will enable the Consultant to identify major traffic safety hotspots to review the interventions to improve safety for road users.

24. **Soil Investigation and testing.** The Consultant shall review the existing geological and geotechnical information for the proposed candidate roads, if available. The Consultant shall propose and conduct such soil investigations (including any field and laboratory tests) at suitable points (minimum 2 locations per kilometer of road and at every stretch where the soil profile appears to change) to determine their characteristic engineering design parameters for the roads. For sites of major structures and bridges a minimum of 3 tests per site need to be done (one each at every abutment location and one in the middle). The above frequencies of tests are only indicative and can be modified based on discussion and agreement with Client. Usually for roads CBR pits and DCP tests are done and for structures Standard Penetration Tests (SPT) are done. If and where black-topped pavements exist the strength and condition need to be assessed visually (for roughness, rutting and raveling) and with appropriate tests (like FWD or Benkelman Beam tests) for pavement strengthening purposes. In high embankment/cut slope zones appropriate soil testing for fill material as well as slope stability tests to ensure slip prevention needs to be done.

25. **Quarry Material Survey.** The Consultant shall review existing (or potential) quarries located along the road corridor and identify if they have valid permits and license including environmental permits from respective authorities. Due diligence shall be undertaken to assess if potential quarries could meet the ESF requirements. For quarry sites that have valid permits and could meet ESF requirements, the Consultant shall source suitable laboratory material tests to verify, and modify if required, the proposed engineering design parameters or look at other material source options to meet design specifications.

26. **Base Traffic Loading:** From the traffic surveys conducted and any other data sources available, the Consultant is to review and update current traffic volumes (by vehicle category) and axle loading (ESA/vehicle) for each of the roads homogenous section-wise. A homogeneous section shall be defined by the presence of

any feature that results in significant changes to traffic flows such as major intersections, markets, industries/factories etc.

27. **Traffic Forecast:** The Consultant shall review traffic growth rates generally used for such roads by MPWT/DPWT for forecasting future traffic, taking due consideration of historic traffic data, historic data on development of the Project areas, population, per capita income growth rates, elasticity of transport demand to income and population, and estimated annual production increases in diverse economic sectors in the Project influence areas. Divertible and generated traffic should also be factored into the forecast. The consultant shall advise the MPWT/DPWT of the most likely traffic scenario and the high growth scenario.

28. **Design Traffic Loading:** The Consultant shall compute the design ESA loading for the pavements for each homogeneous section based on which final pavement design will be done. High growth scenario traffic will be an indication of risk limit for maintenance and operations phase.

29. **Hydrological Studies:** Since the project envisages new bridges/culverts, replacement of existing bridges/culverts and strengthening of existing bridges/culverts; hydrological studies will be required to ascertain bridge length and span arrangements, height of bridges and depth of foundations. Study of historical data in the vicinity of the road alignments, local enquiries about floods and submergence of roads will provide an idea of the high flood levels and frequency of such floods. Analytical calculations using empirical and other models will need to be done (for e.g., rainfall run off and catchment area method) to ascertain waterway length, water levels, afflux, and speed of flow.

30. Climate resilience and Land Slide/Erosion Protection Study: The project will improve the Local roads with the existing road alignment and some section will pass mountainous areas where the upper hill or lower hill side may pose risk to erosion/land slide. The consultant team share carry out climate resilience analysis including identification of locations vulnerable to landslides and erosion and suggest measures to enhance climate resilience aspect, taking into account of the optimum cost mitigations technical such as structural engineer design or bio-engineer design in order to again climate resiliency.

31. *Output and timeline:* The output from Task-2 shall be a comprehensive Data Collection and Analysis Report that documents the findings of the desktop studies, field investigations, surveys, site inspections, and consultations carried out. The timeline for this report will be 5 months from start of assignment.

Task 3: Technical Options Analysis and Detailed Engineering

32. The Consultant shall perform an assessment of the current road alignments and proposed project facilities and provide identification and justification of possible improvements for the most optimized arrangement for the project features and facilities. These additional features and enhancements will include bus stops, parking bays, village market platforms, small storage spaces etc. Following the Data Collection Stage, the Consultant shall make use of the available data to propose any additional studies/investigations required. However, this needs to be kept to a minimum and only proposed if critical for project design, construction, or operations.

33. Considering the results of the initial field surveys and review of existing alignments, the Consultant shall develop horizontal alignment and vertical profile options for evaluation with respect to technical feasibility, minimizing capital and operating costs, and **particular emphasis on minimizing** environmental and social risks including land acquisition and involuntary resettlement especially of Indigenous Peoples. Alternatives shall be analyzed in relation to key criteria, including the following:

(a) Alternative siting and location of wayside project features and appurtenances,
(b) Alternative road alignments and profiles wherever necessary,
(c) Alternative pavement options to improve performance and optimize costs,

(d) Alternative options for bridge siting, span arrangements, and structural configuration,
(e) Alternative option erosion protection design,
(f) Integration of ES aspects,
(g) Alternative project management, schedule, and construction methods, and
(h) No-Project scenario

34. For the above alternatives considered the Consultant shall estimate the preliminary approximate costs using updated unit costs of recently completed similar configuration rural roads, bridges, culverts and other roadside features, environmental mitigation measures. From traffic counts on projects roads and other socio-economic reviews tangible and intangible benefits to road users and other stakeholders can be estimated. Benefits for non-motorized traffic should be evaluated based on international norms. Preliminary benefit-cost and economic analysis for the Project alternatives shall be worked out.

35. *Output and timeline:* The preliminary/first output from Task-3 and Task-4 (outlined later below from Para 37) shall be a Prioritization and Options Report that will enable the Client and WB to understand, and approve the proposed options on project roads (under budget constraints), prior to the detailed surveys and design activities being undertaken. The Consultant shall schedule and sequence the activities required for this report in Tasks 3 and 4 in such a way as to be able to deliver this output within 4 months of commencement of its services. A strip map highlighting the important on-road and roadside features of the project roads observed and measured during the preliminary surveys will be shown. Any other important sketches, preliminary drawings and maps would also be part this report.

36. Following approval from the Client, the Consultant shall proceed in preparing the detailed engineering analysis and designs of the road and bridge elements factoring in the road safety, traffic management, E&S safeguards management etc. as detailed out below:
(a) Geometric alignment (horizontal, vertical road alignments and typical cross sections, road junctions),
(b) Pavement design and soil improvements (use of locally available materials for pavement layers and use of industrial wastes may be explored),
(c) Design of structures such as bridges, culverts (including foundation elements),
(d) Design of erosion protection structures including bio engineering consideration,
(e) Design of safety countermeasures like barricading, crash-barriers, speed control measures etc.,
(f) Earthworks, embankments and Earth-Retaining and Stabilizing Structures (ERSS) schemes,
(g) Road drainage schemes,
(h) Typical traffic layout scheme including road markings, traffic signage, reflecting studs and side posts,
(i) Drainage schemes to prevent/minimize road submergence and problems to wayside communities,
(j) Utility diversion scheme, if any, in built up areas,
(k) Street lighting in village zones at critical points to improve road safety,
(l) Truck and bus parking bays and other wayside amenities for village markets and storage areas,
(m) Wayside amenities for current and increased future e-mobility options,
(n) Environmental and social mitigation and enhancement schemes including community safety, wildlife crossings, landscaping/turfing schemes,
(o) Instrumentation and monitoring plans if proposed for any climatic or similar monitoring systems for traffic and axle loads,
(p) Location of potential construction material sources, existing quarry sites, works areas, spoil dump locations for construction material, casting yard etc.,
(q) Evaluate suitable construction methodologies, installation and operation and maintenance performance standards (e.g., OPBRC, HPBRC) vs. Item-rate contracts for the roads and facilities,
(r) Provide an estimate of the quantities and costs for each respective contract package and an estimate of the overall design, construction, and annual maintenance cost. The Consultant shall indicate the related level (%) of uncertainty with respect to each item in the cost breakdown, and

(s) Evaluate contract packaging options and recommend the most suitable contract packaging structure for Project. This shall include the following:

- Contract packaging structure for Project design and construction, taking account of the length and location of roads, and the experience and capabilities of likely prospective contractors,
- Recommendations and related justifications regarding the form(s) of conditions of contract to be used for each of the contract packages,
- Recommendations and related justifications regarding the defect liability period requirements and maintenance period for each of the works' contracts, and
- Review options for the various procurement strategies following the World Bank's Project Procurement Strategy for Development guidelines.

Task-4: Environmental and Social Assessment, Environmental and Social Risk Management and Capacity Building

37. The main objective of the environmental and social (ES) assessment is to identify the potential ES risks and impacts associated with the project on local communities and environment, and to enhance potential positive impacts where possible in accordance with the Project ES Framework (ESF) instruments including (i) Environmental and Social Commitment Plan (ESCP); (ii) Environmental and Social Management Framework (ESMF); (iii) Stakeholder Engagement Plan (SEP) that includes Ethnic Group Engagement Framework (EGEF); and (iv) Resettlement Policy Framework (RPF) of the project which are to be prepared in prior to the project appraisal. This project will apply the World Bank's Environmental and Social Framework (ESF), relevant Environmental and Social Standards (ESSs), Environmental Health and Safety Guidelines, and the relevant E&S legal framework of GOL which are described in the project ESF instruments. All site-specific E&S plans to be prepared by the DFES Consultants may require for clearance and/or approval from the World Bank before bidding can be issued, and from GoL before construction begins. The DFES Consultants shall work closely with the Environmental Research Disaster Prevention Division (EDPD)/Public Works and Transport Institute (PTI) during the scope of ES assessment, and the preparation of required site-specific E&S plans.

38. The Consultants shall conduct a screening/assessment of the potential environmental and social risks of the Project within the Project scope to help the Client identify and manage environmental and social issues. Based on the agreed parameters, detailed studies of various aspects of engineering designs and road safety, and outcomes of environmental and social assessment, the Consultants will then prepare site-specific ES risk management instruments that outline detailed site-specific ES risks and impacts, recommended mitigation measures, and also cover measures for meaningful engagement with stakeholders through the project implementation, procedures for establishment and operationalization of grievance redness mechanism, institutional arrangement, capacity building for the Client's ES focal points, consultants and contractors, allocation of adequate resources, monitoring and reporting on implementation of E&S risk mitigation measures.

39. *Output and Timeline:* The output from Task 4 will be site-specific ES plans including but not limited to: a) site-specific Environmental and Social Management Plans (ESMP); b) Abbreviated Resettlement Action Plans (ARAP) or Resettlement Action Plans (RAP) where land acquisition and resettlement are unavoidable; c) Ethnic Group Engagement Plans (EGEP); d) Biodiversity Management Plan (BMP) if any significant biodiversity risks are identified during the site-specific assessments for selected roads; and (e) Initial Environmental Examination Reports (IEEs).Output (a), (b), (c), and (d) will need clearance and/or approval from the World Bank before bidding can be issued while output (e) will need clearance and/or approval from the GoL before construction begins.

Preparation of site-specific Environmental and Social Management Plans (ESMP)

40. The consultant shall conduct an environmental and social assessment to identify and assess the potential environmental and social impacts of the project's selected roads, design appropriate mitigation, management, and monitoring measures. The site specific ESMPs will provide measures to be taken during the project's pre-

construction, construction, and operation phases. The ESMPs should include inter alia the contents included in ESS1 – Annex 1. Environmental and Social Assessment of the WB's ESF ("D. Indicative outline of ESIA" and "E. Indicative Outline of ESMP") which are available on WB's website[2]. In preparing the ESMPs, the Consultant shall carefully review E&S requirements of the GOL, WB ESF and prepare ESMPs that comply with requirements of GOL and WB in a streamline manner to avoid unnecessary repetition. The consultant scope of work includes to prepare IEE for submission to the PONRE/GOL for clearance and ECC issuance.

41. The consultants will also ensure that requirements for contractor to prepare Contractor-ESMPs will be explicitly mentioned. An ESMP will also be made a part of the bidding documents for work contracts and will be an obligation of the contractors to implement. It will provide mechanisms and institutional arrangement for implementing the mitigation measures, conducting monitoring, reporting and capacity building programs, and estimation of budget.

Preparation of Biodiversity Management Plan (BMP)

42. The project will not finance roads within the Protected Areas (PAs) with internally or nationally significant biodiversity value, to avoid risks and impacts on biodiversity of significant value, critical and natural habitats, and ecological functions. The project will also exclude any activities or sub-projects that would impact both natural and/or critical habitats, regardless of whether the road sections are located in a protected area. However, when the selected roads are close to the PAs, the DEFS consultants shall determine if any significant risks to biodiversity are likely, and a BMP may be prepared to manage identified direct risks on biodiversity and indirect risks resulted from the road improvement during road operation and after the project completion.

43. The objectives of BMP will be based on the findings of the biodiversity part of the ESA. The BMP activities may include, for example, site-specific habitat restoration, enhancement, or improved management; community benefit-sharing; livelihood restoration activities (to mitigate any negative socioeconomic impacts from newly restricted access to natural resources, in accordance with ESS6); species- specific management interventions; monitoring of project implementation or biodiversity outcomes; engagement with local authorities for enforcement in accordance with national laws and regulations on forestry and land uses; awareness raising of communities on importance of forests and biodiversity for their ecosystem services; or support for increased financial sustainability of conservation actions.

44. The BMP also consists of an implementation schedule considering the planned timing of construction and other project activities; institutional responsibilities for BMP implementation; the cost estimate for BMP implementation, including up-front investment costs and long-term recurrent costs. The BMP also specifies the funding sources for plan implementation as well as recurrent operating costs.

Preparation of Abbreviated Resettlement Action Plans (ARAP) or Resettlement Action Plans (RAP)

45. For road sections that will result in land acquisition and asset loss, an Abbreviated Resettlement Plan (ARAP) or **Resettlement Action Plans (RAP)** in accordance with the Resettlement Policy Framework (RPF) applied under the project. The ARAP/RAP will fully address all requirements under ESS5 described in the RPF to mitigate unavoidable adverse social and economic impacts from land acquisition or resettlement by: (a) providing timely compensation for loss of assets at replacement cost and (b) assisting affected persons in their efforts to improve, or at least restore, their livelihoods and living standards, in real terms, to pre-project levels.

[2]https://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-standards?cq_ck=1522164538151#ess1

The ARAP/RAP will address the following elements, as relevant:

- Brief description of the project,
- Basic data that describe impacts and persons affected,
- Objective of the ARAP,
- Census survey and baseline socio-economic studies,
- Legal Framework (ESS4 and relevant national legislation),
- Institutional Framework,
- Eligibility (Definition of affected persons and criteria for determining their eligibility for compensation and other resettlement assistance),
- Valuation of and compensation for losses,
- Community participation and consultation,
- ARAP implementation schedule,
- Cost and budget,
- Grievance Redress Mechanism (GRM), and
- Implementation monitoring and reporting arrangement

Preparation of Ethnic Group Engagement Plan (EGEP)

46. For road sections that will result in adverse impacts on ethnic groups and where Ethnic Groups, as per WB ESS7 are present in, or have collective attachment to, an Ethnic Group Engagement Plan (EGEP) including Grievance Redress Mechanism (GRM) in accordance with the Ethnic Group Engagement Framework (EGEF) applied under the project. The EGEP will fully address all requirements under ESS7 described in the EGEF to mitigate unavoidable adverse impacts on ethnic groups. The Grievance Redress Mechanism (GRM) for the project may need to be adjusted taking into consideration the needs of ethnic groups, and accessibility for ethnic groups to submit feedback or grievances. Whenever feasible, locally appropriate GRMs shall be built upon. Also, whenever feasible, the GRM shall include traditional grievance or conflict resolution systems.
47. If impacts related to one or more of the circumstances requiring Free Prior and Informed Consent (FPIC) in line with ESS7 are required, then FPIC will be used for engagement, in the undertaking of assessments, and informing frameworks and plans.
48. There is a need to ensure that ethnic groups are not excluded from any benefits and that there is equity in the benefits, especially from other capacity building activities. Special attention to the needs of ethnic groups when engaging them will be needed, including ensuring translation into relevant languages during consultations of key issues and measures. Ethnic group interpreters will be used to address the language barrier to avoid misunderstandings and enhance cooperation and support full participation in activities. Therefore, at least one Ethnic Group interpreter will be used in each consultation and communication with Ethnic Group villages, regardless of where the village is located, to ensure that all villagers, especially the elderly and children, who often do not speak Lao fluently, are able to fully understand information provided by the project. Also, since ethnic languages may not be written, communication materials will need to take this into account and adapt so that messages can still reach Ethnic Groups.
49. An Ethnic Group Engagement Plan (EGEP) would include the following elements, as needed:
    - A summary of the Social Assessment;
    - A summary of the legal and institutional framework applicable to ethnic groups in the project;
    - A summary of the relevant portions of the SEP applicable to the project subcomponent where ethnic groups were found, including the analysis of stakeholders, consultations and disclosure;
    - A summary of the framework for meaningful consultation and, if applicable, Free, Prior and Informed Consent (FPIC) with the affected ethnic groups during project implementation;

    - A detailed description of culturally appropriate measures to mitigate any adverse impacts, as well as culturally appropriate and sustainable development benefits. Note that impacts refer not only to

physical, but also cultural impacts on Ethnic Groups. Impacts and benefits should be closely consulted with ethnic groups and be intergenerational and gender-sensitive.

- Institutional arrangements, with a clear description of responsibilities and accountabilities. This should include measures to strengthen the capacity of local and national authorities, as needed, as well as the involvement of NGOs or CSOs as necessary;
- The Grievance Mechanism established for the project needs to be adapted and/or changed as necessary to ensure it is culturally appropriate and accessible to affected ethnic groups, and takes into account the availability of judicial recourse and customary dispute settlement mechanisms among the ethnic groups. This should be done in consultation with ethnic groups;
- The cost estimates and financing plan for the EGEP implementation;
- Mechanisms and benchmarks appropriate for monitoring, evaluation, and reporting on the implementation of the EGEP. Monitoring arrangements should include the following tasks: (i) administrative monitoring to ensure that implementation is on schedule and problems are dealt with on a timely basis; (ii) socio-economic monitoring during and after EGEP implementation, utilizing the baseline information established by the socio-economic survey (from the SA) of ethnic groups undertaken to ensure that impacts on ethnic groups are mitigated and benefits reach ethnic groups; and (iii) overall monitoring.

Preparation of Initial Environmental Examination Reports (IEEs)

50. **IEE and ESMMP Reports For PONRE/GoL:** the Consultant shall prepare and submit an an Initial Environmental Examination (IEE) report and its ESMMP to PONRE for clearance and ECC issuance in compliance with the Decree on Environmental Impact Assessment issued in October 2022 (No. 389/GoL, dated 20/10/2022) and and the new Decision on the List of Projects and Activities Triggered IEE and EIA (No. 0358/MONRE) was issued in February 2023.

Task-5: Economic & Financial Analysis

Economic Analysis

51. The Consultant shall review and update the preliminary economic analysis for Project roads (refer para 35) to confirm economic viability of the project. The analysis will cover all the key aspects of economic analysis including demand assessment, alternative analysis, least cost analysis, benefit cost analysis, sensitivity and risk analysis, and sustainability and fiscal impact analysis.

52. The Consultant will conduct greenhouse gas (GHG) emission accounting for the project, including (i) gross emissions over the economic lifetime; (ii) net emissions over the economic lifetime, and (ii) annual net emissions, using the World Bank's GHG Accounting Methodologies for Transport Sector 2018, or other reliable methodologies. The GHG accounting calculates emissions associated with usage of project road only. GHG emissions from construction of road and production and transport of construction materials are not included.

53. Along with the GHG accounting, the consultant will apply a shadow price of carbon in the economic analysis using discount rates specified in the World Bank's Guidance Note on Shadow Price of Carbon 2017. The result should be included in the GHG calculation sheet, and clearly shows the impact of shadow price of carbon to the project's ERR and NPV under different discount rate.

54. The economic analysis shall evaluate using HDM-4 or a similar model. The Consultant shall quantify the benefits using shadow prices for each selected improvement option for every road, including time savings from improved road conditions, road maintenance savings, savings due to improved road safety conditions (from iRAP or similar analysis) and climate resilience, and others as appropriate.

55. To assess economic benefits, vehicle operating costs (VOC) for cars, buses, trucks, and other vehicles (e.g., motorcycles), and road users' time costs for non-motorized traffic, passengers and goods in transit will be worked out in economic terms for vehicle mix and user groups under different traffic flow conditions for "without" and "with" the project situations. The VOC model will be run for alternate traffic scenarios for each homogenous road segment. The model will provide total VOC benefits under “without”, and "with improved facility" scenarios. The Consultants will also consider estimated changes in congestion level and the committed plans for improvement of other links of the existing road network in the region.

56. Life-cycle costs for the road infrastructure, inclusive of environmental mitigation measures shall be calculated. As far as possible, all identifiable external costs (such as air and water pollution, carbon emissions and other environmental hazards) shall be considered in project economic analysis as part of project costs. This shall include initial construction costs together with maintenance and rehabilitation costs for the analysis period. The cost of land acquisition shall be included in the economic cost of the project based on the most likely use of the land if it were not used for the project. The full costs associated with any resettlement, shall be included in the economic analysis.

57. The total project cost, estimated in financial terms at perceived market prices, shall be converted into economic cost to reflect the resource cost to the national economy. All costs incurred to implement the actions included under Economic Benefits (see previous section) should be considered. The financial cost of the project will be distributed among major cost components, and for each component foreign exchange requirements, if any, will be assessed. The indigenous cost component of machinery, equipment and materials will be expressed either in terms of their border price equivalent or net of taxes and duties. Expected social and environmental costs should be included as part of the project cost.

58. The economic analysis will be based on economic internal rate of return (EIRR) and Net Present Value (NPV) using cost benefit approach consistent with the approach of the Client. The annual streams of project benefits and costs computed for 20 years (or more) including the construction period would be used in this analysis. Determine the extent to which the benefits from improvements to the Project roads will be passed on to end users for different road user groups. The economic analysis will assess the total life cycle costs.

59. The analysis must identify risks and undertake a risk and sensitivity analysis of the EIRR in a manner consistent with country and WB guidelines and policies. Sensitivity analysis shall be carried out by varying project costs and benefits and different gestation period in the following manner:

- Case I: Increase in projected costs by 10% and 20%
- Case II: Decrease in benefits by 10% and 20%
- Case III: Combination of Cases I and II

60. The Consultant shall propose a benefit monitoring framework for the ensuing project along with the safeguards’ specialists, in accordance with the WB and Government requirements. The Consultant shall provide advice and inputs to enable the WB to understand the broader socio-economic impact of the project. Analysis shall be performed, and options formulated for maximization of inclusive growth. The Consultant shall assess the economic benefits likely to arise from: (i) the efficiency gain from the improvement of listed Project roads under Appendix A; and (ii) wider economic benefit from improved connectivity.

61. Quantify in monetary value the wider economic benefits from improved connectivity. The factors considered shall include but not necessarily be limited to improved connectivity to agriculture, tourism, logistics, and foreign direct investment along the CDO-Davao-General Santos corridor, and in terms of savings in road user costs comprising the cost of vehicle operation on different routes/modes, value of travel time, and accident losses.

Financial Analysis

62. The Consultant shall develop a financial model for the OPBRC/HPBRC to enable the WB and Client to understand the relationship between:

- the amount of WB and Government financing required during the improvement and rehabilitation (or construction) phase; and
- the ongoing fiscal impact to the Government resulting from contractual monthly payments to the Contractor during the operation and maintenance (O&M) phase of the contract.
- Advantages and disadvantages of using OPBRC contracts vis-à-vis traditional Item Rate contracts will be highlighted

63. Following consultations with the WB and Client, the Consultant shall propose an optimal duration of contract for OPBRC/HPBRC, balance between the amount of payment available for the initial improvement works and payment for ongoing maintenance services. The amount deferred from the initial improvement works phase to the O&M phase should not exceed the expected profit on the initial improvement works, such that the profit on the improvement works is tied to the long-term quality of their maintenance services.

64. The financial analysis shall be carried out separately for each project road, and options shall be presented in respect of bidding as single or multiple contracts. Option of clubbing a few nearby roads and packaging it as a single area wide OPBRC/HPBRC should also be evaluated so that such contracts can be piloted in one or two districts.

Task-6: Preparation and Submission of Final Report and Timeline

65. The Consultant shall document the analysis, findings, detailed designs, estimates etc. of the Tasks 2 to 5 in a Detailed Project Report (DPR) incorporating the field survey results, technical options analysis including E&S assessments, detailed designs with working drawing for road sections and bridges, cost estimates, economic and financial assessments. The DPR shall explain the adopted methodology, assumptions, criteria, analytical models, and analysis. This shall initially be provided to the Client as a draft. The Client shall review and provide feedback to the Consultant on any amendments required prior to finalization of the report. This draft report shall be submitted before the end of 8th month from the start of assignment. After incorporating the comments of Client and WB the final report shall be submitted within a month of receiving comments.

66. *Conceptual & Detailed Design Drawings:* For every structure, drawings will be prepared showing inter alia general arrangements, setting out details, bore log information, protection arrangements and general notes. The roads and bridges drawings are expected to include the following:

- Key plan (to suitable scale),
- Roadway plans (1:2,500 scale) and longitudinal sections at scales of 1:2,500 horizontal and 1:250 vertical showing the improvements proposed,
- Typical Cross-sections with details of pavement structures,
- Cross-section details showing pavement corrections, including super-elevation where required and pavement design,
- Roadside drainage,
- Detailed working drawings for bridges and structures,
- Details of drainage structures, culverts, and bridges (to appropriate scale),
- Drawings of road signs, markings, and other facilities,
- Details of repairs of existing structures,
- Miscellaneous details, e.g., guard-rails, general road features,
- Roadside amenities like bus stops, parking bays, market platforms, e-mobility solutions etc.

67. Schematic diagrams shall include:

- Widening scheme,
- Location of median, intersection, interchanges, bypasses etc.,
- Location of service roads, if any,
- Location of parking areas, weighing stations, petrol pumps bus bays, rest areas etc.

68. *Contract Documentation and Cost Estimates:* Unit rate data shall be obtained from recent similar road construction contracts, supplemented by data on cost determination from more basic inputs, market rates including equipment hire rates and labor material costs. Total kilometer costs would first be determined for the range of treatments and then applied to the homogeneous sections. Spreadsheet programs will assist for early determination of the treatment and section costs. Following consultations with the Client, the BOQ and bidding documents shall be prepared. The contract documentation to be delivered shall be suitable for the invitation of domestic and international bids (RFB).

69. The contract cost shall also include the costs for actions necessary to ensure full compliance with the environment and social requirements to mitigate potential negative impacts during construction according to the Environment, Social, Health, and Safety (ESHS) requirements to be described in the bidding and contract documents. The ESHS requirements will be prepared in accordance with the ES documents/instruments of the project approved by the WB and/or GoL. The quantities and rates for various items of work shall be calculated as precisely as possible to keep the variation in final cost estimates within the range of variation by +/- 10%.

70. Other costs to be estimated by the Consultant include mobilization, engineering, mitigation cost for adverse environmental impact due to the project, cost towards social impact mitigation, social rehabilitation & resettlement cost, utility relocation costs, and land acquisition/compensation costs.

71. Before preparing the Procurement documents, the consultant will prepare the procurement plan for this component based on the procurement methods to be used, in line with the standard WB procurement guidelines.

72. The bidding documents for each construction lot/package, including the project Detail Design, shall be delivered as part of the Final Report. Prepare request for bids (RFB)/request for proposal (RFP) for international competitive selection of the OPBRC Contractor(s)/national competitive selection of HPBRC Contractor(s). This will include, but not limited to: Instructions to Bidders, Conditions of Contract, Bill of Quantities (BoQ), Specifications for the Improvement/Rehabilitation Works (i.e., construction phase), Key Performance Indicators (KPI) for the operation and maintenance (O&M) phase, and technical documentation (e.g., drawings, specifications). For contract packages for which traditional Item-rate contracts are chosen as the preferred mode required documentation based on the WB models agreed with Client shall be followed.

73. The Consultant shall base the RFB on the latest version of the World Bank standard procurement document "Request for Bids – Works – Roads (Output- and Performance Based Road Contracts), using the option "Without Prequalification.". Key requirements are as follows:

- Submit bidding documents to the Client and World Bank for review.
- After receipt of comments from the Client and World Bank, prepare the final version of the documents in the required number of copies and provide soft copies of all documents, suitably documented.
- Use the BOQ to produce base costs for the capital investments of the project, that is, engineering estimated CAPEX.
- Undertake an estimate on the proportions of the project's base capital costs in terms of (i) foreign exchange cost (including direct and indirect foreign exchange costs), (ii) local currency cost, and (iii) taxes. Calculations are to be spreadsheet or similar software based.

- Similarly, undertake an estimate of the O&M costs, that is, engineering estimated OPEX. In principle, both CAPEX and OPEX would depend on the Key Performance Indicators selected and deemed appropriate for low volume rural and district roads. The stricter the KPI are, the higher OPEX and/or CAPEX would tend to be.
- Based on the complexity of the works, it is anticipated that the rehabilitation works will be undertaken in a period of 1-2 years (or maximum of 3 years if the contract has major bridge construction), while the O&M period would be 4-5 years. In either case, it is anticipated that the total life of each OPBRC/HPBRC contract would be 5-8 years.
- The Consultants shall consider, for preparation of the bidding documents and draft contract, features proposed for the project roads that are given in Annex 1.
- After discussion with Client and World Bank, make suitable allowance for physical and price contingencies, and produce final engineering estimates for the CAPEX and OPEX. These are to be presented in the form of the final Bill of Quantities for the capital investment cost of every contract, as well as annual amounts of OPEX during the O&M period and are to be supported by a report detailing all calculations, to be delivered in both hard and soft versions.

Task-7: Preparation of RFP/ToRs for follow-on Services

74. Based on the Works contract management framework agreed with Client and any other Services that may be deemed necessary for effective implementation of the project, resulting from discussions and agreement with the Client and WB, the Consultant will prepare the ToR and RFP documents for the services. This will enable the client to be able to invite proposals etc. for supervision/monitoring and audit services plus any other road safety, educational and stakeholder consultation services.

D. REQUIRED EXPERTISE

75. The Consultant is expected to be a firm or an association of consulting firms with the appropriate capabilities and experience to execute the services. For this purpose, the Consultants are required to demonstrate availability of qualified international and national staff to carry out the assignment in Lao PDR. Consultants are strongly encouraged to create JVs or sub-consultancy arrangements in this context.

76. The following requirements shall apply to the firms to qualify for the assignment:

Criterion 1: Over 10 years of proven experience in carrying out and preparing feasibility studies, environmental and social assessments, and design for road construction/rehabilitation projects.
Criterion 2: Over 5 years of such experience should be in rural/low volume roads sector. Such international I experience of at least 5 years especially in South/ South East Asia is a strong asset.
Criterion 3: Minimum 3 contracts carried out in the past 10 years, performing feasibility studies and conceptual and detailed designs for a country's road sector of comparable value, scope and nature.
Criterion 4: Experience of feasibility studies and design under OPBRC, HPBRC, OPRC, DBMOT, DBFOT, PBMC or similar arrangement, successfully completed in the capacity of Lead Consultant (i.e. individually or as lead member of Joint Venture) is an asset.
Criterion 5: Minimum 3 contracts of similar nature performed in the past 10 years for preparation of ESA for national road construction, rehabilitation and maintenance and working on WB/ADB or any other internationally financed projects.

77. The Consultant shall propose a project team consistent with the services required. It is anticipated that the following key experts will be required:

1. Team Leader/Highway Engineer (with international experience)
2. Transport Economist
3. Structural/Bridge Engineer

4. Pavement/Materials Engineer
5. Hydrological Modeler
6. Geological Specialist
7. Senior Quantity Surveyor/Procurement Specialist
8. Traffic Engineer/Transport Planner
9. ESA Lead Specialist (with international experience)
10. Environmental Specialist (ES)
11. Social/Ethnic Group Specialist (SS).
12. Biodiversity Specialist (BS)
13. Occupational, Health, and Safety Specialist (OHSS)
14. Road Safety Engineer

78. Further to the Key Experts identified and listed above, it is expected that both the technical as well as the ESA tasks shall be carried out by a qualified team of additional non-key-experts, including surveyors, roads designers, CAD-draughtsman, traffic and socio-economic survey team, social specialists on resettlement, labor, ethnic groups, stakeholder engagement, possibly community health and safety, environmental experts, and others. The Consultant shall use his own estimate and judgement to propose a project team consistent with the services required.

Staff Qualifications

79. **Team Leader/Highway Engineer**

TL/HE Will function as Team Leader and will be responsible for the entire project preparation activities including timely completion. The expert will undertake frequent project site visits and shall guide, supervise, co-ordinate and monitor the work of other experts. He will the main contact point for the Clients as well as the WB team for this assignment. The TL/HE will be responsible for the engineering studies and topographical surveys with a supporting team.

Qualification Criteria:

- a senior highway engineer with a degree in transport/highway engineering
- minimum 20 years' international relevant work experience,
- at least 8 years in the feasibility study and design of roads using modern best practices and work experience in projects funded by international financing institutions,
- experience with performance-based contracts, such as OPBRC/HPBRC and climate resilient assessment.
- experience in carrying out geometric design of roads, as well as in reviewing such designs.
- proven record as Team Leader for preparation and implementation of road projects or as project manager for at least 4 years and must have done at least one project of similar nature for rural roads.
- familiarity with government and foreign aid project operations.
- knowledge of spoken and written English; knowledge of Lao language is an asset.

80. **Transport Economist**

Qualification Criteria:

- a senior transport economist with a degree in transport/highway engineering
- minimum 15 years' experience,
- at least 8 years in the feasibility study of roads using modern best practices and work experience in projects funded by international financing institutions.
- experience and proven record as transport economist in at least one similar road project in the last 4 years.
- familiarity with government and foreign aid project operations.

- Knowledge of spoken and written English; knowledge of Lao language is an asset.

81. **Structural/Bridge Engineer**

Qualification Criteria:

- a degree or equivalent in structural/bridge engineering,
- minimum 15 years' experience out of which at least 10 years on design, construction, evaluation of bridges and structures in south/south-east Asian countries and have experience incorporate climate resilient in bridge and structure design
- knowledge of internationally accepted design codes & methodologies and familiarity with international 'best practices' is essential.
- experience in designing and implementing bridge rehabilitation is required.
- experience of planning & monitoring geotechnical and hydraulic investigations for bridges and interpreting the findings thereof.
- knowledge of spoken and written English; familiarity with government and foreign aid project operations; knowledge of Lao language is an asset.

82. **Materials/Pavement Engineer**

Qualification Criteria:

- graduate in civil engineering or science
- at least 10 years professional engineering experience including 5 years in supervising testing and evaluation of highway construction materials used in modern highway construction techniques.
- thoroughly familiar with all the standard laboratory testing procedures adopted in case of highway projects. Better qualification and experience on above line will be considered for higher rating in evaluation.
- at least 5 years of experience in designing road pavements for similar roads – bituminous and concrete.
- knowledge of spoken and written English; knowledge of Lao language is an asset.

83. **Hydrological Modeler**

Qualification Criteria:

- a degree in civil/hydrological engineering or equivalent,
- at least 8 years' experience in road projects (or similar) out of which at least 4 years on design and/or evaluation of drainage facilities, including bridges, leading to a climate resilient road.
- experience with flood/hydrological modeling, climate impact assessments;
- knowledge and practice of numerical representations of conducting analyses of historical flood; bridge waterway and other parameters for scouring etc., review of regional natural and man-made hydrological aspects that can lead to flooding events;
- experience with numerical modeling and computer programming.
- familiarity with government and foreign aid project operations.
- knowledge of spoken and written English; knowledge of Lao language is an asset.

84. **Geological Specialist**

Qualification Criteria:

- a degree in civil / geological engineering or equivalent,
- at least 8 years' experience in road projects (or similar) out of which at least 4 years on design and/or evaluation of erosion protection, including bio-engineering erosion protection design, leading to a climate resilient road.
- experience with land slide/ geological aspect study, climate impact assessments;

- knowledge and practice of geology conducting analyses of risky of land slide and other parameters for geology erosion and source of issues etc., review of regional natural and man-made geological aspects that can lead to land slide events;
- experience with soil mechanic modeling and computer programming.
- familiarity with government and foreign aid project operations.
- knowledge of spoken and written English; knowledge of Lao language is an asset.

85. **Senior Quantity Surveyor/Procurement Specialist**

Qualification Criteria:

- a degree in engineering
- minimum 15 years of experience of which 5 years on procurement of works and quantity surveying.
- at least 2 years' experience on highway projects funded by international lending agencies.
- in-depth knowledge and experience on FIDIC conditions of contract, preparation of bidding documents, bid evaluation and analysis are essential and understand clearly concept of OPBRC.
- familiarity with government and foreign aid project operations.
- knowledge of spoken and written English; knowledge of Lao language is an asset.

86. **Traffic Engineer/Transport Planner**

Qualification Criteria:

- a degree in economics, engineering, transport planning or equivalent,
- at least 10 years' experience in road projects, out of which at least 4 years on road traffic studies, including traffic forecast.
- experience with traffic modeling, counting, Origin and Destination (O-D) and Commodity Movement Surveys, Roadside Interviews (RSIs); Axle Load Survey; Speed/Delay Survey.
- experience with numerical modeling and computer programming and understand of iRAP process
- familiarity with government and foreign aid project operations.
- knowledge of spoken and written English; knowledge of Lao language is an asset.

87. **ESA Lead Specialist (with international experience)**

S/he will lead the ESA and preparation of ES instruments, ESMP, RAP/ARAP, EGEP, GAP, SEP, and LMP, BMP as required. S/he will work closely with ES, SS and *OHSS* to a) design environmental and social risks and impacts assessment process and tools including questionnaires to be used by enumerators for data collection and household interviews, b) ensure adequacy and consistency between environmental and social data as well socio-economic information across ESMP, RAP/ARAP, EGEP, GAP, SEP, LMP, and BMP. S/he will supervise and provide technical guidance for all the consultant team members to ensure the expected outputs are delivered in a timely and satisfactory manner.

Qualification Criteria:

- Master's degree in environmental management, environmental engineering, or other relevant fields,
- 10 years' international experience in conducting ESIA and producing ESIA report and ESMP and other relevant ES documents for infrastructure including transport projects with proven track records,
- Knowledge on the World Bank safeguard policies (OP 4.01, OP 4.12) and new ESF/ESSs and the relevant government legislation would be an advantage,
- Strong spoken and written English proficiency with ability to produce ESIA report and ESMP in English of acceptable quality,
- Ability to plan, conduct and supervise the team and process of conducting ESIA and preparing ESIA and producing ESIA report and ESMP, and other required E&S instruments (with social inputs from Social safeguard consultant to be hired as one of the team members) acceptable to the World Bank or the other donors and development partners with minimal supervision and intervention,
- familiarity with government and foreign aid project operations.

- knowledge of spoken and written English; knowledge of Lao language is an asset.

88. **Environmental Specialist**

This specialist will be responsible for environmental risk assessment and preparation of all E&S documents including ESMP, and other documents related to environmental aspect. S/he shall work closely with the Social Specialist (SS) and the Occupational, Health, and Safety (OHS) specialist (see below).

Qualification Criteria:

- A minimum of bachelor's degree or equivalent in engineering and/or environmental science or in related other disciplines
- minimum 10 years of experience of which 5 years on environmental impact assessment of road (or similar) development projects.
- related experience of at least 2 years in developing countries and/or Lao PDR is essential.
- full knowledge of the World Bank's guidelines, procedures, and operational policies/directives. Experience of working as environmental expert in at least one World Bank funded project is required.
- experience of preparing environmental management plans and supervising & monitoring implementation of the plans, especially those related to mitigation of potential negative impacts during construction of road projects in Lao PDR.
- familiarity with government and foreign aid project operations.
- knowledge of spoken and written English; knowledge of Lao language is an asset.

89. **Social Specialist**

This specialist will be responsible for social risk screening/assessment and preparation of all E&S documents related to social aspects i.e., RAP/ARAP, EGEP, GAP, SEP, and LMP, and other documents related to social aspect. He shall coordinate the work of the social team (experts on resettlement, labor, ethnic groups, stakeholder engagement, and possibly community health and safety) to be engaged by the Consultant and he/she shall work closely with the ES and the OHS specialist.

Qualification Criteria:

- A bachelor's degree or equivalent qualification in social sciences or in related disciplines
- 10 years' experience out of which 5 years' experience of working as social / resettlement / gender / ethnic group expert for road/engineering projects,
- Knowledge of the World Bank's safeguard policy or new ESF/ESSs and experience with the World Bank and ADB financed projects would be an advantage,
- familiarity with government and foreign aid project operations.
- knowledge of spoken and written English; knowledge of Lao language is an asset.

90. Biodiversity Specialist

This specialist will be responsible for biodiversity risk assessment and preparation of Biodiversity Management Plan (BMP).

Qualification Criteria:

- A minimum of bachelor's degree or equivalent in forestry/biodiversity management or environmental science or in related other disciplines
- minimum 10 years of experience of which 5 years on environmental impact assessment of road (or similar) development projects.
- Related experience of at least 2 years in developing countries and/or Lao PDR is essential.
- full knowledge of the World Bank's guidelines, procedures, and operational policies/directives. Experience of working as environmental expert in at least one World Bank funded project is required.

- experience of preparing environmental management plans and supervising & monitoring implementation of the plans, especially those related to mitigation of potential negative impacts during construction of road projects in Lao PDR.
- familiarity with government and foreign aid project operations.
- knowledge of spoken and written English; knowledge of Lao language is an asset.

91. **Occupational, Health, and Safety Specialist**

This specialist will be responsible for providing inputs during the preparation of all E&S documents related to OHS especially those related to workers and local communities during construction of project roads and other associated facilities (i.e., ESMP (and C-ESMP), and LMP and he/she shall work closely with the EMS and the SIS.

Qualification Criteria:

- A degree or equivalent qualification in engineering and/or OHS related disciplines
- minimum 10 years' experience out of which 5 years' experience of working as an OHS expert for road/engineering projects.
- knowledge of the World Bank's related guidelines and operational directives and must have worked as an OHS expert on at least one World Bank funded project.
- at least 2 years working experience in developing countries and/or Lao PDR is essential.
- experience of preparing a cost-effective OHS plan, especially those related to mitigation measures of potential negative impacts during construction of road projects in Lao PDR.
- knowledge and experience on health and safety aspects of local communities will be highly advantaged.
- familiarity with government and foreign aid project operations.
- knowledge of spoken and written English; knowledge of Lao language is an asset.

92. **Supporting team**:

A team of specialists on alignment surveying, structural and road designing, geotechnical investigations, traffic enumeration, CADD, resettlement, labor, gender, ethnic groups, stakeholder engagement, GIS, community health and safety, field data collection collector and enumerators and outreach personnel. Women from ethnic groups are strongly encouraged to join the consultant team.

E. DURATION OF SERVICES

93. The duration of services is expected to be 8 calendar months.

F. REPORTS/DELIVERABLES

94. The Consultant shall submit to the DOR and PTRI/EDPD the following reports in ten copies plus electronic files:

(a) Inception Report, presenting initial findings and detailed planning of all activities and outputs, due within 30 days from commencement.

(b) Monthly Progress Briefs, due within the fifth day of each calendar month, in electronic files only,

(c) A Data Collection report, Climate Resilience Assessment report, Road Safety Assessment Report, including all the results of the field data collection, within 5 months of commencement,

(d) A Prioritization and Options Report, including all the data collected on the access roads to the railway Corridor and recommending selected roads for conceptual design, within 4 months of commencement,

(e) The various outputs & reports from Task-4 which would be reports encapsulating the finding of the detailed environmental and social studies which have been highlighted, within 7 months of commencement, with due consideration of the findings of the environment and social studies,

(h) A Draft Final Report, due upon completion of all the studies and assessments, including, inter alia, detailed designs & drawings, cost estimates, economic and financial analyses, and bidding documents

within 8 months of commencement. This includes those related to the E&S documents as described as described in Tasks 4 & 6 that incorporate results from stakeholder consultations,

(i) A Final Report, within one month of receipt of comments from Client and World Bank. This also includes the final bidding and contract documents for the agreed contract packages,

(j) Environmental Compliance Certificate (ECC). An Environmental Compliance Certificate (ECC) will be issued by PONRE to approve the final IEE reports. The Consultant shall prepare and submit an IEE reports to PONRE for review and approval in compliance with The Decree on Environmental Impact Assessment No. 21/PMO of 31 January 2019.

(k) ToR and RFP documents for any follow-on services as detailed in Task-7 as and when required during the duration of the Consultant services.

G. TENTATIVE SCHEDULE OF PAYMENTS

95. Payments to the Consultant under the assignment will be made according to the following schedule (Please refer to G. Reports):

(a) Upon submission of the Inception Report: 10% of contract amount,

(b) Upon submission of the Prioritization and Options Interim Report: 15% of contract amount,

(c) Upon submission of the Data Collection Report: 20% of contract amount,

(d) Upon submission of reports and E&S instruments under Task-4 (Environmental and Social Studies and Capacity Building): 20% of contract amount

(e) Upon submission of the Draft Final Report and Final Bidding Documents: 10% of contract amount,

(f) Upon submission of the Final Report, Bidding Documents, and issuance of ECC by PONRE: 15% of contract amount,

(g) Submission of follow-on ToR/RFPs: 10% on a pro-rata basis as and approved after submissions.

H. FACILITIES AND EQUIPMENT

96. DOR/MPWT will provide the Consultant with:

(a) All data, reports, etc. available in PROMMS and other district and project and similar roads related information,

(b) Available base mapping, existing road inventories including data on pavement history and condition, traffic data and road accident statistics, geographical maps of all districts including categories of road thereon,

(c) All available traffic count data on projects roads and feeder roads,

(d) Appropriately qualified Client staff for attachment/deputation to the consultant in selected capacities (which are to be determined between the consultant and the DOR during negotiations for these services), as part of the training and skills-transfer strategies for the project,

(e) Office space – of a size to be agreed – (without furniture) will be provided to the consultant free of rent. All charges related to use of energy, telecommunications and water will be borne by the Consultant.

97. The Consultant will be responsible for other services that may be needed, including:

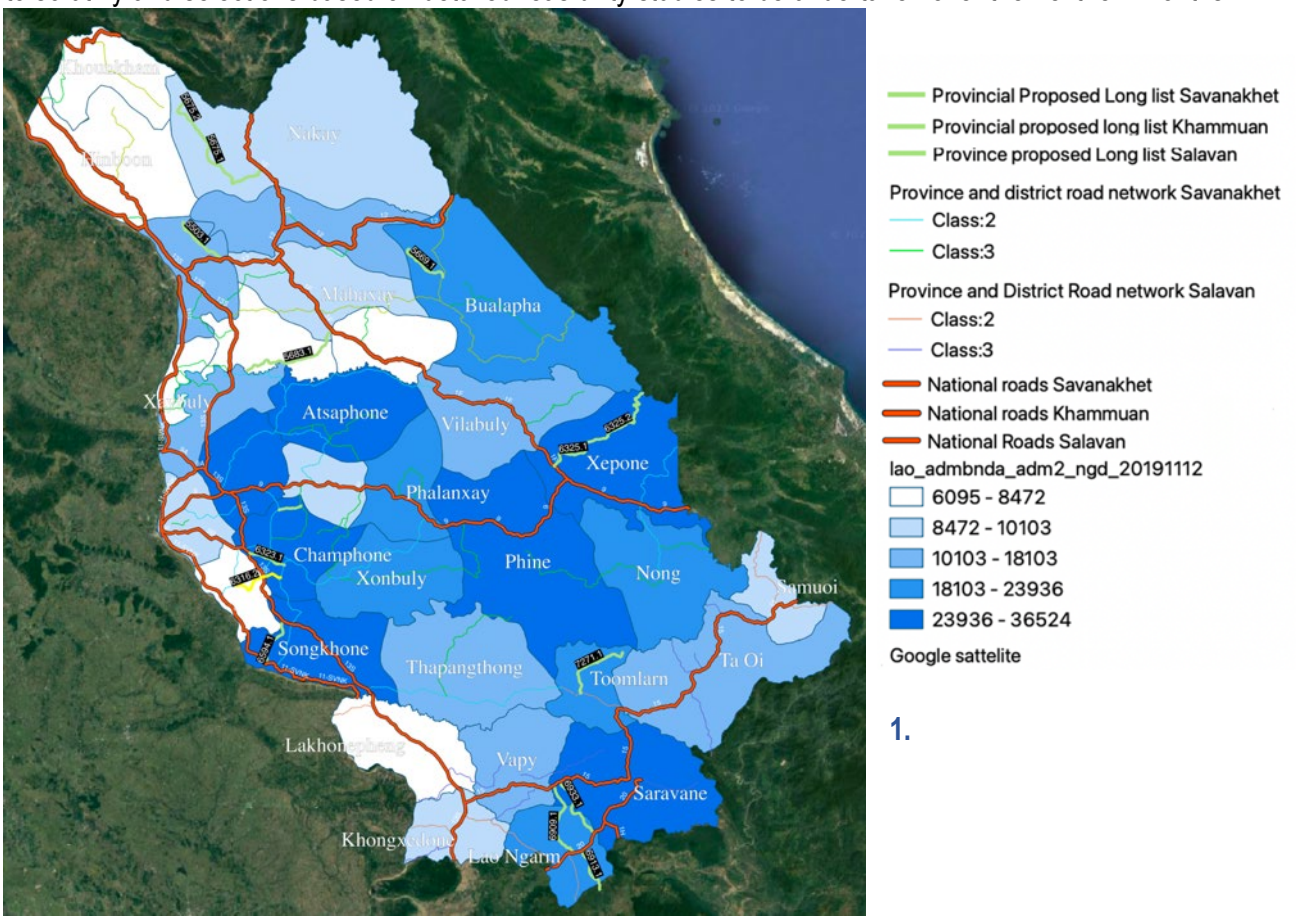
1. Translation of the reports in Lao language,
2. Printing all report and any information required by client,
3. Local transport,
4. National, and international telecommunication,
5. Organizing of the workshops when it is required by Client,
6. Other means required for performing the services.

Annex 1

Proposed Project Roads for Road Improvement and Maintenance

The CRRIP will focus on improvement of some of the District Roads and Rural Roads in poor districts of Khammouane, Savannakhet, and Saravan provinces. The MPWT in consultation with the DPWT of Khammouane, Savannakhet, and Saravan provinces had identified a long list of proposed roads. The roads in this longlist are being subjected to further prioritization exercise based on some aspects which included (i) passing through a poor district – based on poverty head count 2 , (ii) criticality of the link for climate resiliency of the network, (iii)
connectivity to agricultural areas, (iv) road length and population served by the road, (v) traffic level, and (vi) not passing through environmentally sensitive areas.

Roads considered for the Project are district and rural roads and which do not have major environmental and social impacts. The map below indicates the primary selection of roads which however will be further subjected to scrutiny and selections based on detailed feasibility studies to be undertaken over the next few months.



1.

Figure 1 Province proposed selection; Savanakhet Salavan and Khammuan

Savannakhet province

The Savannakhet province is the largest province in Lao PDR both in terms of population (1,004,000 in 2023) and land size (21,774 sq km). It consists of 14 districts, 1025 villages and has a total road network of 5758 km consisting of 765 km of National Roads (NR) , 732 km of Provincial Roads (PR) , 633 km of District roads (DR) , 344 km of Urban roads (UR) , 3272 km of Rural Roads (RR) and 9.3 km of Special roads (SR). The large number of tributaries originating from the province which feed into the Mekong River has required the government to fund 575 bridges with an approximate total length of 15,000m. According to the Department of Public Works and Transport, 30% of the villages do not have year-round accessibility (both wet and dry season). The development plan of the province aims to provide 100% of the villages to have year-round access by 2025.

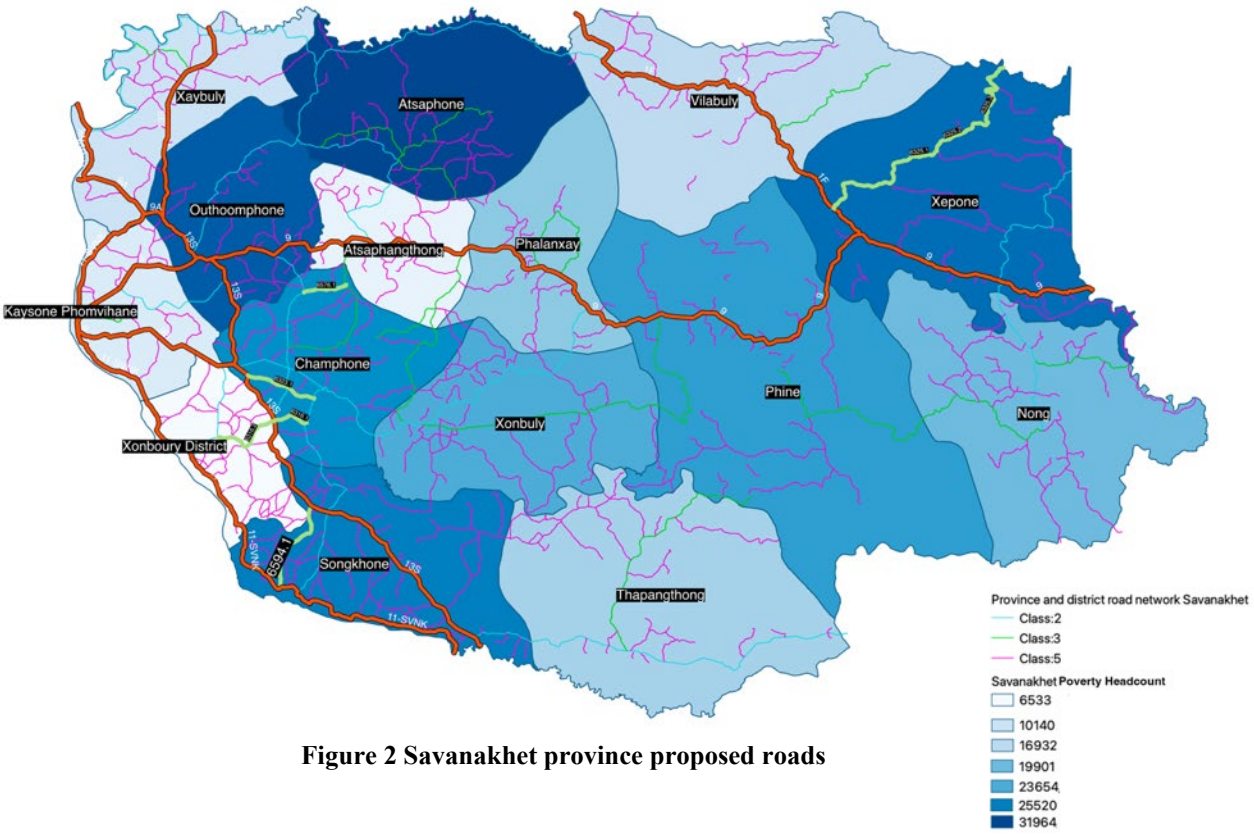


Figure 2 Savanakhet province proposed roads

6316-District Road This gravel has a total length of 21.4 km and is located in the Champhone district (25,077 poverty headcount) of the Savannakhet province. This road consists of 2 sections 6316.1 and 6316.2. 6316.1 serves as a link between Provincial Road (PR) 6309 and National Road (NR) 13S. The road is 4.5-5.5m wide with flat terrain and poor/fair drainage condition. Upon our site visit, the province of Savannakhet had already paved the road. This road services 6 villages with a total population of 8170 (4234 female) living in 1372 households. The data from the Provincial Road Maintenance Management System (PROMMS) indicate that the area around this road has medium agriculture potential and a medium traffic volume (51-150 light vehicles and 5-10 trucks per day).

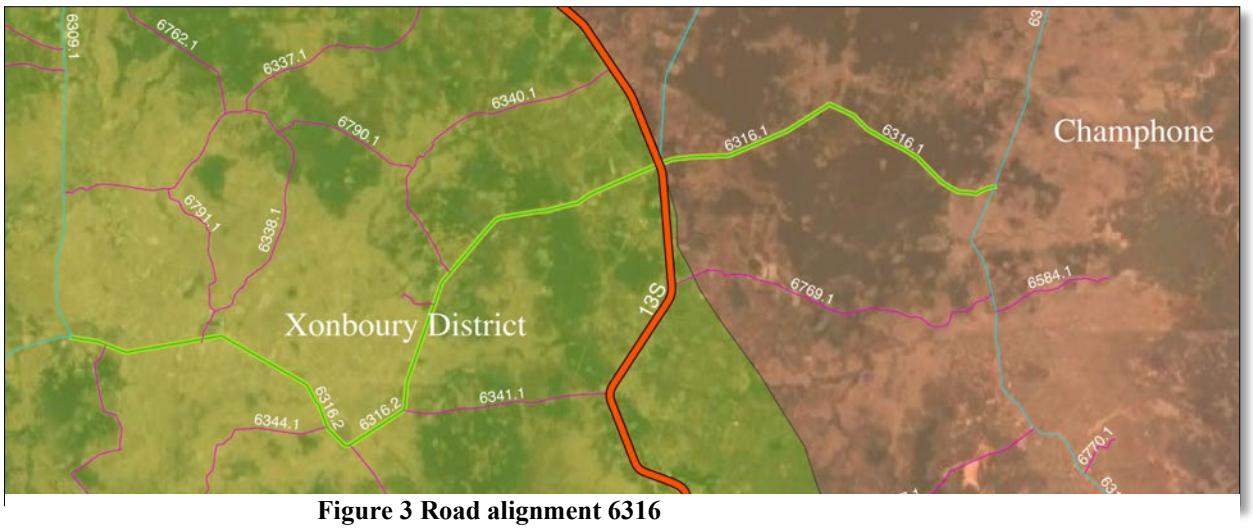


Figure 3 Road alignment 6316

6594

This gravel road has a total length of 19.4 km and is located in the Songkhone District (25,520 poverty headcount) of the Savannakhet province. The road is 4.5-5.5m wide and has drainage in fair condition. The road provides connectivity between 2 national roads, namely NR13S to NR11 in the Savannakhet province. This road serves 4 villages with a total population of 4079 (2123 female) living in 939 households. During the site visit it was observed that the community has provided funds to the local temple to construct some sections of the road (Cement concrete). According to the PROMMS data, the area around this road has medium agriculture potential and light traffic volume (20-50 vehicles and 2-3 trucks per day).

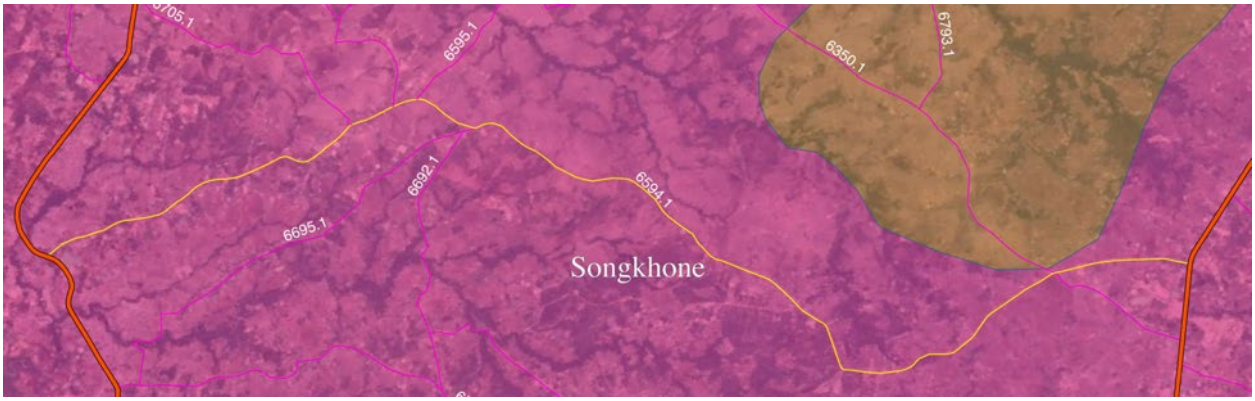


Figure 4 Road alignment 6594

Picture 1 Condition of drainage 6594

Picture 2 Condition of road 6594. Road maintained due to local community providing funds to maintain the road.

Picture 1 Community funded concrete cement pavement

Picture 2 Adjacent areas of road used for agriculture products such as rice.

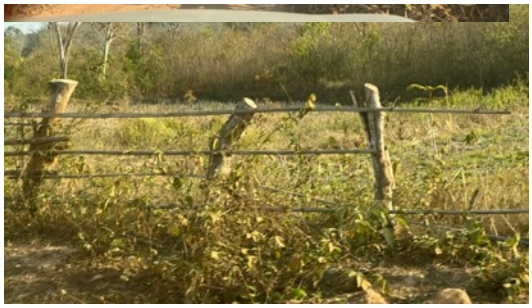
6323- District Road This gravel road has a total length of 14 km and is located in the Champhone district (25,077 poverty headcount). This road services 5 villages with a total population of 8170 (4234 female) living in 1705 households. This road connects PR 6310 to NR 13S while intersecting with the PR 6312. The road is 4.5-5m wide, with 4 bridges and has poor drainage condition. According to the PROMMS data the area around this road has medium agriculture potential and a medium traffic volume (51-150 light vehicles and 5-10 trucks per day).

Figure 5 Road alignment 6323

Picture 5 Road 6323 in bad condition with poor drainage

Picture 6 Steel bridge with a capacity of 8 tons on 6323

Picture 7 Local community exposed to high levels of dust when travelling on this road



Picture 8 Settlements near the roadside, raising concerns for right of way in some sections of the road.

6325- District Road

This gravel road has a total length of 68 km. This road is located in the Xepone district (27,246 poverty headcount) of the Savannakhet province. It is connected to National road 1F and services 6 villages with a total population of 2474 people (1265 female) living in 437 households. The road is 4.5-5m wide with a rolling terrain and poor drainage condition. According to the PROMMS database, the area around the road has medium agriculture

potential and serves light traffic (20-50 vehicles and 2-3 trucks). As per the data provided by the Ministry of Agriculture and Forestry (MAF), the sections 6325.2 and 6325.3 are passing through a conservation area in the Xepone district. As per the data provided, the MPWT needs to confirm this discrepancy with their own data.

Figure 6 Road alignment 6325

6576

This gravel road has a total length of 8.6 km and is located in the Champhone district (25,077 poverty headcount). It connects Rural road 6312 to District road 6318 which is paved. The road services 5 villages with a total population of 7781 (4092 female) living in 1231 households. The road has 4 bridges (1 being only a pedestrian bridge, making that part of the road being inaccessible) with all bridges needing reconstruction. Based on the PROMMS data, the area around the road has medium agriculture potential and serves light traffic (20-50 vehicles and 2-3 trucks per day).

Figure 7 Road alignment 6576

Picture 9 Road 6576 deteriorating due to lack of maintenance, local fauna growing in the road.

Picture 10 Only pedestrian crossing available on major river crossing. Used by

Picture 11 Wood and steel bridge used by community to cross. Carrying capacity

Picture 12 Crossing used by 4W vehicles, inaccessible during wet season.

Saravane Province

The Saravane province has a total population of 410,000 living in 578 villages. The province consists of 8 districts with a total area of 10,691 sq km. The total road network of the province is 3717.27 km long where 535 km are NR, 182.60 km are PR, 311.89 km are DR, 151.20 are UR, 2344 km are RR and 194 km are SR. 54% of the road network has year round access therefore 46% of the road network consisting of 238 roads and 124 villages are only accessible in the dry season (November to April).

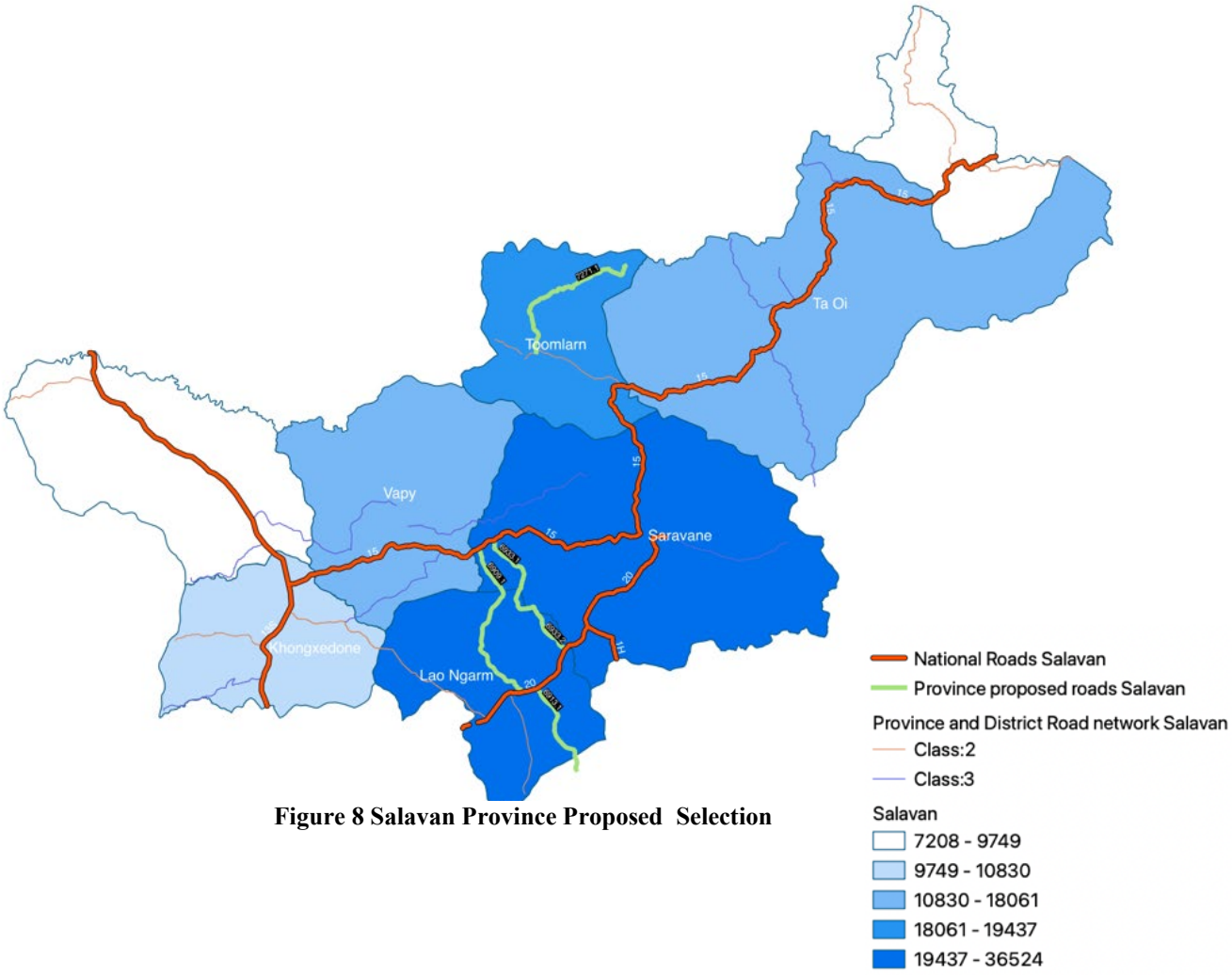


Figure 8 Salavan Province Proposed Selection

6933

This gravel/earth road with the length of 21.88 km is located in the Saravane district (District poverty headcount of 36524) of the Saravne province. The width of the road is 5.5m with poor drainage condition. The local community has settled near the road, thus the road might have Right Of Way (ROW) problems. It connects road number NR15 in the Saravane district to NR20 in the Lao Ngarm district. This road services 7 villages with a total population of 4861 people (2426 female) living in 785 households. The road has 3 bridges out of which 2 are in need of reconstruction. The PROMMS data indicates that the area around this road has high agriculture potential a medium traffic volume (51-150 light vehicles and 5-10 trucks per day).

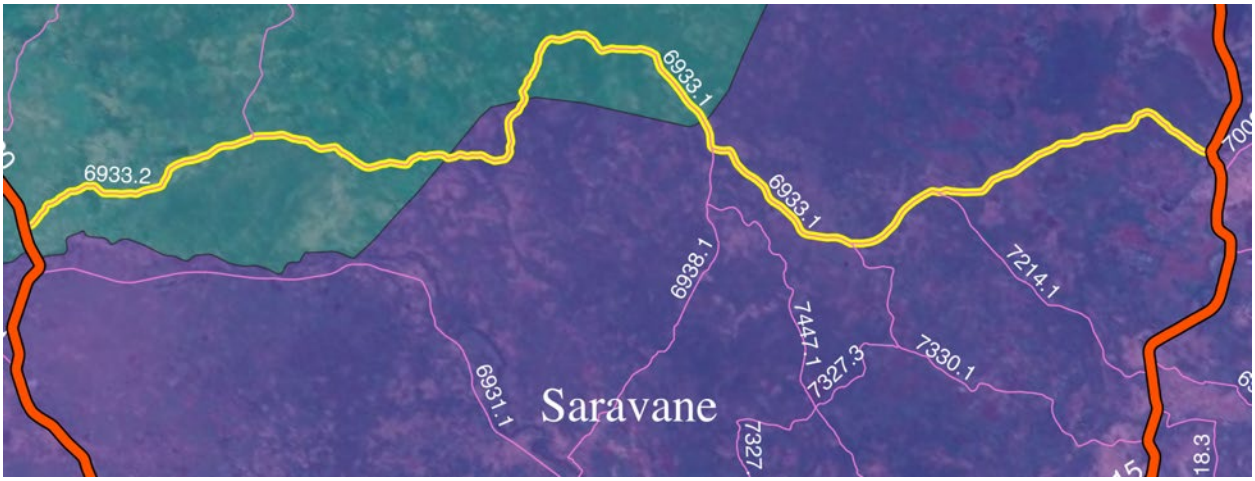


Figure 9 Road alignment 6933

Picture 13 Damage occurring due to local farming practices due to bad condition of drainage

Picture 14 Timber bridge inaccessible by 4W vehicles, adjacent water crossing required

Picture 15 Land occupied by local community past the installed electric poles. Concerns for ROW problems

Picture 16 Deteriorating condition of timber bridges.

6909

This gravel road with the length of 32.4 km is located in the Lao Ngarm district (District poverty headcount 19574) in the Saravane province. It connects NR20 in the Lao Ngarm District to NR15 in Saravane district. The road has a width of 5.5-6m with a rolling terrain type and bad drainage condition. The road has no bridges. This road services 10 villages with a total population of 6741 (3518 female) living in 1080 households. The PROMMS data indicated that the area around this road has medium agriculture potential and medium traffic volume (51-150 light vehicles and 5-10 trucks per day).

Figure 10 Road alignment 6909

Picture 17 Section of road 6909 damaged by rainfall

Picture 18 Ruts created by rainfall damage due to poor condition of drainage

Picture 19 Concrete bridge on 6909

Picture 20 Heavy truck using 6909 to traverse through NR 20 and NR15

6913

This gravel road with a total length of 18.9 km is located in the Saravane district (District poverty headcount of 36524) of the Saravane province. It connects NR 15 in the Lao Ngarm District and provides connectivity to the NR 16 in the Paksong district of the Champassak province. The road is 5.5-6m wide with a rolling terrain and poor drainage condition. The road has no bridges. This road services 7 villages with a total population of 7983 (4011 female) living in 1424 households. The PROMMS data indicates that the area around the road has high agriculture potential and a high traffic volume (151-500 vehicles and 11-100 trucks per day).

Figure 11 Road alignment 6913

Picture 21: Vegetation on the side of the road blocks drainage. Road 6913.

Picture 23 Cassava plantations alongside road 6913

Picture 22 Damage to sections of roads due to heavy rainfall and lack of maintenance. Road 6913

Picture 24 Villagers transporting harvested Cassava to local processing plants to earn income

7271

This earthen road is located in the Toomlarn district (District poverty headcount of 19232) in the Salavan province. It is connected to PR 6958. The total length of this road is 31.5 km. The road is 5.5-6m wide in a rolling and mountainous terrain with poor drainage condition. The road has 7 bridges with one major steel bridge requiring reconstruction. This road services 7 villages with a total population of 4157 (2093 female) living in 505 households. The PROMMS data indicates that the area around this road has medium agriculture potential and has medium traffic volume 51-150 light vehicles and 5-10 trucks per day).

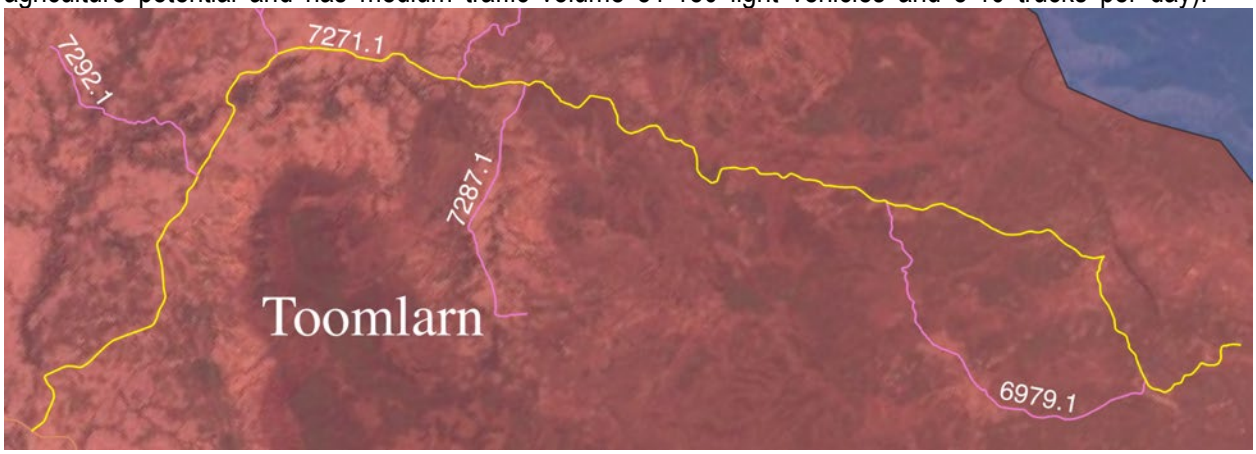


Figure 12 Road alignment 7271

Picture 25 Lack of drainage in several sections of road 7271

Picture 26 Major steel bridge 60m used to cross the river, carrying capacity only 2 tons.

Picture 27 Timber bridge unusable by 4W transport due to heavy damage.

Picture 28 Concrete substructure of the major steel bridge.

Khammouane Province

The Khammouane province has a total population of 397,000 people living in 581 villages. The province consists of 10 districts with a total area of 16,315 sq km and has a total road network of 3844 km with 592 km of NR, 322 km of PR, 379 km of DR, 227 km of UR, 2223 km of RR and 99 km of SR. About 70% of the road network has year-round accessibility therefore 30% of the road network provides accessible during the dry season.

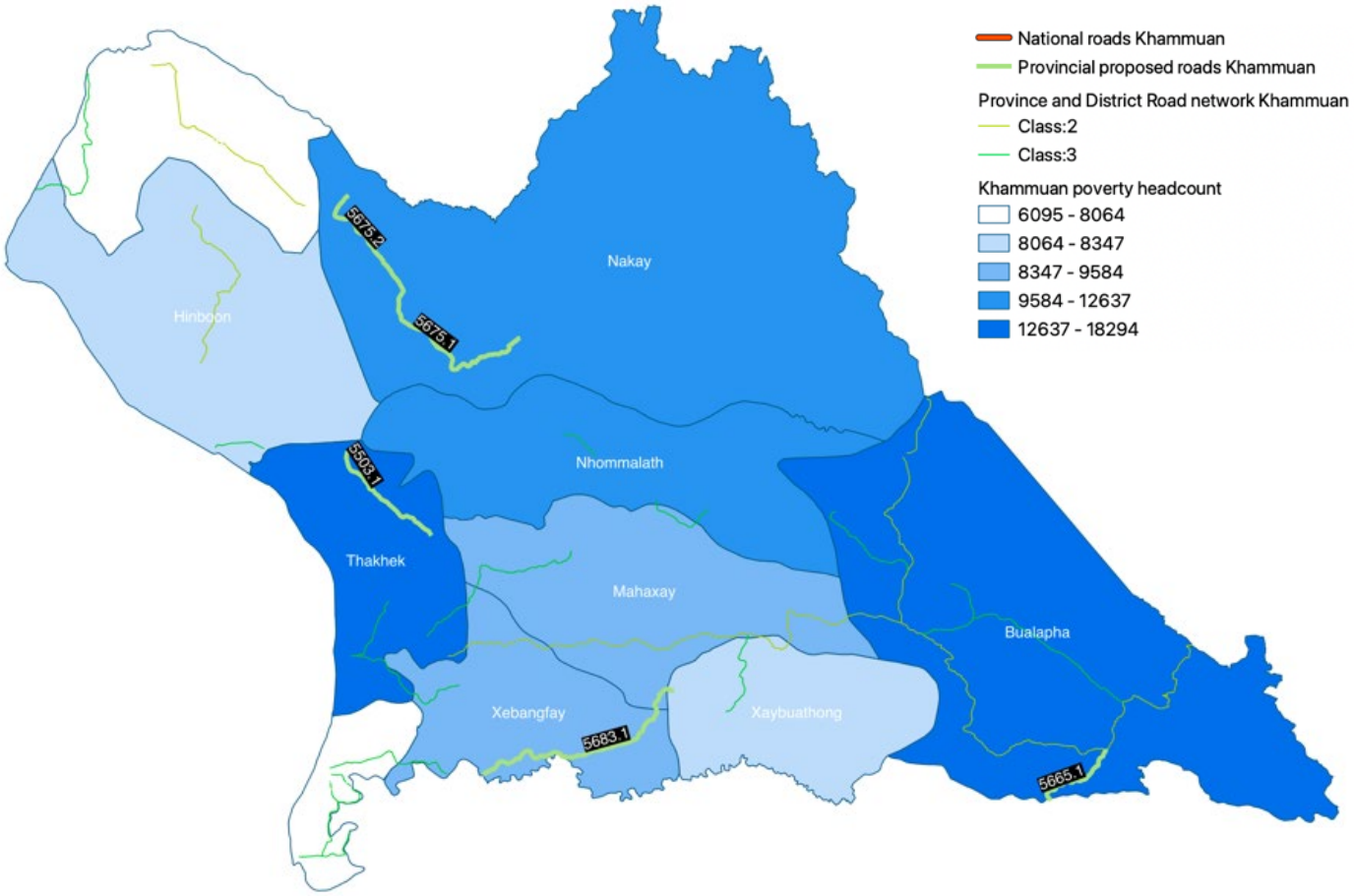


Figure 13 Khammuan province proposed selection

5675

This gravel road with the total length of 60 km is located in the Nakay district (District poverty headcount of 9617) of the Khammouane province. The road is 3.5-4.5m wide with a rolling terrain and poor drainage condition. The road is connected to the National Road 1E and provides access to the Thong Lor caves which are a popular tourist attraction in the district. As per the data provided by the MAF, section 2 of this road passes through a conservation area. However during discussions in the mission, some members of the delegation pointed that the forest in the conservation area has degraded, which needs to be confirmed

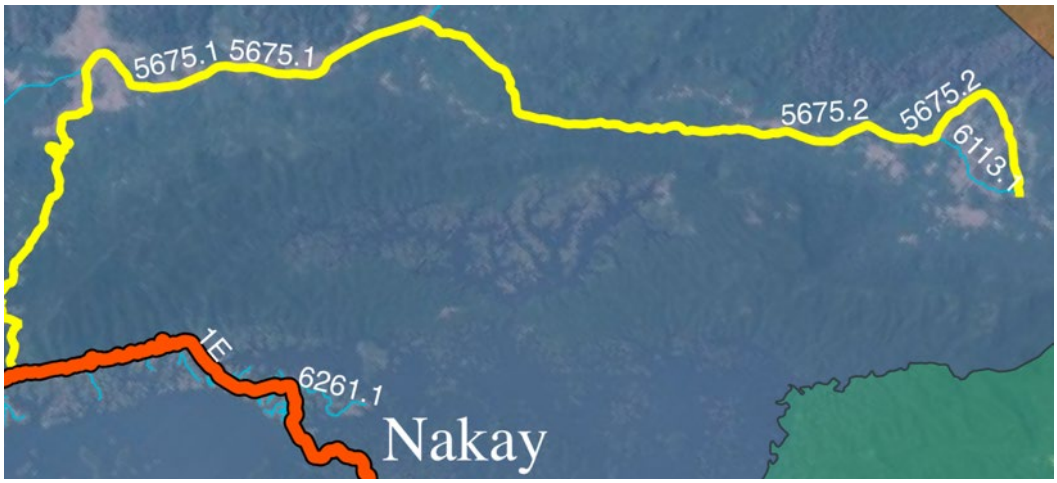
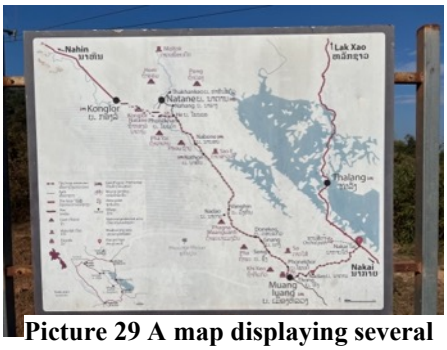


Figure 14 Road alignment 5675

. This road services 10 villages with a total population of 8322 (4290 female) living in 1657 households. The PROMMS data indicates that the area around this road has high agriculture potential.



Picture 29 A map displaying several tourist attraction along road number

Picture 30 A perspective on the depth of the ruts in the first section of 5675

Picture 31 Ruts formed in the first section of 5675 at the mountainous section of the road.

Picture 32 The scale of agriculture in the conservation area of 5675. Satellite image as of 2023.

5503

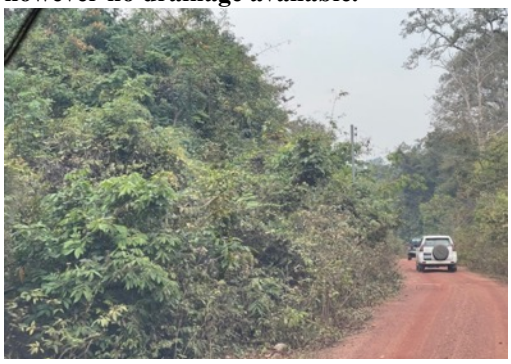
This gravel road with a total length of 24 km is located in the Thakhek district (District poverty headcount of 13,787) of the Khammouane province. The road is 4.5-5.5m wide with poor and bad drainage condition. This road is connected to the National Road 12 and services 6 villages with a total population of 2393 (1276 female) living in 453 households. The road might require construction of 1-2 bridges and a few culverts. Based on the data provided by MAF, some sections of the road pass through conservation area, however members of the delegation pointed that some forest areas around the road have degraded and are used for agriculture. The PROMMS data indicates that the area around this road has high agriculture

potential.

Figure 15 Road alignment 5503

Picture 33 Road 5503 in fair condition however no drainage available.

Picture 34 Bridge required to make this road accessible.



Picture 35 An example of how 5503 is passing through a conservation area.

Picture 36 An example of how rubber plantation is being done by local community in the area around the 5503.

5669

This gravel road with a total length of 20.9 km is located in Bualapha District (District poverty headcount of 18294) of the Khammouane province. The road is 3.5-4.5m wide with a flat terrain and bad drainage condition. The road is connected to District Road 5528 and Rural Road 6157. The government has committed funding for developing Rural Road 6157 which provides connectivity to National Road 12. This road serves 7 villages with a total population of 2533 (1268 female) living in 454 households. The road has 2 major bridges and 6 minor bridges which require construction. The area around the road is vulnerable to floods thus making the area inaccessible during the wet season. According the PROMMS data this road has medium agriculture potential.

Figure 16 Road alignment 5669

'5683

This gravel road has a total length of 49 km and is located in the Xebangfay district (District poverty headcount of 8364) of the Khammouane province. The road is 3.5-4.5m wide with a rolling terrain and bad drainage condition. The road has about 9 bridges including 1 missing bridge and 8 small bridges. This road connects the National Road 13S and National Road 1F in the province and serves 6 villages with a total population of 2361 (1069 female) living in 460 households. The PROMMS data indicates that the area alongside the road has medium agriculture potential.

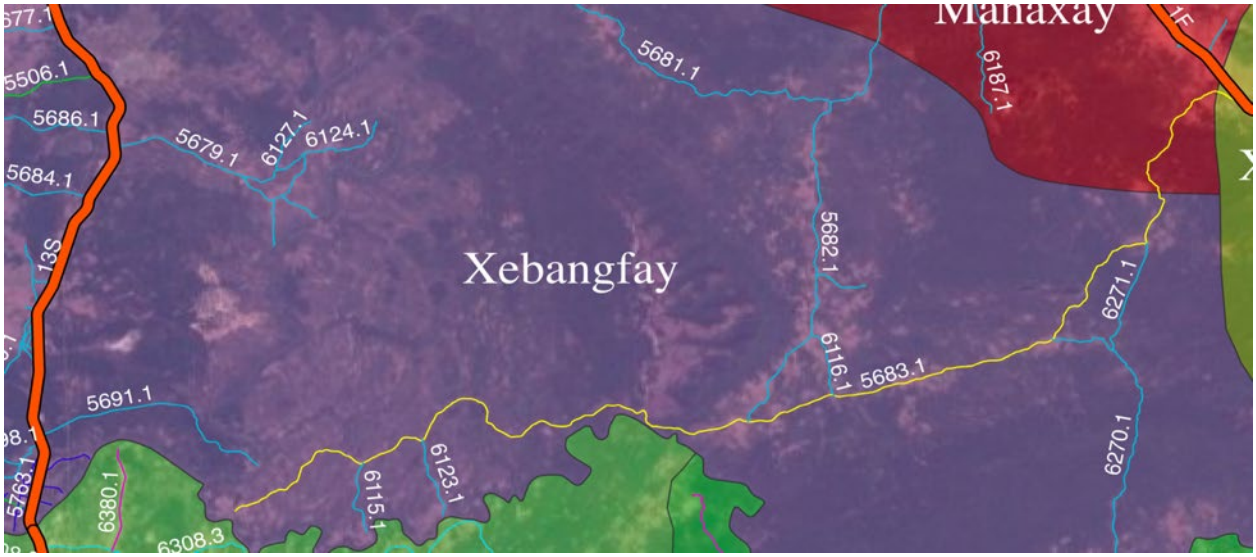


Figure 17 Road alignment 5683

Picture 37 Community built bridges in areas prone to flooding.

Picture 38 The deteriorating condition of timber bridges in road 5683.

Annex 2.

Brief Information on ES Requirements of WB

This Annex provides a brief information regarding environment and social assessment (ESA) taken into account the environment and social (ES) requirement of the World Bank (WB). This information is not exhaustive, and the Consultant is required to review those that are applicable especially those related to the national laws and regulations related to the proposed project in details.

WB's Environment and Social Framework (ESF)[3]

The World Bank's new Environmental and Social Framework (ESF), which was officially endorsed and launched in October 2018, is applied to the proposed project. The ESF objective goes beyond the traditional 'do no harm' approach to maximize development gains. World Bank's Environmental and Social Standards (ESSs) set out the requirements for its clients relating to the identification and assessment of environmental and social risks and impacts associated with projects supported by the Bank through Investment Project Financing. The ESSs are designed to assist World Bank clients to fulfil the Bank's ESS requirements on the identification and management of environmental and social risks. The ESSs are also designed to support WB clients in their goal to reduce poverty and increase prosperity in a sustainable manner for the benefit of the environment and their citizens, especially in (i) achieving good international practice relating to environmental and social sustainability; (ii) fulfilling their national and international environmental and social obligations; (c) enhancing non-discrimination, transparency, participation, accountability and governance; and (d) enhancing the sustainable development outcomes of projects through ongoing stakeholder engagement.

Where applicable, the following 10 ESSs are applied through the project life cycle:

- ESS1: Assessment and Management of Environmental and Social Risks and Impacts
- ESS2: Labour and Working Conditions
- ESS3: Resource Efficiency and Pollution Prevention and Management
- ESS4: Community Health and Safety
- ESS5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement
- ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities
- ESS8: Cultural Heritage
- ESS9: Financial Intermediaries
- ESS10: Stakeholder Engagement and Information Disclosure.

Box A2.1 provides a list of GOL national laws and regulations considered relevant to a WB-funded project. It is also necessary to the proposed project to also recognize the GoL obligations to the regional and global commitment regarding to the climate change and other environment and social aspects.

The WB will classify all projects into one of the 4 E&S risks classification. High Risk, Substantial Risk, Moderate Risk, or Low Risk, taking into account relevant issues, such as the type, locations, sensitivities, and scale of the project; the nature and magnitude of the potential E&S risks and impacts; and the capacity and commitment of the agencies/entities responsible for implementation of the project to manage the E&S risks and impacts consistent with the ESSs. As part of the project legal agreement, the Borrower is required to prepare an Environmental and Social Commitment Plan (ESCP) describing measures and actions required for the project to meet the ESSs over a specific timeframe. The ESCP will form part of the legal agreement. The ESF will also apply to all activities/investment considered as an "Associated Facilities" as defined in the ESF.

[3] https://www.worldbank.org/en/projects-operations/environmental-and-social-framework

For projects involving multiple small subprojects, that are identified, prepared and implemented during the course of the project, the WB will review the adequacy of national environmental and social requirements relevant to the subprojects, and assess the capacity of the Borrower to manage the E&S risks and impacts of subprojects as follows:

- The WB will require the borrower to carry out appropriate E&S assessment of subprojects and prepare and implement such subprojects as follows: (a) *High Risk* subprojects, in accordance with the ESSs; (b) *Substantial Risk, Moderate Risk, and Low Risk* subprojects, in accordance with the national law and any requirements of the ESSs that the WB deems relevant to such subprojects.
- If the WB is not satisfied that adequate capacity exists on the part of the Borrower, all *High Risks* and as appropriate, *Substantial Risk* subprojects will be subjected to prior review and approval by the WB until it is established that adequate capacity exists. If the risk rating of a subproject increases to a higher risk rating, the WB will require the Borrower to apply relevant requirements of these ESSs in a manner agreed with the WB. The measures and actions agreed will be introduced in the ESCP, and will be monitored by the WB.

Box A2.1. Key laws and regulations related to ESF requirement of a WB project[4]

The key laws and regulations are identified as follows is not exhaustive.

- The Law on Environmental Protection, No. 29/NA, dated 18 December 2012;
- The Decree on Environmental Impact Assessment No. 21/PMO of 31 January 2019;
- The Law on Aquatic and Wildlife Animals No. 07/NA, of 24 December 2007 Article 7;
- The Forestry Law No 64/NA of 13 June 2019 Article 7; Ministerial Agreement No 8056/MONRE of 17 December 2013;
- The National Heritage Law No.44/NA dated 24 December 2013;
- The Decree on National Environmental Standards, No. 81/GOL dated 21 February 2017;
- Ministerial Instruction on Hazardous Waste Management No: 0744/MONRE dated 11 February 2015;
- Lao Labour Law, No. 43 NA, 24 December 2013;
- The Decree on Occupational Health and Safety No 22/GOL of 5 February 2019;
- The 1992 ethnic group policy and Article 12 of the Government Decree on Ethnic Groups No. 207/GOL, 2020;
- The Law on Hygiene, Prevention and Health Promotion (Amended 2011);
- The Law on Preventing and Combating Violence Against Women and Children (VAWC), No. 56/NA 2014;
- The Law on the Protection of the Rights and Interests of Children No. 05/NA, 2006;
- The Law on the Development and Protection of Women and Children (2004);
- The Law on Anti-Trafficking in Persons, No. 73/NA of 17 December 2015;
- Lao PDR has adopted the Convention on the Rights of the Child (1989);
- Lao PDR adopted the Convention on the Elimination of All Forms of Discrimination against Women in 1981;
- The Family Law (1990);
- The Ethnic Groups Committee under the National Assembly.

[4] This list is based on the Lao PDR Global Partnership for Education III: Learning and Equity Acceleration Project (P173407) to be financed by WB and GPEIII.

Annex 3.

Brief summary of initial environmental and social risk screening

During the concept stage of project, the longlisted roads were initially screened for potential environmental and social risks based on the available documentation. Nine out of ten Environmental and Social Standards (ESSs) were considered relevant under the project.

ESS 1: Assessment and Management of Environment and Social Risks and Impacts
ESS 2: Labor and Working Conditions
ESS 3: Resource Efficiency and Pollution Prevention and Management
ESS 4: Community Health and Safety
ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement
ESS 6: Biodiversity Conservation and Sustainable Management of Living Resources
ESS 7: Indigenous Peoples
ESS 8: Cultural Heritage
ESS 10: Stakeholder Engagement and Information Disclosure

Overall, the project ES rating is considered as Moderate. The project roads will follow the existing alignments except those segments where some small adjustments may be needed to improve road safety and climate resilience. Following risk mitigation hierarchy as per ESS 6, the project will not finance road sections within Protected Areas with international or nationally significant biodiversity value that may cover Conservation Forests and Protection Forests so to ensure avoidance of adverse impacts on key biodiversity, critical and natural habitats, and ecological functions as well as local population. While shortlisting roads based on selection criteria, consultations with Ministry of Agriculture and Forestry, and its respective Provincial and District Offices, and other key stakeholders must be undertaken to ensure that the road sections for project financing do not fall within PAs which are prioritized for conserving internally or nationally significant biodiversity. The project will also exclude any activities or sub-projects that would impact both natural and/or critical habitats, regardless of whether the road sections are located in a protected area.

Potential environmental risks and impacts are considered including:

1) Potential direct impacts and risks related to improvement of roads and cross-drainage structures as part of roads: earthworks, sourcing of materials, soil erosion, impacts on water flow and river biology, sedimentation, noise, dust, hazardous and non-hazardous wastes generated from civil works, exhaust from engines and fuel leak of earth moving vehicles, management of storm water, traffic disturbance during construction, community safety related to traffic during construction and operation, occupational health and safety of the contracted workers, clearing of production forests and land beyond road corridors for worker camps, encounter of unexploded ordnance (UXO), and intentional or accidental introduction of non-native flora species for stabilization of embarkment. Based the scale and nature of proposed project activities, potential environmental risks and impacts associated with road improvement activities are considered insignificant, site specific, temporary, and manageable if relevant mitigation measures are properly conducted.

2) Potential indirect impacts may be associated with improved road condition that may induce additional encroachment of agricultural farms and infrastructure to the road-side forests which are already in degraded condition and cause further degradation of such forests or changes to other land use types.

3) Indirect impacts that may be potentially amplified following road upgrading and the increased connectivity of road network: illegal trades of timber and wildlife products from nearby Conservation Forests/Protected Areas and Protection Forests.

Civil works for road improvement will be mainly carried out within the existing road alignments except at places where some adjustments are required for widening and climate resilience. Land clearing beyond the road corridors may be necessary in such cases and for workers accommodation and laydown areas. Road alignment may go through some Protection Forests and Production Forests and noise and frequent movement of traffic during construction and operation might affect biodiversity and their habitats. The ESMF and site-specific management plans will include mitigation measures to limit direct impacts of road improvement on forests and biodiversity during construction and operation phases. There are indirect risks that may happen after the project completion such as further encroachment of agricultural activities, and new settlements to the remaining road-side forests. The site-specific management plans will identify measures to mitigate such risks which may include engagment with local authorities for enforcement in accordance with national laws and regulations on forestry and land uses, and awareness raising of communities on importance of forests for their ecosystem services. If any significant biodiversity risks are identified during the site-specific assessments for selected roads, a Biodiversity Management Plan will be prepared to manage these risks.

Potential social risks and impacts are considered including:
1) Risks of the exclusion and discrimination, particularly of ethnic minorities, women and vulnerable groups from project planning, consultation, implementation and benefit, e.g., income earning or employment opportunities. Risks related to the labor and working conditions of project workers: i) workers health and safety resulting from unsafe working conditions and travel, (ii) employment discrimination, and (iv) Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) and child labor.

2) Risks related to community health and safety including road safety during and after road construction, transmission of communicable and respiratory diseases, Sexual Transmitted Diseases (STDs, HIV/AID), COVID-19 from contractor's workers and migrant workers and other risks associated with potential labor influx which are expected to be limited such as SEA/SH incidents during the road construction phase.

3) Temporary economic displacement, small-scale land acquisition and relocation of minor structures and/or access restrictions during the construction period. While shortlisting roads based on selection criteria, consultations with Ministry of Agriculture and Forestry, and its
respective Provincial and District Offices, and other key stakeholders must be undertaken to ensure proposed road sections for project financing do not fall within Protected Areas with internally and nationally significant biodiversity value.
In prior to the project appraisal, the following project's risk management instruments will be prepared and applied under the project to manage the above E&S risks. These include but should not be limited to: (i) Environmental and Social Commitment Plan (ESCP), (ii) Environmental and Social Management Framework (ESMF) covering occupational health and safety requirements for road improvement works, UXO Protocol, Labor Management Procedures, Community Health and Safety Plan (CHSP), and a template for Biodiversity Management Plan, (iii) Resettlement Policy Framework (RPF) with sample outline of Abbreviated

Resettlement Action Plan (ARAP) provided; and (iv) a Stakeholder Engagement Plan (SEP), which will include an Ethnic Group Engagement Framework (EGEF).

A stand-alone EGDF would not be prepared because potential risks and impacts from the project on ethnic groups and ethnic villages that may be present in the road sections will likely be insignificant, site specific and manageable. A small number of ethnic households present along both sides of the roads (not entire ethnic villages) may be affected by the road works since the project will only finance the improvement of the existing roads with the existing alignments. No new road will be constructed under the project. Potential major issue and impact on the ethnic groups is the risk of excluding them from consultation on road work design and workplan, implementation, and benefit sharing through employment opportunities and compensation (if required) for possible minor land and assets lost. These risks, however are manageable and can be sufficiently addressed in the SEP, RPF and ESMF, specifically LMP. Other risks related to work (road safety, ethnic workers health and safety, dust, noise), risk associated with labor influx (communicable diseases, SEA/SH, GBV and VAC), and risk of ethnic cultural heritage (both tangible and intangible) will be adequately managed through the ESMF with templates of specific risk management tools and procedures provided for references and adoption. These ESF instruments are required to be prepared, disclosed, consulted with key stakeholders, and submitted to the Bank for review and clearance before appraisal.

For details of initial ES screening, refer to the project Environmental and Social Review Summary (ESRS)[5].

Further to the initial ES screening of the project conducted bank, the MPWT conducted detailed screening of ES related aspects for all long-listed roads in the three project provinces. The data from this screening will help the DEFS consultants in conducting the site-specific assessments and preparing the required plans. The MPWT will provide the screening data when the DEFS consultants are onboard.

[5] https://documentsinternal.worldbank.org/Search/34067106 Concept Environmental and Social Review Summary