

TERMS OF REFERENCE FOR A CONSULTANT TO UNDERTAKE ROAD SAFETY AUDITS OF NR 13N AND TO PROVIDE TECHNICAL ASSISTANCE TO THE LAO MINISTRY OF PUBLIC WORKS AND TRANSPORT IN ROAD SAFETY ENGINEERING AND AUDIT TRAINING AND MANAGEMENT UNDER COMPONENT THREE OF THE LAO NATIONAL ROAD 13 NORTH IMPROVEMENT AND MAINTENANCE PROJECT

BACKGROUND

The World Bank and the Government of Laos is preparing the Lao National Road 13 North Improvement and Maintenance project (NR13N). The intended Project Development Objective is to improve road services on critical sections of National Road 13 in Lao. The proposed project has three components:

Component 1 — Road Improvement and Maintenance. This component will finance (i) improvement works to address road capacity constraints, climate resilience, quality, and traffic safety aspects on 58 km of NR13 North. The road sections include:

- A. Section Sikeut-Ban Dong (km 12 to km 31) for a proposed upgrade from 2 to 4-lane with 24m right-of-way; and
- B. Section Ban Dong-Phonhong (km 31 to km 70) for proposed improvement of the existing 2-lane with 16m right-of-way.

Component 2 — Supervision and Capacity Building. This component will finance (i) supervision of road improvement works including (a) a review the designs prepared by the Contractor; (b) supervision and monitoring of the works (rehabilitation, upgrading and maintenance) on the project road; (c) monitoring compliance with performance indicators during the first two years of the O&M period; (d) advising MPWT on all aspects of NR13N project implementation; and (e) strengthening the capacity of MPWT to implement and monitor OPBRC contracts; and (ii) technical assistance to prepare environmental and social studies and detail design for NR13 North km 6-km12.

Component 3 — Project Management. This component will finance (i) project and contract management and monitoring; (ii) financial audit; (iii) monitoring implementation of environment and social requirements; (iii) road safety activities; and (iv) incremental operating costs and training costs.

Transport Department, MPWT is seeking an individual consultant to carry out road safe audit for national road 13 and technical assistance on road safety training and management, which is to be financed under NR13 road improvement and maintenance project.

SCOPE OF SERVICES

The Bank requires an experienced international road safety auditor to undertake 4 Tasks:

1. Undertake a detailed design stage road safety audit of NR 13 N, as well as a pre-opening stage audit of NR13 N.

National Road 13 is the most important highway in Lao PDR, connecting Laos with China in the north and Cambodia in the south, for a total length of 1,500 km. The proposed project road (NR13N) from Vientiane to Phonhong is 58 km, and is a critical stretch serving high traffic volumes. The section of NR13N close to Vientiane has a higher traffic volume, while the volume decreases for the sections further from Vientiane.

The detailed design for this road duplication and improvement project is expected to be ready by late 2019. An experienced road safety engineering consultant is required to undertake a road safety audit of the designs to ensure that the recommendations and decisions made about road safety as a result of the preliminary design stage audit have been included in the final drawings. The Consultant is also required to undertake a pre-opening stage audit of this road once the work is completed.

The Consultant will:

- Undertake the detailed design stage audit in accordance with international audit processes.
- Inspect the existing road (day and night) to determine roadway and roadside features, design elements and local conditions (night visibility, adjacent land uses, glare etc.) that may increase the likelihood and/or severity of a crash when the road is upgraded.
- Observe how road users are interacting with each other and with the road during the site inspections, and determine if the needs of all road users are being adequately and safely met.
- Prepare a detailed design stage road safety audit report, in a format that complies with internationally recognised audit procedures such as AUSTROADS 2009.
- Ensure that the report contains practical recommendations for treating all identified safety concerns.
- Use the audit as an opportunity to mentor a team of local engineers from the MPWT and the Training Institute in the road safety audit process.
- Use the opportunity to work with the MPWT to assist it to introduce the audit process into the design, construction and maintenance stages of its road projects.
- These tasks shall be undertaken during the first visit to Laos by the Consultant, which is anticipated to be in late 2019 or early 2020.
- Undertake the pre-opening stage audit in accordance with international audit processes.
- Inspect the new road (day and night) to assess features and local conditions (night visibility, adjacent land uses, glare etc.) that may increase the likelihood and/or severity of a crash on the new road.
- Observe how road users are interacting with each other and with the road during the site inspections, and assess if the safety needs of all road users are being met.
- Prepare a pre-opening stage road safety audit report, in a format that complies with internationally recognised audit procedures such as AUSTROADS 2009.
- Ensure that the report contains practical recommendations for treating all identified safety concerns.

For the detailed design stage audit, the Client will provide the Consultant with:

- As-built design drawings (when available);
- Any traffic volume and speed data that is available;
- Any previous reports about road safety and crash data on NR13 N.

26 days will be assigned to the detailed design stage audit, and 15 days to the pre-opening stage audit, making a total of 41 days for this task.

2. Undertake the concept stages road safety audit of NR 13 S.

The MPWT, with support from the World Bank, plans to widen and rehabilitate a section of NR13S from Km 71 to Km 346. An experienced road safety engineering consultant is required to undertake a road safety audit of the concept design and to provide recommendations about road safety for inclusion in the final drawings.

The Consultant will:

- Undertake the concept design stage audit in accordance with international audit processes.
- Inspect the existing road (day and night) to determine roadway and roadside features, design elements and local conditions (night visibility, adjacent land uses, glare etc.) that may increase the likelihood and/or severity of a crash when the road is upgraded.
- Observe how road users are interacting with each other and with the road during the site inspections, and determine if the needs of all road users are being adequately and safely met.

- Prepare a concept design stage road safety audit report, in a format that complies with internationally recognised audit procedures such as AUSTRROADS 2009.
- Ensure that the report contains practical recommendations for treating all identified safety concerns.
- Use the audit as an opportunity to mentor a team of local engineers from the MPWT and the Training Institute in the road safety audit process.

For the concept design stage audit, the Client will provide the Consultant with:

- Concept design drawings (when available);
- Any traffic volume and speed data that is available;
- Any previous reports about road safety and crash data on NR13 S.

24 days will be assigned to this task.

3. Assisting the DoT with the treatments of high-risk road locations

The Road Safety Engineering Consultant should assist the Department (and others agreed by the Client) with road safety engineering matters including the investigation and treatment of high-risk road locations.

There can be a great safety benefit and a reduction in crash costs for the Lao community from the implementation of a national program of treating high risk road locations (which may often be termed “blackspots”). Experience in Australia indicates that the expenditure of \$1 to remove a “blackspot” yields over \$4 in benefits to the community. Despite difficulties with crash data, it is suggested that Laos has many hundreds of “blackspots” which can be eliminated at low cost.

The Consultant shall therefore assist the Department to design and develop a national “blackspot” program, with recommendations for an annual remedial budget. The program will be tested with the investigation and treatment of a small number of blackspots (suggested three) in locations close to Vientiane. A report recommending suitable low-cost treatments for each blackspot will be prepared and submitted to the Client for consideration and action. While assisting with this task, the Consultant shall also provide specialised training in blackspot investigations to MPWT officers and shall prepare a report about the establishment of national blackspot program.

As part of Task (3), the Consultant will assist the Department to initiate a phased safety improvement program for high-risk locations along NR13N (from Phonhong to Luang Namtha). This new initiative will investigate the high-risk locations along this major route and prepare remedial low-cost treatments to reduce the risks. It is anticipated that this initiative will be a phased program in which one section of the road is investigated each year over a period of 3-5 years. Each program will examine ways to effectively improve safety along the route through consistency in signage, line marking, delineation and roadside protection.

40 consultancy days are assigned for this task.

4. Provide capacity building and mentoring to local engineers in road safety engineering matters, and in particular assist them to develop expertise and experience with road safety audit

The Consultant will assist the DoT Traffic Management and Safety Section with professional road safety audit inputs as/when requested, but also provide three 2days trainings on road safety audit. The Consultant shall assist the Section in all practical ways within the overall assignment timetable. At least 80 technical engineers should be trained on road safety audit.

15 days each year for three years (45 consultancy days) are assigned for this task.

OUTPUTS / DELIVERABLES

The Consultant will deliver the following:

1) Detailed design stage road safety audit and pre-opening stage audit of NR13 N.

- a) A detailed design stage Road Safety Audit report (including recommendations) for the NR13 N and present it for Client review and discussion.
- b) The Consultant will prepare and deliver a Power-Point presentation to identified stakeholders, summarising the detailed design stage road safety audit findings including recommendations, at a date to be determined in consultation with the Client.
- c) A pre-opening stage Road Safety Audit report (including recommendations) for the NR13 N and present it for Client review and discussion.
- d) The Consultant will prepare and deliver a Power-Point presentation to identified stakeholders, summarising the pre-opening stage road safety audit findings including recommendations, at a date to be determined in consultation with the Client.

2) Concept stage road safety audit of NR 13 S.

- a) A concept stage road safety audit report (including recommendations) for the NR13 S and present it for Client review and discussion.
- b) The Consultant will prepare and deliver a Power-Point presentation to identified stakeholders, summarising the road safety audit findings including recommendations, at a date to be determined in consultation with the Client.

3) Assisting the DoT with the treatment of high-risk road locations

- a) Blackspot reports recommending low-cost treatments for three blackspots.
- b) The Consultant will prepare a report to the Department with recommendations for the establishment of a national blackspot treatment program.
- c) The Consultant will assist the Department to initiate a phased safety improvement program for high-risk locations along NR13N (from Phonhong to Luang Namtha).
- d) Specialised training in blackspot investigations to MPWT officers.

4) Capacity building and mentoring for local engineers in road safety audit

- a) The Consultant will present three 2-day technical training workshops during the visits to Laos on road safety engineering topics. The MPWT will schedule and organise the workshops, and will invite suitable participants. Ongoing mentoring will be provided to the Client and other local stakeholders involved in road safety, based on the Client's request.

CONSULTANT SELECTION CRITERIA

The Consultant shall have:

- a degree in engineering and post-graduate qualifications in engineering that are relevant to the assignment;
- at least 20 years of relevant work experience in road safety engineering including extensive international and SE Asian experience in road safety audits, the identification and treatment of blackspots and safety at road works as well as in mentoring local engineers in road safety engineering matters;

- extensive international experience conducting road safety audits at all stages of road projects;
- extensive experience in auditing road works and Traffic Management Plans (TMP's).
- extensive experience preparing and leading road safety engineering workshops in Laos and nearby SE Asian countries;
- experience in carrying out road safety engineering work and road safety audits in Laos and nearby SE Asian countries;
- experience working in national highway authorities in SE Asia and preferably in Laos on road safety engineering tasks.

TIMEFRAME

The work will be intermittent over a period of approximately three years.

The detailed design stage road safety audit of NR13 N will require one visit to Laos. A total of 26 days (including travel, site inspections, audit report preparation, PowerPoint preparation and discussions with Client and key stakeholders) are allocated to this task. The audit should be undertaken as soon as possible after completion of the detailed design drawings. The pre-opening audit of NR13 N will take place when the road is nearing, or at completion. The Consultant shall prepare an audit report for the new road for the Client as well as a PowerPoint presentation for discussion with key stakeholders. 15 days are allocated for this task.

The concept stage audit of NR13 S will take place as soon as possible after completion of the concept stage drawings. A total of 24 days are allocated to this task.

The investigations and treatments of the selected high-risk locations is to be scheduled to meet MPWT requirements. This work, including the development of a national blackspot program, may require separate travel to Laos depending on the timing of the other activities in this Assignment, such as capacity building on blackspot management. 40 days are allocated for this task. The Consultant will liaise closely with the Client's representative to plan travel to be as efficient as possible.

A further consultancy 45 days (15 days per year for 3 years) are allocated for road safety mentoring, training and guiding engineers in the audit process.

150 days of professional inputs and at least six trips to Laos will be required over the three year period. Up to a third of these days may be used in home office (for the preparation of reports, PowerPoints, technical preparation and associated writings).

BUDGET

The contract is a Time-Based Contract with an individual Consultant. The consultant will be paid a daily fee for professional service that will be agreed during contract negotiations on the understanding that it includes all the Consultant's costs and any tax obligation that may be imposed on the Consultant.

Contract registration and any other fee associated with the contract and the payment need to be included in the contract. The work is scheduled for 150 days of inputs. Most of these will be in-country but up to one third of them may be from home office (for report writing, preparation etc).

SUPERVISION ARRANGEMENTS

The Consultant will work under the overall supervision of Director of Transport Department, the Ministry of Public Works and Transport, with day-to-day supervision from the designated representative, Mr Phouthavishet Phommanivong (Land Traffic and Driving License Management Division of DoT).

The Client will make available the relevant personnel as required to provide local knowledge and technical assistance to the Consultant. The Consultant will be required to hold a completion meeting

with the Client towards the end of each visit to Laos to discuss progress on the implementation of the Road Safety Audit process in Laos and the further actions required.

The expert is required to provide his own laptop computer and any other specialised equipment as required.