MINISTRY OF HIGHWAYS ROAD DEVELOPMENT AUTHORITY
ENVIRONMENT AND SOCIAL DEVELOPMENT DIVISION

TERMS OF REFERENCE FOR ENGAGEMENT OF AN ENVIRONMENTAL ECONOMIST TO CARRY OUT THE EXTENDED COST BENEFIT ANALYSIS FOR THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR RUWANPURA EXPRESSWAY – PHASE II and III

1. Background

Government of Sri Lanka (GOSL) has identified the need of an expressway towards Sabaragamuwa province, which will act as a fast road link between Sabaragamuwa and Uva provinces with Colombo the economic capital of the country. This project is considered as one of the key infrastructure development projects in the country that needs to be implemented in the near future. With the above directive, RDA initiated a Feasibility Study (FS) in year 2016 to find out a suitable road corridor to construct the Ruwanpura Expressway considering present and future development scenarios of the country. The study also considered having minimum possible impacts on the environment including the social environment (i.e., minimum resettlement impacts to general public and land acquisition cost). This expressway project was officially called as "Ruwanpura Expressway Project" or REP.

Different route alternatives were studied during the FS conducted in 2016 and a final trace was selected to conduct detailed investigations. As per the final trace of the FS, the proposed expressway is to start from Kahathuduwa Interchange of Southern Expressway and end at Pelmadulla connecting with Pelmadulla – Nonagama (A018) road.

The expressway had a length of about 74 kilometers (km) and consisted of three (3) stages as;

- Phase I – Southern Expressway (Kahathuduwa) to Ingiriya, (Ch. 0+000 km – Ch. 26+300 km)
- Phase II – Ingiriya to Ratnapura (Ch. 26+300 km – Ch. 52+500 km)
- Phase III – Ratnapura to Pelmadulla(Ch. 52+500 km – Ch. 73+900 km)

As per the National Environmental Act (NEA) regulations, REP was categorized as a Prescribed Project so that RDA conducted and Environmental Impact Assessment (EIA) for the trace selected under the FS of 2016 seeking the environmental approval from Central Environmental Authority (CEA) who is the Project Approving Agency (PAA). However, due to location of the major parts of the Phase II and III of the expressways within the Central Fragile Area (CFA) of the country and considering the adverse impacts to the land use changes, possible urbanization around the interchanges in the CFA and impacts due to construction of tunnels, National Physical Planning Department (NPPD) being a key stakeholder of the project was not in a position to grant their consent for the EIA for Phase II and III of REP. As a result, the environmental approval was granted only for the Phase I of the REP in 2021.

In 2020, RDA under the guidance of Ministry of Highways took actions to revisit the FS in order to explore alternative routes for the Phase II and III of the REP having the least impacts to the CFA and avoiding tunnels, and accordingly University of Moratuwa (UOM) was entrusted the work. As a result, UOM conducted a new FS and proposed a new trace having comparatively less impacts to the CFA and also avoiding tunnels. The new trace proposed by the UOM for the Phase II is deviating about 19km from the trace selected under the FS of 2016 and no change in Phase III.

The location map of the new trace is presented in figure 1.1 below.

As per the new trace, length of the Expressway is 76+225 km and phases for the REP were revised as follows.

- Phase I – Southern Expressway (Kahathuduwa) to Ingiriya, (Ch. 0+000 km – Ch. 25+000 km)-Work already started.
- Phase II– Ingiriya to Kiriella (Ch. 25+000 km – Ch. 44+000 km)(diverted section- End Ch. 44+000 km can be changed)
- Phase III– Kiriella to Pelmadulla (Ch. 44+000 km – Ch. 76+450 km) (Ch. 44+000 km and end Ch. 76+450 km can be slightly changed)

Therefore, in order to assess the environmental and social feasibility of the new trace and also to obtain the environmental approval from the CEA, RDA is planning to conduct a new EIA for the Phase II. Subsequently, the Basic Information Questionnaire (BIQ) was submitted to the CEA and the Terms of Reference (TOR) for the EIA was received from CEA on 04th October 2021 through the letter 08/EIA/Trans/07/2014 Vol. V

(Location map of the selected trace for Phase II and III of REP and TOR are attached).

Environmental and Social Development Division (ESDD) of RDA was assigned to conduct the EIA for Phase II and III on behalf of the Project Management Unit (PMU) of RDA in compliance with the TOR issued by the CEA, and to obtain the environmental approval from the CEA.

ESDD has planned to complete the EIA in combining with the specialists hired for the specialized areas required for the EIA. Accordingly, ESDD shall obtain the expert inputs of an Environmental Economist (EE) who will work in association with the Team Leader (TL) of the EIA in order to complete the EIA and to obtain the environmental approval.

This document presents the TOR for the services and inputs required from the Environmental Economist in carrying out the EIA study, preparation of EIA Report (EIAR) and obtaining the environmental approval from CEA.

2. Objectives of the TOR

- To specify the qualifications and experience required by the EE in order to qualify for the said assignment,
- To specify the scope of work of the Extended Cost Benefit Analysis under Chapter 6 of the EIA in relation to conducting the EIA study, preparation of EIAR and obtaining the environmental approval from CEA,
- To describe the requirements stipulated in the EIA TOR forwarded by CEA (Ref. Appendix).and requirements of other stakeholder agencies.
- To indicate the assistance provided by the RDA (ESDD and PMU) for the study during the assignment,
- To indicate the time allocation for the assignment and the financial disbursement related to the assignment of Environmental Economist.

3. Required Qualifications of the Environmental Economist

- PhD/M.Sc. in Economics/Environmental Economics ,Natural Science, Environment Management, Environmental Engineering, or related field Minimum of 8 years proven experience in carrying out the Extended Cost Benefit Analysis for the Environmental Impact Assessments (EIA) for road development and other projects which were approved by CEA.

4. Scope of the Service

In general, the Environmental Economist of the EIA to carry out the Extended Cost Benefit Analysis (ECBA)

A cost-benefit analysis approach should be used to estimate the economic worth of the project. The methodology should involve the following steps:

- Obtaining the project objectives and scope from RDA
- Defining the project options which form the basis of the economic evaluation
- Defining the base case against which the project options are compared
- Identifying the incremental costs and benefits that might be expected in moving from the base case to each of the options
- Obtain related traffic study results of the options studied by RDA
- Identifying and agreeing the core parameters of the evaluation (e.g., time scale, base year for prices to calculate present values, discount rate)
- Where possible, quantifying the costs and benefits over the expected lifecycle and discounting future values to express them in current equivalent values
- Building the Cost Benefit Analysis (CBA) model using discounted cash flow techniques over the evaluation period and generating performance measures including,
  - Amalgamating Environmental Costs(e.g., fauna and flora loss, habitat fragmentation, degradation, in the riverine ecosystem and the other areas associated to Central Fragile Area) and Social Costs (Land acquisition and resettlement cost etc.) to the CBA
  - Amalgamating Environmental and Social Benefits (e.g., emission reduction) to the CBA.
  - Computing Net Present Value (NPV).
  - Computing the Benefit Cost Ratio (BCR).
  - Computing the Internal Rate of Return (IRR).
- Testing the sensitivity of these performance measures to changes in the underlying assumptions utilized.
- Confirmation of the validity of the computed parameters to show that the project is economically and environmentally feasible.

To facilitate the above scope of work the EE will be provided with following facilities by ESDD and PMU

- The final trace of the Phase II and III of REP in KML formats and hard formats (with adequate resolution) with defined start/ end points; locations of links, entry and exit ramps, tall gates etc.
- Feasibility report or any other relevant report which includes following information;
  1. Design and construction related information including different options considered for construction of the highway (alternative route, design, technology and construction techniques),
  2. Description of the project including objective of the project, funding source, financial and economic analysis (where the economic analysis should include the environment cost), timing and possible phasing of the project,
  3. Quantities of material (including cement, sand, soil and aggregate) and possible sites of extraction with proximity to the project site,
  4. Quantity of construction waste that would be generated and potential location/s of disposal (With the concurrence from landowners and local authorities).
- All relevant maps or row data to prepare maps as indicated and required to fulfill the information requirement of the EIAR.
- Relevant chapters/sections on Social Impact Assessment as required in the CEA TOR for the EIA

- A complete report on public and stakeholder consultation and awareness programs conducted by ESDD and PMU,
- Information on baseline condition of air, water and noise parameters with respect to national standards,
- Reports on hydrological impact assessment, studies on landslide impacts, noise model report etc.
- Relevant chapters/sections of the EIAR on ecological assessment as required in the CEA TOR for the EIA including baseline condition, impacts to the ecological environment and feasible mitigation measures to avoid/reduce or mitigate the impacts
- Consents from key stakeholder agencies as required in the CEA TOR for the EIA
- And any other information related to preparation of EIAR as requested by EE.

Immediately after signing the agreement with RDA, the prospective Environmental Economist should study all available information provided by RDA or obtained by other sources and provide a list of further details in case he needs, to carry out the ECBA and to prepare Chapter 6 of the CEA ToR related to Ruwanpura Expressway Phase 2 and 3.

5. Time Schedule

Time duration for the said assignment is 4 (four) calendar months from the date on which the contractual agreement is signed between both parties (RDA and EE), unless otherwise extended due to unavoidable externalities as mutually agreed by both parties.

Environmental Economist (EE) who will work in association with the Team Leader (TL) of the EIA may issue the details to suit with the level of the process of the EIA in order to complete the EIA within the given time line.

6. Expected deliverables

Following deliverables are expected from the Environmental Economist during the specified time period.

- Chapter 6 (ECBA) for Draft final EIA.
- Chapter 6 (ECBA) - Final EIA after incorporating CEA and public, stakeholder comments.
- A summary report of activities completed when submitting a claim for payment. This summary report shall include key activities carried in completion of the task for which the claim is made.
- The Consultant is expected to exercise with utmost care during the process to avoid any accidents at site and any unfair situation and if the Consultant is found responsible for any faults/conflicts, no claims will be accepted by RDA on this regard.

7. Payments

Payments shall be made to the Environmental Economist as detailed in the table below.

Task	**Outputs/Reports**	**Tentative duration to complete the task**	**Percentage of payment eligible**	**Cumulative Payment Ceiling (% of Total cost of the Assignment)**
Task 1	Advance payment	**After the contractual agreement**	**5%**	
Task 2	Collection of relevant secondary data and compilation	**2 weeks**	**45%**	**50%**
Task 3	Completion of Draft Final EIAR and submission to ESDD/RDA	**7 weeks**	**20%**	**70%**
Task 4	Presenting the EIAR to TEC	**1 day**	**5%**	**75%**

Task 5	Attending to comments, requests made by TEC and submission of Final EIAR to ESDD/RDA	**3 weeks**	**10%**	**85%**
Task 6	Attending any public comments and attending to queries made by public during public disclosure	**1.5 months**	**5%**	**90%**
Task 7	Addressing public and stakeholder comments made during public disclosure and technical evaluation and preparation of the addendums to the EIAR	**3 weeks**	**10%**	**100%**