Project Administration Manual

Project Number: 47182-001
Loan and/or Grant Number(s): 3027/3028
1 June 2017

Sri Lanka: Southern Road Connectivity Project

Contents

Project Administration Manual Purpose and Process

The project administration manual (PAM) describes the essential administrative and management requirements to implement the project on time, within budget, and in accordance with Government and Asian Development Bank (ADB) policies and procedures.

Ministry of Ports, Highways and Shipping, as the executing agency, and Road Development Authority, as the implementing agency are wholly responsible for the implementation of ADB financed projects, as agreed jointly between the borrower and ADB, and in accordance with Government and ADB's policies and procedures. ADB staff is responsible to support implementation including compliance by executing and implementing agencies of their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.

At Loan Negotiations the borrower and ADB shall agree to the PAM and ensure consistency with the Loan agreements. Such agreements shall be reflected in the minutes of the Loan Negotiations. In the event of any discrepancy or contradiction between the PAM and the Loan Agreements, the provisions of the Loan Agreements shall prevail.

After ADB Board approval of the project's report and recommendations of the President (RRP) changes in implementation arrangements are subject to agreement and approval pursuant to relevant Government and ADB administrative procedures (including the Project Administration Instructions) and upon such approval they will be subsequently incorporated in the PAM.

Abbreviations

ADB	=	Asian Development Bank
ADF	=	Asian Development Fund
AFS	=	audited financial statements
DMF	=	design and monitoring framework
EARF	=	environmental assessment and review framework
EIA	=	environmental impact assessment
EMP	=	environmental management plan
ESMS	=	environmental and social management system
GACAP	=	governance and anticorruption action plan
GDP	=	gross domestic product
ICB	=	international competitive bidding
IEE	=	initial environmental examination
IPP	=	indigenous people plan
IPPF	=	indigenous people planning framework
LAR	=	land acquisition and resettlement
LIBOR	=	London interbank offered rate
MOHEH	=	Ministry of Higher Education and Highways
NCB	=	national competitive bidding
NGOs	=	nongovernment organizations
PAI	=	project administration instructions
PAM	=	project administration manual
PIU	=	project implementation unit
QBS	=	quality based selection
QCBS	=	quality- and cost based selection
RDA	=	Road Development Authority
RRP	=	report and recommendation of the President to the Board
SBD	=	standard bidding documents
SGIA	=	second generation imprest accounts
SOE	=	statement of expenditure
SPS	=	Safeguard Policy Statement
SPRSS	=	summary poverty reduction and social strategy
TOR	=	terms of reference

I. PROJECT DESCRIPTION

1. The project will improve the connectivity between expressway network and the local transport network in south region.[1] The capacity of 33.07 kilometers (km) of national highways linking three expressway interchanges will be improved; and the capacity of Road Development Authority (RDA) will be enhanced in planning the expressway connectivity improvement and in ensuring the project implementation readiness. By amplifying the benefits of the country's first expressway network, the project will contribute to one of the Government of Sri Lanka's key development goals, developing the country into a regional trading center between the East and the West. It will also improve the access to economic opportunities, and basic social, health, and education facilities.

2. The impact of the project will be efficient road transport in south region. The outcome will be improved connectivity between the expressway network and the local road network in south region.

3. The project will deliver two outputs: (i) improved capacity of 33.07 km of key national highways linking the expressway network in south region, and (ii) enhanced capacity of RDA in planning expressway connectivity improvement and in ensuring implementation readiness. The outputs will be achieved through two components of the project:

(i) **National highway improvement**. The component will improve priority national highways which provide connectivity to three interchanges of Southern Expressway. The priority highways are selected according to the current road condition and capacity, travel demands, and readiness for improvement.

Road	Section	Chainage	Length (km)
B389	Rathmalana – Mirihana	5+700 km to 7+840 km	2.14
B295	Moratuwa – Piliyandala	2+620 km to 5+120 km	2.50
A004	Kirulapana – Homagama	0+130 km to 1+000 km, and 15+360 km to 16+280 km	1.79
B157	Southern Expressway – Matugama	42+372 km to 32+000 km	10.37
B084	Kesbewa – Pokunuwita	13+800 km to 28+180 km	14.38
	Ambatale-CINEC Junction Road	0+000 km to C1+883 km	1.88
		Total Length	**33.07**

(ii) **RDA capacity enhancement**. The component will be implemented by assisting RDA in developing a long-term expressway connectivity improvement plan. The preparation of such a plan will involve (a) screening the national highways linking expressway network for the needs of improvement, (b) programming the future projects for feasibility study, detailed engineering, land acquisition and resettlement, and procurement of civil works, (c) carrying out feasibility study for about 250 km of national highways, (d) undertaking detailed engineering for about 200 km of national highways, (e) assisting in improving the design standards and construction technology, and (f) delivering training programs about the planning methodology, design standards, and construction technology.

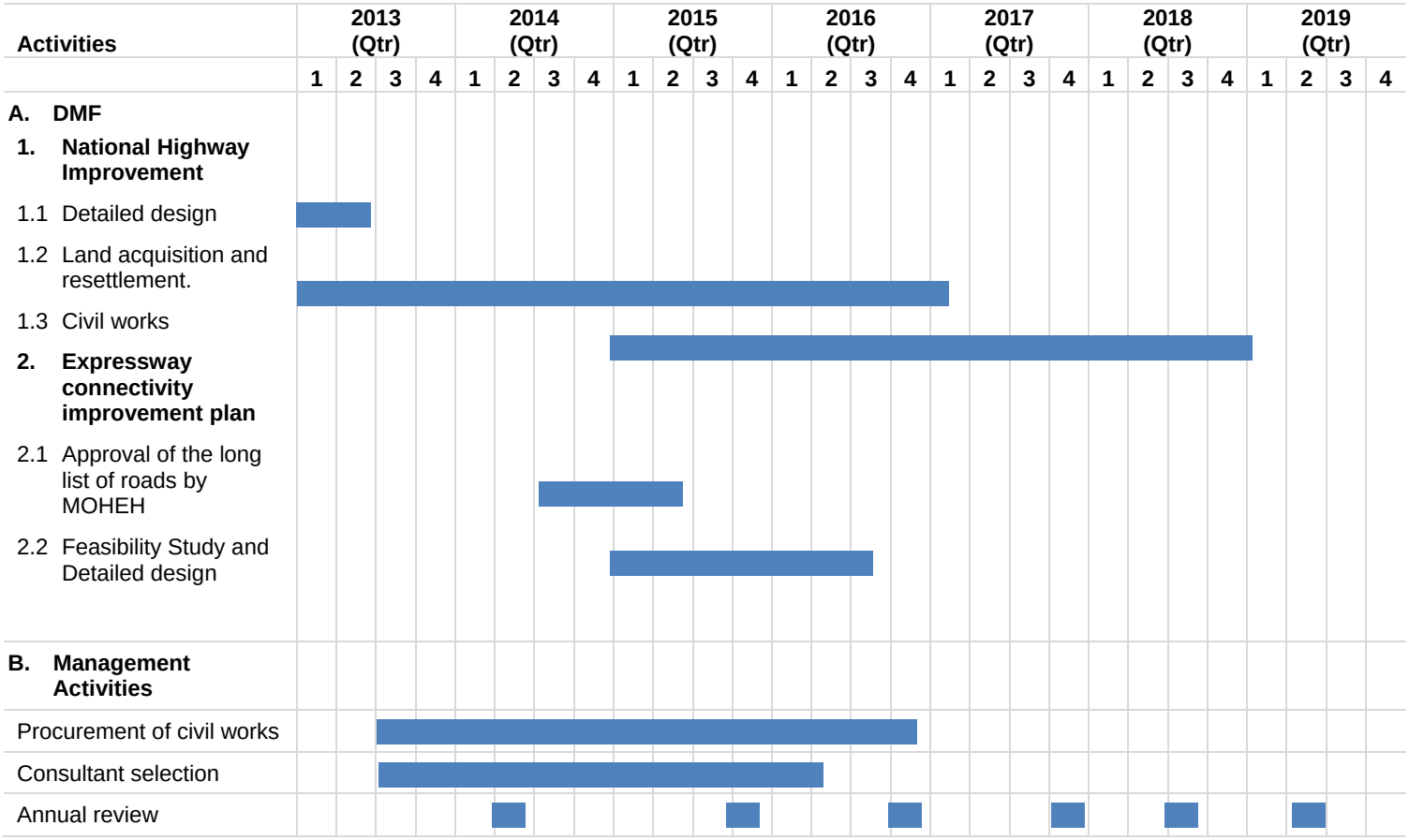
[1] The Road Project Preparatory Facility, funded by ADB, was utilized to undertake project preparatory activities, including preparation of detailed design and bidding documents. ADB. 2004. *Report and Recommendation of the President to the Board of Directors: Proposed Technical Assistance Loan to the Democratic Socialist Republic of Sri Lanka for the Road Project Preparatory Facility*. Manila (Loan 2080-SRI).

II. IMPLEMENTATION PLANS

A. Project Readiness Activities

Year/ Month	Loan Processing Responsible by ADB	Consultant Selection Responsible by RDA	Procurement of Civil Works Responsible by RDA
2013			
May	☐ Reconnaissance Mission Aide Memoire and Preliminary PAM ☐ Approval of Concept Paper ☐ Approval of Advance Procurement		
Jun	☐ Fact-finding Mission ☐ Management Review Meeting		
Jul	☐ Loan Negotiation		
Aug			
Sep	☐ Board Consideration/Approval		
Oct			
Nov			
Dec		☐ Submission 1 for ECIP Consultants	
2014			
Jan			☐ Invitation for Bids (CP-01)
Feb			
Mar			☐ Bid Submission (CP-01)
Apr			
May	☐ Loan Signing		☐ Bid Evaluation Report (CP-01)
Jun		☐ Submission 1 for Project Implementation Consultants (PIC)	
July		☐ Submission 2 for ECIP Consultants	
Aug	☐ Loan Effective	☐ Submission 3 for ECIP	
Sep		☐ Submission 2 for PIC ☐ Submission 4 for ECIP	☐ Invitation for Bids (CP-02)
Oct		☐ Submission 3 for PIC	☐ Award contracts (CP-01)
Nov		☐ Submission 4 for PIC	☐ Bid Submission (CP-02)
Dec			☐ Bid Evaluation Report (CP-02)
2015			
Jan			☐ Invitation for Bids (CP-03)
Feb			☐ Award contracts (CP-02)
Mar			☐ Bid Submission (CP-03)
Apr			
May			☐ Bid Evaluation Report (CP-03)
Jun			
Jul			
Aug			☐ Award contracts (CP-03)
Sep			
Oct			
Nov			
Dec			
2016			
Jan-Sep			
Oct			☐ Invitation for Bids (CP-04)
Nov			☐ Bid Submission (CP-04)
Dec			☐ Bid Evaluation Report (CP-04)
2017			☐ Award contracts (CP-04)

B. Overall Project Implementation Plan



III. PROJECT MANAGEMENT ARRANGEMENTS

A. Project Implementation Organizations – Roles and Responsibilities

Organizations	Management Roles and Responsibilities
• **Executing Agency (EA)** Ministry of Higher Education and Highways (MOHEH)[2]	☐ overall coordination of project implementation ☐ interagency coordination
• **Implementing Agency (IA)** Road Development Authority	☐ day-to-day project management ☐ consultant recruitment and procurement of works ☐ project accounts management – establishing and maintaining imprest account, withdrawal applications and supporting documentation, including procedures for State-of-Expenditure ☐ project progress reports ☐ maintaining project accounts and complete loan financial records ☐ implementing the stakeholder communication strategy
• **National Steering Committee** Chair: MOHEH Members: Ministry of Finance and Planning represented by External Resources Department, National Planning Department, Budget Department, and Project Monitoring and Management Department.	☐ overseeing and monitoring project implementation as well as the adequacy of overall project funding ☐ holding meeting as required but at least quarterly to discuss overall status and project issues, and when and as necessary invite representatives from the Central Environmental Authority and Wild Life and Forest Department of the Ministry of Environment, and any other relevant agencies.
• **Asian Development Bank**	☐ Monitoring and reviewing overall implementation of the project in consultation with the EAs/IAs including: the project implementation schedule; actions required in terms of poverty reduction, environmental impacts, and resettlement plans (RPs) if applicable; timeliness of budgetary allocations and counterpart funding; project expenditures; progress with procurement and disbursement; statement of expenditure when applicable; compliance with particular loan covenants; and the likelihood of attaining the project's immediate development objectives.

B. Key Persons Involved in Implementation

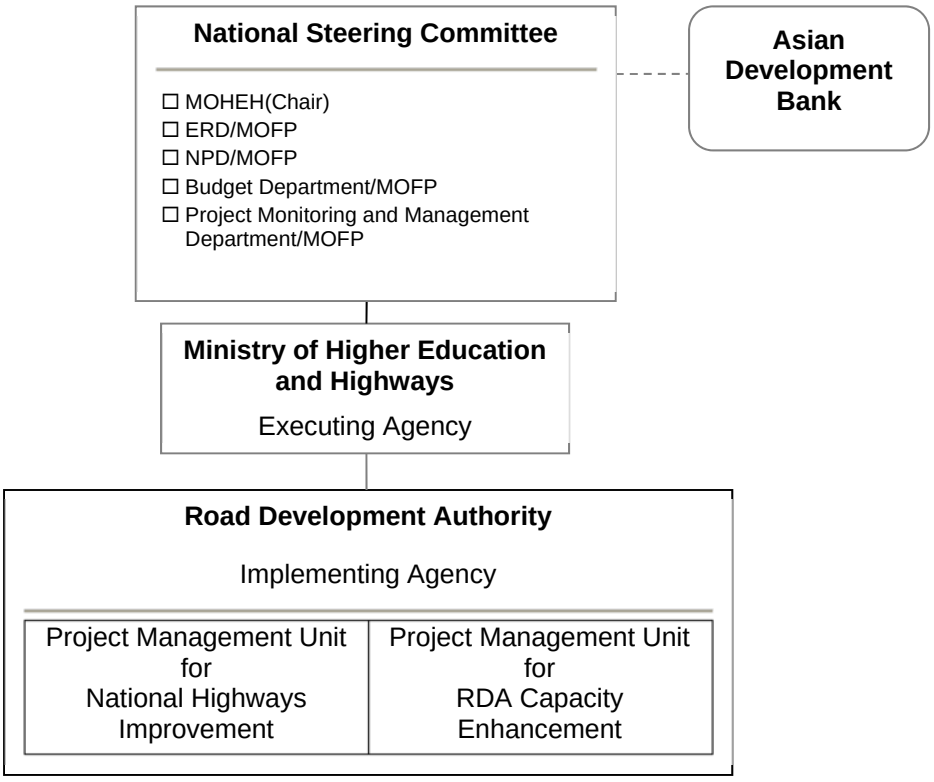
Executing Agency **MOHEH**	Mr. D.C. Dissanayake Secretary, MOHEH Maganeguma Mahamedura, Road Development Authority Densil Kobbekaduwa Mawatha Pelawatta, Bataramulla, Sri Lanka. Telephone: 94-11-2871521-30 Fax: 94-11-2863296 Email address: sec@mohsl.gov.lk
Implementing Agency **RDA**	Mr. W.K. Kodituwakku Project Director Road Development Authority No 434/2, Denny Hettiarachchi Mawatha, Ganahena, Battaramulla, Sri Lanka Telephone: 941 1 288 4047 Facimile: 941 1 288 4043 Email address: srcppd@gmail.com

[2] Former name of MOHEH, as indicated in RRP and legal agreements, is Ministry of Ports and Highways (MOPH).

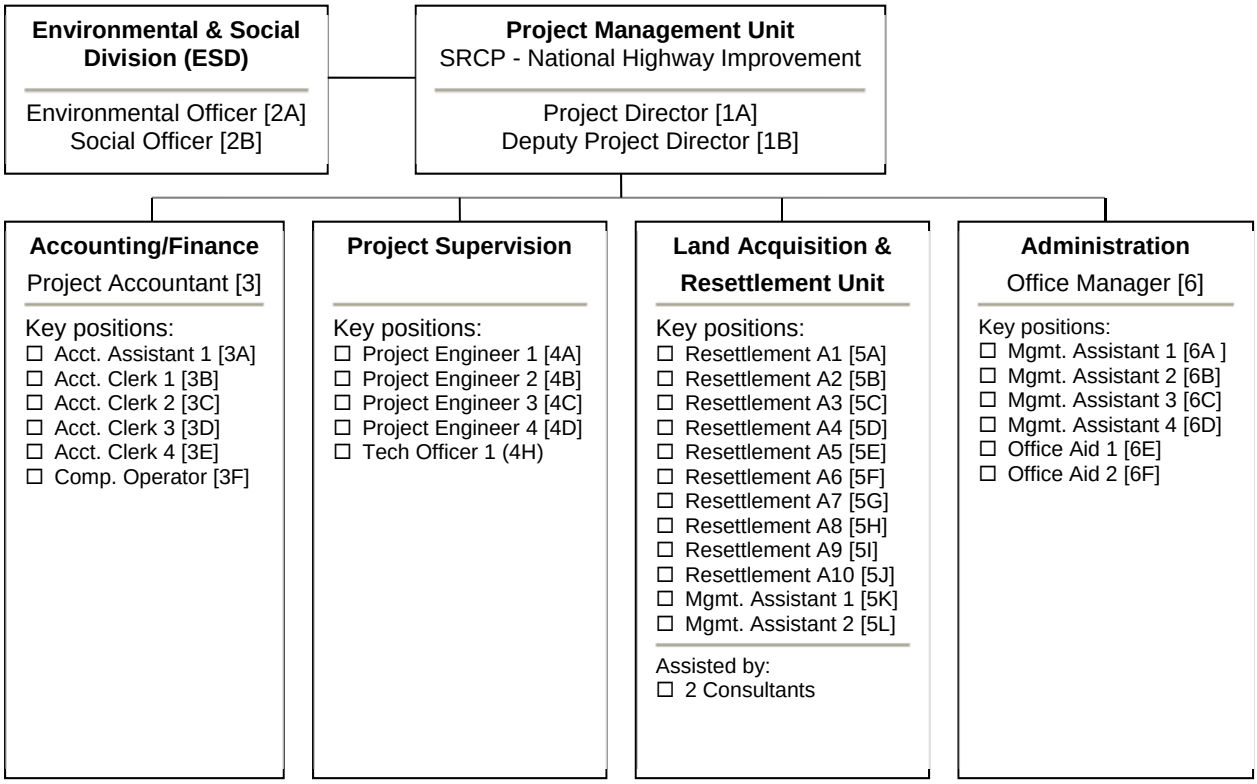
	Mr. A.H.M. Nizar Project Director, Road Development Authority No. 347, Kaduwela Road, Koswatta Battaramulla, Sri Lanka Telephone: 941 1 274 1224 Fax No: 94 11 274 1225 Email address: eciprda@gmail.com
ADB	Mr. Hiroaki Yamaguchi Director, SATC Telephone No.: (63) 2 632 6745 Email address: hyamaguchi@adb.org Mr. Andrew Gutierrez Senior Project Officer, SATC Telephone No.: (63) 2 632 6155 Email address: acgutierrez@adb.org

C. Project Organization Structure

4. The flow chart below shows the internal structures of key organizations involved, including the national steering committee, EA, and IA. The project management unit for Additional Financing for National Highway Sector Project will be used to implement the component (i): National Highway Improvement, and the project management unit for Loan 2080-SRI: Road Project Preparatory Facility will manage the activities under component (ii): RDA Capacity Enhancement.



5. The following flow chart and table show the reporting lines and essential internal structures of the project management unit for component (i): National Highway Improvement, and their staffing assignments.

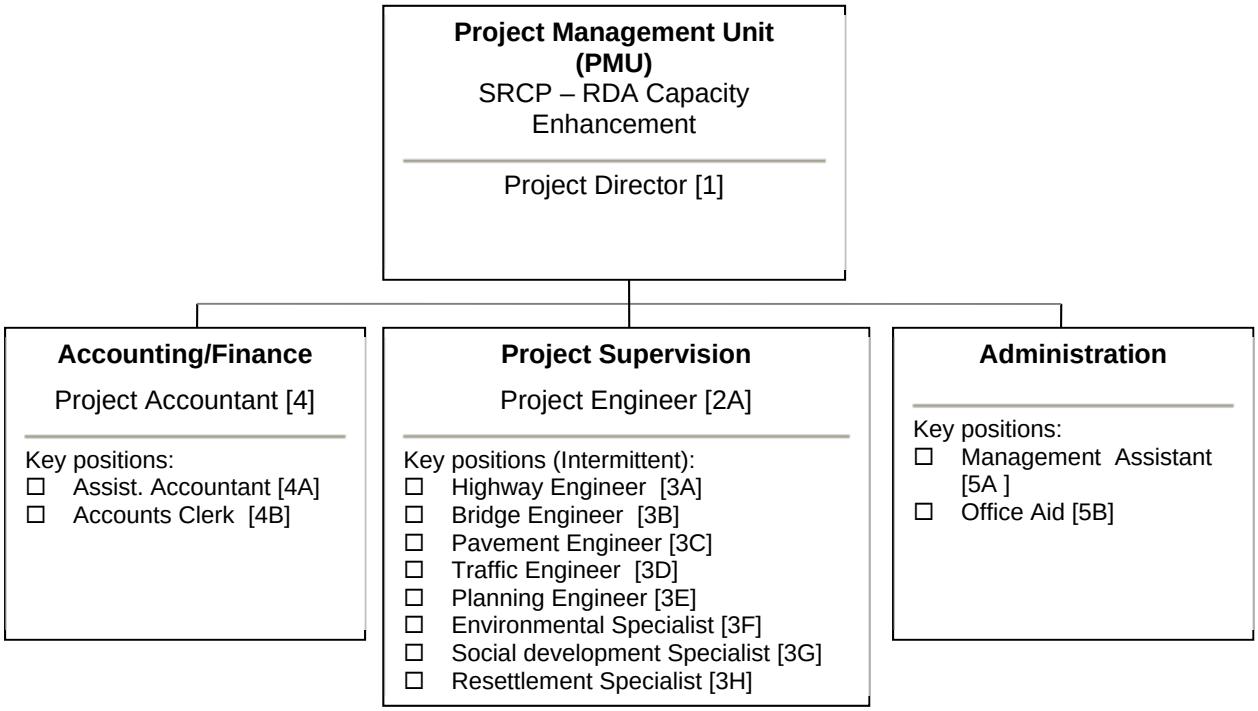


Staffing Assignment and Recruitment Plan

	Serial No.	Position	Existing	New Recruit
1	**[1A]**	**Project Director**	☒ appointed	☐
2	[1B]	Deputy Project Director	☐ appointed	☐
3	**[2A]**	**Environmental Officer/ESD**	☒ appointed	☐
4	**[2B]**	**Social Officer/ESD**	☒ appointed	☐
5	**[3]**	**Project Accountant**	☒ appointed	☐
6	[3A]	Accountant Assistant 1	☒ appointed	☐
7	[3B]	Accounts Clerk 1	☒ appointed	☐
8	[3C]	Accounts Clerk 2	☒ appointed	☐
9	[3D]	Accounts Clerk 3	☒ appointed	☐
10	[3E]	Accounts Clerk 4	☒ appointed	☐
11	[3F]	Computer Operator	☒ appointed	☐
12	**[4A]**	Project Engineer 1	☒ appointed	☐
13	[4B]	Project Engineer 2	☒ appointed	☐
14	[4C]	Project Engineer 3	☒ appointed	☐
15	[4D]	Project Engineer 4	☒ appointed	☐
16	[4H]	Technical Officer 1	☒ appointed	☐
17	**[5A]**	Resettlement Assistant 1	☒ appointed	☐

	Serial No.	Position	Existing	New Recruit
18	[5B]	Resettlement Assistant 2	☒ appointed	☐
19	[5C]	Resettlement Assistant 3	☒ appointed	☐
20	[5D]	Resettlement Assistant 4	☒ appointed	☐
21	[5E]	Resettlement Assistant 5	☒ appointed	☐
22	[5F]	Resettlement Assistant 6	☒ appointed	☐
23	[5G]	Resettlement Assistant 7	☒ appointed	☐
24	[5H]	Resettlement Assistant 8	☒ appointed	☐
25	[5I]	Resettlement Assistant 9	☒ appointed	☐
26	[5J]	Resettlement Assistant 10	☒ appointed	☐
27	[5K]	Management Assistant 1	☒ appointed	☐
28	[5L]	Management Assistant 2	☒ appointed	☐
29	[5M]	Management Assistant 3	☒ appointed	☐
30	**[6]**	**Office Manager**	☒ appointed	☐
31	[6A]	Management Assistant 1	☒ appointed	☐
32	[6B]	Management Assistant 2	☒ appointed	☐
33	[6C]	Management Assistant 3	☒ appointed	☐
34	[6D]	Management Assistant 3	☒ appointed	☐
35	[6E]	Office Aid 1	☒ appointed	☐
36	[6F]	Office Aid 2	☒ appointed	☐

6. The following flow chart and table show the reporting lines and essential internal structures of the project management unit for component (ii): RDA Capacity Enhancement and their staffing assignments.



Staffing Assignment and Recruitment Plan

	Serial No.	Position	Existing	New Recruit
1	**[1]**	**Project Director**	☒ appointed	
2	[2A]	Project Engineer	☒ appointed	
3	**[3A]**	Highway Engineer	☐ appointed	
4	[3B]	Bridge Engineer	☐ appointed	
5	[3C]	Pavement Engineer	☐ appointed	
6	[3D]	Traffic Engineer	☐ appointed	
7	[3E]	Planning Engineer	☐ appointed	
8	[3F]	Environmental Specialist	☐ appointed	
9	[3G]	Social development Specialist	☐ appointed	
10	[3H]	Resettlement Specialist	☐ appointed	
11	**[4]**	**Project Accountant**	☒ appointed	
12	[4A]	Assistant Accountant	☒ appointed	
13	[4B]	Accounts Clerk	☐ appointed	
14	**[5A]**	Management Assistant 1	☒ appointed	
15	[5B]	Office Aid 1	☒ appointed	

IV. COSTS AND FINANCING

7. The project is estimated to cost $100 million (Table 1).

Table 1: Project Investment Plan
($ million)

Item		Total Amount
A.	**Base Cost**	
	1. National Highways	53.81
	2. Consulting Services	9.08
	3 Land acquisition and resettlement	11.36
	4. Project Management	2.68
	Subtotal (A)	**76.93**
B.	**Contingencies**	**20.93**
C.	**Financing Charges During Implementation**	**2.14**
	Total (A+B+C)	**100.00**

8. The government has requested a loan of $70 million from ADB's ordinary capital resources to help finance civil works of national highway component and related consulting services, and a loan of $5 million equivalent from ADB's Special Funds resources to help finance the consulting services to prepare the expressway connectivity improvement plan. The government will finance taxes, duties, road maintenance, and land acquisition and resettlement of about $25 million.[3] The financing plan is in Table 2.

Table 2: Financing Plan

Item	Total	Share of Total (%)
ADB OCR Loan	70.00	70.00
ADB ADF Loan	5.00	5.00
Government	25.00	25.00
Total	**100.00**	**100.00**

9. The ADB loans will fund only the incremental expenditure of project management units before the loan closing date of Additional Financing for National Highway Sector Project for component (i), and before the loan closing date of Loan 2080-SRI Road Project Preparatory Facility for component (ii): RDA Capacity Enhancement. After the respective closing dates, the ADB loans will fund the full expenditure of project management units under each component.

[3] All civil work contracts will include improvements of project roads and 5-year performance-based maintenance. The government will finance the 5-year performance-based maintenance.

A. Detailed Cost Estimates by Expenditure Category

Item	Total	ADB OCR (%)	ADB ADF (%)	Government (%)
A. Investment Costs [a] [b]				
1. Civil Works				
a. National Highway Improvement	53.04	89.29	0.00	10.71
b. Performance-based Maintenance	0.77	0.00	0.00	100.00
2. Consultants				
a. Project Implementation Consultant	4.72	82.63	0.00	17.37
b. Expressway Connectivity Plan	4.36	0.00	82.34	17.66
3. Land Acquisition and Resettlement				
a. National Highways	11.36	0.00	0.00	100.00
Subtotal (A)	**74.25**	**69.04**	**4.84**	**26.13**
B. Recurrent Costs [c]				
1. Project Management (NHI)	2.38	100.00	0.00	0.00
2. Project Management (ECIP)	0.30	0.00	100.00	0.00
Subtotal (B)	**2.68**	**88.81**	**11.19**	**0.00**
C. Contigencies				
1. Physical Contingency [d]	7.69	69.73	5.06	25.22
2. Price Contingency [e]	13.24	68.73	3.63	27.64
Subtotal (C)	**20.93**	**69.10**	**4.15**	**26.75**
D. Financing Charges During Implementation				
1. Interest During Implementation [f]	1.84	86.96	13.04	0.00
2. Commitment Charges [g]	0.30	100.00	0.00	0.00
Subtotal (D)	**2.14**	**88.79**	**11.21**	**0.00**
Total Project Cost (A+B+C+D)	**100.00**	**70.00**	**5.00**	**25.00**

ECIP = expressway connectivity improvement plan, NHI = national highway improvement

[a] In 2013 prices based on detail design.

[b] Inclusive of local taxes and duities compute at 12.0% for civil works contract values, consulting services, and equipment, and 25% for foreign consultant remuneration.

[c] Incremental administrative expenditures, including bank charges related to imprest accounts.

[d] Computed at 10% for civil works.

[e] Computed at about 2% for foreign currency costs, and 6-7% for local currency costs.

[f] Capitalized during implementation period, consisting of OCR at ADB's London interbank rate (LIBOR) plus Effective Contractual Spread of 0.5% per annum, and ADF at 2.0% per annum.

[g] Capitalized at 15 basis point on flat amounts of undisbursed loan balances (OCR portion only).

B. Allocation and Withdrawal of Loan Proceeds

OCR Loan

ALLOCATION AND WITHDRAWAL OF LOAN PROCEEDS (Southern Road Connectivity Project)			
Number	**Item**	**Total Amount Allocated for ADB Financing ($) Category**	**Basis for Withdrawal from the Loan Account**
1	Works (excluding performance based maintenance portion)	47,360,000	100% of total expenditure claimed*
2	Consulting Services for project implementation consultant	3,900,000	100% of total expenditure claimed*
3	Project management costs for national highways improvements	2,380,000	100 % of amounts due
4	Interest and commitment charges	1,900,000	
5	Unallocated	14,460,000	100% of total expenditure claimed*
	Total	70,000,000	

* Exclusive of taxes and duties imposed within the territory of the Borrower.

ADF Loan[4]

ALLOCATION AND WITHDRAWAL OF LOAN PROCEEDS (Southern Road Connectivity Project)			
Number	**Item**	**Total Amount Allocated for ADB Financing (SDR) Category**	**Basis for Withdrawal from the Loan Account**
1	Consulting Services for Expressway Connectivity Improvement Plan	2,795,000	100% of total expenditure claimed*
2	Project management costs for Expressway Connectivity Improvement Plan	200,000	100% of the total expenditure claimed*
3	Interest Charge	160,000	100 % of amounts due
4	Unallocated	0	
5	Consulting Services for Bataramulla Link	174,000	100% of the total expenditure claimed*
	Total	3,329,000	

* Exclusive of taxes and duties imposed within the territory of the Borrower.

[4] Revised allocation of ADF funds was approved on 28 July 2015.

C. Detailed Cost Estimates by Year

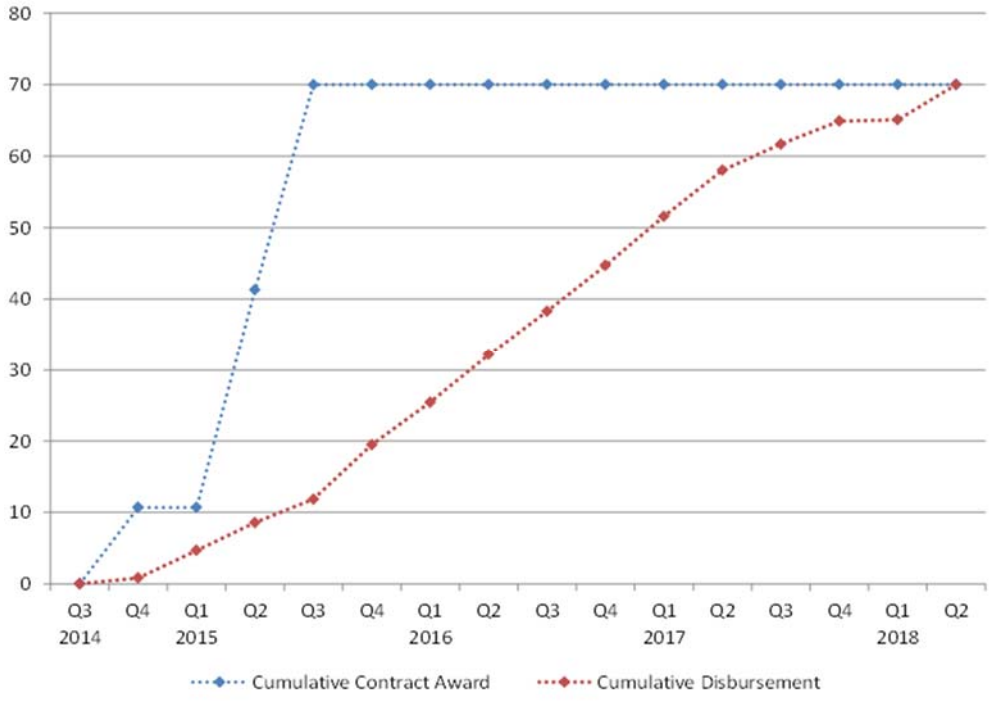
($ million)

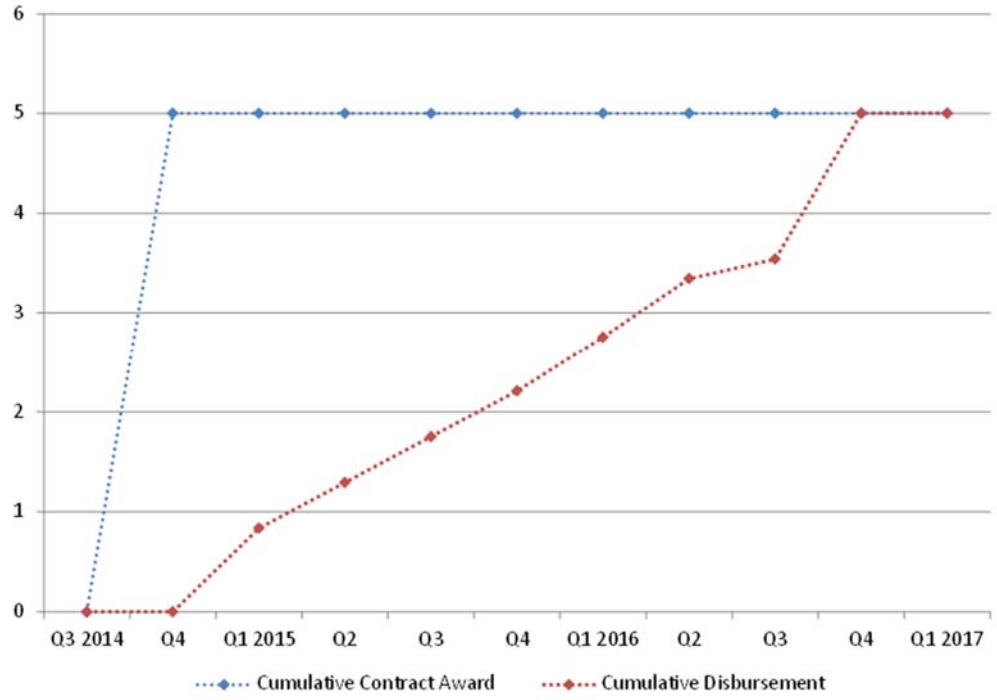
Item	Total	2014	2015	2016	2017	2018	2019	2020	2021
A. Investment Costs									
1. Civil Works									
a. National Highway Improvement	53.04	2.78	18.33	21.27	10.66				
b. Performance-based Maintenance	0.77			0.02	0.07	0.14	0.16	0.21	0.17
2. Consultants									
a. Project Implementation Consultant	4.72	0.24	2.01	2.01	0.27	0.19			
b. Expressway Connectivity Plan	4.36	0.46	1.97	1.86	0.07				
3. Land Acquisition and Resettlement									
a. National Highways	11.36	8.47	2.89						
Subtotal (A)	**74.25**	**11.95**	**25.20**	**25.16**	**11.07**	**0.33**	**0.16**	**0.21**	**0.17**
B. Recurrent Costs									
1. Project Management (NHI)	2.38	0.48	0.59	0.67	0.39	0.25			
2. Project Management (ECIP)	0.30	0.08	0.09	0.10	0.03				
Subtotal (B)	**2.68**	**0.48**	**0.59**	**0.67**	**0.39**	**0.25**	**0.00**	**0.00**	**0.00**
C. Contigencies									
1. Physical Contingency	7.69				3.96	3.73			
2. Price Contingency	13.24				9.23	4.01			
Subtotal (C)	**20.93**	**0.00**	**0.00**	**0.00**	**13.19**	**7.74**	**0.00**	**0.00**	**0.00**
D. Financing Charges During Implementation									
1. Interest During Implementation	1.84	0.08	0.21	0.34	0.56	0.65			
2. Commitment Charges	0.30	0.09	0.08	0.06	0.05	0.02			
Subtotal (D)	**2.14**	**0.17**	**0.29**	**0.40**	**0.61**	**0.67**	**0.00**	**0.00**	**0.00**
Total Project Cost (A+B+C+D)	**100.00**	**12.60**	**26.08**	**26.23**	**25.26**	**8.99**	**0.16**	**0.21**	**0.17**

ECIP = expressway connectivity improvement plan, NHI = national highway improvement

D. Contract and Disbursement S-curve

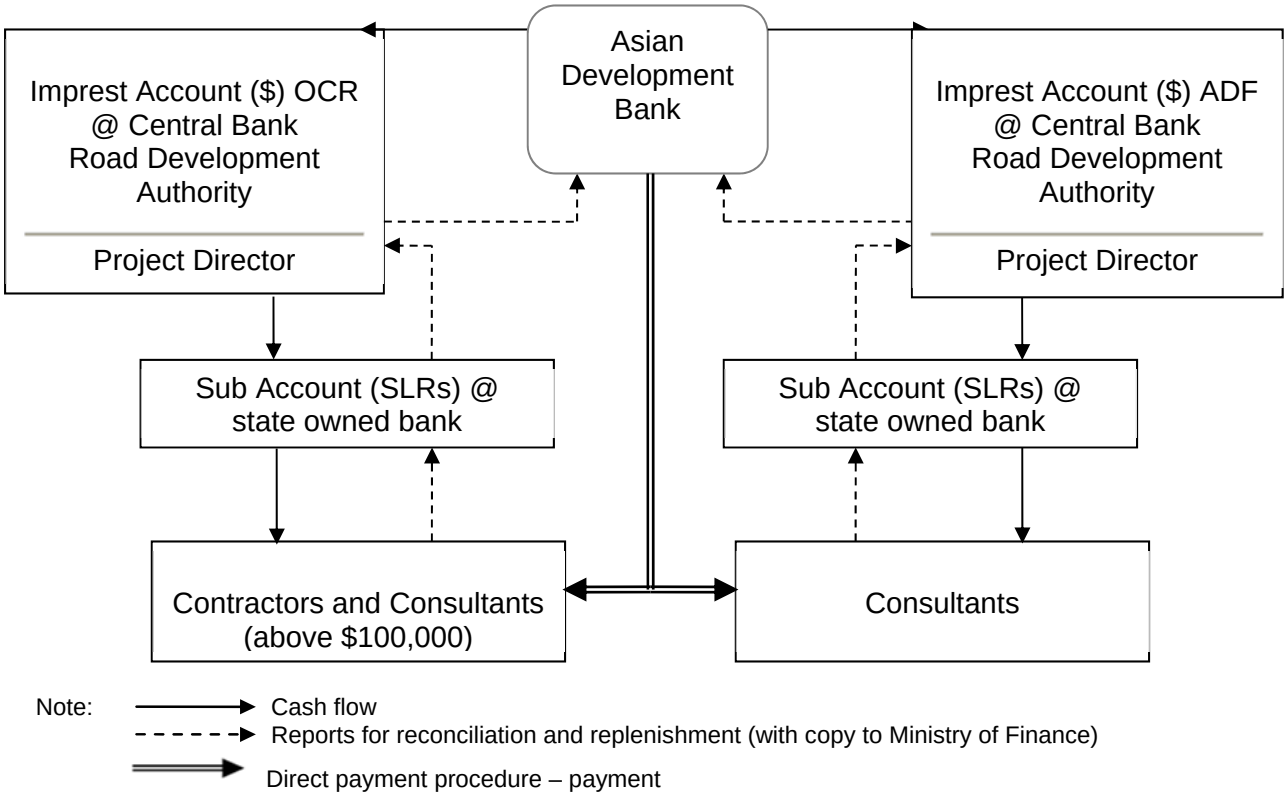
10. The following graphs show contract awards and disbursement for the OCR and ADF loans respectively over the life of the project, and annually based on the contract awards and disbursement projections (in $ million).





E. Fund Flow Diagram

11. The following diagram show how the funds will flow from ADB and the Borrower to implement project activities. RDA is the authorized signatory of withdraw application, or the imprest accounts.



Notes on funds flow:

a. **From ADB to the Imprest Accounts.** Loan proceeds will be channeled through two First Generation Imprest Accounts opened at the Central Bank of Sri Lanka to two Sub Accounts to be managed by the two project implementing units. ADB funds will be allocated based on the annual budget estimates prepared by the RDA. RDA will process all disbursement requests to ADB, including direct payment to contractors and consultants fees (above $100,000) The Project Imprest Account will be liquidated and replenished according to the ADB's *Loan Disbursement Handbook*. RDA is the authorized signatory.

b. **From ADB to contractors as well as consultants.** Payments for contractors and consultants fees (above $100,000), fees contracted by RDA, will be paid directly by ADB, which requires RDA's submission of approved invoices and documentation to ADB in accordance with ADB's *Loan Disbursement Handbook.*

V. FINANCIAL MANAGEMENT

A. Financial Management Assessment

12. Financial management assessment carried out in 2012 for Additional Financing for Northern Road Connectivity Project was updated for RDA, the implementing agency and its project implementation units for the purpose of the proposed loans. RDA has prior and ongoing experience with implementing ADB-funded projects and has satisfactory capacity in terms of project financial accounting and knowledge of ADB disbursement procedures. Within the project implementation unit for National Highway Sector Project, RDA has established a dedicated project accounting and finance team with suitably qualified accountants: a project accountant, an accounts assistant, four accounts clerks and a computer operator. Similarly, project management unit of Road Project Preparatory Facility consist of a project accountant, assistant accountants, accounts clerks and a cashier. RDA will maintain separate project records and accounts to identify the financing resources received and expenditures made for the project, ensuring an adequate audit trail. The government's Office of Auditor General will annually audit the project accounts and related financial statements in accordance with international auditing standards. To further minimize any risks, ADB's direct payment procedure will be utilized for substantial disbursement of payments for works, goods, and consulting services. To enhance the internal audit arrangement, a steering committee will be established and chaired by the Secretary of MOHEH to monitor the project activities and progress.

13. Financial management risks should be considered and updated[5] throughout the life of the project. Risk mitigation measures should also be updated accordingly.

B. Disbursement

14. The Loan proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2015, as amended from time to time),[6] and detailed arrangements agreed upon between the Government and ADB.

15. In principle, direct payment procedure by ADB will be utilized for progress payments on civil works, and consultant's fees for expenses above $100,000. Reimbursement and imprest fund (liquidation or replenishment) procedures will be utilized for recurrent costs (project management). Two separate imprest accounts will be established and maintained by RDA.

16. The following table summarizes currency, responsible entities of the separate imprest accounts and sub-accounts to be established under ADB's OCR and ADF loans.

[5] Available at: https://www.adb.org/documents/financial-due-diligence-methodology-note , and Financial Management. See also Analysis of Projects Guidelines (2005): https://www.adb.org/documents/financial-management-and-analysis-projects

[6] Available at: https://www.adb.org/documents/loan-disbursement-handbook

	Funding Source	
	ADF	OCR
Imprest Account	(1) account ($) established at the Central Bank of Sri Lanka in the name of RDA for Expressway Connectivity Improvement Plan	(1) account ($) established at the Central Bank of Sri Lanka in the name of RDA for the National Highway Improvement
Sub Account	(1) account (SLRs) established at the state owned bank in the name of RDA's Project Implementation Unit	(1) account (SLRs) established at the state owned bank in the name of RDA's Project Implementation Unit

17. The imprest accounts will be established, managed, replenished and liquidated in accordance with the Loan Disbursement Handbook. The ceiling for the imprest accounts will not exceed the equivalent of 10% of the loan amount. The request for advance to the imprest accounts should be accompanied by an Estimate of Expenditure Sheet[7] setting out the estimated expenditures for the forthcoming six (6) months of project implementation, and submission of evidence satisfactory to ADB that the imprest accounts have been duly opened. For every liquidation and replenishment request of the imprest accounts, the borrower will furnish to ADB (a) Statement of Account (Bank Statement) where the imprest accounts are maintained, and (b) the imprest accounts Reconciliation Statement reconciling the above mentioned bank statement against the EA's records.[8]

18. ADB's statements of expenditure (SOE) will be utilized for reimbursement, liquidation and replenishment of the imprest accounts for any individual payments not exceeding the equivalent of $100,000. SOE records should be maintained and made readily available for review by ADB's disbursement and review mission or upon ADB's request for submission of supporting documents on a sampling basis, and for independent audit.

19. Before the submission of the first withdrawal application, the borrower should submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the borrower, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is US$100,000, unless otherwise approved by ADB. The borrower is to consolidate claims to meet this limit for reimbursement and imprest account claims. Withdrawal applications and supporting documents will demonstrate, among other things that the goods, and/or services were produced in or from ADB members, and are eligible for ADB financing.

20. RDA will be responsible for (i) preparing disbursement projections, (ii) requesting budgetary allocations for counterpart funds, (iii) collecting supporting documents, (iv) preparing and sending withdrawal applications to ADB, and (v) managing the imprest accounts and sub-accounts.

C. Accounting

21. The RDA will maintain separate project financial statements and records by funding source for all expenditures incurred on the Project. Project financial statements will follow international accounting principles and practices.

[7] Available in Appendix 7B of the *Loan Disbursement Handbook.*
[8] Follow the format provided in Appendix 10C of the *Loan Disbursement Handbook.*

D. Auditing

22. The RDA will cause the project financial statements to be audited in accordance with International Standards on Auditing and in accordance with the Government's audit regulations by an auditor acceptable to ADB. The audited financial statements will be submitted in the English language to ADB within 6 months of the end of the fiscal year by the executing agency. The annual audit report will include a copy of the management letter, a separate opinion covering the use of ADB loan proceeds, the use of imprest account and statement of expenditure procedures, and compliance with loan financial covenants, if applicable. Pursuant to ADB's Public Communications Policy, the audited project financial statements, including the notes to accounts and the auditors' report will be disclosed on ADB's website within 30 days after receipt. The Government, MOHEH and RDA have been made aware of ADB’s policy on delayed submission, and of the requirements for satisfactory and acceptable quality of the audited accounts. ADB reserves the right to verify the project's financial accounts to confirm that the share of ADB’s financing is used in accordance with ADB’s policies and procedures. For revenue generating projects only, ADB requires audited financial statements for each executing and/or implementation agency associated with the project.

23. The Auditor General Department should be informed of the need for audit on a timely basis, such that they incorporate this into the work plan.

VI. PROCUREMENT AND CONSULTING SERVICES

A. Advance Contracting and Retroactive Financing

24. All advance contracting will be undertaken in conformity with ADB's *Procurement Guidelines* (April 2015, as amended from time to time) (ADB's *Procurement Guidelines)*[9] and ADB's *Guidelines on the Use of Consultants* (March 2013, as amended from time to time) (ADB's *Guidelines on the Use of Consultants).*[10] The issuance of invitations to bid under advance contracting will be subject to ADB approval. The Government, MOHEH, and RDA have been advised that approval of advance contracting does not commit ADB to finance the ensuing Project.

25. Advance contracting includes tendering and bid evaluation for civil works packages, and recruitment of consultants. The detailed advance action schedules, which will be updated on regular basis, are presented below:

Procurement - Civil Works: National Highways Improvement CP01

No.	Activity	Days	Timeframe	Action By	Status	Actual Date
1	Finalize Bidding Document		02/07/2013	RDA	completed	02/01/2014
2	ADB Review	28	30/07/2013	ADB	completed	15/01/2014
3	Final Revisions	4	10/08/2013	RDA	completed	16/01/2014
4	Advertise IFB in Newspaper/ADBBO	1	15/08/2013	RDA	completed	17/01/2014
5	Preparation of Bids	42	30/09/2013	External	completed	03/04/2014
6	Submission of Bids/Public Opening	0	30/09/2013	RDA	completed	03/04/2014
7	TEC Evaluate Bids	60	01/11/2013	RDA	completed	28 /04/2014
8	Review by Procurement Committee	15	20/11/2013	RDA	completed	27/07/2014
9	ADB Review and No-Objection	21	10/12/2013	ADB	completed	29/08/2014
10	Issue Notice of Award	48	30/01/2014	RDA	completed	23/10/2014

Procurement - Civil Works: National Highways Improvement CP02

No.	Activity	Days	Timeframe	Action By	Status	Actual Date
1	Finalize Bidding Document		15/09/2014	RDA	completed	01/11/2015
2	ADB Review	28	25/09/2014	ADB	completed	11/11/2015
3	Final Revisions	4	29/09/2014	RDA	completed	07/12/2015
4	Advertise IFB in Newspaper/ADBBO	1	30/09/2014	RDA	completed	08/12/2015
5	Preparation of Bids	42	11/12/2014	External	completed	22/01/2016
6	Submission of Bids/Public Opening	0	11/12/2014	RDA	completed	22/01/2016
7	TEC Evaluate Bids	60	12/12/2014	RDA	completed	20/04/2016
8	Review by Procurement Committee	15	20/12//2014	RDA	completed	
9	ADB Review and No-Objection	21	20/01/2015	ADB	completed	24/05/2016
10	Issue Notice of Award	48	20/02/2015	RDA	completed	27/06/2016

[9] Available at: https://www.adb.org/documents/procurement-guidelines

[10] Available at: https://www.adb.org/documents/guidelines-use-consultants-asian-development-bank-and-its-borrowers

Procurement - Civil Works: National Highways Improvement CP03

No.	Activity	Days	Timeframe	Action By	Status	Actual Date
1	Finalize Bidding Document		05/01/2015	RDA	completed	20/02/2015
2	ADB Review	28	04/02/2015	ADB	completed	27/02/2015
3	Final Revisions	4	08/02/2015	RDA	completed	20/04/2015
4	Advertise IFB in Newspaper/ADBBO	1	10/02/2015	RDA	completed	23/04/2015
5	Preparation of Bids	42	25/03/2015	External	completed	23/06/2015
6	Submission of Bids/Public Opening	0	25/03/2015	RDA	completed	23/06/2015
7	TEC Evaluate Bids	60	10/05/2015	RDA	completed	22/10/2015
8	Review by Procurement Committee	15	25/05/2015	RDA	completed	23/10/2015
9	ADB Review and No-Objection	21	25/06/2015	ADB	completed	23/02/2016
10	Issue Notice of Award	48	12/08//2015	RDA	completed	08/04/2016

Procurement - Civil Works: National Highways Improvement CP04

No.	Activity	Days	Timeframe	Action By	Status	Actual Date
1	Finalize Bidding Document		18/08/2016	RDA	completed	06/09/2016
2	ADB Review	61	17/10/2016	ADB	completed	28/10/2016
3	Final Revisions	2	19/10/2016	RDA	completed	26/10/2016
4	Advertise IFB in Newspaper/ADBBO	1	20/10/2016	RDA	completed	07/11/2016
5	Preparation of Bids	33	21/11/2016	External	completed	08/12/2016
6	Submission of Bids/Public Opening	0	21/11/2016	RDA	completed	08/12/2016
7	TEC Evaluate Bids	26	16/12/2016	RDA	completed	24/01/2017
8	Review by Procurement Committee	16	31/12/2016	RDA	completed	15/03/2017
9	ADB Review and No-Objection	15	15/11/2017	ADB	completed	06/04/2017
10	Issue Notice of Award	6	20/01/2017	RDA		

Consultant Recruitment: Project Implementation Consultants

No.	Activity	Days	Timeframe	Action By	Status	Actual Date
1	Prepare Request for Expression of Interest		15/08/2013	RDA	completed	07/02/2014
2	Advertise in the newspapers & ADBBO	5	20/08/2013	RDA	completed	02/04/2014
3	EOI Submission	31	21/09/2013	External	completed	01/05/2014
4	Submission (1) to ADB: Shortlisting/Draft Request for Proposal (RFP)	21	11/10/2013	RDA	completed	05/06/2014
5	ADB's Review and No-Objection	21	01/11/2013	ADB	completed	14/07/2014
6	Issue RFP	4	05/11/2013	RDA	completed	15/07/2014
7	Proposal Submission	46	21/12/2013	External	completed	28/08/2014
8	Submission (2) to ADB: Technical Evaluation	21	18/09/2014	RDA	completed	24/09/2014
9	ADB's Review and No-Objection	14	02/10/2014	ADB	completed	28/11/2014
10	Public Opening of the Financial Proposals	3	05/10/2014	RDA	completed	10/12/2014

11	Submission (3) to ADB: Financial Evaluation/Ranking	14	20/10/2014	RDA	completed	18/12/2014
12	ADB's Review and No-Objection	7	27/10/2014	ADB	completed	07/01/2015
13	Invite 1st Ranked Firm - Negotiate/Draft Contract	7	05/11/2014	RDA	completed	12/01/2015
14	Submission (4) to ADB: Draft Negotiated Contract	2	07/11/2014	RDA	completed	11/02/2015
15	ADB's Review and No-Objection	7	14/11/2014	ADB	completed	17/02/2015
16	Contract Signing & Issue Notice to Proceed	2	15/11/2014	RDA	completed	05/06/2015

Consultant Recruitment: Expressway Connectivity Improvement Plan

No.	Activity	Days	Timeframe	Action By	Status	Actual Date
1	Prepare Request for Expression of Interest		06/08/2013	RDA	completed	27/08/2013
2	Advertise in the newspapers & ADBBO	5	11/08/2013	RDA	completed	16/09/2013
3	EOI Submission	31	11/09/2013	External	completed	17/10/2013
4	Submission (1) to ADB: Shortlisting/Draft Request for Proposal (RFP)	21	02/10/2013	RDA	completed	04/12/2013
5	ADB's Review and No-Objection	21	23/10/2013	ADB	completed	05/02/2014
6	Issue RFP	4	28/10/2013	RDA	completed	18/02/2014
7	Proposal Submission	46	13/12/2013	External	completed	04/04/2014
8	Submission (2) to ADB: Technical Evaluation	21	03/01/2014	RDA	completed	02/07/2014
9	ADB's Review and No-Objection	14	17/01/2014	ADB	completed	05/08/2014
10	Public Opening of the Financial Proposals	3	20/01/2014	RDA	completed	11/08/2014
11	Submission (3) to ADB: Financial Evaluation/Ranking	14	03/02/2014	RDA	completed	15/08/2014
12	ADB's Review and No-Objection	7	10/02/2014	ADB	completed	28/08/2014
13	Invite 1st Ranked Firm - Negotiate/Draft Contract	7	17/02/2014	RDA	completed	01/09/2014
14	Submission (4) to ADB: Draft Negotiated Contract	2	19/02/2014	RDA	completed	23/09/2014
15	ADB's Review and No-Objection	7	26/02/2014	ADB	completed	01/10/2014
16	Contract Signing & Issue Notice to Proceed	2	28/02/2013	RDA	completed	25/11/2014

26. Retroactive financing is permitted only if (i) it is specifically agreed, by ADB and the borrower, in the loan agreements, and only pursuant to the terms of the relevant agreement; (ii) the goods, works, services, and consultants for which it is requested are procured in accordance with ADB's *Procurement Guidelines* or *Guidelines on the Use of Consultants by Asian Development Bank and Its Borrowers* or *Guidelines on the Use of Consultants by Asian Development Bank and Its Borrowers*, under arrangements acceptable to ADB; and (iii) the amount to be retroactively financed does not exceed 20% of the loan, grant, or TA amount. The expenditure must be incurred before the effectiveness of the loan, but no earlier than 12 months before the signing date of the loan agreements.

B. Procurement of Goods, Works and Consulting Services

27. All procurement of goods and works will be undertaken in accordance with ADB's *Procurement Guidelines (2015, as amended from time to time).*

28. The government will inform ADB on the changes made to the national procurement regulations if any and carry out a joint review of the NCB Annex if necessary. The procurement plan should be updated whenever change in the procurement arrangements and/or the NCB Annex is required and agreed.

29. An 18-month procurement plan indicating threshold and review procedures, goods, works, and consulting service contract packages and national competitive bidding guidelines is in Section C (Procurement Plan).

30. All consultants will be recruited according to ADB's *Guidelines on the Use of Consultants (2013, as amended from time to time)*.[11] The terms of reference for all consulting services are detailed in Section D.

31. To facilitate project management and implementation, an international firm, as project implementation consultants (PIC), will be recruited. The PIC will assume the role of the "Engineer" and will supervise respective civil works and provide on-the-job training to counterpart staff. An estimated 662 person-months (54 international, 608 national) of consulting services are required. The consulting firm will be engaged using the quality- and cost-based selection (QCBS) method with a weighting of 90% technical and 10% financial as the nature of the assignment requires priority consideration for quality.

32. To develop the expressway connectivity improvement plan, an international firm will be recruited. An estimated 297 person-months (58 international, 239 national) of consulting services are required. The consulting firm will be engaged using the quality- and cost-based selection (QCBS) method with a weighting of 90% technical and 10% financial as the nature of the assignment requires priority consideration for quality. Individual consultants will be recruited (i) to conduct studies for connecting Battaramulla Link with the new Kelany Bridge and the Port Acess Link as part of the expressway connectivity program for Colombo Metropolitan area (e-connect); (ii) to strengthen the geometric designs, review the detail structural designs and integrate/update the economic analysis for Package I-Gampaha (Meerigama) to Kurunegala including Ambepussa link section of the Central Expressway Project with a link to Kandy; and (iii) to assist RDA in assessment of overall road network including expressways with future demands and identify roads linking expressways and national highways.

C. Procurement Plan

33. The procurement plan, prepared in accordance with the country specific template, is in Attachment A, describing all procurement of good and works to be undertaken for the Project.

D. Consultant's Terms of Reference

34. The consultant's terms of reference are provided in the following attachments.

(i) Attachment B: Project Implementation Consultants.
(ii) Attachment C: Expressway Connectivity Improvement Plan
(iii) Attachment D: Transport Planner
(iv) Attachment E: Highway Engineer

[11] Checklists for actions required to contract consultants by method available in e-Handbook on Project Implementation at: http://www.adb.org/documents/handbooks/project-implementation/

(v) Attachment F: Bridge and Structural Engineer
(vi) Attachment G: Highway Engineer
(vii) Attachment H: Bridge/Structural Engineer

VII. SAFEGUARDS

35. Pursuant to ADB's Safeguard Policy Statement (SPS, 2009),[12] ADB funds may not be applied to the activities described on the ADB Prohibited Investment Activities List set forth at Appendix 5 of the SPS.

A. Environment

36. The Project has been classified as Category B in accordance with the ADB *Safeguard Policy Statement 2009*. Hence road specific Initial Environmental Examination (IEE) reports including Environmental Management Plans (EMPs) and Environmental Monitoring Plans (EMoPs) have been prepared. The EMPs as well as requirements of the environmental clearance issued by the Central Environmental Authority (CEA) and the EMoP will be incorporated in the bidding documents and included as part of the contract documents. Hence, it is the contractor's responsibility to implement the EMP and EMoP during construction and the associated cost will be included in the contract.

37. The Environmental specialist under the PMU under RDA, MOHEH is responsible for overall coordination of monitoring implementation of the EMP and EMOP by the contractors. The Environmental and Social Division (ESD) of the RDA will provide technical guidance and support to the PMU. Day to day site level monitoring of EMP and EMOP implementation and reporting will be carried out by the supervision consultant's team which includes an environmental specialist. Any updates to the EMP (if required) will be made by the environmental specialist under the supervision consultants and reviewed and approved by ESD. An initial coordination cum training workshop will be organized by the PMU with technical support from ESD before the start of construction works for the supervision consultants to agree on modalities for implementing the EMP and EMoP and carrying out necessary monitoring and reporting activities.

B. Social – Involuntary Resettlement

38. The project is classified as category A in accordance to ADB's Safeguard Policy Statement (SPS, 2009). Three resettlement plans (RPs) have been prepared for the three project roads requiring land acquisition and rehabilitation. The RPs mitigate and address the resettlement impacts due to the project and all the associated losses. These resettlement plans have been prepared based on ADB's SPS, government's Land Acquisition Act (LAA) of 1950 and the National Involuntary Resettlement Policy (NIRP) 2001. Land acquisition for 2 project roads—B295 and B389—where already mostly completed by the government prior to ADB intervention. 2 due diligence reports were prepared. Government will complete the pending payments, including necessary interest payments, prior to displacing affected persons.

39. Complete details of compensation rates for the loss of land and structures, shifting assistance, and other income restoration assistance are provided in the RPs. Additional support provisions for displaced people belonging to vulnerable groups are included in the resettlement plans. Proper consultation during the preparation of RPs with the project displaced persons including land acquisition and compensation process has been undertaken and the disclosure of the RPs and due diligence reports to the general public through the ADB website and directly to affected persons has been undertaken. An effective grievance mechanism will be established to receive and facilitate the resolution of affected persons concerns and grievances about physical

[12] Available at: https: https://www.adb.org/documents/safeguard-policy-statement

and economic displacement and other project impacts in a timely manner as provided for in the RPs.

40. If during implementation any modification or additional land requirement or involuntary resettlement impacts are identified an RP should be updated in accordance with the applicable laws referred to in the RP and prior approval of the ADB before award of contracts obtained before any further implementation of the relevant section of the subproject.

41. RDA will: (i) implement the projects in accordance with the RPs prepared, ADB's Safeguard Policy Statement (2009), and applicable national and state laws and regulations. (ii) in case of any design changes , ensure that the resettlement plans are updated on the basis of the final alignment and submitted to ADB for review and approval prior to awarding of civil works contracts; and (iii) submit semi-annual progress reports (2 times per year) on the implementation of the RPs to ADB for review and posting on the ADB website (as per SPS, SR 2, Appendix 2, para 26 iv, p 49).

42. All displaced people should be paid compensation and assistance before the commencement of the civil works and in accordance with the RPs. A comprehensive income and livelihood rehabilitation program supported by an adequate budget should be in place. The land should be made free of encumbrances and obstructions from the related section required to be handed over to the civil works contractor for and prior to commencement of construction thereof in accordance with the work schedule under the related civil works contract.

43. The implementation of the resettlement plans will be monitored internally by RDA and externally by qualified and experienced expert to monitor, evaluate and report whether resettlement goals have been achieved through RP implementation. The external experts engaged by the IA will advise on safeguard compliance issues and corrective actions. The external experts will submit semi-annual monitoring reports (2 times per year) to IA and ADB.

C. Social – Indigenous People

44. Based on the poverty and social assessment, there are no indigenous people or communities present in the project influence area. Communities affected by the subprojects will be Sinhalese, Muslims, and Tamil. Therefore, no indigenous peoples plan or indigenous people development framework has been prepared. However, special provisions have been made under the RPs to address indigenous people impacts.

45. In case of any adverse impacts if identified during implementation of the subproject on indigenous people, the RDA will ensure that the Indigenous peoples plan (IPP) is prepared in accordance with the Safeguard Policy Statement 2009 and the same is further approved by ADB before award of related civil works contract and implemented before commencement of the relevant section of the civil works contract as applicable. Any update of IPP during implementation shall follow requirements similar to the RPs as described for involuntary resettlement.

VIII. GENDER AND SOCIAL DIMENSIONS

46. **Gender consultation and participation**. A gender action plan (GAP) has been formulated for the project in order to: (i) maximize women's access to project benefits; (ii) provide opportunities to increase women's skills, incomes and participation in decision making; and (iii) minimize social vulnerability in the project affected area. The contract for civil works will include measure to ensure safe and healthy working environment for both the men and women laborers. The civil works contractors will be advised to take appropriate measures with respect to compliance of equal pay for men and women, health and safety at construction sites and labor camps and awareness program for the workers on prevention of STIs.

47. To ensure that these and other gender issues are addressed and complied with, the project implementation consultant will include a social development expert. The project implementation consultants will provide monitoring support and RDA will be responsible for the overall implementation the GAP. The gender mainstreaming activities are in the following table:

Gender Action Plan

Activity	Performance Targets / Indicators	Responsibility	Timeframe
Output 1: Improved capacity of national highways linking the expressway network in south region			
1. Employ local women and/or those from poor female-headed households for road maintenance, ensuring equal pay for work of equal value	• At least 15% of employed local workers are women and/or those from poor female-headed households[13] • An estimated 8,900 person-days of work generated for women workers	• Implemented by civil works contractor • Monitored by PIC	Q1 2015 to Q4 2019
2. Provide all women employed in civil works with post-contract trainings	• All women employed in civil works capacitated on employment skills and personal financial management	• Implemented by PIC	Q3 2016 to Q4 2019
3. Integrate elderly-women-children-disabled (EWCD)-friendly safety features in road design.	• 1.5 km of paved raised sidewalk in urban areas • Soft shoulder for 100% of rehabilitated roads • Rumble strips and zebra crossings in congested areas • Proper traffic signage installed	• Designed by Design Consultant • Implemented by civil works contractor • Monitored by PIC	Q1 2015 to Q4 2019
4. Build the capacity of RDA on gender-inclusive road design, construction, rehabilitation, and operation and maintenance	• 2 gender-inclusive trainings for RDA staff conducted. Objective of the training is to build awareness of RDA staff in measures to integrate gender-inclusive features in future road design, construction, rehabilitation, and operation and maintenance.	• Implemented by PIC • Monitored by ESD/RDA	Q1 2015 to Q4 2019
5. Provide road safety awareness training to community members in the project areas	• 8 gender-inclusive road safety awareness conducted • At least 50% of the participants in the road safety awareness trainings are women	• Implemented by PIC • Monitored by ESD/RDA	Q1 2015 to Q4 2019

[13] In similar projects of similar areas, women participation in civil works is 6-10%.

6. Provide awareness training on sexually transmitted infections and trafficking	• 8 HIV and human trafficking awareness-raising trainings conducted for all project staff and contractors • 8 HIV and human trafficking awareness-raising trainings conducted in project affected areas, at least 50% of whom are women • 1 women-only HIV and human trafficking awareness-raising training per civil works contract package conducted for those from project affected communities	• Implemented by PIC • Monitored by ESD/RDA	Q1 2015 to Q4 2019
Output 2: Enhanced Capacity of RDA			
1. Recruit social development/gender/ resettlement specialist to support capacity in implementing and monitoring the GAP	• One social development/ gender/resettlement specialist recruited for 24 months on an intermittent basis	• Implemented by PIC	Q1 2015 to Q4 2019
2. Collect and analyze sex-disaggregated data during social impact assessment to determine gender-specific needs and constraints in transportation use	• Transport-related gender issues and suggested measures to address them identified	• Implemented by ECIP	Q1 2015 to Q4 2019
3. Integrate gender-responsive strategies and design features in the long-term connectivity improvement plan	• Long-term expressway connectivity improvement plan with gender-responsive strategies and gender-inclusive road design features	• Implemented by ECIP	Q1 2015 to Q4 2019

ECIP = Expressway Connectivity Investment Plan Design Consultant; ESD/RDA = Environmental and Social Division of the Roads Development Authority; PIC = Project Implementation Consultant.

48. **HIV and AIDS**. Sri Lanka continues to have very low HIV prevalence. In 1992, the Government of Sri Lanka initiated HIV prevention and control efforts through the National STD and AIDS Control Program (NSACP) of the Ministry of Health under the Director General of Health Services. In addition, the National Blood Transfusion Services (NBTS) and the National Program for Tuberculosis and Chest Diseases (NPTCCD) strengthened their responses to reduce transmission and prevent further spread of HIV. These services are provided in collaboration with eight Provincial Directors of Health Services and the respective District staff. The NSACP in collaboration with the Provinces undertook HIV prevention activities (e.g., a mass media communications strategy to improve knowledge and awareness of HIV) and provides care and treatment to people living with HIV.

49. RDA will ensure that all civil works contractors complete the following: (i) carry out awareness programs for labor on the risks of sexually transmitted diseases/ AIDS and human trafficking; and (ii) disseminate information at worksites on the risks of sexually transmitted diseases and HIV/AIDS as part of health and safety measures for those employed during construction. Contracts for all subprojects will include specific clauses on these undertakings, and compliance will be strictly monitored by RDA, with the support of construction supervision consultants during project implementation.

50. **Health**. RDA shall ensure that contractors provide adequately for the health and safety of construction workers and further ensure that bidding documents include measures on how contractors will address this, including an information and awareness raising campaign for construction workers on sexually transmitted diseases, HIV/AIDS, and human trafficking.

51. **Labor**. RDA shall ensure that (i) civil works contractors comply with all applicable labor laws and regulations, do not employ child labor for construction and maintenance activities, and provide appropriate facilities for women and children in construction campsites; (ii) people directly affected by the sub projects are given priority to be employed by the contractor; (iii) contractors do not differentiate wages between men and women for work of equal value; and (iv) specific clauses ensuring these will be included in bidding documents. The construction supervision consultants monitor the provisions

IX. PERFORMANCE MONITORING, EVALUATION, REPORTING AND COMMUNICATION

A. Project Design and Monitoring Framework

52. The project design and monitoring framework is in Appendix 1 of the RRP (http://www.adb.org/projects/project.asp?id=47182). Baselines of the indicators for each project road are listed below. A complete baseline database will be collected, verified, and refined by RDA with assistance of Project Implementation Consultants. The project impact indicator, average travel cost on national highways linking the expressway network will be assessed by consultants for expressway connectivity investment plan.

Road	**Average Travel Speed** (2012)	**Fatal Accidents** (Accident number in 2011)	**Movement of people and goods** (average daily vehicle-km in 2012)
B389	30 km/hour	2	37,728
B295	30 km/hour	2	52,800
A004	40 km/hour	0	76,872
B157	30 km/hour	1	90,301
B084	30 km/hour	0	334,170
CINEC - Abhathale Road	30 km/hour	0	Not Available

B. Monitoring

53. **Project performance monitoring**: The achievement of the project performance targets will be assessed following the design and monitoring framework. RDA, assisted by Project Implementation Consultant (Supervision Consultant), will establish a project performance management system. Indicators to be monitored include (i) number of businesses, (ii) household income, (iii) vehicle ownership, (iv) unemployment rate, (v) land value, (vi) traffic volume, (vii) bus and freight transport fares, (viii) travel time, (ix) road accidents, (x) overloading vehicles, (xi) vehicle operating cost, and (xii) surface roughness. These indicators will be monitored before and after construction, on project highways and on some control highways. In addition, every year during the project period RDA will also monitor (i) the road maintenance budget, (ii) ratio of RDA staff/km of NH, and (iii) road maintenance cost/km. Disaggregated baseline data for output and outcome indicators gathered during project processing will be updated and reported quarterly through the quarterly progress reports from RDA, and after each ADB review mission. These quarterly reports will provide information necessary to update ADB's project performance reporting system.[14]

54. **Compliance monitoring**: Compliance with covenants will be monitored through ADB's Project Administration Missions – including project inception mission to discuss and confirm the timetable for compliance with the loan covenants; project review missions to review the borrower's compliance with particular loan covenants and, where there is any noncompliance or delay, discuss proposed remedial measures with the Government; and mid-term review mission if necessary to review covenants to assess whether they are still relevant or need to be changed,

[14] ADB's project performance reporting system is available at: http://www.adb.org/Documents/Slideshows/PPMS/default.asp?p=evaltool

or waived due to changing circumstances.

55. **Safeguards monitoring** - **Environment**: The PMU along with technical support from the Environmental Social Division (ESD) of RDA will ensure overall compliance through periodic site visits and review of monitoring reports submitted by the supervision consultants.

56. Site level day-to-day monitoring for implementation of the EMP and EMoP will be carried out by the field staff of the supervision consultants. Monitoring records in the form of weekly checklists or field notes will be maintained by the field staff and cross checked and verified by the field staff of RDA. Based on these checklists/field notes, the environmental specialist of the supervision consultants will prepare quarterly monitoring reports for purposes of internal project information management and submit them to ESD. Relevant documents such as laboratory test results under the EMoP, permits and licenses, photographs, minutes of site level meetings etc. will be attached to the quarterly reports. Based on these quarterly reports, annual monitoring reports will be prepared and submitted to ESD for further submission to ADB. These annual monitoring reports will then be disclosed on the ADB website in accordance with the requirements of ADB's SPS 2009.

57. The environmental specialist under the supervision consultant's team will visit the site on a bi-monthly or quarterly basis and provide necessary technical advice and guidance to the contractors as well as the field staff maintaining the site level monitoring checklists/field notes.

58. **Safeguards monitoring** - **Resettlement**: In order to monitor the RP implementation, internal monitoring which will be carried out by the IA and external monitoring will be carried out by qualified and experienced external experts. Semiannual monitoring reports will be submitted to IA and ADB.

59. **Indigenous People**: The project has no adverse or significant impact on indigenous people and, therefore, no specific action is required under the subproject. However provisions have been made under the resettlement framework and RPs for special considerations of indigenous people. For any reason, if Indigenous Peoples Plan become necessary during implementation, RDA will prepare for ADB's review and approval, and RDA assisted by the construction supervision consultant, will monitor implementation and report progress on semiannual basis.

60. **Gender and Development**: In order to monitor the Gender Action Plan implementation, a GAP implementation matrix that tracks implementation progress of each GAP activity should be included in semiannual monitoring report. Semiannual monitoring reports will be submitted to IA and ADB.

C. Evaluation

61. A project inception mission will be fielded soon after the legal agreements for the Project are declared effective; thereafter, regular reviews will follow at least annually. As necessary, special loan administration missions and a midterm review mission will be fielded, under which any changes in scope or implementation arrangement may be required to ensure achievement of project objectives. RDA will monitor project implementation in accordance with the schedule and time-bound milestones, and keep ADB informed of any significant deviations that may result in the milestones not being met. Within 6 months of physical completion of the Project, RDA will

submit a project completion report to ADB.[15]

D. Reporting

62. The RDA through MOHEH will provide ADB with (i) quarterly progress reports in a format consistent with ADB's project performance reporting system; (ii) consolidated annual reports including (a) progress achieved by output as measured through the indicator's performance targets, (b) key implementation issues and solutions; (c) updated procurement plan and (d) updated implementation plan for next 12 months; and (iii) a project completion report within 6 months of physical completion of the Project. To ensure projects continue to be both viable and sustainable, project accounts and the executing agency AFSs, together with the associated auditor's report, should be adequately reviewed.

E. Stakeholder Communication Strategy

63. Once a year, RDA will hold one-day workshop to share information on project progress, issues, lessons learned, and performance improvement measures if appropriate. Representation will include members of the national steering committee and provincial coordinating committee.

64. Various information regarding the Project, including scope, general progress status, beneficiaries, invitation for bid, and consultant recruitment notices, will be provided to the general public. The information will be made available and updated through the official websites of RDA.

[15] Project completion report format available at: http://www.adb.org/Consulting/consultants-toolkits/PCR-Public-Sector-Landscape.rar

X. ANTICORRUPTION POLICY

65. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the Project.[16] All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of the executing agency and all Project contractors, suppliers, consultants and other service providers. Individuals/entities on ADB's anticorruption debarment list are ineligible to participate in ADB-financed activity and may not be awarded any contracts under the Project.[17]

66. To support these efforts, relevant provisions are included in the loan agreements, regulations and the bidding documents for the Project.

67. RDA shall ensure that its website provide updated, detailed information on implementation of the Project, specifically procurement related information, including the list of participating bidders, name of the winning bidder, basic details on bidding procedures adopted, amount of each contract awarded, and adequate details of the goods, works and consulting services procured for the Project.

[16] Available at: https://www.adb.org/documents/integrity-principles-and-guidelines
[17] ADB's Integrity Office web site is available at: https://www.adb.org/site/integrity/overview

XI. ACCOUNTABILITY MECHANISM

68. People who are, or may in the future be, adversely affected by the project may address complaints to ADB, or request the review of ADB's compliance under the Accountability Mechanism.[18]

69. To ensure greater accountability, the Project is operating a grievance redress mechanism to ensure greater accountability to receive and resolve complaints, as well as to act upon stakeholders' reports of irregularities on project related matters, including grievances concerning resettlement. A total of 14 Grievance Redress Committees, comprising a divisional secretary as chair, a resettlement officer as secretary, 3 other members of non-government civil societies, have been organized and their existence is publicized to ensure that stakeholders are aware of a venue available to address concerns or grievances relating to fraud, corruption, abuse, and any other aspects of project implementation.

[18] For further information see: https://www.adb.org/site/accountability-mechanism/main

XII. RECORD OF PAM CHANGES

70. All revisions/updates during course of implementation should be recorded and retained under this Section to provide a chronological history of changes to implemented arrangements recorded in this PAM.

Ver.	Date	Description of Revisions
0.1	May 2013	Draft during fact-finding mission.
1.0	July 2013	Agreed during loan negotiations.
2.0	September 2014	Updated during Loan Inception to reflect project progress
3.0	June 2017	Updated sections on Implementation Plan; Project Management Arrangements; Procurement & Consulting Services; Performance Monitoring, Evaluation, Reporting and Communication. Includes project progress as discussed during Oct 2016 Review mission.

PROCUREMENT PLAN

Basic Data

Project Name: Southern Road Connectivity Project	
Project Number: 47182-001	**Approval Number:** 3027/3028
Country: Sri Lanka	**Executing Agency**: Ministry of Higher Education and Highways
Project Procurement Classification:	**Implementing Agency**: Road Development Authority
Project Procurement Risk:	
Project Financing Amount: US$ 100,000,000 **ADB Financing:** US$ 75,000,000 **Cofinancing (ADB Administered):** **Non-ADB Financing:** US$ 25,000,000	**Project Closing Date:** 30 June 2019
Date of First Procurement Plan: 23 September 2013	**Date of this Procurement Plan**: 30 September 2016, Version 4

A. Methods, Thresholds, Review and 18-Month Procurement Plan

1. Procurement and Consulting Methods and Thresholds

Except as the Asian Development Bank (ADB) may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Procurement of Goods and Works		
Method	**Threshold**	**Comments**
International Competitive Bidding for Goods	US$ 2,000,000 and Above	
National Competitive Bidding for Goods	Between US$ 100,001 and US$ 1,999,999	Beneath that stated for ICB, Goods. The first NCB is subject to prior review, thereafter post review.
Shopping for Goods	Up to US$ 100,000	Prior review for the first set of documents.
International Competitive Bidding for Works	US$ 15,000,000 and Above	
National Competitive Bidding for Works	Between US$ 100,001 and US$ 14,999,999	Beneath that stated for ICB, Works. The first NCB is subject to prior review, thereafter post review.
Shopping for Works	Up to US$ 100,000	Prior review for the first set of documents.

Consulting Services	
Method	**Comments**
Quality- and Cost-Based Selection for Consulting Firm	Prior review
Individual Consultants Selection for Individual Consultant	

2. Goods and Works Contracts Estimated to Cost $1 Million or More

The following table lists goods and works contracts for which the procurement activity is either ongoing or expected to commence within the next 18 months.

Package Number	**General Description**	**Estimated Value**	**Procurement Method**	**Review** (Prior/ Post)	**Bidding Procedure**	**Advertisement Date** (quarter/year)	**Comments**
CP 04	Rehabilitation/Improvements to Ambatale–CINEC Junction Road (from Ch. 0+000km to Ch. 1+883km)	1,700,000.00	NCB	Prior	1S1E	Q4 / 2016	Prequalification of Bidders: N Domestic Preference Applicable: N

							Bidding Document: Large Works Comments: ADB financing excludes performance-based maintenance.

3. Consulting Services Contracts Estimated to Cost $100,000 or More

The following table lists consulting services contracts for which the recruitment activity is either ongoing or expected to commence within the next 18 months.

Package Number	General Description	Estimated Value	Recruitment Method	Review (Prior/ Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
None							

4. Goods and Works Contracts Estimated to Cost Less than $1 Million and Consulting Services Contracts Less than $100,000 (Smaller Value Contracts)

The following table lists smaller-value goods, works and consulting services contracts for which the activity is either ongoing or expected to commence within the next 18 months.

Goods and Works								
Package Number	**General Description**	**Estimated Value**	**Number of Contracts**	**Procurement Method**	**Review** (Prior/ Post)	**Bidding Procedure**	**Advertisement Date** (quarter/year)	**Comments**
None								

Consulting Services								
Package Number	**General Description**	**Estimated Value**	**Number of Contracts**	**Recruitment Method**	**Review** (Prior/ Post)	**Advertisement Date** (quarter/year)	**Type of Proposal**	**Comments**
None								

B. Indicative List of Packages Required Under the Project

The following table provides an indicative list of goods, works and consulting services contracts over the life of the project, other than those mentioned in previous sections (i.e., those expected beyond the current period).

Goods and Works							
Package Number	**General Description**	**Estimated Value (cumulative)**	**Estimated Number of Contracts**	**Procurement Method**	**Review** (Prior/Post)	**Bidding Procedure**	**Comments**
None							

Consulting Services							
Package Number	**General Description**	**Estimated Value (cumulative)**	**Estimated Number of Contracts**	**Recruitment Method**	**Review** (Prior/Post)	**Type of Proposal**	**Comments**
None							

C. List of Awarded and On-going, and Completed Contracts

The following tables list the awarded and on-going contracts, and completed contracts.

1. Awarded and Ongoing Contracts

Goods and Works							
Package Number	**General Description**	**Estimated Value**	**Awarded Contract Value**	**Procurement Method**	**Advertisement Date** (quarter/year)	**Date of ADB Approval of Contract Award**	**Comments**
CP 02	Rehabilitation/Improvements to sections of B084 (14.38km) & A004 (1.8 km) including 5 years of Performance Based Maintenance	27,300,000.00	21,124,919.13	ICB	Q4 / 2015	18-JUL-16	PCSS 0005. ADB Financing excludes 5-Year Performance Based Maintenance)
CP 03	Rehabilitation/Improvements to sections of B157 (23.48 km) including 5 years of Performance Based Maintenance	17,800,000.00	12,235,460.46	ICB	Q1 / 2015	06-MAY-16	PCSS 0004. ADB Financing excludes 5-Year Performance Based Maintenance)
CP 01	Rehabilitation/Improvements to sections of B295 (2.50km) & B389 (2.14 km) including 5 years of Performance Based Maintenance	10,000,000.00	9,946,244.10	ICB	Q1 / 2014	29-AUG-14	PCSS 0001. ADB Financing excludes 5-Year Performance Based Maintenance)

Consulting Services							
Package Number	**General Description**	**Estimated Value**	**Awarded Contract Value**	**Recruitment Method**	**Advertisement Date** (quarter/year)	**Date of ADB Approval of Contract Award**	**Comments**
ECIP	Expressway Connectivity Improvement Plan	3,873,000.00	3,890,218.18	QCBS	Q1 / 2014	01-AUG-14	L3028/PCSS 0001: Accepted contract amount: $2,557,593 & LKR129,119,880
PIC	Project Implementation Consultants	4,720,000.00	4,039,960.50	QCBS	Q2 / 2014	17-FEB-15	L3027/PCSS 0002: Accepted contract amount: $1,651,601 & LKR320,279,000
ICS 006	International Bridge/Structural Engineer	177,408.00	151,583.00	ICS	Q3 / 2015	15-DEC-15	L3028/PCSS 0006: Naveed Anwar - Asian Institute of Technology of Thailand
ICS 004	International Highway Engineer	158,914.00	211,450.24	ICS	Q3 / 2015	30-SEP-15	L3028/PCSS 0005: Atsushi Nishimura - Oriental Consultants Global
ICS 003	Bridge/Structural Engineer	64,900.00	73,874.90	ICS	Q4 / 2014	29-MAY-15	L3028/PCSS 0004: Yutaka Yamahana - Katahira
ICS 002	Highway Engineer	64,900.00	68,576.59	ICS	Q4 / 2014	18-NOV-14	L3028/PCSS 0003: Kunikazu Azami - Katahira
ICS 001	Transport Planner	67,400.00	99,537.79	ICS	Q4 / 2014	18-NOV-14	L3028/PCSS 0002: Toshio Kimura -

							Katahira

D. National Competitive Bidding

A. Regulation and Reference Documents

1. The procedures to be followed for national competitive bidding shall conform to the provisions prescribed in t he *Procurement Guidelines 2006 for Goods and Works* issued in January 2006 by the National Procurement Agency, and the specific procedures prescribed by the *Procurement Manual* issued in March 2006, with the clarifications and modifications described in the following paragraphs required for compliance with the provisions of the ADB Procurem ent Guidelines.

B. Procurement Procedures

1. Eligibility

2. The eligibility of bidders shall be as defined under Section I of ADB's Procurement Guidelines (2015, as am ended from time to time) (the "Guidelines); accordingly, no bidder or potential bidder should be declared ineligible for reasons other than those provided in Section I of the Guidelines.

2. Registration and Sanctioning

3. Registration is acceptable under the following conditions:

(i) Bidding shall not be restricted to pre-registered firms under the national registration system of the Institute for Construction, Training and Development (ICTAD), and such registration shall not be a condition for the subm ission of bids in the bidding process.

(ii) Where registration is required prior to award of contract, bidders: (i) shall be allowed a reasonable time to com plete the ICTAD registration process; and (ii) shall not be denied registration for reasons unrelated to their ca pability and resources to successfully perform the contract, which shall be verified through post-qualification.

(iii) National sanction lists or blacklists may be applied only with prior approval of ADB.

3. Prequalification

4. Prequalification is discouraged for NCB. When used, particularly for works contracts, an individual prequalif ication exercise is acceptable for each contract as is the use of a registration system (or approved standing list) of co ntractors based on criteria such as experience, financial capacity, and technical capacity. Foreign bidders from elig ible countries must, however, be allowed to register and to bid without unreasonable cost or additional requirements.

4. Advertising

5. The posting of NCB specific notices for contracts valued at less than $1 million on ADB's website is not requir ed but is highly recommended.

5. Preferences

6. The following shall be observed:

(i) No preference of any kind shall be given to domestic bidders or for domestically manufactured goods.

(ii) Foreign suppliers and contractors from ADB member countries shall be allowed to bid, without registration, li censing, and other government authorizations, leaving compliance with these requirements for after award a nd before signing of contract.

6. Participation by Government-Owned Enterprises

7. Government-owned enterprises in the Democratic Socialist Republic of Sri Lanka shall be eligible to partici pate only if they can establish that they are legally and financially autonomous, operate under commercial law, and are not a dependent agency of the procuring entity, or the Project Executing Agency or Implementing Agency.

7. Rejection of Bids and Rebidding

8. Bids shall not be subjected to a test for unrealistic rates. No lowest evaluated and substantially responsive b id shall be rejected on the basis of comparison to rates, including but not limited to market, historical, or agency estab lished rates, without prior approval of ADB.

9. Bids shall not be rejected and new bids solicited without the ADB's prior concurrence.

8. Price Negotiations

10. Price negotiation shall be allowed only where the price offered by the lowest evaluated and substantially res ponsive bidder substantially exceeds costs estimates. Approval of ADB is required prior to any negotiation of prices.

C. Bidding Documents

9. Acceptable Bidding Documents

11. Procuring entities shall use standard bidding documents acceptable to ADB for the Procurement of Goods, Works and Consulting Services, based ideally on the standard bidding documents issued by ADB.

10. Bid Security

12. Where required, bid security shall be in the form of a certified check, a letter of credit or a bank guarantee fro m a reputable bank.

11. ADB Policy Clauses

13. A provision shall be included in all NCB works and goods contracts financed by ADB requiring suppliers and contractors to permit ADB to inspect their accounts and records and other documents relating to the bid submission and the performance of the contract, and to have them audited by auditors appointed by ADB.

14. A provision shall be included in all bidding documents for NCB works and goods contracts financed by ADB s tating that the Borrower shall reject a proposal for award if it determines that the bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing f or the contract in question.

15. A provision shall be included in all bidding documents for NCB works and goods contracts financed by ADB s tating that ADB will declare a firm or individual ineligible, either indefinitely or for a stated period, to be awarded a co ntract financed by ADB, if it at any time determines that the firm or individual has, directly or through an agent, engag ed in corrupt, fraudulent, collusive, coercive or obstructive practices or any integrity violation in competing for, or in ex ecuting, ADB-financed contract.

OUTLINE TERMS OF REFERENCE FOR CONSULTING SERVICES OF PROJECT IMPLEMENTATION CONSULTANTS

A. Background Information

1. The Democratic Socialist Republic of Sri Lanka has applied loans for Southern Road Connectivity Project from the Asian Development Bank (ADB) which will be utilized for rehabilitation/ improvement of national highways linking the expressway network. Part of these funds shall be used for providing construction supervision, and Contract management for the Project.

2. The Executing Agency (EA) for the Project is the Ministry of Ports and Highways (MOPH) and the Implementing Agency (IA) is the Road Development Authority (RDA).

3. The main objective is to assist the RDA ("the Client") in implementing the project by: carrying out the supervision/administration of the civil works contracts, conducting on-the-job training for the Client's staff, and reporting and documenting progress.

4. The rehabilitation/ improvement includes clearing, earth works, widening of roads, widening/reconstruction of bridges and culverts, longitudinal drains, retaining walls, sub base, aggregate base, asphalt concrete pavement, shoulder and road marking and signing.

5. The Project roads given under Table 1 below are situated in Western Province(WP) of the country. The feasibility studies and detail design reports of project roads carried out by other consultants will be provided to the consultants.

Table 1: Contract Packages

Contract Package	Road Section	Province	Length (km)	Duration (months)	Anticipated contract award
AF/CP1	B295 Moratuwa - Piliyandala Road from 2+620km to 5+120km, B389 Ratmalana - Mirihana Road from 5+700km to 7+840km & A004Road Section from Kirulapona–Godagama(00+130km–01+000km) and (15+360km – 16+280km)	WP	6.43	24	Nov 2013
AF/CP2	B084(South) Road Section from Kesbewa to Pokunuwita (13+800km – 28+180km)	WP	14.38	24	Dec 2014
AF/CP3	B157(East) Road Section from Southern Expressway to Madurugoda (42+372 km- 30+000 km)	WP	12.372	24	Dec 2014

km= Kilometer

B. Scope of Consulting Services

6. Civil Works will be carried out based on the International Federation of Consulting Engineers (FIDIC) Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer- Multilateral Development Bank Harmonized Edition -June 2010. The Consultant) will be engaged to act as the Engineer for the purposes of civil work contract which will be procured per Standard Bidding Documents of Asian Development Bank.

7. The Consultants shall (i) undertake contract administration based on the FIDIC contract; (ii) undertake safeguards compliance; ensure that all safeguards (social, environment and indigenous peoples) are being complied under the project, (iii) undertake the Project Performance and Monitoring Survey 3 times; at the start of the Project, at midterm and at the end of the Project: (iv) Study the assistance required in capacity building by training, workshops, and seminars to RDA staff, prepare a plan and implement, (v) prepare a project completion report when the Project is substantially completed incorporating comments from Client and ADB.

8. The consultant shall administer all civil works contracts to ensure that the works are constructed in accordance with the provisions of the construction contracts.

9. The Consultant, while supervising construction works, shall make all necessary arrangements for implementation of quality assurance and quality control plans following industry standards and best practices. The Consultant in consultation with the Client shall make all engineering decisions required for the successful and timely completion of the construction contracts, and shall have all the powers defined as those of the Engineer under FIDIC.

10. The Consultant shall use most up-to-date software and technology for administration of the construction contracts.

11. The members of the Consultancy team shall work 45hrs/week (8.00 to 17.00hrs – Monday to Friday and 8.00 to 13.00hrs – Saturday) barring Public and Mercantile holidays in Sri Lanka.

12. The Consultant shall authorize and appoint either the Team Leader or any other person acceptable to the Client to act as the Engineer for the purpose of civil works contracts within 7days of Effective Date. The Consultant shall also authorize and appoint a suitable person within 7days of Effective Date as a project coordinator for the purpose of consultancy contract agreement.

C. Detailed Scope of Consulting Services

13. The scope in more details is outlined here. The services shall include, but not limited, to the following :

a. Procurement and Contract Administration

(i) Review all the designs for civil works, advice/discuss with the Client of appropriate changes and make necessary changes appropriately.

(ii) Prepare/review/update Engineer's Estimates and Bidding Documents per ADB's latest versions of Standard Bidding Documents.

(iii) Participate at meetings with the Client and the Donor (ADB) during procurement of civil works contractors.

(iv) Assist the Client during stages of bidding, evaluation and award of civil works contracts.

(v) Advice the Client on the acceptability and adequacy of Contractor's guarantees and insurances.

(vi) Administer the contractors' work in accordance with the civil works agreements and shall take every steps to ensure that the works are carried out within the contract award prices.

(vii) Conduct monthly progress review meetings with respect to each contract in consultation with the Client.

(viii) Supervise the contractors' work and certify the works in accordance with contract conditions. Ensure that the construction methods proposed by the contractor for carrying out the works are satisfactory and complying with.

(ix) Verify geometric designs including embankments, designs of structures, and pavement design of project roads of design consultants. If necessary make necessary amendments as and when required.

(x) Review and approve contractors working drawings, method statements, programmes, quality assurance plans, safety plan, environmental management plan and any other documents and monitor contractors' conformity with the same

(xi) Develop quality assurance system and inspection and testing plan.

(xii) Inspect Contractor's construction equipment, results of material and soil tests, safety of the works, property and personnel. Inspect and test all materials, their sources and works to ensure compliance with specifications and giving immediate notice to the Contractor to remedy in the event that such equipment, materials and works fail to comply with the specifications or inadequacy of materials or equipment.

(xiii) Certify work volume and process interim and final payments of the Contractors.

(xiv) Establish efficient procedures for verifying Contractor performance and control reports, quality survey records, request for variation or change orders, requests for time extension, and Contractor's claims and invoices.

(xv) Evaluate and recommend to the Client (Road Development Authority) of contractor's proposal for variations, claims and the rates for any unscheduled items of work that may arise.

(xvi) Ensure that project financial management procedures are in order and are strictly followed, specifically relating to payments, financial accounting, financial reporting and record keeping.

(xvii) Check and recommend "as built" drawings prepared by the Contractors. Keep and record a complete set of as built drawings in paper and electronic formats for archiving in the Clients repository.

(xviii) Ensure that road safety design requirements are implemented in accordance with the contract documents and specifications.

(xix) Assist the Client for provisional and final hand over of works by the contractors.

(xx) Take measurements and keep records.

(xxi) Accept or reject any part of the completed works and certify the completion.

(xxii) Develop and maintain network data base with the Client showing updated contract prices with monthly measurements with respect to each contract and produce such monthly reports before 10th day of the following month in a format acceptable to the Client. These reports shall include any variations/extra works anticipated by the Consultant for the successful completion of the each contract and their costs for Client's review. The Consultant shall ensure that cumulative value of such works shall not exceed the accepted contract sum without the prior approval of the Client.

(xxiii) The Consultant shall submit the progress reports in hard copy and soft copy format with respect to each month before the 10th day of the following month.

(xxiv) Assist the contractors to obtain quarry licences and coordinate and process of getting approvals. Coordinate and monitor the shifting and relocation of utility services, insurance claims and submit their progress to the Client.

(xxv) Provide on-site training where ever required for Client's staff on quality assurance, contract administration and other project management activities.

(xxvi) Maintain records, correspondence and diaries and submit all the key documents and records to the Client at the completion of each contract.
(xxvii) Inspect each project during defects liability period at appropriate intervals as agreed with the Client and issue performance certificate.

b. Safeguard compliance monitoring

(i) Ensure that the Project is complying with ADB's Safeguards Policy Statement (2009);
(ii) Assist and guide the Client to ensure compliance of environmental and social safeguards.
(iii) If required, collect baseline data to prepare a Land Acquisition and Resettlement Plan (LARP) and the other impact assessments carried out in accordance with ADB's Safeguard Policy statement (2009) and relevant laws and regulations of the host country.
(iv) Update the resettlement plans when necessary and help the Client in seeking necessary approvals of the Government and ADB.
(v) If land acquisition and resettlement is necessary, assist the Client to prepare and supervise the implementation of the land acquisition and resettlement plan.
(vi) Help the Government in establishing a Grievance Redress Mechanism and in its proper functioning and management.
(vii) Monitor the implementation of gender action plan and ensure activities are carried out as planned and relevant baseline and monitoring database collected.
(viii) Coordinate with Client to deliver at least 8 road safety awareness training to communities along each project road, and ensure at least 50% of participants are women.
(ix) Coordinate with Client to deliver at least 1 HIV/AIDS and human trafficking awareness training to communities along each project road. Awareness training should beheld separately for men and women.
(x) Coordinate with Client to deliver employment skills and personal financial management training to all women employed in civil works.
(xi) Conduct at least 2 training sessions to RDA staff on how better to integrate gender-friendly design to future projects.
(xii) Monitor relevant social protection indicators in project areas on HIV/AIDS, human trafficking, core labour standards
(xiii) Carry out the following duties related environmental safeguard: (a) ensure the Environmental Management Plans (EMPs) prepared as part of the Initial Environmental Examination (IEE) report are incorporated in the bidding/contract documents; (b) supervise and monitor the implementation of environmental management plan (EMP); and (c) in the event of occurrence of any unexpected environmental impacts, coordinate with the contractor and Client to ensure that necessary mitigation measures are implemented; (d) provide technical advice and organize training events for the contractors, if necessary; (e) Prepare periodic monitoring reports, monthly and annually and submit to the Client; and (f) Facilitate grievance redress in the case of environmental related issues.
(xiv) Monitor Contractors compliance with and performance of required actions regarding HIV/AIDS, human trafficking, and core labor standards in accordance with the contract documents, such as awareness and education of labourers and workers.

c. Project Performance and Monitoring Survey

(i) Develop performance indicators and project targets based on the design and monitoring framework provided by the Client in close cooperation with the Client and if necessary coordinates with the relevant local authorities.
(ii) Collect baseline data based on the indicators agreed in the project's design and monitoring framework; and measure the indicators over time during the assignment period. Undertake project performance monitoring and evaluation in accordance with the project framework and ADB's Project Performance Management System Handbook. Design a simple MS Excel or similar system for recording the baseline and periodic data.
(iii) Assess the indicators at midterm, project completion.
(iv) Assess the socioeconomic impacts of the Project on potential beneficiaries through selective household surveys and participatory research methods.
(v) Assess environmental sustainability of the Project.
(vi) Conduct training in operational social research methods and building Client's capacity on performing management and impact assessment.

d. Project Completion Report

(i) Prepare a project completion report in accordance with procedures of the ADB as spelt out in relevant project administration instructions of the ADB. The format can be had from the Client or ADB relevant project officer.
(ii) Assist the Client in seeking comments from ADB and co-financiers, if required and finalize for submission by Client to ADB.

14. If so required by the Client, the Consultant shall provide any of the following as additional services: (i) prepare reports, including technical appraisals, additional contract documentation, and/or review and comments on the Contractor's proposals, as may be required or the successful completion of the Project; and (ii) provide any other specialist services as may be required from time to time.

15. The Client shall authorize any additional service, other than minor extras that do not materially affect the scope of the design review, procurement and supervision work, at the rates established in the construction supervision Contract, or at the rates mutually agreed upon when the services require the use of specialists not listed in the contract.

D. Consultancy input and Qualifications of Staffs

16. The consulting services shall be carried out by international firm/s in association with national consultants, to be selected by the Client in accordance with ADB's Guidelines on the Use of Consultants (2010, as amended from time to time). A total of 54 person-months of international consultant inputs and 608 person-months of national consultants shall be required.

17. Consulting services are expected to take about 44 months (actual duration of service shall be in line with civil works schedule). All experts, international and national, must be proficient in both written and spoken English. The key positions are given in the table below.

Proposed Key Positions

Position	No.	Person-months	Total Person Months
International			
Team Leader	1	44	44
Senior Urban Highway Design Engineer	1	10	10
Total			**54**
National			
Contract Management/Claim Specialist	1	42	42
Environmental Specialist	1	24	24
Social/Gender/Resettlement Specialist	1	24	24
Senior Highway Design Engineer	1	40	40
Senior Bridge/Structural Design Engineer	1	40	40
Senior Drainage Engineer	1	40	40
Senior Quantity Surveyor	1	42	42
Resident Engineer (CP1)	1	27	27
Resident Engineer (CP2)	1	27	27
Resident Engineer (CP-3)	1	27	27
Materials Engineer (CP1)	1	25	25
Materials Engineer (CP2)	1	25	25
Materials Engineer (CP3	1	25	25
Quantity Surveyor (CP1)	1	25	25
Quantity Surveyor (CP2	1	25	25
Quantity Surveyor (CP3)	1	25	25
Assistant Resident Engineer (CP1)	3	25	75
Assistant Resident Engineer (CP2)	1	25	25
Assistant Resident Engineer (CP-3)	1	25	25
Supporting Staff			As required
Total			**608**

18. The Consultant is requested to propose assignment of experts in accordance with the scope and expected deliverables.

19. Qualification descriptions of each expert are as follows. Regional and host country experience of the international staff is preferable.

Team Leader [International, 44 Person-months]:

The Team Leader shall be leading the team and be responsible for the overall tasks as defined here under the scope. He/she shall hold a minimum of bachelor degree in civil engineering and preferably a master degree holder in road engineering/contracts management. He/she shall have minimum 18 years experience in major road construction and minimum of 10yrs of experience in the capacity of team leader of contracts administered under FIDIC Conditions of contracts. He/she shall be familiar with various international standards for design and construction (FIDIC) including stage of works and method of construction such as temporary

works, construction plans, schedules, construction method, assignments of equipment and personnel, testing and trials, and drawings. He/She Leader shall (i) maintain records and advise the Client with the day-to-day coordination and supervision of Project and its components, including the preparation of regular progress reports, (ii) coordinate and review updated designs and cost estimate prepared by the design consultants, (iii) coordinate and supervise the work of field teams in supervising and certifying construction in accordance with contract conditions. (iv) coordinate and liaise with Client, attend meetings arranged by Client and update the Client regularly on progress of work, delays, and variations and recommend the remedial measures. (v) Submit to the Client and obtain the approval on variation, extension of time and other specific items defined in the civil works contracts. (vii) chair the site progress review meeting.. He/she shall ensure that the safeguards aspects under the project are being complied. He/she shall ensure that the specifications under the contract are being met, and quality is maintained. He/she shall also ensure that consultancy service is carried complying the Consultancy Contract. He/she shall also have experience in the topographic conditions similar to the host country.

Senior Urban Highway Design Engineer[International, 10 Person-months]:
The Senior Urban Highway Design Engineer shall hold a minimum of bachelor degree in civil engineering with 15 years of total experience and minimum of 8yrs of experience in urban highways designs in the topographic conditions similar to the host country. He/she shall review the designs of roads and highways, particularly the sections in urban areas, specifications and recommend the Employer on necessary adjustments/amendments.

Contract Management/Claim Specialist [National,42 Person-months]
The Contract Management/Claim Specialist shall be a bachelor in engineering with minimum 12 years experience in road works contract administration including FIDIC contract administration. He/she shall (i) advice the Client in case of disputes by the contractor on claims settlement and (ii) review guarantees and insurance policies submitted by the Contractors and advice the Client of their acceptability.

Environmental Specialist [National,24 Person-months - Intermittent]
The Environmental Specialist shall have a bachelor degree in environmental science preferably with minimum 6 years of similar experience in civil works. He/she shall (i) review all documents and reports regarding the integration of environmental including contractor's environmental action plan, (ii) supervise the contractor's compliance to EMP, and (iii) prepare compliance reports.

Social/Gender/Resettlement Specialist [National,24 Person-months - Intermittent]
The Social/Gender/Resettlement specialist shall be a a social related university graduate, with 6 years similar experience in civil works contracts He /She shall also be familiar with ADB's Safeguard Policy statement (2009) and relevant laws and regulations of the host country. He /She shall assess the contractor's compliance to contract provision specifically on social safeguards. He/she shall check the implementation of land acquisition and resettlement (if relevant), compliance to contractors' obligation in addressing communicable diseases/sexually transmitted infections (STI) and compliance to core labor standards.

Senior Highway Design Engineer[National,40 Person-months]
The Senior Highway Design Engineer should have bachelor degree in civil engineering with professional qualifications and minimum 10 years experience in the similar capacity in highway design and supervision, especially in asphalt pavement design and construction of roads. He/she shall review the highway design, pavement design, specifications and advise on

necessary adjustments/amendments. He/she in coordination with Senior Bridge/Structural Design Engineer and the Senior Quantity Surveyor, shall update designs and cost estimates, check design centerline, set out and make necessary adjustments.

Senior Bridge/Structural Design Engineer [National,40 Person-months]
The Senior Bridge/Structural Design Engineer should have bachelor degree in civil engineering with professional qualifications and minimum 10 years experience in the similar capacity in Bridge/Structural Design and supervision; He/she shall review the bridge and structural designs, and specifications and advise on necessary adjustments/amendments. He/she in coordination with the Senior Highway Design Engineer and the Senior Quantity Surveyor, shall update designs and cost estimates, check design centerline set out and make necessary adjustments.

Senior Drainage Engineer [National,40 Person-months]
The Senior Drainage Engineer should have bachelor degree in civil engineering with professional qualifications and minimum 10 years experience in the similar capacity in drainage designs and supervision, He/she shall review the drainage designs, specifications and advice on the amendments proposed.

Senior Quantity Surveyor [National,42 Person-months]
The Senior Quantity Surveyor shall have a bachelor degree in quantity surveying with minimum 10 years experience or National Diploma Certificate with minimum 14 years experience in quantity surveying of major projects. He/she shall have at least 6 yrs of experience in the similar capacity. He/she shall check and recommend the payment certificates, maintain measurement records, review and update the estimates as required and assist the Team Leader in checking and verifying quantity, variations.

Resident Engineers [National, 3 Positions, 81 Person-months]
The Resident Engineer shall assist the Team Leader on coordination and supervision of road construction works in the field. The Resident Engineer shall have a bachelor degree in civil engineering having professional qualifications with minimum 10 years experience in road construction. He/she shall (i) assist Team Leader in day-to-day construction supervision, monitoring schedule, preparing monthly certificates, reviewing and approving shop drawing and as-built-drawings (ii) issue Site Instructions in consultation with Team Leader and (iii) timely inform the Team Leader on issues on quality of works, progress of work, and any other constraints affecting the work.

Material Engineers [National, 3 Positions, 75 Person-months]
The Material Engineer shall have a bachelor degree in civil engineering with minimum 6 years experience or National Certificate in civil engineering with minimum 10 years experience in major road construction works especially in material testing. He/she shall (i) undertake day-to-day supervision of compliance to material specifications and testing (ii) supervise the contractors work, and (iii) certify the construction in accordance with contract conditions including acceptance standards of materials, approval of source supply, and material testing methods.

Quantity Surveyors [National, 3 Positions, 75 Person-months]
The Quantity Surveyor shall have a bachelor degree in quantity surveying with minimum 6years experience or National Diploma Certificate with minimum 10 years experience in quantity surveying of major projects. He/she shall have at least 3yrs of experience in the similar capacity check. He/she shall be responsible for recommending the payment certificates, maintaining

measurement records, reviewing and updating the estimates as required and assisting the Resident Engineer to check the quantity, variations, justification.

Assistant Resident Engineers [National, 5 Positions, 125 Person-months]
The Assistant Resident Engineer shall assist the respective Resident Engineer on coordination and supervision the road construction works in the field. The Assistant Resident Engineer shall have a bachelor degree in civil engineering with minimum 5 years experience in road construction. He/she shall assist the Resident Engineer in day-to-day construction supervision, monitoring schedule, checking monthly certificates, reviewing and approving shop drawing and as-built-drawings.

E. Deliverables

20. The Consultant shall prepare reports including monthly reports on the project progress in a format and level of detail agreed with Client and ADB. The Consultant shall maintain records documenting information supplied by the field teams, decisions made at meetings, progress on civil works, certified achievements and milestones, financial records, and any deviations from or changes to the contract plans. The Consultant shall assist the Client in preparing quarterly progress reports, safeguard compliance reports including sections on environment, social, and gender, a project completion report, and monitoring and evaluation reports as required under the Contract. The Consultants shall also undertake surveys, design reviews and workshops and submit relevant reports.

F. Reports

21. The Consultant shall submit the reports in hardcopy and softcopy as follows.

Table 2: Reports to be submitted to the Client and ADB

	Client	ADB
Inception Report (month 1)	3	2
Monthly Progress Reports	3	2
Project Completion Report	5	2
Surveys design reviews	3	0

(i) Inception Report: initial findings and the work program for the balance of the assignment.
(ii) Monitor the record-keeping and instruct the Contractor to keep further contemporary records including and statutory requirements concerning the Contractor's reporting of dangerous occurrences or accidents to government or other public authorises.
(iii) Reporting and updating the works implementation schedule, highlighting any foreseen delays, and timely proposing corrective measures.
(iv) Maintain up to date financial and other records for review, if and when needed by Client/ADB.
(v) The Monthly Progress Report: brief details of the works carried out during the previous month, the problems encountered or anticipated and financial and physical progress to date, along with S-curve. The format must follow that given in the ADB's Project Administration Manual.

G. Facilities Provided by the Client

22. The Client shall provide the following

(i) Visa supporting letters and registrations for host country
(ii) Relevant project data and reports
(iii) Access to data, records, and other information required to perform the assigned tasks; and

23. The following shall be provided under the civil works contracts;
(i) Furnished air-conditioned office spaces with support facilities (including utilities, and furnishings and fittings) in the construction site.
(ii) Furnished air conditioned accommodation for the Resident Engineer. Other field staff shall be provided with accommodation on shared basis
(iii) Provide and maintain vehicles with drivers for Resident Engineers for site supervision
(iv) Provide and maintain two vehicles with drivers for the Team leader for official works
(v) Supporting staff for Resident Engineers.
(vi) Office stationery for the offices of the Resident Engineers

H. Facilities to be provided by the Consultants

24. The Client shall not provide and maintain the central office to be located within the proximity of the Client's office where the Team Leader and his staff are functioning. The consultant shall be responsible for the following;

(i) Office and house accommodation and furniture if required for the Team Leader and its staff in the central office.
(ii) Transport facilities other than those stated under para 23 above.
(iii) Staff other than the staff listed under para 17 above.
(iv) International communication, and various equipment required to carry out the assignment;
(v) Office stationery/supplies for central office; and
(vi) Any other items not provided by the RDA or under civil works contracts.

OUTLINE TERMS OF REFERENCE FOR CONSULTING SERVICES OF EXPRESSWAY CONNECTIVITY IMPROVEMENT PLAN: SCREENING, FEASIBILITY STUDY AND DETAILED ENGINEERING DESIGN OF NATIONAL HIGHWAYS LINKING THE EXPRESSWAY NETWORK

A. Introduction

1. The Democratic Socialist Republic of Sri Lanka has applied a Loan for the Southern Road Connectivity Project from the Asian Development Bank (ADB) which will be made available for the Expressway Connectivity Improvement Plan (ECIP) to build the capacity of RDA. The assignment includes (a) screening the national highways linking expressway network for the needs of improvement, (b) programming the future projects for feasibility study, detailed engineering, land acquisition and resettlement, and procurement of civil works, (c) carrying out feasibility study for about 250 km of national highways, (d) undertaking detailed engineering for about 200 km of national highways, (e) assisting in improving the design standards and construction technology, and (f) delivering training programs about the planning methodology, design standards, and construction technology.

2. Asian Development will arrange the loan under the proposed Southern Road Connectivity Project for the payment of this Consultancy Services.

3. The Executing Agency (EA) for the project is the Ministry of Ports and Highways (MOPH) and the Implementing Agency (IA) is the Road Development Authority (RDA).

4. The main objective of the consulting services is to carry out (a) Screening Study of about 400km of road, (b) prepare prioritized the road list, (c) feasibility study of about 250 km, and (d) detailed engineering design of about 200km of roads

5. The Employer, RDA will assess the consultant's performance from time to time, and report to the steering committee (SC). When SC determines the consultant's performance as unsatisfactory, the Employer reserves the right to terminate the Consultant and recruit new ones for the successive cycle of work and/or request replacement of particular expertise whose performance is found to be poor. The consultant contract however may be extended for another subgroup of roads or contracts through contract variations or direct negotiations, subject to evaluation by the RDA and agreement by ADB.

B. Scope of the Consulting Services

(I) Screening and Programming

6. The Consultant should select potential project roads in consultation with the MOPH, RDA, and ADB, supporting by the following reviews and preliminary surveys.

(i) Review existing road and transport studies and other development projects recently completed or undergoing in Southern and Western Provinces of Sri Lanka to gain an understanding of existing development initiatives, transport needs and determine long term expressway connecting improvement plans.
(ii) Develop a traffic model for expressway network and national and provincial road network (in Southern and Western Provinces) feeding the expressway network.
(iii) Review existing surveys and data (eg. Traffic and roughness) relating to the long list of possible candidate road improvement proposed by RDA (about 400

kilometers [km]), including those road improving the access to the completed, ongoing and proposed future expressways in Southern and Western Provinces.

(iv) The screening study will review those roads, taking into account their role in terms of the development objectives of the country. The screening process will also take into account traffic volume, easy access to expressway network, existing pavement conditions, safety and environmental considerations, serving areas that contain significant levels of unemployment and poverty and the costs and benefits of the improvements.

(v) The output of the screening will be a list of roads that need to be studied further, consisting of about 250 km that require substantial improvements (criteria for selecting 250km of roads should be approved by SC). The list will be considered by RDA, ADB and the consultants at a tripartite meeting. The final list will become the basis for the subsequent feasibility study.

(vi) Prepare an implementation program for the roads selected under the screening study based on prioritization by the EA and IA.

(II) Feasibility Study

7. The terms of reference for the consultants for feasibility study include, but are not limited to, the following:

a. Engineering Study

8. The consultants will have the following tasks:

(i) Survey conditions of candidate roads, including geometric features, type and condition of drainage structures, pavement strength, and other major features; determine residual life; and categorize the roads into homogeneous sections.

(ii) Investigate the suitability of local construction materials, and, where necessary, locate new quarries and borrow pits, and assess the quality and quantity of materials and hauling distances.

(iii) Study and propose technical options for improving sections on candidate roads, including consideration of geometric alignment, pavement strengthening, and rehabilitation and/or widening of bridges, taking into account traffic forecasts and, wherever possible, seeking to minimize land acquisition and involuntary resettlement, and incorporating coastal considerations for coastal roads, if any.

(iv) Prepare cost estimates (with 20% accuracy level) for proposed improvements for each candidate road, separating foreign exchange, local currency, and tax and duty elements.

(v) Propose an approach to contract packaging, taking into account (a) the location of the project roads, size of contracts, and other project-specific factors; (b) ADB's Guidelines for Procurement; and (c) the aim of supporting development of strong, competitive domestic private sector capacity in road construction and engineering services.

(vi) Prepare a report summarizing the findings and recommendations, and presenting the supporting data and analysis, for review by the Government and ADB.

(vii) In cooperation with RDA, consult with stakeholders regarding project design, and ensure that the selected roads reflect the result of consultation.

(viii) Conduct road safety audits with use of ADB's Road Safety Audit for Road Project : An Operational Tool Kit or similar procedure acceptable to ADB.

(ix) Develop a road inventory database and a digital mapping of the project roads linking road inventory, traffic volume and other existing data with use of geographic information systems (GIS).

b. Economic Analysis

9. The consultants will carry out the following tasks:

(i) Review existing traffic data, conduct traffic counts and origin-destination and axle-load surveys, and forecast traffic for each candidate road sections for 20 year projections.
(ii) Prepare an economic analysis of the proposed road improvements using the Highway Department and Management model (version 4) individually and in combination; distribution analysis; and estimation of the poverty impact ratio following ADB's Guidelines for the Economic Analysis of Projects. Calculate the Economic Internal Rate of Return (EIRR) individually, overall.
(iii) Undertake sensitivity analysis on the risk factor for various scenarios such as changes to the cost, generated and diversion traffic, model shift, construction period, etc.
(iv) Prepare and submit Economic Assessment Report, presenting the following :
  (a) Introduction
  (b) General Considerations
  (c) Input Data for Vehicle Operating Cost Components and Other Components for Economic Analysis
  (d) Economic Benefits (including those due to regional implications)
  (e) Construction and Maintenance Alternatives and Cost Estimates
  (f) Economic Analysis
  (g) Sensitivity Analysis
  (h) Conclusions – summarizing the economic assessment, approach & methodology, findings (EIRRs and sensitivity analysis), and overall economic viability.

  Appendices:
  A. Project road details (should be available from main report)
  B. Traffic studies (base year traffic, traffic generation, traffic diversion assessments)
  C. Economic growth trend and traffic forecast (including the basis)
(v) Develop a project impact monitoring framework according to ADB's *Guidelines for Preparing a Design and Monitoring Framework (July 2007),* and carry out baseline survey for all roads.
(vi) During detail design stage, if required, update the economic analysis based on updated cost estimate and prepare two-page economic assessment summary for ADB's review.

c. Social Assessment

10. The consultants will carry out the following tasks but are not limited to;

(i) Conduct 20% poverty & social assessment taking into account socioeconomic and poverty status of the project area of influence, including the nature, extent and determinants of poverty in the project area. Identify and estimate the likely socioeconomic and poverty reduction impacts of the project. Collect and present

sex-disaggregated data where appropriate. Assess local demand for the proposed road investment, employment opportunities, child labor, affordability, gender specific capacity to take advantage of the likely socioeconomic opportunities that would result from the project. This will be in accordance with ADB's Handbook on Poverty and Social Analysis (2012).

(ii) Identify project-related interests of key stakeholders, likely barriers to their participation in and benefiting from the project resources, and suggest possible strategies for addressing their concerns.

(iii) Conduct studies by using participatory approaches. With the participation of stakeholders, identify and analyze the reasons behind the vulnerability of at risk groups, including their exposure to risks. Suggest participatory development strategies for key stakeholders to apply when designing and implementing the project.

(iv) Prepare a detailed gender analysis. Identify project design elements (policy, investment, or implementation) in which women can participate in and thus benefit from the project. Coordinate closely with engineering team to incorporate appropriate design elements.

(v) Conduct assessment of risks of human trafficking and HIV/AIDS due to the project. Provide suggestions for measures to be incorporated in the project to mitigate possible adverse impacts through human trafficking and HIV/AIDS, and identify possible partners for assisting in implementing such measures.

(vii) Identify any necessary mitigation measures and a strategy for implementing them. Identify potential proactive measures, in terms of additional components and design options, which will make it easy for the poor and vulnerable to benefit from the project.

(viii) In coordination with the economic analysis, design a time-bound benefit monitoring and evaluation program, including monitoring indicators and baseline data, to assess the project benefits to local communities before and after the construction of project. The program should address not only the economic benefits but also poverty reduction impacts and other social benefits such as stability of the region and integration with other parts of the country.

(ix) Submit a draft final Poverty and Social Analysis (PSA) report to ADB and RDA for review and comments. Incorporate comments and finalize the PSA accordingly, then re-submit the revised PSA to ADB through RDA. Summarize and submit these PSA findings in the Summary Poverty Reduction and Social Strategy (SPRSS) report format.

d. Environmental Assessment

11. The consultants will carry out an environmental assessment of the identified project roads in accordance with the Government's, ADB's Safeguard Policy Statement 2009 (SPS), as well as their environmental regulations and policies. The major tasks include, but are not limited to, the following :

(i) Prepare the CEA's BIQ to classify the road in accordance with the Government's environmental impact assessment requirements and ADB's Screening Checklist for Environmental Classification;

(ii) Depending on the classifications, prepare IEE as per relevant guidelines of CEA and ADB, and if EIA is required, prepare TOR acceptable to the Government.

(iii) Ensure that the IEE/EIA be prepared in accordance with the requirements of the National Government and as well as ADB's SPS 2009.

(iv) In preparing the IEE/EIA the following issues must be investigated:

a) Potential impacts on biodiversity including modified, natural, critical habitat and protected areas and necessary measures to minimize, mitigate and offset impacts.
b) Potential waste issues including hazardous materials and wastes and appropriate measures for their disposal, treatment and other forms of management.
c) Potential contamination and pollution issues of air, noise, soil and water
d) Screening of climate change risks for the sub-projects. Where potential risks exist, necessary adaptation steps to mitigate the risks must be recommended for inclusion in the project design
e) Estimation of greenhouse gas emission levels with and without the project activities and measures that are technically and financially feasible to reduce or off-set project related GHG emissions during project design, construction and operation stages.
f) Occupational Health Safety issues and measures for the construction workers as well as the local communities in and around the project site.
g) Potential impacts on physical and cultural resources and measures to avoid, minimize or mitigate impacts.
i) Grievance Redress Mechanism to address concerns and grievances of the affected people in the course of the project cycle.
j) Assessment of the institutional set up and capacity of the EA for meeting the environment safeguard requirements of the National Government as well as ADB. Institutional and capacity needs if any must be identified and planned for with adequate budget provisions.

(v) The EIA/IEE report including EMPs must be prepared and revised to incorporate feedback from all relevant stakeholders including the EA, ADB, affected persons and others.

e. Resettlement and Indigenous Peoples Assessment

12. The consultants will carry out Resettlement and Indigenous People Planning of the project road in accordance with the ADB's Safeguard Policy Statement 2009, Public Communications Policy 2012 as well as Government's acts, regulations and policies. The major tasks include, but are not limited to, the following:

(i) Conduct a preliminary social impact assessment for the project including assessment of possible land acquisition/resettlement impacts for the candidate road alignments in accordance with ADB's Safeguard Policy Statement 2009 (SPS). Prepare and complete screening and impact categorization form for involuntary resettlement for the candidate road alignments.

(ii) Identify whether the project will be located in, or pass through, areas of significant indigenous people's settlements, and if this is the case propose how to specifically include indigenous peoples in project planning and implementation in accordance with ADB's Safeguard Policy Statement 2009 (SPS). If relevant, make an overview of population characteristics in the project area and anticipate project impacts. Prepare and complete checklist for indigenous people screening and impact categorization for the candidate road alignments.

(iii) For the whole program, review existing resettlement frameworks (RF) and adjust them to the project roads as necessary acceptable to the Government and ADB in compliance with the Government's National Involuntary Resettlement Policy and ADB's Safeguard Policy Statement 2009 and Government related acts and policies.

(III) <u>Detailed Engineering Design</u>

a. Engineering Study

13. The Consultant's responsibilities will include the following.

(i) Inventory road sections selected for engineering, including geometric features, and type and condition of drainage structures, including an estimate of their load-carrying capacity, pavements, and other major features. Carryout topographical surveys of all candidates roads and prepare a digital terrain model.

(ii) Establish GPS coordinates, connecting to National Grid and carry out engineering surveys, including horizontal and vertical alignments and cross-sections. Establish horizontal control points, bench marks, and reference beacons as required to prepare detailed engineering designs to enable construction quantities to be calculated with reasonable accuracy (5%).

(iii) Carryout geotechnical investigations for soft soil treatment and stability of slopes and record data in the digital terrain model.

(iv) Prepare detailed design, applying sound engineering practice and giving due regard to environmental and social safeguard aspects in accordance with the ADB's Safeguard Policy Statement 2009 and Government related regulations and policies.

(v) Investigate the suitability of local construction materials and, where necessary, locate new quarries and borrow pits and assess the quality and quantity of materials and hauling distance.

(vi) Study the hydrological regime in detail, based on an analysis of rainfall and flood records, supplemented by engineering field investigations, to establish the adequacy of road embankment levels, culverts, and side ditches, and design bed and slope protection for the drainage structures and bridges.

(vii) Assess cross-drainage requirements and proposed new structures (bridges, culverts, and causeways as appropriate) or improvements to structurally unsound structures.

(viii) Prepare practical and cost-effective geometric (horizontal, vertical, intersection, etc.) pavement and structural designs using internationally accepted software on the basis of projected traffic levels; pavement structure studies; axle-load considerations, as determined from activities (i) to (vi) and from previous studies; traffic safety; environmental assessment; and other relevant inputs.

(ix) Determine the most cost-effective improvement option for each project road section. Where new pavements are to be provided, they will be designed, using an internationally recognized procedure, for a10-year life, with provision for overlays during or at the end of that period to extend the life to 15-20 years.

(x) Prepare engineering technical specifications in accordance with best international practice and standards, including any applicable domestic standards (i.e. "Standard Specifications for Construction and Maintenance of Roads and Bridges" Second Edition, published June 2009 and the Institute of Construction Training and Development (ICTAD).

(xi) Assess and record in the digital terrain model the degree of vulnerability of each road section, in respect of the potential impacts of; climate zone shift, floods, landslides, sea level rise and drought exposure as a result of climate change.

(xii) Prepare Detailed Engineering Designs of road, pavement, and structures, and bill of quantities, and calculate Engineering costs estimates for civil works broken down into foreign (direct and indirect) and local components as well as taxes and custom duties.

(xiii) In Consultation with RDA, establish contract packages, taking into account (a) the location of the project roads, size of contracts, and other project specific

factors; (b) ADB's Guidelines for Procurement; and (c) the aim of supporting development of strong, competitive domestic private sector capacity in road industry.

(xiv) Prepare engineering project implementation schedules showing anticipated progress of works and expenditures for each contract package. The schedules will reflect seasonal climate effects at the work sites and take into account typical outputs on earlier ADB-financed road projects.

(xv) Prepare engineering drawings, including road plans (1:2,000 scale), longitudinal profiles (scales: 1:2,000 horizontal and 1:200 vertical), road cross sections at minimum 20m intervals, structure plans, and other requirements.

b. Performance-based Road Maintenance

14. The service will include the following tasks when the draft detailed designs are available:

(i) Assess the viability of using performance-based maintenance contracts under the proposed projects in Sri Lanka.

(ii) Assess the capacities of road agencies and contractors for managing and implementing performance-based road maintenance; if the capacities are not adequate, recommend remedial measures.

(iii) Based on the assessments and detailed design, recommend appropriate terms and mechanisms for implementing performance-based maintenance contracts, including but not limited to the following aspects : (a) performance indicators, (b) payment schedule, (c) quality control and assurance, (d) risk allocation, (e) scope of services, and (f) duration of contracts.

(iv) Prepare provisions for performance-based road maintenance after construction to be included in all bidding documents.

c. Road safety

15. The service will conclude the following tasks when the draft detailed designs are available:

(i) Conduct road safety audits with use of ADB's Road Safety Audit for Road Project; An Operational Tool Kit or similar procedures acceptable to ADB. The following will be carried out:

(a) conduct pre-audit meetings with RDA and the detail design team to review project information and drawings;

(b) conduct office safety review of detailed designs combined with mandatory field visits to the project roads conducted both during daytime and nighttime, together with representatives of local field offices of RDA, and other representatives (e.g., police) as appropriate;

(c) conduct office road safety audit analysis and preparing concise Road Safety Audit Reports for each of the project roads with the list of road safety issues identified, highway risk for each issue assessed, and specific countermeasures proposed to be incorporated into detailed designs;

(d) present RSA findings and recommendations to RDA and detailed design team;

(e) checking the revised detailed designs to ensure that measures to address road safety issues, as endorsed by RDA, are incorporated in detailed designs; and
(f) preparation of provisions for managing road safety aspects appropriately during construction to be included in all bidding documents.

d. Resettlement Planning and Implementation Assistance

16. The consultants will carry out the following tasks. Some tasks may need to be commenced during the feasibility study.

(i) For each road section, prepare a resettlement plan (RP) and indigenous people plan (IPP) as necessary acceptable to the Government and ADB in compliance with the Government's National Involuntary Resettlement Policy, ADB's Safeguard Policy Statement 2009, and Government related acts and policies. RP and IPP should be based on 100% census which covers a complete enumeration of all Affected People (APs) and their affected assets.
(ii) Define categories for impact and eligibility of affected people for compensation and prepare a matrix of entitlements covering compensation and other assistance for all types of impacts to fully replace lost assets, income, and livelihood. Assess whether the compensation standards for all types of assets, crops, and trees are based on replacement value and discuss in detail the valuation methodology used.
(iii) Prepare income restoration plans to restore incomes of APs and host people. Identify specific measures for severely affected poor people, ethnic minorities, or other vulnerable households.
(iv) Ensure that (a) the compensation standards are based on replacement value, and (b) the overall resettlement budget is sufficient to implement the resettlement plan based on the proposed entitlements and rehabilitation plans.
(v) Assist Government officials to initiate and expand consultation with the affected communities, local leaders, proponents, and stakeholders who may be opposed to the Project. Prepare a consultation plan for the MOPH and RDA and a format for documenting consultation with affected people.
(vi) Assess the capacity of the Government in implementing the proposed RP and IPDP, recommend improvements and actions required before land acquisition, and proposed necessary training to enable MOPH and RDA to implement the RP and IPDP and assess the social and resettlement issues of the follow-on subprojects, if required. Assist the MOPH and RDA to (i) prepare a resettlement implementation schedule, (ii) recruit NGO/Agency for RP and IPDP implementation (if required), and (iii) recruit consultants for external monitoring and evaluation.
(vii) Assist the MOPH and RDA to develop a computerized database management system for recording affected persons (APs) and lost assets. The system should reflect the present impact on APs and accordingly the entitlements for APs are planned. The system should be in place from the beginning of the resettlement survey. Also, develop cadastral mapping of affected plots for construction of new alignments using road inventory map developed under the engineering study.
(viii) While reviewing/updating IPPs, conduct (a) social impact assessment, (b) meaningful consultation and (c) ascertain consent of affected IP communities. For items (b) and (c), proper recording and full documentations are required. These documents must be attached to IPPs as annex. These IPPs should also incorporate the findings of the resettlement census.

(ix) Prepare a final RP and IPDP, and summary RP and IPDP, taking into account comments from ADB and the Government, and based on 100% census survey. The RP and IPDP should include a record of consultation with affected persons.
(x) Assist Government officials in expanding consultation, if required, with the affected communities, local leaders, proponents, and stakeholders who may be opposed to the Project.
(xi) Assist the MOPH and RDA in updating the computerized database management system for APs and lost assets. Also, update cadastral mapping of affected plots developed under the feasibility studies.

e. Environmental Studies

17. The consultants will carry out the following tasks. Some tasks may need to be commenced during the feasibility study.

(i) Prepare the CEA's BIQ to classify each subproject in accordance with the CEA's environmental impact assessment requirements and ADB's Screening Checklist for Environmental Classification;
(ii) Depending on the classifications, prepare IEE or EIA as per relevant guidelines of CEA and ADB
(iii) Ensure that the IEE/EIA be prepared or updated (if already prepared) in accordance with the requirements of the National Government and as well as ADB's SPS 2009.
(iv) The study should clearly identify and describe the area of impact, provide an assessment of potential impacts and mitigation measures with site specific details and involve public consultations with affected people and other relevant stakeholders. It should include a comprehensive, site specific and practical Environmental Management Plan (EMP) with clear institutional arrangements for the implementation and monitoring of the EMP.
(v) In preparing or updating (if already prepared) the IEE/EIA the following issues must be investigated or covered:
    a. Potential impacts on biodiversity including modified, natural, critical habitat and protected areas and necessary measures to minimize, mitigate and offset impacts.
    b. Potential waste issues including construction debris, excavated material, hazardous materials and wastes and appropriate measures for their disposal, treatment and other forms of management.
    c. Potential contamination and pollution issues of air, noise, soil and water
    d. Screening of climate change risks for the sub-projects. Where potential risks exist site specific adaptation measures to mitigate the risks must be provided and incorporated in the detailed design and properly documented
    e. Greenhouse gas emission levels with and without the project activities and measures that are technically and financially feasible to reduce or off-set project related GHG emissions during project design, construction and operation stages.
    f. Occupational Health Safety issues and measures for the construction workers as well as the local communities in and around the project site.
    g. Assess the institutional set up and capacity of the EA for meeting the environment safeguard requirements of the National Government as well as

ADB. Institutional and capacity needs if any must be identified and planned for with adequate budge provisions.

h. Potential impacts on physical and cultural resources and measures to avoid, minimize or mitigate impacts.
i. An assessment of induced and cumulative impacts of the sub projects
j. Grievance Redressed Mechanism to address concerns and grievances of the affected people in the course of the project cycle.

18. For category A projects a minimum of two public consultations must be carried out during the early stages of the project and after preparation of the first draft of the EIA. The findings of the EIA must be shared in a form or nature that is accessible and understandable by the affected persons or necessary recommendations and guidelines made for sharing such kind of information at a later stage. As part of the IEE/EIA study The EIA/IEE report including site specific EMPs must be prepared and revised to incorporate feedback from all relevant stakeholders including the EA, ADB, affected persons and others.

f. Procurement Assistance

19. Prepare the Prequalification (if applicable) and bidding documents using ADB's sample Bidding Documents – Procurement of Civil Works.

g. Design Standard and Construction Technology

20. Review and update the Government's design standard taking in account today's advanced technology adopted in design and construction of civil engineering projects.

h. Capacity Development and Technology Transfer

21. Conduct workshops and trainings for the EA and IA's staff to enhance their capacity in engineering design and programming.

C. Reports, Time Schedule and Payment

22. The consulting services will be implemented over eighteen (18) calendar months from the commencement date. The following reports, in the English language, will be submitted by the consultant to the Government (4 copies) and ADB (2 copies), including CD-ROM.

Report	Description/ Technical Accomplishments	Submission deadline (no. months after the commencement date)	Cumulative Payment ceiling (% of Total Remuneration + Out-of-Pocket Expenses)
Inception Report	Highlight the progress made, initial findings, and any recommendations and proposed changes to the work program. Program of mobilizing teams with detailed work schedule. Roads that will be safeguard issues and other risks to	1	05

	be studied at the initial stage. Such roads will be identified in consultation with RDA and ADB.		
Screening Report	Review existing studies and programs, review existing surveys and Data, screening Assessment, adopting Multi Criteria Analysis (MCA), prepare transport modeling, and propose 300 km road section for feasibility study.	06	20
Draft/ FS Report	(a) summary of activities, (b) documentation of data, analyses, and recommendations developed under the terms of reference, (c) stakeholder assessments (social and environments data); IEE's, (d) assessment of the effectiveness of the activities undertaken and (e) conclusion.	09	40
Final FS Report	Revised FS report incorporating the comments.	10	50
Draft Final Report (including the detailed design)	Design services with: (a) summary of activities; (b) documentation of data, analyses, and recommendations developed under the terms of reference, (c) land acquisition Documents, including drawings and BOQ's; (f) procurement plan; and (g) any other necessary documents.	17	80
Final Report	Revised final report incorporating the comments	18	100

D Consultants Inputs

23. This assignment will be carried out over a period of eighteen months from the date of commencement and will require about **58 *person – months*** of International (key Experts) inputs and **149 *person months*** of Domestic (Key Experts) inputs, and **90 *person months*** of Domestic (Non Key Experts) inputs. It is anticipated that the consultant's staffing inputs will generally be as set below;

Expert	**Input (Person Month)**
Team Leader/ Highway Engineer	17
Highway Design Engineer	08
Bridge/ Structural Design Engineer	08
Transport Planner	05
Transport Economist	06
Transport Modeler	05
Pavement Design Engineer	04
Road Safety Engineer	02
Performance Based Maintenance Expert	03
Sub Total	**58**

Highway Design Engineer	18
Transport Economist	11
Bridge/ Structural Design Engineer	14
Pavement Engineer/ Materials Engineer	11
Hydrologist	08
Geotechnical Engineer	08
Climatic Specialist	03
Traffic Engineer	06
Procurement Specialist	12
Quantity Surveyor (1)	18
Quantity Surveyor (2)	10
Environmental Specialist	10
Social Development Specialist	10
Resettlement Specialist	10
Sub Total	**149**
Engineer (1)	18
Engineer (1)	18
Engineer (1)	18
Junior Environmental Specialist	12
Junior Social Development Specialist	12
Junior Resettlement Specialist	12
Sub Total	**90**

24. Qualification description and responsibilities of each expert are as follows;

Team Leader/Senior Highway Engineer (international)
The team leader/senior highway engineer shall be a graduate in civil engineering, professionally qualified and preferably a master degree holder in transport/highway engineering. He/she shall have 20 years of professional experience in road transport sector, 10 years of which in leading a design team. He/she shall lead the team, oversee the overall operation of the team and be responsible for all the tasks stated in Section B. He/she shall also (i) maintain records and advise the EA on development of the studies and submit various reports, (ii) inform and recommend possible solutions to the RDA of the problems or potential problems outcome of screening, feasibility studies to the Technical committee (TC) of RDA and incorporate the comments in the final reports, (iii) present the draft reports to the TC and incorporate their comments, (iv) regularly update the Project Director (PD) on the developments and issues and find solutions, and (v) coordinate and liaise with employer on any urgent implementation issues.

Senior Highway Design Engineer (international)
The senior highway design engineer shall be a graduate in civil engineering, professionally qualified with 20 years of professional experiences, 12 years of which in highway design. He/she shall assess conditions of the candidate roads, prepare an assessment report, and assist Team Leader in screening the roads. He shall (i) prepare the plan for and organize field survey, testing and investigations (ii) carry out geometric design, cross drain, road signs and markings and other detailed engineering designs complying with technical and safety standards, with the assistance of the highway design engineer (national), and (iii) assist the team in preparation of pavement design, specifications and other tasks as directed by the team leader.

Senior Bridge/Structure Design Engineer (international)

The senior bridge/structure design engineer shall be a graduate in civil engineering, professionally qualified with 20 years professional experience, 12 years of which is in bridge design. With assistance of the bridge/structural design engineer, he/she shall (i) conduct a condition assessment of the existing bridges and drainage and other structures, (ii) prepare an assessment report propose an improvement and/or rehabilitation scheme and recommend new bridges/and structures when deemed necessary, and (iii) design bridges and structures in compliance with technical and safety standards.

Transport Planner (international)
The transport planner shall be a graduate in civil engineering with 15 years of professional experience, 12 years of which in transport planning. He/she shall (i) review and assess road network in Southern and Western provinces of Sri Lanka, (ii) analyze the land use pattern and development trend and (iii) assist transport modeler to develop a traffic model.

Senior Transport Economist (international)
The senior transport economist shall be a graduate in economics with a minimum 15 years of professional experience, 12 of which in road sector. He/she shall assist the team leader in screening studies, (ii) review the existing traffic data and other surveys determine the additional data to be collected and survey to be carried out, and organize and supervise surveys, and (iii) prepare economic analysis and sensitivity analysis for the feasibility stage and update them at detailed design stage.

Transport Modeler (international)
The transport modeler shall be a graduate in civil/transport engineering with 15 years of professional experience, 12 years of which in data simulation and preparation of transport models. He/she shall, (i) conduct an inventory of road condition and traffic volume by gathering demographic information, and socio-economic data from national, provincial road agencies and other data sources in Southern and Western province, (ii) develop a GIS-based database including road network information, demographic information, socio-economic data, and land use pattern with satellite images (if available) showing the evolution of land use, (iii) assist the Transport Planner in analyzing the road network by undertaking analytical works and producing thematic maps, (iv) assist the transport planner in designing survey tools and methodologies related to traffic flow and composition by link, level of service, and vehicle characteristics (vehicle operating costs, emission, etc.), and (v) based on the survey results, develop a traffic model for expressway and national and provincial road network in Southern and Western Provinces, feeding the expressway network.

Senior Pavement Design Engineer (international)
The senior pavement design engineer shall be a graduate in civil engineering with 15 years of professional experience, 12 years of which in pavement design. He/she shall (i) study the existing road pavement structures and determine the residual strength, (ii) assist the Senior Highway Design Engineer in determining further investigations and testing required, (iii) prepare the optimum and most practical pavement design for the project.

Road Safety Engineer (international)
The road safety engineer shall be a graduate in civil engineering with 15 years of professional experience, 10 years of which in road safety design and audit. He/she shall

(i) identify the potential safety issues along the candidate road sections and incorporate them in the detailed designs, and (ii) prepare a road safety report.

Performances Based Maintenance Expert (international)
The performances based maintenance expert shall be a graduate in civil engineering with 15 years of experience, 12 years of which in performance-based road maintenance. He/she shall (i) review the performance based maintenance scheme, terms and conditions and specifications currently practiced in national and provincial road contracts, and (ii) recommend improvements.

Highway Design Engineer (national)
The highway design engineer shall be a graduate in civil/transport engineering, professionally qualified with 10 years of experience, 7 years of which in highway design. He/she shall (i) assist highway design engineer (international) in assessing conditions of the candidate roads, preparing the assessment reports, and supervising testing, investigation and survey, (ii) carry out geometric design, cross drain, road signs and markings and other detailed engineering designs complying with technical and safety standards under guidance of the senior highway design engineer.

Transport Economist (national)
The transport economist shall be a graduate in economics with 12 years of professional experience, 10 years of which in road sector. He/she shall assist the senior transport economist in screening studies, data collection, economic analysis and sensitivity analysis.

Bridge/ Structure Design Engineer (national)
The bridge/structure design engineer shall be a graduate in civil engineering, professionally qualified with 10 years professional experience, 7 years of which in bridge design. He/she, under guidance of the senior bridge/structure design engineer, shall (i) carry out an assessment of the conditions of existing bridges and other structures, and (ii) design the bridges and structures based on technical and safety standards.

Pavement/Materials Engineer (national)
The pavement/materials engineer shall be a graduate in civil engineering with 12 years of professional experience, 10 years of which in pavement design materials engineering. He/she, under supervision of Senior Pavement Design Engineer, shall (i) carry out the pavement design, (ii) study the existing road pavement materials and propose suitable pavement and embankment materials, And (iii) carry out survey of existing quarries and proposed quarries and recommend suitability of materials.

Hydrologist (national)
The hydrologist shall be a graduate in civil engineering with 12 years of professional experience, 10 years of which in hydraulic and hydrologic engineering design. He/she, in coordination/consultation/consultation with the Senior Bridge/Structure Design Engineer and Senior Highway Design Engineer, shall (i) study the rainfall and climatic statistics for the candidate roads, (ii) assimilate all relevant topographic and hydraulic data, (iii) study the existing structures and its adequacy, (iv) identify the flood prone areas and recommend appropriate preventive measures, and (v) carry out hydrologic and hydraulic computations and propose the opening sizes required for the flows.

Geotechnical Engineer (national)

The geotechnical Engineer shall be a graduate in civil /geological engineering with 12 years of experience, 10 years of which in subsoil investigation and foundation design. He/she, in coordination/consultation with the senior bridge/structural design engineer, shall (i) study the geological conditions of the candidate roads, (ii) carry out testing and investigations as required, and (iii) prepare geotechnical engineering design for the roads and drainage structures.

Climatic Specialist (national)
The climatic Specialist shall be a graduate in engineering/science with 10 years of professional experience, 5 of which in climate change impact assessment/climate proof design. He/she, in coordination/consultation with the senior bridge/structure design engineer and hydrologist, shall assess and record the degree of vulnerability of each road sections in respect of the potential impacts of climate zone shift, floods, landslides, sea level rise and drought exposure as a result of climatic change.

Traffic Engineer (national)
The traffic Engineer shall be a graduate in civil/traffic engineering with 10 years of professional experience, 7 years of which in traffic engineering. He/she, in coordination/consultation with the transport planner and transport economist, shall (i) review the existing traffic data, determine additional traffic studies to be conducted, (ii) carry out additional traffic surveys as needed, and (iii) prepare the traffic assessment reports.

Procurement Specialist (national)
The procurement Specialist shall be a graduate in civil engineering with 12 years of professional experience, 10 years of which in preparing civil works' contract documents and specifications. He/she, in coordination/consultation with the team leader, shall prepare the projects' bid documents following ADB guidelines and Government requirements.

Quantity surveyor (national)
The quantity surveyor shall hold a national diploma certificate (or equivalent)in surveying, with 10 years of professional experience, 7 years of which in road sector quantity survey. He/she shall (i) in coordination/consultation with the procurement specialist, prepare bill of quantities, rate analysis and engineers estimate for each contract package, And (ii) assist the transport economist and transport planner by providing necessary information and calculations as required.

Environment Specialist (national)
The environment specialist shall be a graduate in environmental science/engineering with 12 years of professional experience, 10 years of which in infrastructure projects. He/she shall (i) carry out environmental assessment of the candidate roads in accordance with the Government and ADB safeguard policies, and (ii) prepare BIQ, IEE or EIA, prepare EMP/EMOP and cost estimates.

Social Development Specialist (national)
The social development specialist shall be a graduate in sociology/social science with 10 years of professional experience, 7 years of which in infrastructure projects. He/she shall (i) conduct social assessment of candidate roads following ADB and Government safeguard policies and guidelines, and (ii) prepare poverty and social analysis reports.

Resettlement Specialist (national)
The resettlement Specialist shall be a graduate in social or environmental science with 10 years of professional experience, 7 of which in infrastructure projects. He/she shall prepare (i) resettlement plan and indigenous people plan complying ADB and Government policies, and (ii) restoration plans, compensation matrix, computerized data base.

Junior Engineer (national)
The junior shall be a graduate in civil engineering with 3 years of professional experience. He/she, under guidance of the team leader, highway design engineer, bridge/structural design engineer, and traffic engineer, shall support the team's operation in all engineering aspects of the project.

Environmentalist (national)
The Environmentalist shall be a graduate in environmental science/environmental engineering with 03 years of professional experience. He/she shall assist the environmental specialist in environmental aspects of the project.

Sociologist (national)
The sociologist shall be a graduate in sociology/social science with 03 years of professional experience. He/she shall assist the social development specialist in social and gender aspects of the project.

Junior Resettlement Specialist (national)
He/she shall be a graduate in social/environmental science with 03 years of experience. He/she shall assist resettlement specialist in resettlement aspects of the project.

G. Facilities Provided by the Client

25. The Client shall provide the following
    (i) Visa supporting letters and registrations for host country
    (ii) Relevant project data and reports
    (iii) Access to data, records, and other information required to perform the assigned tasks; and

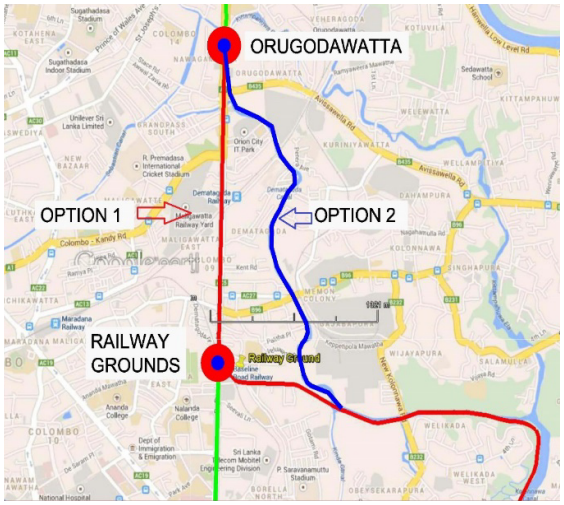
TERMS OF REFERENCE – TRANSPORT PLANNER

CONSULTING SERVICES FOR FEASIBILITY STUDY AND PRELIMINARY ENGINEERING DESIGN OF ELEVATED HIGHWAY LINK CONNECTING PROPOSED SECOND NEW KELANY BRIDGE PROJECT AND PROPOSED BATTARAMULLA ELEVATED EXPRESSWAY

A. Introduction and Background

1. The Government of Sri Lanka (the Government) has received a loan from the Asian Development Bank (ADB) and intends to apply a portion of loan to engage consulting services to assist the Road Development Authority (RDA) the Feasibility Study and Preliminary Design of Elevated Highway Link (Battaramulla link) from Proposed 2nd New Kelany Bridge Project to administrative capital (Battaramulla) area.

2. The Battaramulla link is part of the RDA's expressway connectivity program for Metro Colombo Area, which includes the New Kelani Bridge, the Port Access Link, and the Battaramula link. Upon completion of the expressway connectivity program, Colombo will get better access to the expressway network, and additionally, a fast track between the fort area and the Battaramulla area will be constructed.



3. RDA has identified two possible traces for the Battaramulla link (Shown in Map as Option -1 and Option -2)
Option -1 :- Trace from 2nd New Kelani Bridge Project to Railway ground along Base Line Road and from Railway Ground up to Canal along " SAKASA PURA Housing Scheme Access Road , **Option 2** Trace along Canal from 2nd New Kelani Bridge Project up to "SAKASAPURA" housing scheme access Road link Shown in Blue Color.
To explore and assess alternative options, the government wishes to compare the two possible traces along the existing streams or canals or marshy lands or any other possible ways to minimize the damages to the environment, social and Acquisition of lands. For the selected trace, the consultant will undertake feasibility study and preliminary design for elevated highway.

B. Scope of Services

The following outlines the general scope of services. The Consultant is expected to propose necessary enhancements or refinements as well as any innovative approaches in keeping with the intended objectives of the services.

Task.1 Traffic Study, Needs Assessment, and Alternative Trace Study

(i) Review existing transport studies, including available traffic data, and assess current traffic patterns and constraints.

(ii) Forecast traffic for proposed elevated road for 30 year projections.

(iii) Validate the need for the proposed elevated expressways and assess whether it is consistent with relevant sector strategy of the government. This should include comparison with no-project scenario and other proposed Alternate Baseline alignment, and schemes. The consultant should closely consult with RDA, and recommend possible alignment adjustments that may achieve optimum balance of environmental and social impact, investment cost, and positive factors while achieving the overall objective.

Task 2. Economic and Financial Assessment

(i) Prepare an economic analysis of the proposed road improvements using the Highway Development and Management model (HDM, version 4) or other more appropriate models for urban areas. Calculate the Economic Internal Rate of Return (EIRRs) for individual subprojects and overall.

(ii) Undertake sensitivity analysis on the risk factor basis for various scenarios such as changes to the cost, generated and diversion traffic, modal shift, construction period, etc.

(iii) Prepare and submit Economic Assessment Report, presenting the following:

(a) Introduction
(b) General Considerations
(c) Input Data for Vehicle Operating Cost Components and Other Components for Economic Analysis
(d) Economic Benefits (including those due to regional implications)
(e) Construction and Maintenance Alternatives and Cost Estimates
(f) Economic Analysis
(g) Sensitivity Analysis
(h) Conclusions - summarizing the economic assessment, approach & methodology, findings (EIRRs and sensitivity analysis), and overall economic viability.

Appendices:

A. Project road details (should be available from main report)
B. Traffic studies (base year traffic, traffic generation, traffic diversion assessments)
C. Economic growth trend and traffic forecast (including the basis)

(iv) Develop a project impact monitoring framework and carry out baseline survey for all roads. Develop financial analysis models for the proposed investment in line with ADB's *Guidelines for the Financial Governance and Management of Investment Projects Financed by the ADB* (2002)*

*-Available at ADB website

(v) Calculate the financial internal rate of return (FIRR) for the overall investment and establish the financial viability by comparing the FIRR with the cost of capital, taking into account financial costs and benefits. Sensitivity analysis should be carried out by varying tariff levels, financial revenues, and investment costs.

(vi) Undertake financial analyses and projections of elevated expressway operations to assess the financial sustainability and identify measures to ensure sustainable operations, including possible private sector involvement through public-private partnership such as in operations & maintenance arrangements.

C. Implementation Arrangements and Staffing

RDA will engage three individual consultants to complete the assignment: (i) Transport Planner, (ii) Highway engineer, and (iii) Bridge and structure engineer. The Transport Planner will act as the Team leader and coordinator to manage the progress and ensure the report quality. The task responsibility is as follows:

Expert	Responsibility
Transport Planner	**Lead**
Highway Engineer	Support
Bridge and Structure Engineer	Co-Lead

D. Reports, Time and Payment Schedule

No.	List of Deliverables	Time /(Months)	Cumulative Payment Ceiling (% of Contract)
1	Traffic Study, Forecasting & Needs Assessment, and Validation Report	0.5	30%
2	Economic Feasibility Report	1.0	50%
3	Financial Feasibility Report	1.5	70%
4	Tariff Level Assessment Report	2.0	90%
5	Submission of Final Report	3.0	100%

E. Data and Reports to Be Provided by the Government

- The consultant should attend and present progress work of the assignment at Steering Committee Meetings, Project Coordinating Committee meetings, etc.

- The above reports, in the English language, will be submitted by the consultant to the Government (4 copies) and ADB (2 copies). The final report will also be submitted on CD-ROM

F. Counter Part Facilities

1. **The Government shall provide and make available to the Consultant, free of charge following, as they are required by the Consultant for carrying out the Services;**

(i) Furnished office accommodation for all experts
(ii) Utilities including power, telephone lines, water, internet connection and Secretarial arrangements.
(iii) Access to relevant document, surveys, investigations, statistics, data, information, reports and maps that are available from the Government

2. **The Government shall also undertake the following:**

(i) Appoint counterpart staff within the Executing Agency, as needed, who will work closely with the Consultant for the successful accomplishment of the Services
(ii) Provide remuneration, per diem and other provisions necessary for the Government counterpart staff.
(iii) All the counterpart support, facilities and information shown above would be provided by the Government in kind as its contribution to the Project and would be free of charge to the Consultants.
(iv) All available reports for completed or ongoing engineering, traffic, and project details shall be provided.

G. Contents of Deliverable is annexed in Annex-1 as follows;

Deliverables	Contents Annex-1

Traffic Study, Forecasting & Needs Assessment, and Validation Report	Annex 1.1
Economic Feasibility Report	Annex 1.2
Financial Feasibility Report	Annex 1.3
Tariff Level Assessment Report	Annex 1.4
Combined Final Report	Annex 1.5

Annex -1
Annex 1.1

TRAFFIC STUDY, FORECASTING & NEEDS ASSESSMENT, AND VALIDATION REPORT

1. Review of Existing Transport Studies
2. Analysis of Traffic counts, Origin – Destination and Axle Load Surveys
3. Traffic Impact Assessment to the City
4. Travel Time Pattern Establishment
5. Holistic Network Study
6. Traffic Forecasting of Elevated Highways
7. Validation of Need for Proposed Elevated Highways

Annex 1.2

ECONOMIC FEASIBILITY REPORT

1. Economic Analysis
2. Sensitive Analysis
3. Economic Assessment
4. Project Impact Monitoring Framework and Baseline Survey

Annex 1.3

FINANCIAL FEASIBILITY REPORT

1. Financial Model Analysis
2. Calculation of Financial Internal Rate of Return
3. Financial Analysis and Projections

Annex 1.4

TARIFF LEVEL ASSESSMENT REPORT

1. Financial Model Analysis
2. Calculation of Financial Internal Rate of Return
3. Financial Analysis and Projections

Annex 1.5

CONTENTS OF COMBINED FINAL REPORT

TERMS OF REFERENCE – HIGHWAY ENGINEER

CONSULTING SERVICES FOR FEASIBILITY STUDY AND PRELIMINARY ENGINEERING DESIGN OF ELEVATED HIGHWAY LINK CONNECTING PROPOSED SECOND NEW KELANY BRIDGE PROJECT AND PROPOSED BATTARAMULLA ELEVATED EXPRESSWAY

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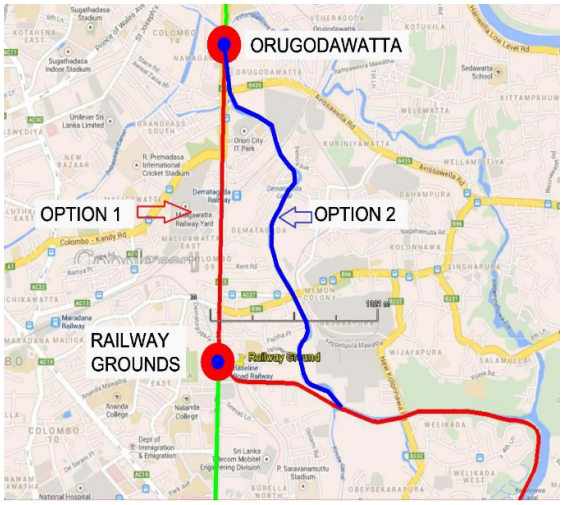
2. The Battaramulla link is part of the RDA's expressway connectivity program for Metro Colombo Area, which includes the New Kelany Bridge, the Port Access Link, and the Battaramula link. Upon completion of the expressway connectivity program, Colombo will get better access to the expressway network, and additionally, a fast track between the fort area and the Battaramulla area will be constructed.



3. RDA has identified two possible traces for the Battaramulla link (Shown in Map as **Option -1 and Option -2)**
Option -1 :- Trace from 2nd New Kelani Bridge Project to Railway ground along Base Line Road and from Railway Ground up to Canal along " SAKASA PURA Housing Scheme Access Road ,

Option 2 Trace along Canal from 2nd New Kelani Bridge Project up to "SAKASAPURA" housing scheme access Road link Shown in Blue Color.

To explore and assess alternative options, the government wishes to compare the two possible traces along the existing streams or canals or marshy lands or any other possible ways to minimize the damages to the environment, social and Acquisition of lands. For the selected trace, the consultant will undertake feasibility study and preliminary design for elevated highway.

B. Scope of Services

4. The following outlines the general scope of services. The Consultant is expected to propose necessary enhancements or refinements as well as any innovative approaches in keeping with the intended objectives of the services.

Task: Urban Expressway Design

(i) Investigate site conditions, including availability of land and layout of existing utilities, and assess the technical viability of the proposed elevated roadways. Conduct consultation with the Ceylon Electricity Board (CEB), Lanka Electricity Company (LECO), National Water Supply and Drainage Board (NWS&DB), Colombo Municipal

Council (CMC), and any other utility agencies, and identify existing utility services and possible options for required relocation of utility services and land acquisition requirements.

(ii) Prepare conceptual design, including options weighed with advantages and disadvantages, and recommend the most optimal option to ensure practical and cost effective alignment (including the most optimum entrance and exit points) and Highway Design on the basis of projected traffic levels, environmental and social impact, road safety, and any other relevant inputs.

(iii) Prepare engineering drawings as per Client's requirements.

C. Implementation Arrangements and Staffing

5. RDA will engage three individual consultants to complete the assignment: (i) Transport Planner, (ii) Highway engineer, and (iii) Bridge and structure engineer. The Transport Planner will act as the Team leader and coordinator to manage the progress and ensure the report quality. The task responsibility is as follows:

Expert	Responsibility
Transport Planner	Support
Highway Engineer	**Lead**
Bridge and Structure Engineer	Co-Lead

D. Reports, Time and Payment Schedule

No.	List of Deliverables	Time /(Months)	Cumulative Payment Ceiling (% of Contract)
1	Design of Horizontal and Vertical Alignment Drawings	0.5	30%
2	Design of Intersections and Interchanges Drawings	1.0	50%
3	Layout of Land Acquisition Plans	1.5	70%
4	Highway Design Report with Standard Specifications	2.0	90%
5	Submission of Final Report	3.0	100%

E. Data and Reports to Be Provided by the Government

- The consultant should attend and present progress work of the assignment at Steering Committee Meetings, Project Coordinating Committee meetings, etc.

- The above reports, in the English language, will be submitted by the consultant to the Government (4 copies) and ADB (2 copies). The final report will also be submitted on CD-ROM

F. Counter Part Facilities

6. The Government shall provide and make available to the Consultant, free of charge following, as they are required by the Consultant for carrying out the Services;
   (i) Furnished office accommodation for all experts
   (ii) Utilities including power, telephone lines, water, internet connection and Secretarial arrangements.
   (iii) Access to relevant document, surveys, investigations, statistics, data, information, reports and maps that are available from the Government

7. The Government shall also undertake the following:

(i) Appoint counterpart staff within the Executing Agency, as needed, who will work closely with the Consultant for the successful accomplishment of the Services
(ii) Provide remuneration, per diem and other provisions necessary for the Government counterpart staff.
(iii) All the counterpart support, facilities and information shown above would be provided by the Government in kind as its contribution to the Project and would be free of charge to the Consultants.
(iv) All available reports for completed or ongoing engineering, traffic, and project details shall be provided.

G. Contents of Deliverable is annexed Annex-1 as follows;

Deliverables	**Contents Annex-1**
Design of Horizontal and Vertical Alignment Drawings	Annex 1.1
Design of Intersections and Interchanges Drawings	Annex 1.2
Layout of Land Acquisition Plans	Annex 1.3
Highway Design Report with Standard Specifications	Annex 1.4
Combined Final Report	Annex 1.5

Annex-1
Annex 1.1

DESIGN OF HORIZONTAL AND VERTICAL ALIGNMENT DRAWINGS

1. Site Investigation and Surveys and Identification of Control Points
2. Identification of viable alignments within the Selected Corridor
3. Analysis of Technical Viability of the Alignments of Elevated Highway
4. Preliminary Design of Horizontal & Vertical Alignments Drawings

Annex 1.2

DESIGN OF INTERSECTIONS AND INTERCHANGES DRAWINGS

1. Identification of possible links with Existing Road Network
2. Conceptual Design with Traffic Flow Patterns
3. Analysis of Technical Viability of the selected Intersection and Interchanges
4. Preliminary Engineering Design and Engineering Drawings with On/ Off Ramps

Annex 1.3

LAYOUT OF LAND ACQUISITION PLANS

1. Site Investigation and Identification of affected public and private properties
2. Layout of Land acquisition plan according to the Engineering Design

Annex 1.4

HIGHWAY DESIGN REPORT WITH STANDARD SPECIFICATIONS

1. Preliminary Specifications for the Elevated Highways and Ramps
2. Recommendation for the Modification of Alignments with Curve improvements for Detail Design
3. Preliminary Engineering Design and Engineering Drawings

Annex 1.5

CONTENTS OF COMBINED FINAL REPORT

Chapter 3 Preliminary Engineering Design
3.2 Highway Design
3.2.1 Geometric Design Standard and Design Criteria
3.2.2 Summary of Design Criteria
3.2.3 Geometric Design Standard and Cross Section
3.2.4 Ramp and Interchange Design
3.2.5 Conclusion

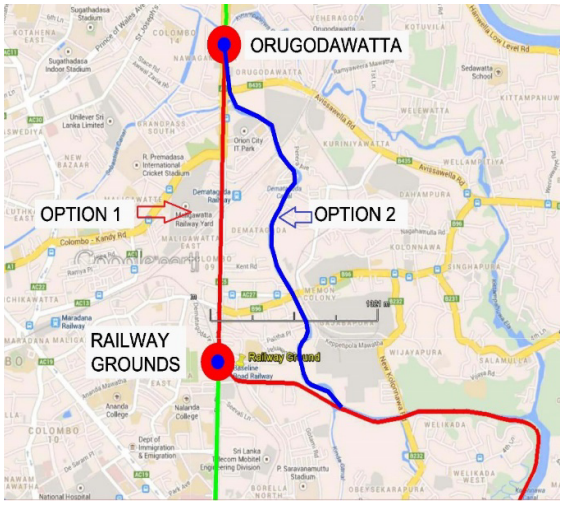
TERMS OF REFERENCE –BRIDGE AND STRUCTURAL ENGINEER

CONSULTING SERVICES FOR FEASIBILITY STUDY AND PRELIMINARY ENGINEERING DESIGN OF ELEVATED HIGHWAY LINK CONNECTING PROPOSED SECOND NEW KELANY BRIDGE PROJECT AND PROPOSED BATTARAMULLA ELEVATED EXPRESSWAY

A. Introduction and Background

1. The Government of Sri Lanka (the Government) has received a loan from the Asian Development Bank (ADB) and intends to apply a portion of loan to engage consulting services to assist the Road Development Authority (RDA) the Feasibility Study and Preliminary Design of Elevated Highway Link (Battaramulla link) from Proposed 2nd New Kelany Bridge Project to administrative capital (Battaramulla) area.

2. The Battaramulla link is part of the RDA's expressway connectivity program for Metro Colombo Area, which includes the New Kelany Bridge, the Port Access Link, and the Battaramula link. Upon completion of the expressway connectivity program, Colombo will get better access to the expressway network, and additionally, a fast track between the fort area and the Battaramulla area will be constructed.



3. RDA has identified two possible traces for the Battaramulla link (Shown in Map as Option -1 and Option -2)
Option -1:- Trace from 2nd New Kelani Bridge Project to Railway ground along Base Line Road and from Railway Ground up to Canal along
"SAKASA PURA Housing Scheme Access Road,

Option 2 Trace along Canal from 2nd New Kelani Bridge Project up to "SAKASAPURA" housing scheme access Road link Shown in Blue Color.
To explore and assess alternative options, the government wishes to compare the two possible traces along the existing streams or canals or marshy lands or any other possible ways to minimize the damages to the environment, social and Acquisition of lands. For the selected trace, the consultant will undertake feasibility study and preliminary design for elevated highway.

B. Scope of Services

The following outlines the general scope of services. The Consultant is expected to propose necessary enhancements or refinements as well as any innovative approaches in keeping with the intended objectives of the services.

Task: Preliminary Engineering Design, Specification, Cost Estimate, and Works Packaging

(i) Conduct site investigation and surveys (i.e. geotechnical, hydrological) necessary for the preliminary engineering design, and prepare a three-dimensional digital terrain model in reference to the national coordinate.

(ii) Prepare preliminary engineering design for substructure and superstructure (including access ramps, toll plazas, pavement, drainage system, lighting system, noise control system, traffic management system, possibility of using Intelligence Transport (IT) systems, and etc. in accordance with best international practice and standards, including any applicable domestic standards.

(iii) Prepare preliminary specifications in accordance with best international practice and standards, including any applicable domestic standards (i.e. "Standard Specifications for Construction and Maintenance of Roads and Bridges" Second Edition, published June 2009 by the Institute of Construction Training and Development - ICTAD).

(iv) Prepare engineering drawings as per Client's requirements.

(v) Prepare conceptual design, including options weighed with advantages and disadvantages, and recommend the most optimal option to ensure practical and cost effective Structural Design on the basis of projected traffic levels, environmental and social impact, road safety, and any other relevant inputs.

(vi) Develop preliminary cost estimates and bills of quantities for the proposed civil works and relocation of existing utility services, using available indices validated by reference to market prices, separating foreign exchange, local currency, and tax and duty elements.

C. Implementation Arrangements and Staffing

RDA will engage three individual consultants to complete the assignment: (i) Transport Planner, (ii) Highway engineer, and (iii) Bridge and structure engineer. The Transport Planner will act as the Team leader and coordinator to manage the progress and ensure the report quality. The task responsibility is as follows:

Expert	Responsibility
Transport Planner	Support
Highway Engineer	Co-Lead
Bridge and Structure Engineer	**Lead**

D. Reports, Time and Payment Schedule

No.	List of Deliverables	Time /(Months)	Cumulative Payment Ceiling (% of Contract)
1	Preliminary Conceptual Structural Design of Intersections and Ramps	0.5	10%
2	Geotechnical and Substructure Design Report	1.0	30%
3	Structural Design of Elevated Highway with Pier Location and Profile	1.5	50%
4	Structural Design Final Drawings with Utility Details	2.0	70%
5	Quantity Calculation & Cost Estimate	2.5	90%
4	Submission of Final Report	3.0	100%

E. Data and Reports to Be Provided by the Government

- The consultant should attend and present progress work of the assignment at Steering Committee Meetings, Project Coordinating Committee meetings, etc.

- The above reports, in the English language, will be submitted by the consultant to the Government (4 copies) and ADB (2 copies). The final report will also be submitted on CD-ROM

F. Counter Part Facilities

1. The Government shall provide and make available to the Consultant, free of charge following, as they are required by the Consultant for carrying out the Services;

(i) Furnished office accommodation for all experts
(ii) Utilities including power, telephone lines, water, internet connection and Secretarial arrangements.
(iii) Access to relevant document, surveys, investigations, statistics, data, information, reports and maps that are available from the Government

2. The Government shall also undertake the following:

(i) Appoint counterpart staff within the Executing Agency, as needed, who will work closely with the Consultant for the successful accomplishment of the Services
(ii) Provide remuneration, per diem and other provisions necessary for the Government counterpart staff.
(iii) All the counterpart support, facilities and information shown above would be provided by the Government in kind as its contribution to the Project and would be free of charge to the Consultants.
(iv) All available reports for completed or ongoing engineering, traffic, and project details shall be provided.

G. Contents of Deliverable is annexed IN Annex-1 as follows;

Deliverables	Contents Annex-1
Preliminary Conceptual Structural Design of Intersections and Ramps	Annex 1.1
Geotechnical and Substructure Design Report	Annex 1.2
Structural Design of Elevated Highway with Pier Location and Profile	Annex 1.3
Structural Design Final Drawings with Utility Details	Annex 1.4
Quantity Calculation & Cost Estimate	Annex 1.5
Combined Final Report	Annex 1.6

Annex-1
Annex 1.1

PRELIMINARY CONCEPTUAL STRUCTURAL DESIGN OF INTERSECTIONS AND RAMPS

1. Proposal of various type structures for Selected Alignment
2. Comparison of Structural types and Recommendations
3. Analysis of Technical Viability of the Ramps and Grade separation of Elevated Highway
4. Preliminary Design Drawings including Interchanges and Ramps

Annex 1.2

GEOTECHNICAL AND SUBSTRUCTURE DESIGN REPORT

1. Representation of Geotechnical Data and Bed rock profiles
2. Types of Foundation and Piles for Elevated Highway Structures
3. Design of Substructures

Annex 1.3

STRUCTURAL DESIGN OF ELEVATED HIGHWAY WITH PIER LOCATION AND PROFILE

1. Identification of pier location and Type of Structures
2. Design of Superstructures
3. Construction Methodologies for the Foundation

Annex 1.4

STRUCTURAL DESIGN FINAL DRAWINGS WITH UTILITY DETAILS

1. Preliminary Specifications for the Design of Structures
2. Preliminary Engineering Design and Engineering Drawings
3. Representation of Existing Utility Data with the Proposed Structures

Annex 1.5

QUANTITY CALCULATION & COST ESTIMATE

1. Formulation of Bill of Quantities for proposed structures
2. Preliminary cost estimate including all provisions
3. Project Implementation plan and program

CONTENTS OF COMBINED FINAL REPORT

Annex 1.6

Chapter 3 Preliminary Engineering Design

3.1 Geotechnical Investigation and Materials Survey
3.1.1 Borehole Location
3.1.2 Subsurface Conditions
3.1.3 Engineering Analysis
3.1.4 Summary and Recommendations
-
3.3 Bridge / Structure Design
3.3.1 Design Standard
3.3.2 Comparative Study of Bridge / Structure Type
3.3.3 Structure Type
3.4 Hydrological Study and Drainage Design
3.4.1 Rainfall Intensity
3.4.2 Discharge Pipe
3.4.3 Ramp Drainage
3.5 Quantity Calculation and Cost Estimation
3.5.1 Summary of Base Preliminary Cost Estimate
3.5.2 Summary of Civil Work Cost
3.5.3 Summary of Project Cost
3.6 Utility Survey
3.6.1 Data of Existing Utility Services
3.6.2 Summary
3.7 Project Implementation Plan
3.7.1 Project Implementation Schedule
3.7.2 Construction Schedule
3.7.3 Packaging / Stage Construction

OUTLINE TERMS OF REFERENCE FOR CONSULTING SERVICES OF INTERNATIONAL HIGHWAY ENGINEER

A. Background

1. The Government of Sri Lanka (GOSL) has already finalized the suitable road corridor to construct the Central Expressway with a link to Kandy. The road trace starts from Outer Circular Highway (OCH) at Kadawatha and runs via Gampaha, Meerigama, Pothuhera, Kurunegala, Melsiripura, Galewela and end at Dambulla. Kandy Linkage starts at Pothuhera and further, there is a proposal for linking Ambepussa starting from Meerigama North. Consultancy service is required to assist the government by concurring after checking the detail geometricdesigns prepared by RDA, and other required due diligence.

2. Under the project, as a "Package I- Gampaha (Meerigama) to Kurunegala including Ambepussa link", is going to be designed in detail by Road Development Authority (RDA). It is proposed to procure the services of an Individual International Highway Engineer to strengthen the geometric design for Package- I of the project, for which the TOR is written.

3. The project will be implemented under a Project Director from RDA, and International Highway Engineer is directly responsible to the design team leader.

B. Scope of Services

4. The Consultant shall assist to the design team on following considerations and also review being carried out designs by the design team.

a. The preliminary optimum vertical and horizontal alignments shall be reviewed in relation to the outcomes of the entire engineering investigation process having agreed to:

- Design manual criteria or such other criteria agreed with the client
- Need to balance cut and fill where ever possible
- Need to minimize the damage to the properties
- A requirement for accommodation works to be affordable and acceptable to frontage roads
- Need to avoid geological, hydrological and environmental problems

b. Alignment set out details as tangent length, curve radius, deflection angle, apex distance, transition length etc. shall be prepared to ensure easy setout of the alignment. In order to ensure setting out using Total station, coordinates of all Centre line intersection points, tangent points and straights at 100m intervals shall be determined and scheduled. Likewise, horizontal and vertical curve data at 20m intervals shall also be scheduled.

c. Cross sectional design shall take in to accounts for the need of:

- Earth work, side slopes and cuttings, including the need for benching or other slope stability measures
- Requirements for open/covered and catch water drains, subsurface drains
- Space to utilize utility services and roadside furniture, eg. Road lighting and ducting, guardrails, road signs and the like

- Full cross section data shall be computed at 20m interval for main trace and 10m for ramps.

d. The Consultant shall use geometric design software being currently used by the design team and shall produce output data in a format that can be easily followed and understood. The detail design calculations are to follow international standards in layout and referencing.

e. The Consultant shall assist to prepare geometric design report which shall include a full set of design calculations, basic design assumptions and criteria used are to be included in table and note form on the drawings. The report shall include all necessary design drawings and schedules / tables.

f. The consultant shall ensure the works contract documents make it clear that the successful bidder may present modifications to the plan during the various stages of implementation to suite precise construction requirements, but will not be permitted to over-ride the main provisions of the plan.

g. The Consultant shall assist to prepare and review contract drawings and load them onto AutoCAD/standard design software and on the client's systems and present. The scale of presentations should be as per national standards/international best practices.

h. Detailed bill-of quantity shall be prepared for bidding purpose.

i. Assist to other matters related to Geometric Designs.

C. Output and Requirements

5. Consultant shall assist to the design team to provide all the Geometric Designs and related reports required and review the same to satisfy its adequacy for funding agencies requirements.

Reporting Requirement	Description	Timelines
Geometric Design Documents	Prepare Geometric Design drawings with reports together with bill- of quantities in accordance with the relevant Standards under ADB guidelines. Reports to be submitted in draft form and to be finalized after receiving and accommodating comments received from PMU and ADB.	Inception Report Within 14 Days of Mobilization Draft Final Report Within 5 months from Mobilization Final Report Within 6 months from Mobilization

D. Expert Required

6. The International Highway Engineer will hold a graduate degree in a major relevant discipline in Engineering and preferably have ten yearsof experience in similar capacity of geometric design practices in expressway/ highway development projects, whereby experience in the area of geometric design for expressways / highways.

Minimum General Experience	10 Years
Minimum Specific Experience (relevant to assignment)	5 Years

E. Facilities provided by PMU

7. PMU will provide the Consultant with suitably equipped office facilities and utilities complete with relevant design softwareand internet connection, and supplies (stationary etc) in the PMU office. PMU will also assist the Consultant in liaising with the other stakeholders as necessary and in furnishing key reports and other documents that the Consultant need to discharge his functions.

8. Transport will be provided only for the field visits if required.

OUTLINE TERMS OF REFERENCE FOR CONSULTING SERVICES OF INTERNATIONAL BRIDGE/STRUCTURAL ENGINEER

A. Background

1. The Government of Sri Lanka (GOSL) has already finalized the suitable road corridor to construct the Central Expressway with a link to Kandy. The road trace starts from Outer Circular Highway (OCH) at Kadawatha and runs via Gampaha, Meerigama, Pothuhera, Kurunegala, Melsiripura, Galewela and end at Dambulla. Kandy Linkage starts at Pothuhera and further, there is a proposal for linking Ambepussa starting from Mirigama North Interchange. Consultancy service is required to assist the government by concurring after checking the detail structural designs prepared by RDA, and other required due diligence.

2. As per out comes from several discussions, ADB has given their consect for technical and financial assistance for the project.

3. Under the project, as a “Package I- Gampaha (Mirigama) to Kurunegala including Ambepussa link”, is going to be designed in detail by Road Development Authority (RDA).

4. It is proposed to procure the services of an Individual International Bridge / Structural Engineer to strengthen the structural design for Package- I of the project, for which the TOR is written. The project will be implemented under a Project Director from RDA, and International Bridge / Structural Engineer is directly responsible to the design team leader.

B. Scope of Services

5. The Consultant shall assist to the design team on following considerations and also review being carried out designs by the design team.

a. All structural openings and there sofit levels shall be maintained considering the recommended elevations of 100 years recurrence interval by Hydrological study
b. The detail design shall take account the structure location and expected difficulties in constructing-lead time in importing specialist materials if proposed, consider the view of build ability and maintainability.
c. The foundations of each structure/structural element shall be designed based on the geotechnical data.
d. The Consultant shall use structural design software being currently used by the design team and shall produce output data in a format that can be easily followed and understood. The design software that the Consultant intends to use shall compatible with the Clients software. The detail design calculations are to follow international standards in layout and referencing.
e. The Consultant shall assist to prepare structural design report which shall include a full set of design calculations, basic design assumptions and criteria used are to be included in table and note form on the drawings. The report shall include all necessary design drawings and schedules / tables. Drawings of each structure are to be prepared in sufficient details for the structures to be constructed.

f. The consultant shall ensure the works contract documents make it clear that the successful bidder may present modifications to the plan during the various stages of implementation to suite precise construction requirements, but will not be permitted to over-ride the main provisions of the plan.

g. The Consultant shall assist to prepare and submit contract drawings and load them onto AutoCAD/standard design software and on the client's systems and present. The scale of presentations should be as per national standards/international best practices.

h. The Consultants have freedom to choose the type of sub structure and superstructure, provided International code specifications and standards are met. The drawings and designs shall include a general arrangement drawings and detailed longitudinal section drawing of all components in minimum A3 size paper. The level of detailing shall be such so as to enable check of conformance with code provisions, including bar bending schedules. The responsibility of issuing Detailed Structural Design is that the International Bridge / Structural Engineer.

i. Detailed bill-of quantity shall be prepared for all the structural elements for bidding purpose.

j. Assist to other matters related to Structural Designs.

C. Output and Requirements

6. Consultant shall assist to the design team to provide all the Geometric Designs and related reports required and review the same to satisfy its adequacy for funding agencies requirements.

Reporting Requirement	Description	Timelines
Structural Design Documents	Prepare Structural Design drawings with reports together with bill- of quantities in accordance with the relevant Standards under ADB guidelines. Reports to be submitted in draft form and to be finalized after receiving and accommodating comments received from PMU and ADB.	Inception Report Within 14 Days of Mobilization Draft Final Report Within 5 months from Mobilization Final Report Within 6 months from Mobilization

D. Expert Required

7. The International Bridge / Structural Engineer will hold a graduate degree in a major relevant discipline in Engineering and preferably have ten years of experience in similar capacity of structural design practices in expressway/ highway development projects, whereby experience in the area of structural design for expressways / highways.

Minimum General Experience	15 Years
Minimum Specific Experience (relevant to assignment)	5 Years

E. Facilities provided by PMU

8. PMU will provide the Consultant with suitably equipped office facilities and utilities complete with relevant design software and internet connection, and supplies (stationary etc) in the PMU office. PMU will also assist the Consultant in liaising with the other stakeholders as necessary and in furnishing key reports and other documents that the Consultant need to discharge his functions.

9. Transport will be provided only for the field visits if required.

SUMMARY OF DESIGN STANDARD AND TECHNICAL APPROACH
(Sri Lanka: Southern Road Connectivity Project)

1. Design Standards and Guidelines. The Project consists of class A and B roads within the national road network. Applicable design standards and guidelines are:

(i) Cross section: (a) Road Design Manual and Bridge Design Manual—RDA's standard; (b) AASHTO—Geometric Design of Highways and Streets 5th edition (2004); (c) TRL—Overseas Road Note 6, A Guide to Geometric Design (1988), and (d) Austroads—Rural Road Design (2003).

(ii) Bridges: RDA's Sri Lanka Bridge Design Manual of 1997, based on the British Standards Code of Practice for Bridge Design (BS5400:1990).

(iii) Pavement: (a) Transport Research Laboratory's Road Note 31, 4th Edition (TRL-RN31), basis of RDA's pavement design process; (b) AASHTO Pavement Design Guide, and (c) design life for new pavements: 10-year life with provision for overlays during or at the end of that period to extend the life to 15–20 years.

(iv) Drainage: RDA's standards incorporating relevant standards from AASHTO and the British Standard Design Manual for Roads and Bridges.

2. Cross Section. Road cross sections vary depending on projected traffic volume, geometric condition, and terrain. In general, the cross section consists of carriageway 7–14 meters (m), shoulder 2 m each side, with drainage and berm as required. Use of the existing road corridor (existing road cross section and provision for utilities) is maximized to achieve the optimal combination of economy and desired road improvement with minimum land acquisition.

Road	Description	Chainage	Length (km)	Cross Section
A004	Kirulapona-Homagama	0+130 – 1+260 and 15+360 – 16+280	2.05	4x3.5m lanes + 2x1.5m Hard Shoulder + 2x2.0m foot walk + 1.2m center median
B295	Moratuwa -Piliyandala	2+620 – 5+120	2.50	2x3.5m lanes + 2x1.5m cycle lanes + 2x2m foot walk and avg. of 2x2m hard shoulder
B389	Ratmalana - Mirihana	5+700 – 7+840	2.14	2x3.5m lanes + 2x1.5m cycle lanes + 2x2m foot walk and avg. of 2x2m hard shoulder
B084	Kesbawa–Pokunuwita	13+800 – 18+800	5.00	4x3.5m lanes + 2x1.5m Hard Shoulder + 2x2.0m foot walk + 1.2m center median
		18+800 – 28+180	9.38	2x3.5m lanes + 2x1.5m cycle lanes + 2x2m foot walk and avg. of 2x2m hard shoulder
B157	Southern Expressway - Madurugoda	42+372-30+000	12.37	2x3.5m lanes + 2x1.5m hard shoulder + 2x(0.5~1) soft shoulder

3. Alignment and Traffic Facilities. In general, the proposed improvements follow the existing horizontal and vertical alignment. The only minor changes are applied to the horizontal alignment for very short sections to enhance road safety, to ease the radius of curves, or minimize blind spots. The road safety aspects relate mostly to localized sections of the road alignments. In densely populated areas, roads, bridges, and associated sidewalks are made accessible for all, including the disabled.

4. Road Safety. The road safety aspects are related mostly to localized sections of the alignments. Based on the road safety inspections, carried out on all roads during the field evaluation, the detailed design, wherever possible, incorporates improvements to road width

and alignment, including installing precautionary speed signs to slow down for oncoming curves or low speed areas.

5. Drainage. To minimize local flooding or ponding, side drains are reconstructed to direct surface flows away from road pavements and linked to streams or watercourses. For existing drainage structures (retained or repaired), the waterways are restored by removing settled materials and debris.

6. Climate Change. All the project roads have been assessed for climate vulnerability based on the document entitled "*Sector Vulnerability Profile – Urban Development Human Settlement and Economic Infrastructure – Supplementary Document to Climate Change Adaptation Sri Lanka*".[1] Key vulnerability indicators considered for the project roads were: i) flood risk, ii) land slides, and iii) sea level rise. Maps of the project roads were superimposed on the transport sector vulnerability maps to assess the level of vulnerability. In addition field visits were conducted to all the project roads to identify flooding and other drainage issues. The findings reveal that there most of the project roads fall in the low vulnerability zone with a small section falling in the moderate vulnerability zone. Hence there are no major climate risks for the project. To address the moderate climate change risks, the design of the project roads includes measures such as adequate embankment height, appropriate horizontal and cross drainage structures.

7. Bridges. Improvements comprise repairing and or replacing existing bridge structures, including structural renovation of substructure and superstructure elements together with installation or repair of guardrails and improvement of causeways and vented drifts. Materials and construction methods are in accordance with Technical Specifications, Part 1 Standard Specification for Construction and Maintenance of Roads and Bridges 1989 (Sri Lanka), modified to suit project requirements.

[1] Government of Sri Lanka, Ministry of Environment, Climate Change Secretariat. *National Climate Change Adaptation Strategy for Sri Lanka: 2011 to 2016*. Colombo.