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Report No: PAD1265

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 90.5 MILLION

(US$125 MILLION EQUIVALENT)

TO THE

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

FOR THE

TRANSPORT CONNECTIVITY AND ASSET MANAGEMENT PROJECT

April 18, 2016

Transport and ICT Global Practice
Sri Lanka Country Management Unit
South Asia Region

CURRENCY EQUIVALENTS
(Exchange Rate Effective February 29, 2016)

Currency Unit	=	Sri Lanka Rupee
SLR 145	=	US$1
US$1.38131	=	SDR 1

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
CE	Contracting Entity
CRIP	Climate Resilience Improvement Project
DA	Designated Account
DBMOT	Design, Build, Maintain, Operate, and Transfer
EA	Environmental Assessment
EIRR	Economic Internal Rate of Return
EMP	Environmental Management Plan
EMS	Environmental Method Statement
ESD	Environment and Social Division
ESMF	Environmental and Social Management Framework
FM	Financial Management
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIS	Geographic Information System
GoSL	Government of Sri Lanka
GRC	Grievance Redress Committee
GRS	Grievance Redress Service
GSMB	Geological Surveys and Mines Bureau
HIMS	Highway Information Management System
HDM-4	Highway Development and Management Model
ICB	International Competitive Bidding
IOC	Incremental Operating Cost
IRI	International Roughness Index
IUFR	Interim Unaudited Financial Report
LARMP	Land Acquisition and Resettlement Management Plan
MC	Monitoring Consultant
MHEH	Ministry of Higher Education and Highways
MTR	Midterm Review
NCB	National Competitive Bidding
NPV	Net Present Value
OPRC	Output and Performance Based Road Contract
PDO	Project Development Objective
PMU	Project Management Unit
PPP	Public-Private Partnership

RAMS	Road Asset Management System
RAP	Resettlement Action Plan
RDA	Road Development Authority
RMTF	Road Maintenance Trust Fund
RPF	Resettlement Policy Framework
RSAP	Road Sector Assistance Project
SCD	Systematic Country Diagnostic
SIA	Social Impact Assessment
TEC	Technical Evaluation Committee
TOC	Tender Opening Committee
VOC	Vehicle Operating Cost
VoT	Value of Time

Regional Vice President:	Annette Dixon
Country Director:	Francoise Clottes
Senior Global Practice Director:	Pierre Guislain
Practice Manager:	Karla Gonzalez Carvajal
Task Team Leader:	Amali Rajapaksa

THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
Transport Connectivity and Asset Management Project

Table of Contents

Page

PAD DATA SHEET

Sri Lanka

Transport Connectivity and Asset Management Project (P132833)

PROJECT APPRAISAL DOCUMENT

SOUTH ASIA

GTIDR

Report No.: PAD1265

Basic Information		
Project ID P132833	EA Category B - Partial Assessment	Team Leader(s) Amali Rajapaksa
Lending Instrument Specific Investment Loan	Fragile and/or Capacity Constraints [ ] Financial Intermediaries [ ] Series of Projects [ ]	
Project Implementation Start Date 30-Jun-2016	Project Implementation End Date 30-Jun-2026	
Expected Effectiveness Date 31-Aug-2016	Expected Closing Date 30-Jun-2026	
Joint IFC No		

Practice Manager/Manager	Senior Global Practice Director	Country Director	Regional Vice President
Karla Gonzalez Carvajal	Pierre Guislain	Francoise Clottes	Annette Dixon

Borrower: Democratic Socialist Republic of Sri Lanka					
Responsible Agency: Roads Development Authority					
Contact:	Mr. Uditha Atapattu		Title:	Project Director	
Telephone No.:	94-11-2865930		Email:	pdoprc@gmail.com	

Project Financing Data(in USD Million)					
[ ]	Loan	[ ]	IDA Grant	[ ]	Guarantee
[X]	Credit	[ ]	Grant	[ ]	Other

Total Project Cost:	125.00	Total Bank Financing:	125.00
Financing Gap:	0.00		

Financing Source	Amount
BORROWER/RECIPIENT	0.00
International Development Association (IDA)	125.00
Total	125.00

Expected Disbursements (in USD Million)

Fiscal Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Annual	2.00	19.00	28.00	24.00	13.00	5.00	5.00	5.00	22.00	2.00
Cumulative	2.00	21.00	49.00	73.00	86.00	91.00	96.00	101.00	123.00	125.00

Institutional Data

Practice Area (Lead)

Transport & ICT

Contributing Practice Areas

Cross Cutting Topics

[ ] Climate Change
[ ] Fragile, Conflict & Violence
[ ] Gender
[ ] Jobs
[X] Public Private Partnership

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Transportation	Rural and Inter-Urban Roads and Highways	90	27	
Transportation	General transportation sector	10		
Total		100		

☐ I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

Themes

Theme (Maximum 5 and total % must equal 100)

Major theme	Theme	%
Rural development	Other rural development	50

Urban development	Other urban development	50
Total		100

Proposed Development Objective(s)

The Project Development Objective (PDO) is to strengthen the Road Development Authority's (RDA) capacity for asset management and improve the road service delivery on the selected corridor. The selected corridor means the road section from Ja-Ela to Chilaw on National Highway A003 in Sri Lanka.

Components

Component Name	**Cost (USD Millions)**
Institutional Strengthening and Capacity Building	22.90
Piloting the Implementation of Road Asset Management Principles	102.10

Systematic Operations Risk- Rating Tool (SORT)

Risk Category	**Rating**
1. Political and Governance	Moderate
2. Macroeconomic	Moderate
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Substantial
7. Environment and Social	Moderate
8. Stakeholders	Low
9. Other	
OVERALL	Moderate

Compliance

Policy

Does the project depart from the CAS in content or in other significant respects?	Yes [ ] No [X]
Does the project require any waivers of Bank policies?	Yes [ ] No [X]
Have these been approved by Bank management?	Yes [ ] No [ ]
Is approval for any policy waiver sought from the Board?	Yes [ ] No [X]
Does the project meet the Regional criteria for readiness for implementation?	Yes [X] No [ ]

Safeguard Policies Triggered by the Project	**Yes**	**No**
Environmental Assessment OP/BP 4.01	**X**	
Natural Habitats OP/BP 4.04	**X**	

Forests OP/BP 4.36	**X**	
Pest Management OP 4.09		**X**
Physical Cultural Resources OP/BP 4.11	**X**	
Indigenous Peoples OP/BP 4.10		**X**
Involuntary Resettlement OP/BP 4.12	**X**	
Safety of Dams OP/BP 4.37		**X**
Projects on International Waterways OP/BP 7.50		**X**
Projects in Disputed Areas OP/BP 7.60		**X**

Legal Covenants

Name	**Recurrent**	**Due Date**	**Frequency**
Appointment of the Monitoring Consultant (MC) for monitoring of the contract.		30-Nov-2016	

Description of Covenant

Unless the Association shall otherwise agree in writing, the Recipient shall: (a) acquire, by no later than one (1) month prior to the award of the Design, Build, Maintain, Operate, and Transfer (DBMOT) contracts, and thereafter maintain throughout the implementation of the project, the services of a Monitoring Consultant with experience and qualifications satisfactory to the Association to support the RDA in the monitoring of DBMOT contracts; and (b) assign adequate number of qualified RDA staff to work on secondment basis with their respective counterparts at the Monitoring Consultant under terms of reference satisfactory to the Association. (The due date is an estimate and will be subject to change based on the estimated date of award of the DBMOT contract).

Name	**Recurrent**	**Due Date**	**Frequency**
Operational Manual		30-Jun-2016	

Description of Covenant

The Recipient shall: (a) adopt, by no later than June 30, 2016, a project Operational Manual in form and substance satisfactory to the Association and thereafter carry out the project in accordance with the project Operational Manual; and (b) not amend, revise or waive, nor allow to be amended, revised or waived, the provisions of the Project Operational Manual or any part thereof without the prior written agreement of the Association.

Name	**Recurrent**	**Due Date**	**Frequency**
Steering committee	**X**		CONTINUOUS

Description of Covenant

The Recipient shall maintain, throughout the implementation of the project, a project Steering Committee, with composition and terms of reference satisfactory to the Association. The project Steering Committee shall be responsible for providing guidance and overall project oversight and supervision.

Name	Recurrent	Due Date	Frequency
Project management unit (PMU)	**X**		CONTINUOUS

Description of Covenant

The Recipient shall maintain, throughout the implementation of the project, a project management Unit under the direction of qualified management provided with sufficient resources, and staffed with competent personnel in adequate numbers including, among others, a project director, an environmental specialist, a social specialist, and financial management, procurement, engineering, and administrative staff, in each case with qualifications, experience and under terms of reference acceptable to the Association. The PMU shall be responsible for overall planning, management, implementation and coordination of the project.

Name	Recurrent	Due Date	Frequency
Safeguards	**X**		CONTINUOUS

Description of Covenant

The Recipient shall ensure that the project is carried out in accordance with the provisions of the Safeguards Instruments. Except as the Association shall otherwise agree in writing, the Recipient shall not assign, amend, abrogate, waive, or permit to be assigned, amended, abrogated, or waived, any Safeguards Instrument, or any provision thereof.

Name	Recurrent	Due Date	Frequency
Annual work plans and Budget	**X**		Yearly

Description of Covenant

The Recipient shall, throughout Project implementation, furnish to the Association for approval as soon as available, but in any case not later than October 30th of each year, an annual work plan and budget for the Project for each subsequent fiscal year, of such scope and detail as the Association shall have reasonably requested, except for the annual work plan and budget for the first fiscal year which shall be furnished prior to the commencement of any activities under the project. The Recipient shall, no later than two (2) months after furnishing each annual work plan and budget referred to in the preceding paragraph to the Association, finalize and adopt, and thereafter ensure that the project is carried out in accordance with, such plan and budget as agreed in writing with the Association.

Name	Recurrent	Due Date	Frequency
Project Reports	**X**		Quarterly

Description of Covenant

The Recipient shall monitor and evaluate the progress of the project and prepare project reports in accordance with the provisions of Section 4.08 of the General Conditions and on the basis of the indicators set forth in the project Operational Manual. Each project report shall cover the period of one calendar semester, and shall be furnished to the Association not later than one month after the end of the period covered by such report.

Name	Recurrent	Due Date	Frequency
Financial Management System	**X**		CONTINUOUS

Description of Covenant

The Recipient shall maintain or cause to be maintained a financial management system in accordance with the provisions of Section 4.09 of the General Conditions.

Name	Recurrent	Due Date	Frequency
Interim Unaudited Financial Reports	X		Quarterly

Description of Covenant

Without limitation on the provisions of Part A of this Section, the Recipient shall prepare and furnish to the Association not later than forty-five (45) days after the end of each calendar quarter, interim unaudited financial reports (IUFRs) for the project covering the quarter, in form and substance satisfactory to the Association.

Name	Recurrent	Due Date	Frequency
Financial Statements	X		Yearly

Description of Covenant

The Recipient shall have its Financial Statements audited in accordance with the provisions of Section 4.09 (b) of the General Conditions. Each audit of the Financial Statements shall cover the period of one fiscal year of the Recipient. The audited Financial Statements for each such period shall be furnished to the Association not later than six months after the end of such period.

Name	Recurrent	Due Date	Frequency
Intermediate Review Report		30-Jun-2019	

Description of Covenant

The Recipient shall prepare, under terms of reference satisfactory to the Association, and furnish to the Association by the thirtieth (30th) month after the award of the DBMOT contract under Part 2 (a) of the Project, a first (intermediate review) consolidated report for the project, summarizing the results of the monitoring and evaluation activities carried out from the inception of the Project up to each such date, and setting out the measures recommended to ensure the efficient completion of the project and to further the objectives thereof. (The due date is an estimate and will be subject to change based on the date of award of the DBMOT contract).

Name	Recurrent	Due Date	Frequency
Mid Term Review Report		31-Dec-2021	

Description of Covenant

The Recipient shall prepare, under terms of reference satisfactory to the Association, and furnish to the Association by the sixtieth (60th) month after the award of the DBMOT contract under Part 2 (a) of the project, a second (mid-term review [MTR]) consolidated reports for the project, summarizing the results of the monitoring and evaluation activities carried out from the inception of the project up to each such date, and setting out the measures recommended to ensure the efficient completion of the project and to further the objectives thereof. (The due date is an estimate and will be subject to change based on the date of award of the DBMOT contract).

Team Composition

Bank Staff

Name	Role	Title	Specialization	Unit
Amali Rajapaksa	Team Leader (ADM Responsible)	Senior Infrastructure Specialist	Transport and PPP's	GTI06

Haider Raza	Procurement Specialist (ADM Responsible)	Senior Procurement Specialist	Procurement	GGO06
Bernadeen Enoka Wijegunawardene	Financial Management Specialist	Sr Financial Management Specialist	Financial Management	GGO24
Anita Lakshmi Fernando	Team Member	Team Assistant	Team Assistant	SACSL
Comfort Onyeje Olatunji	Team Member	Program Assistant	Program Assistant	GTI06
Darshani De Silva	Safeguards Specialist	Senior Environmental Specialist	Environment safeguards	GEN06
Elena Y. Chesheva	Peer Reviewer	Sr Transport. Spec.	Peer reviewer	GTI06
Gylfi Palsson	Team Member	Lead Transport Specialist	Transport and Asset management	GTI04
Hisham A. Abdo Kahin	Counsel	Lead Counsel	Legal	LEGES
Kishan Weditha Namanayaka Abeygunawardana	Team Member	Economist	Economist	GMF06
Kulwinder Singh Rao	Peer Reviewer	Sr Highway Engineer	Peer Reviewer	GTI01
Mohamed Ghani Razaak	Team Member	Senior Social Development Specialist	Social safeguards	GSU06
N. S. Srinivas	Team Member	Operations Analyst	Operations	GTI06
Pratap Tvgssshrk	Team Member	Sr Transport. Spec.	Engineering	GTI06
Ralph Van Doorn	Team Member	Sr Country Economist	Economist	GMF06
Satish Kumar Shivakumar	Team Member	Finance Officer	Finance	WFALN
Suranga Sooriya Kumara Kahandawa	Team Member	Disaster Risk Management Specialist	Disaster Risk Management	GSU18
Susrutha Pradeep Goonesekera	Safeguards Specialist	Consultant	Social safeguards	GSURR
Ulrich K. H. M. Schmitt	Team Member	Program Leader	Program Leader	SACSL
Vickram Cuttaree	Peer Reviewer	Program Leader	Peer reviewer	EACPF

Extended Team

Name	Title	Office Phone	Location
Ian Greenwood	Road Asset Mgmt Consultant		Auckland

Locations					
Country	**First Administrative Division**	**Location**	**Planned**	**Actual**	**Comments**
Sri Lanka	Western	Ja Ela	**X**		Start point of the corridor.
Sri Lanka	North Western	Chilaw	**X**		End point of the corridor.

Consultants (Will be disclosed in the Monthly Operational Summary)	
Consultants Required?	Consulting services to be determined

I. STRATEGIC CONTEXT

A. Country Context

1. Sri Lanka is a lower-middle-income country with a total population of 20.7 million people. Following 30 years of civil war that ended in 2009, Sri Lanka's economy grew at an average 6.7 percent during 2010–2014, reflecting a peace dividend and a determined policy thrust toward reconstruction and growth. Sri Lanka's economy is also transitioning from a previously predominantly rural-based economy toward a more urbanized economy oriented around manufacturing and services. In 2014, the service sector accounted for 63.1 percent of gross domestic product (GDP), followed by manufacturing (28.9 percent) and agriculture (8.0 percent). Per capita GDP reached US$3,811 in 2014. The government envisions promoting a globally competitive, export-led economy with an emphasis on inclusion.

2. Sri Lanka has also made significant progress in its socioeconomic development. High growth has translated into shared prosperity with national poverty headcount ratio declining from 15.3 percent in 2006/07 to 6.7 percent in 2012/13. Extreme poverty is rare; however, a large share of the population subsists on little more than the extreme poverty line. The country has comfortably surpassed most of the Millennium Development Goal targets set for 2015 and was ranked 73rd in the Human Development Index in 2014.

3. The newly elected government presented its economic policy statement to the Parliament in November 2015. This policy statement identified generating one million job opportunities, enhancing income levels, developing rural economies, and creating a wide and strong middle class as key policy priorities. It proposed consolidation of fiscal operations through raising revenue and reducing the fiscal deficit to 3.5 percent of GDP by 2020. Further, it discussed far-reaching reforms to improve performance of the State-owned enterprises and enhance trade and foreign direct investment. A multitude of new institutions was also proposed to be established to administer the development agenda. The implementation of this reform-oriented policy statement will require continued political will and close coordination of all stakeholders.

4. The country's fiscal landscape is challenging. In 2014, a widened primary deficit and a slowdown in growth increased the fiscal deficit and the public debt to 5.7 percent and 71.8 percent, respectively, as a share of GDP. This trend marks a slight reversal of the fiscal consolidation path observed in the post-conflict period. The fiscal budget for 2016 presented to the parliament projects a deficit around 6.0 percent of GDP for 2015 and 2016. The country's tax revenue[1] remains one of the lowest in the world, leaving little room for countercyclical fiscal policy. Slower GDP growth, continuation of revenue disappointment, and the depreciation of currency could elevate the pressures on public debt to GDP ratio.

5. Recognizing the importance of infrastructure for reconciliation, growth, and development, the government of Sri Lanka (GoSL) has invested heavily in the development, rehabilitation, and modernization of infrastructure, especially in roads, ports, airports, energy, and urban sectors. These investments, on average, accounted for approximately 4.0 percent of the GDP over the period from 2010 to 2014. The fiscal budget plans to increase the public investment on

[1] 10.2 percent of GDP in 2014.

infrastructure to 5.3 percent of GDP for 2016. It also proposes to issue guidelines for public-private partnerships (PPPs) till a comprehensive regulatory framework is developed. A proposed medium- to long-term megapolis development project also contemplates being a catalyst for mobilizing additional private capital for development of the infrastructure facilities in the western province.

B. Sectorial and Institutional Context

6. The GoSL aims to connect rural areas to markets, create employment, and provide associated services, and through increased connectivity, allow the 80 percent of Sri Lanka's population that live in rural areas to better capitalize on the emerging economic opportunities. The GoSL also aims to create a high mobility interregional network of expressways for movement of people and goods. The GoSL has also intensified its plans to develop adequate road sector institutions as well as the contracting industry to operationalize this strategy. This strategy also resonates well with the World Bank's Transport Sector Strategy Note of 2012[2].

7. Sri Lanka's road network is extremely dense and is the predominant mode of transport, carrying 95 percent of the passenger traffic and 98 percent of the freight. The road network is classified as national, provincial, and rural, based on ownership and management responsibility.

8. **National roads.** The national roads and the expressway network consist of 12,164 km and 160 km, respectively, and are managed by the Road Development Authority (RDA) under the Ministry of Higher Education and Highways (MHEH). The RDA, established under an Act of Parliament, is currently responsible for the planning and implementation of the national roads and expressway networks and is overseen by a Board of Directors. Day-to-day operation is managed by a Director General and 17 Directors. The RDA has approximately 10,500 employees, including 615 engineers. About 58 percent of RDA's employees are laborers who are engaged in routine and periodic maintenance works. The management of the expressway network is expected to be handed over to an Expressway Authority that is to be soon established, for which a legal framework is currently being drafted.

9. **Provincial and rural roads.** The provincial network comprising 15,530 km is being managed by the respective nine provincial councils. The network of rural roads, consisting of approximately 88,200 km, is owned and managed by 335 local authorities.

10. During 2005–2013, based on the National Road Sector Master Plan, the RDA rehabilitated about 4,500 km of national roads and constructed a total of 160 km of new expressways. From 2009–2013, the GoSL has provided US$5.5 billion for the improvement of the national network and the development of the expressways. About 34 percent of the investment in road rehabilitation was financed by the government's own resources. These efforts and investments contributed to an overall improvement of the national roads network, increasing the proportion of roads in good and fair condition from 48 percent to 65 percent.

11. **Institutional sector reforms.** Over the past decade, the GoSL also implemented important reforms in the sector.

[2] This is an internal diagnostic shared with the Government to assist them in identifying areas of engagement with the Bank in the transport sector.

- **Separation of owner and supplier of services.** Over a decade ago, at the time of the Bank entering the transport sector, all capital works were carried out through state-owned organizations. As the GoSL closed these state-owned organizations, an active private sector contracting industry developed. The rehabilitation of roads and the construction of the new roads are today carried out through domestic and international private contractors. The domestic construction industry is performing equally well as international contractors. Routine road maintenance and emergency works are addressed through in-house labor available within the RDA.

- **Road Maintenance Trust Fund (RMTF).** The RMTF was established within the Ministry of Highways, Ports, and Shipping with the task of addressing the periodic and routine maintenance needs of the national network. The RMTF is managed by a board of trustees and assisted by a secretariat that works closely with the RDA in setting work priorities. The RMTF is also responsible for the allocation of funds, as well as the monitoring and auditing of contracts that finance maintenance works. During 2005–2013, the budgetary allocation to road maintenance through RMTF increased from US$13 million to US$63 million.

12. **Road sector challenges.** Following the cessation of the conflict, road construction work has increased tremendously, driven mostly by increased volume of road projects. Several challenges have emerged in the sector, including limited capacity of contractors and road agencies, limited availability of suitable raw materials, etc. in meeting the increased volumes, weak contract management, limited financial and technical controls, and inadequate systems for monitoring and evaluation (M&E). Two of the key structural and institutional challenges, however, have been inadequate maintenance and the reliance on input-based civil works contracts.

- **Inadequate maintenance.** Since the end of the conflict, the GoSL has primarily focused on rehabilitating the road network. The need for rehabilitation has been the result of many years of backlog in regular maintenance. However, the financing of regular maintenance continues to compete with the financing of network rehabilitation. Furthermore, the funding of road maintenance has usually been delayed primarily because of uncertainties in fund flow and because of increased pressure on the budget due to cost escalations in rehabilitations and new constructions. Continuous delays of maintenance works adversely impact the entire road network causing increase in the overall cost of road asset management. Based on the National Road Master Plan (2007–2017), the total funding requirement for periodic and routine maintenance during 2007 to 2013 was approximately LKR 81 billion whereas only LKR 38 billion (or 47 percent of the needed resources) was available during the same period. Furthermore, as the RDA capacity was directed to the rehabilitation of the provincial and rural networks, the budgetary allocations for the maintenance of the national network have generally been redirected to meet the rehabilitation demand of the other networks and have not benefited from regular maintenance in the national network.

- **Input-based contracting.** To date, Sri Lanka's road sector has been operated on the bases of input-based civil works contracts. A recent study carried out by the Bank in 2014 on the source of time and cost overruns in road works projects, focusing on

World Bank-funded road projects in Sri Lanka[3], suggests that these typical road rehabilitation contracts experience cost variations averaging 86 percent, with associated contract time extensions from the initial period up to completion averaging 70 percent. Besides significant cost and time overruns resulting from input-based contracts, such contracts, and their limited defect liability periods have also contributed to the substandard quality of works, as is demonstrated by defects appearing shortly after the end of the contractual defect liability periods, and hence have undermined the asset life and caused additional financial burden and liabilities.

13. **Previous Bank engagement.** The Bank has supported the road sector through several projects,[4] mainly in the rehabilitation of national, provincial, rural roads, and bridges as well as through addressing climate resilience through increased safety measures for slope stabilization. Further, the completed Road Sector Assistance Project (RSAP) under implementation by the RDA has been transformational in its attempts to address the backlog of maintenance due to years of neglect. In addition, during the long-term partnership between the Bank and RDA, the Bank has supported several institutional changes and reforms and financed the piloting of several initiatives to address adverse issues within the sector including development of the contract management capacity within the RDA.

14. **Way forward.** Based on the experience of the RSAP and other road projects (reflected in lessons learned) a methodology was required to address some of the issues encountered. The long-term development of the capacity of the RDA as well as the maturity of the construction industry together with renewed focus on good governance has stimulated the use of output and performance-based road contracts (OPRC) format in the proposed project. Given the country's history of inadequate maintenance of existing assets and the Bank's strong support for maintenance reflected through its entire support to the road sector in Sri Lanka, an asset management approach is being proposed through the Design, Build, Maintain, Operate, and Transfer (DBMOT) methodology. Sri Lanka has over two decades of successful experience in full-fledged PPPs that have been implemented in the ports and power sectors although sufficient capacity needs to be developed for successful implementation of this concept within the road sector.

15. **Donor coordination.** There has been systematic and continuous coordination among the Asian Development Bank (ADB), Japanese International Corporation Agency, and the Bank in providing support to the road sector which commenced with the entry of the Bank in 2005. To formalize the coordinated support among the three institutions, a sector framework agreement was signed in 2004, describing the functions and responsibilities of each partner in the overall support to the sector. The ADB was entrusted with the responsibility of restructuring the RDA. The Japanese International Corporation Agency's support was directed toward capacity building of the private contractors while the Bank's support has focused on the implementation of a sustainable arrangement for financing and management of rehabilitation and maintenance of the national road network. In 2008, the three development partners also coordinated in financing a program of

[3] Report no. 99928 and Includes Road Sector Assistance Project (sections financed through CR-4138 CE and CR 4429 CE) and Provincial Roads Project (CR 4630-LK)

[4] Road Sector Assistance Project - CR 4138 CE, CR 4429 CE, CR 4906 LK (US$350 million), Provincial Roads Project - CR 4630 LK (US$105 million), Climate Resilience Improvement Project (CRIP) - CR 4630 LK (transport continuity component of US$36 million), Metro Colombo Project - CR 81450 LK (approximately US$45 million).

US$266 million for the development of 970 km of the provincial road network. This project is also being prepared in a backdrop of strong coordination with the ADB.

C. Higher Level Objectives to which the Project Contributes

16. The proposed project supports the World Bank Group's corporate goals of ending extreme poverty and boosting shared prosperity. As highlighted in the Systematic Country Diagnostic (SCD),[5] road transport is the predominant form of transport in Sri Lanka and with limited alternatives. Therefore, sustaining the quality of the road network is essential for the efficiency, economy, and reliability of the access to markets for producers and manufacturers; access to employment opportunities for people; and the provision of services to all segments of the population. The SCD also highlights fiscal constraints as significant impediment to budget planning and predictability of public resources for critical investments. The implementation of modern asset management approaches under the project will bring significant medium-term benefits in terms of increased economic efficiency and optimized use of public resources, public asset preservation, and predictability of required government expenditures for road rehabilitation and maintenance, and hence will address development constraints as highlighted in the SCD. The project is well aligned with the 2013-16 Country Partnership Strategy (Report 66286-LK), and supports the government's goals of increasing the quality of services, and improving living standards, social inclusion and equitable access.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

17. The project development objective (PDO) is to strengthen the Road Development Authority's capacity for asset management and improve the road service delivery on the selected corridor. The selected corridor means the road section from Ja-Ela to Chilaw on National Highway A003 in Sri Lanka.

B. Project Beneficiaries

18. The A3 corridor provides alternate access to the Bandaranaike International Airport. Fishing and tourism are considered the main economic activities along the coastal belt from Ja-Ela to Puttalam. While Puttalam has one of the largest lagoons in the country and uses this for salt production as a major industry, the lagoons in Negombo and Chilaw have potential for fishing as well as recreational activities. A considerable proportion of the population within this corridor is engaged in agriculture. Furthermore, there are 993 factories in Gampaha, which includes two of Sri Lanka's largest free-trade zones that provide employment to youth and have encouraged migration that has resulted in a significant socioeconomic change. About 74 percent of the population in the study area fall within the 15–60 year age group, of which 52 percent is female.

19. The primary beneficiaries of the project will be the road users, communities in the area, the RDA, and the construction industry as a whole.

[5] Ending poverty and promoting shared prosperity - A Systematic Country Diagnostic (SCD) was presented to the Board on October 13, 2015 (report no: 100226).

(a) Road users will benefit from the improved condition of the roads with continuous maintenance and improvement in the level of service that will contribute to reduced vehicle operating cost (VOC) and travel time.

(b) The project will benefit the RDA in managing its road network through improved systems and capacity building and will benefit contractors, consultants, regulators in the industry that will improve capacity in advanced contracting methodologies, which will in turn position them to compete internationally. Most importantly, it will benefit the country through improved governance and better fiscal management.

(c) The project will assist the promotion of tourism in the Kalpitiya area, which is a major focus of the present government and provide easy access to several attractions including dolphin watching.

(d) The agricultural/industrial producers and communities along the corridor will benefit from easy access to jobs as well as jobs created through the long-term contracts.

C. PDO Level Results Indicators

(a) Percentage of the value of new investments on existing road links selected by the RDA using the Road Asset Management System (RAMS)

(b) Reduction in average roughness in the selected corridor[6]

(c) Increased user satisfaction on the selected corridor[7]

20. **Intermediate indicators.** (a) Road Sector Strategy and policy developed and approved; (b) asset management system operationalized; (c) asset management 'unit' created; (d) number of DBMOT contracts for national roads contracted; (e) roads rehabilitated (non-rural); and (f) reduction in the number of accidents on the selected corridor.

III. PROJECT DESCRIPTION

21. **Project concept.** The proposed project is designed to support modern road asset management in the RDA. It focuses on creating an enabling environment for more effective asset management and includes interventions to develop systems and capacity within the RDA and the industry. It will demonstrate the implementation of asset management principles in selected priority road corridors of the national road network. The project will particularly focus on the institutional and system changes that are necessary to transform the RDA from a provider of infrastructure to a service provider in line with the ambition and needs of a middle-income country. The asset management contract representing the DBMOT methodology through the use of an OPRC format is being piloted on a selected corridor to meet this overarching objective.

22. **Programmatic approach.** The Bank and the ADB propose to support the MHEH and the RDA through a unified approach for asset management using the OPRC format as well as in the

[6] 'Corridor' under the indicator relates to the section from Ja-Ela to Chilaw being financed by the Bank.
[7] The baseline data will be collected before the award of the DBMOT contractor and no later than July 31, 2016.

institutional strengthening of the RDA and the capacity building of the industry. The MHEH, together with the RDA, has identified a total of approximately 500 km of the national road network, comprising several priority road corridors, which require rehabilitation and maintenance work. The MHEH and RDA intend to implement these through piloting the DBMOT methodology using the OPRC. The Bank has been leading the dialogue with the government on the DBMOT methodology using the OPRC format, and the ADB has agreed to adopt the same methodology and format in the bidding documents under the iRoad Project. Furthermore, the RDA intends to bring together the asset management skills from the Bank and ADB financed projects that would be implementing DBMOT contracts. In the longer run this will allow the RDA to strengthen its skills for wider usage and may lead to the discontinuation of the PMU implementing this project. The alignment of the Bank and ADB with regard to piloting a unified OPRC format in the respective projects as well as institutional support for asset management constitutes a programmatic approach that will allow the RDA to coordinate road asset management for greater systemic impact across the identified priority road corridors.

23. **ADB support.** The ADB supports the asset management approach under its iRoad Project approved in June 2014. The project includes a multi-tranche facility for the development of national, provincial, and rural roads, with an investment value of US$800 million with a project end date of 2024. This project includes a total of 400 km of national roads, which are included in approximately 500 km of priority corridors that have already been identified. The RDA has already identified four contract packages for the following corridors that include the 400 km Colombo-Kandy Road (A1), Katugasthota-Kurunegala-Puttalama Road, Chilaw-Wariyapola Road, and several road sections in the southern province totalling 323 km at an estimated value of US$160 million. As the focus of this project is to provide connectivity to provinces, it also covers the rehabilitation of approximately 2,200 km of provincial and rural roads, to be implemented by different road agencies through traditional methods of contracting. The project has been designed to commence with the implementation of the latter component and the asset management approach to be adopted for national roads only has been planned for much later. The contract packages on DBMOT methodology using the OPRC format were originally planned for award in 2015 and are now being revised for bidding in 2016, having been delayed because of recent political changes. It has been provisionally agreed that the contract(s) under Bank financing will be tendered before those under ADB financing in a manner that will retain sufficient interest and competition from proposed contracting entities (CEs). The iRoad Project is being implemented by a fully staffed PMU established within the RDA.

24. **Bank support.** The Bank will support the RDA through the proposed project in the implementation of the DBMOT methodology using the OPRC format in the Ja-Ela to Chilaw section (of approximately 58 km) of the Peliyagoda-Puttalama Corridor (A003). Additional complementary support will be provided to the RDA, private sector contractors, and consultants to ensure successful implementation of the OPRC concept. The total investment cost for this project is estimated at US$125 million.

A. Project Components

Component 1: Institutional Strengthening and Capacity Building for Asset Management (US$22.9 million)

25. This component will finance activities to support the RDA in institutionalizing the use of the DBMOT methodology using the OPRC format and implement institutional and system changes necessary to sustain and expand the use of the DBMOT methodology using the OPRC format in the RDA and in the construction industry. The following subcomponents have been identified for project support:

(a) **Road asset management.** This subcomponent will provide support to (i) operationalize the web-based, multiuser asset management system to improve network data collection and finance additional software, equipment, and technical support for the customization and maintenance of the computerized RAMS; (ii) establish/upgrade an asset management unit within the RDA that will be responsible for planning and implementation of asset management contracts and the implementation of the asset management system; (iii) develop a Road Sector Strategy and policy that will provide inputs to an integrated Transport Sector Strategy; (iv) carry out a study to assess staffing, skills, and institutional capacity-building needs to institutionalize asset management practices within the RDA; (v) enhance capacity of the RDA's technical and managerial staff, contractors, consultants, regulatory bodies, auditors, and other stakeholders to build awareness and capacity in the implementation of DBMOT contracts; (vi) monitor and evaluate the pilot contract through a monitoring consultant (MC); (vii) carry out the necessary preparatory work for the DBMOT methodology using the OPRC format in the event of a scale-up of the operation; (viii) carry out a cost efficiency assessment of performance-based contracts, including DBMOT contracts using the OPRC contract format and will include all performance-based contracts implemented by the RDA, including those financed by the ADB and the Bank; and (ix) carry out other studies and surveys that may be required for the implementation of the project.

(b) **Operational improvements.** This subcomponent will provide support to the RDA to transform itself into a more efficient and service-oriented organization. Specifically, it will include support to (i) develop a Management Information System for the RDA to obtain timely financial and physical progress information of all activities of the RDA for appropriate decision making; (ii) establish a Grievance Redress System to better enable the RDA to receive, manage, and respond to public complaints related to national roads; and (iii) incremental operating cost (IOC) of the project.

Component 2: Piloting the Implementation of Road Asset Management Principles (approximately US$102.1 million)

26. The following subcomponents have been identified under this component:

(a) **DBMOT contract.** This subcomponent will finance the DBMOT contract for the approximately 58 km along the Ja-Ela to Chilaw section of the A003 corridor. The

conceptual design for the corridor has been carried out through an experienced firm of consultants and the detailed designs will be carried out by the CE once selected. The contract will incorporate all interventions needed during a nine-year period, including road upgrading, rehabilitation, sealing and patching, repaving, drainage structures, widening in selected stretches, sidewalks, and all maintenance requirements to achieve a prescribed level of service of the road. The design features will include enhanced road safety, automated traffic management, and infrastructure demanded by urban population. The corridor will require minimum widening in identified locations to ensure safety.

(b) **Compensation payments for land acquisition and resettlement related to removal of black spots identified on the corridor.** This will finance the cost of compensation related to land acquisition and resettlement for the five identified black spots to improve the road safety outcomes of the project. The total compensation will not exceed US$2.1 million and will have a cap of US$1.1 million for compensation to be paid for land acquisition and a cap of US$1 million to be paid for compensation for properties, structures, livelihood restoration, and other relocation assistance as identified in the Land Acquisition and Resettlement Management Plan (LARMP), which is a part of the approved Resettlement Action Plan (RAP).

27. **Project readiness.** The conceptual design for the corridor has been finalized. The consultants have also prepared the draft bidding documents, which have gone through several rounds of internal discussion and are being finalized. The RDA has also prepared and disclosed the Environmental and Social Management Framework (ESMF), Resettlement Policy Framework (RPF), Environmental Assessment (EA), Environment Management Plan, Drainage Management Plan, Social Impact Assessment (SIA), and the RAP. The Government plans to commence the process of tendering after the credit is made effective due to internal administrative procedures. Allowing a 3 month period for bidding, it is estimated that the DBMOT contract can be awarded by December 31, 2016.

28. The RDA with assistance from the conceptual design consultant has carried out several training sessions on the DBMOT methodology using the OPRC format for the RDA management, contractors, and consultants. Furthermore, several teams from the RDA have visited Botswana, India (Punjab), and Israel to better understand the implementation of these contracts.

B. Project Financing

29. The total cost of the proposed project is estimated to be US$125 million to be financed by an IDA credit. The project will be implemented over a period of 10 years. The proposed lending instrument is an Investment Project Financing.

30. The table below shows the project cost by component and is further detailed in Annex 2.

i. Project Cost and Financing

Project Components	Project Cost (US$, millions)	IDA Financing (%)	% of Financing
Institutional Strengthening and Capacity Building for Asset Management	22.9	100	18
Piloting the Implementation of Road Asset Management Principles including cost of compensation for land acquisition and resettlement	102.1	100	82
Total financing required	125.0	100	100

C. Lessons Learned and Reflected in the Project Design

31. The key lessons learned and reflected in the project design are specific experience from the World Bank-financed RSAP and Provincial Roads Project that have both closed and the report by 'World Bank on 'The Source of Time and Cost Overruns-in Road works projects - A pilot study' (2014).

32. **Cost overruns.** The cost overruns[8] experienced in most of the road contracts have occurred due to several reasons; (a) changes to the designs that have resulted in increased physical variations; (b) cost estimations due to insufficient investigations; (c) delays in the implementation period resulting in payment of escalated costs; and (d) increases in prices of materials resulting in higher escalation of costs. All of these contracts have been input-based contracts where the road agency (or through a consultant) has carried out the design and tendered on a bill of quantities where the quantities are pre identified. Some of these issues can be overcome by transferring the risk of design to the CE that is best able to bear such risk that is envisaged in the DBMOT contracts. The lump sum nature of the contract will also ensure that costs are controlled at the CE level and not by the road agency that is not incentivized to control costs, which sometimes result in overuse of quantities or overdesign. It has been seen in the past that due to some of the contract sizes increasing due to increased variations, the originally selected contractors lack the capacity to carry out the increased workload that also results in extensions of time as well as poor quality of work.

33. **Delays in contract completion.** The same study by the Bank has indicated that the contract time extensions have arisen as a result of delays in various levels of approvals for permits and licenses, unavailability of materials, poor resource planning, poor construction methodologies without due consideration being paid to traffic congestion, road safety by the contractors etc. Some of these delays can be avoided by shifting the risk to the CE that is best able to control it. This will also move the contracting industry away from the present culture wrought with contractual claims.

34. **Substandard quality of work.** In the case of input-based contracts, the payments are made based on the quantity of material used at the rates quoted by the contractors subsequent to employer checking such quality and the contractor remains responsible for the quality of the work only until the expiration of the defects liability period. During the implementation of the contract, the contractor carries out the works according to the design and the investigative work carried out by the employer. Sri Lanka has suffered from many situations in the past where the cost of

[8] The cost overruns are measured based on actual contract price over and above base contract price excluding contingency. It could, however, include additional work that has given rise to the increase in contract value.

rectification as a result of substandard quality of work has either been borne by the GoSL or the rectified sections of the road have not provided the same life where the road agency has fallen short in achieving value for money. In the proposed contracts, the CE is required to achieve levels of service over a long period of the contract, which transfers this risk entirely to them where the cost will not be borne by the GoSL.

35. **Inadequate attention to routine maintenance.** Due to the traditional form of contracting where the rehabilitation and maintenance are addressed through separate contracts based on the availability of funding, where most often these functions have suffered from inadequate and timely availability of funding. These were specifically evidenced in the provincial and rural roads. The long-term nature of the contract under this project will address the maintenance needs until handing over.

36. **Use of grievance redresses mechanism.** As the proportion of road sections in urban areas have increased, the number of complaints and the nature of the complexities have also increased. As a result, there have been more complaints reaching the Grievance Redress Committees (GRCs) established at the divisional secretariat level in the recent past, which was felt best addressed through continuous consultations. The GRCs were found to be an effective community-based, problem-solving mechanism as majority of complaints received by the GRCs were resolved amicably. This has been repeated in the project.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

37. The MHEH will be the executing agency overseeing the project while the project will be implemented by the RDA through the PMU that has already implemented the first Bank-supported project in National Roads—the RSAP—for over 10 years and is also currently implementing the RDA component of the Bank-financed CRIP.

38. The PMU is headed by a Project Director reporting to the Secretary, MHEH, and supported by a Deputy Project Director and several project engineers. Dedicated staff is available for financial management (FM) and environmental/social safeguards. The procurement specialist is being shared between the ADB and Bank projects for effective transfer of skills. The project will be supervised by a MC who will report to the Project Director.

39. As the PMU has been implementing the previous Bank-financed project, a well-functioning FM information system and adequate controls are in place to monitor and manage the proceeds of the credit. The project will open a new designated account (DA) for disbursement of the funds.

40. An Operations Manual that provides a road map on how the project will be managed during its tenure is being prepared by the PMU with guidance from the Bank, includes processes and procedures for FM, procurement, and safeguards management during the implementation of the project.

41. There is a dedicated Environment and Social Division (ESD) in the RDA that is faced with a high volume of work and therefore the environmental/social specialist within the PMU will complement these skills in the monitoring of the project.

B. Results Monitoring and Evaluation

42. The overall monitoring of the project will be carried out by the MHEH through the Steering Committee on a monthly basis. The project Steering Committee, chaired by the secretary of MHEH, with participation of the Chairman, Director General, and other senior members of the RDA as well as the Ministry of Finance and the Ministry of National Policies and Economic Affairs will review the progress of the implementation of the project. The project MC, all project staff, contractors, consultants, and the Bank are invited to participate in these meetings that are held on a monthly basis.

43. The RDA will monitor the outcome indicators of the project included in Annex 1 and will provide the Bank, on a systematic basis, the necessary reports in coordination with all of the other divisions of the RDA. The RDA will provide M&E reports to the Bank biannually incorporating the results of the outcome indicators as required.

44. The overall monitoring of the DBMOT contracts will be carried out by the MC. The MC will be responsible for collating the information related to the civil works contract and will share the information with the RDA through a mutually agreed standardized reporting system for further monitoring by the RDA. The reporting system will highlight the project status and critical issues affecting the overall progress of the work. In addition, the report will also capture information related to the quality of work and disputes, if any, among the entities involved in the implementation of the project. The RDA, with assistance from the MC, will periodically carry out audits to further substantiate the achievements of the results. Monitoring of the road asset management component will be carried out through periodic reviews by the RDA as well as Bank implementation support missions. The MC will initially be appointed for a period of five years with a provision to extend based on the performance.

45. The RDA plans to engage several engineers to shadow the specialties provided by the MC to ensure effective transfer of skills to the RDA. This will be carried out in line with a clearly agreed plan with the Bank where the RDA will ensure adequate resources and time are made available for each engineer to engage as a part of the team of the MC to develop long-term skills within the RDA.

46. The midterm review (MTR) will be scheduled 60 months from the award of the DBMOT contract and an additional review will be conducted at 30 months from the DBMOT contract award date.

C. Sustainability

47. The focus of the project is strengthening national road network management. If the proposed project is successfully implemented, the RDA will be in a better condition to plan, procure, and execute Sri Lanka's funded public works with value for money in mind. The proposed project will increase the sustainability of rehabilitation and maintenance investments through (a) operational improvement at the RDA; (b) strengthening of RAMS; and (c) scaling up the funding

resources devoted to asset preservation. Further, following initial experience with the DBMOT, if the RDA considers scaling up its use of this contract methodology, it will preserve the established road network in a systemic manner. This signifies a move toward efficient road asset management.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

48. Using the Systematic Operations Risk rating Tool (SORT), the overall risk is rated as Moderate. The sector has developed over a long period through clear strategies being implemented with substantial funds, where the capacity of the RDA as well as the local private construction industry has been developed. The RDA has gained sufficient experience in implementing a Bank-financed project, which is reflected in its satisfactory performance in the implementation of safeguards and fiduciary policies. The successful implementation of the project requires substantial understanding and acceptability of the DBMOT concept by the RDA as well as the industry. The risks associated with limited institutional capacity and leadership to implement the DBMOT concept are being mitigated by the preparation of conceptual designs through experienced consultant and support from an MC during the implementation of the project. Furthermore, awareness and capacity building for the RDA and the local contracting industry is being carried out to further mitigate this risk. The overall procurement related risks will be mitigated by using experienced personnel in carrying out procurement and continuous Bank supervision and guidance in the implementation of the contract.

VI. APPRAISAL SUMMARY

A. Economic Analysis

49. The economic analysis is performed for the Component 2 of the project road rehabilitation, upgrading, and maintenance of 58 km of the Ja-Ela to Chilaw section of the A003 corridor.

50. The economic analysis has been done using the Highway Development and Management Model (HDM-4), a globally accepted key analytical tool for economic analysis of highways investment alternatives, and the economic costs and benefits attributed to the project are calculated by comparing 'without' and 'with' project scenarios. Both scenarios have been defined for the 20-year benefit period from 2016 to 2035. In the 'with' scenario, four different 'with' alternatives are considered. Based on the economic analysis, the alternative with the highest net present value (NPV) is selected.

51. A conservative approach is adopted when estimating economic benefits—they are assumed to stem from savings on VOCs and time savings for passengers and goods (carried) in transit (Value of Time - VoT), only. Benefits from a reduction in accidents and from junction improvements are assumed to be zero even though the project design reduces black spots and improves junctions once land acquisition has been carried out.

52. The economic evaluation shows that the project is economically viable even without accounting for greenhouse gas (GHG) emissions benefits. As explained in Annex 5, rehabilitation and maintenance alternatives were considered and the economic internal rates of return (EIRRs) for all four alternatives are greater than 12 percent even without accounting for GHG emissions

benefits. The alternative with the highest EIRR is selected for implementation—the EIRR for this alternative is 23.3 percent and the NPV, at 12 percent discount rate, is US$57.7 million.

53. The analysis also indicates that there is a significant difference in net government outlays between the 'with' and 'without' project scenarios in a 20-year horizon. The undiscounted stream of economic costs serves as a proxy for the net government outlays under each scenario as it does not include taxes, which in this case are a transfer from one government institution (that is the RDA) to another (that is Ministry of Finance). This is just a proxy as the contractor will ask for an additional premium when there is a mismatch between the timing of costs and payments or because of potential risks. Analysis based on international experience indicates that a 10 percent premium seems reasonable. The 20-year undiscounted stream of economic costs in the 'without' project scenario adds up to US$164 million, while in the 'with' project scenario, it adds up to only US$99 million. Hence, even including the 10 percent premium in the latter case, the difference in costs is significant.

54. Net GHG emissions are also estimated for the project—they are estimated using vehicle kilometers travelled, fuel consumed per kilometer (which varies with speed/international roughness index [IRI]), and the carbon emissions per liter of fuel consumed. The tool developed by the Bank Transport and ICT Global Practice was used to estimate reductions in GHG emissions. The NPV, at 12 percent discount rate, increases by approximately US$0.01 million when GHG emissions are included and there is a small increase in the EIRR as well.

55. These results are quite robust to variations in costs and benefits. The switching value analysis determines the percentage change in costs or benefits for the NPV, at 12 percent discount rate, to become nil. When GHG emissions benefits are excluded, costs have to increase by 77.2 percent or benefits have to decrease by 81.3 percent for the NPV, at 12 percent discount rate, to be nil. The switching value for costs is 0.1 percentage points higher when GHG emissions are included.

B. Technical

56. The project road traverses through urban/semi urban settings in a flat terrain, has minimum longitudinal grades and cross slopes, and passes through high density of communities, making it very difficult to widen the road to accommodate more lanes.

57. **Characteristics of the existing road.** The cross-sectional elements of the existing road vary from a four-lane configuration to two-lane configuration as follows:

(a) The section from km 18 to km 32 (from Dandugam Oya Bridge to Periyamulla) is a divided four-lane highway with 3.9–4 m wide lanes, a 1.0 m wide median, and 0–3 m wide shoulders.

(b) The section from km 32 to km 76 (from Periyamulla to Chilaw) is a two-lane highway with 3.2 m wide lanes, 0–0.5 m widening, and no shoulders.

58. The section from km 18 to km 32 runs through a highly urbanized environment and has geometry suitable for a design speed of 70 km/h. This section is also expected to carry a projected traffic volume of 25,000 passenger car units per day in 2017. The section from km 32 to km 76

runs through semi-urban environment and is expected to carry a projected traffic volume of 18,000–25,000 passenger car units per day in 2032. This section has eight locations with poor geometry (that is five locations with curves of insufficient radii for the design speed of 60 km/h and three locations which require improvement of junctions). These sections were last improved in 2001.

59. The project road has 19 minor junctions and 1 major junction at km 23+730, which is, at Katunayake International Airport and carries a traffic load of 6–30 million standard axels. In 2030, the entire road is expected to carry a traffic load of more than 30 million standard axels. The composition of the pavement except from km 18 to km 23+600 consists of 45–60 mm of asphalt concrete, 50–350 mm of base course, and 140–450 mm of sub base course. The composition of the pavement from km 18 to km 23+600 consists of 250 mm of asphalt concrete, 300 mm of base course, and 300 mm of sub base course. The California Bearing Ratio of the subgrade of the existing road varies from 7 to 11.

60. During the rainy season, the hydraulic capacity of the existing culverts are insufficient. Their connectivity with the longitudinal drainage structures is also poor. The urban stretches have covered drains but the rural stretches have no drains. The project road has 14 bridges all of which require minor repairs.

61. **Proposed interventions for the project road.** The selected contractor/concessionaire will design and construct the interventions and maintain and operate the project road for a period of nine years according to the predetermined levels of service and performance standards. The interventions will include (a) construction of shoulders up to the limit of the side private properties in urban areas and construction of hard and soft shoulders in rural areas; (b) widening of pavement in some sections; (c) enhancement of hydraulic conditions by improving the longitudinal grades and construction of side drains; (d) construction of new culverts at some locations; (e) raising of the road to arrest inundation at several locations (km 18+600 to km 19+300, km 20+250 to km 20+800, km 22 to km 22+700); (f) provision of facilities for pedestrians for walking along the road and crossing the road; (g) signalization of the intersections/junctions; (h) provision of bus stops along the road; (i) repair of bridges; (j) provision of road furniture for enhancing road safety; and (k) improvement of junctions. Due consideration has been given to making the roads more climate resilient and the climate risk screening for the project has been carried out.

62. **Level of service.** Under the proposed project, levels of services are being predefined, which will be the standard of performance mandated for the CE that will be monitored by the MC. The levels of service have been classified under different functionalities, namely road usability, road user service and comfort measures, road durability performance, road safety, and performance management. These levels of service will be applicable throughout the project life at different stages of the civil works implementation, starting from the design stage till the eventual transfer of the road assets to the RDA.

C. Financial Management

63. The proposed FM procedures are in line with fiduciary requirements of OP 10.00. The PMU, operating within the RDA, will be responsible for overall FM arrangements of the project. The PMU has gained significant experience in handling Bank-funded operations through RSAP.

The PMU is well equipped with an accountant and other support FM staff who will continue to manage the proposed project. During the implementation of the previous Bank-financed project, the PMU has been receiving a FM rating of 'Moderately Satisfactory' or higher. Therefore, the proposed project is assessed to be having a 'Moderate' FM risk rating. The PMU already has a well-established computerized accounting system that was tailor-made for the requirements of the PMU. This system has been used for over eight years to generate the necessary reports and is able to effectively monitor expenditure. The FM arrangements already established for the previous project will continue with further improvements and risk mitigation measures with appropriate capacity-building measures. These arrangements will be reflected in detail in the Operations Manual. There are no overdue audit reports and ineligible expenditures claimed under the main implementing agency.

D. Procurement

64. An assessment of the procurement capacity of the implementing agency (the RDA and PMU) has concluded that the DBMOT methodology and the use of the OPRC format is new to RDA and Sri Lanka. The DBMOT methodology put the onus on the CE to design, build, maintain, and transfer the developed assets under one contract, thus transferring majority of the associated risks to the CE. The RDA is somewhat familiar with the performance-based contracts, which they use for maintenance purposes that is different from the DBMOT concept.

65. As the RDA has been implementing a Bank-funded project, they are familiar with the procurement requirements. The RSAP was much larger in investment value and scope than the proposed project. The concept of implementing the OPRC format under the DBMOT methodology is new and requires additional project preparation efforts including additional input on procurement. As the Bank is leading the introduction of the OPRC format and the ADB has agreed to follow the same contract conditions, the bidding documents developed for the project will also be used under the iRoad Project funded by the ADB. The procurement risk rating is determined to be Substantial because of the (a) limited capacity and experience within the RDA for the procurement and management of the DBMOT methodology using the OPRC format; (b) current staffing; and (c) risk associated with the bid evaluations using the OPRC format. The risk rating will be reviewed during each supervision mission and adjusted to reflect the most current rating.

66. The project will have one major works procurement for acquiring the services of a CE for the implementation of the OPRC format. The DBMOT contract will be procured by following a single-stage two-envelop system. The procedure for managing the security of the bids, especially the price proposal, is detailed under Annex 3.

67. To mitigate such risks, the PMU has appointed an experienced international consultant to develop the conceptual design and the draft bidding document using the DBMOT methodology and OPRC format and the same consultant will also provide support during the bid evaluation stage. The scope under the ongoing consultancy also included training of the RDA and the industry on the DBMOT methodology using the OPRC format as well as conducting road shows/pre-bid conferences for the potential interested contractors/CEs. In addition, the procurement chapter in the Operations Manual will cover all aspects of the procurement process to be followed under the project. The project has appointed a procurement specialist who, by profession, is a civil engineer and has adequate experience in procurement and contract management.

E. Social (including Safeguards)

68. The project will trigger OP 4.12 as there will be some land acquisition for possible road realignment to rectify identified black spots. However, the social impacts intrinsic to rehabilitation and maintenance works under the project are localized and readily mitigated. The deviation from the present alignment will mainly be for engineering reasons and will avoid or minimize resettlement.

69. A SIA was carried out on the A003 corridor, to ensure all potential impacts are identified in the early stages of the project. Several consultations and stakeholder meetings have been carried out along the corridor with the participation of the PMU, subsequent to which an RPF and an RAP have been prepared for the A003 corridor. The SIA highlights a number of positive social impacts and risks involved, which are detailed in Annex 3.

70. The RAP prepared as part of the SIA will be included in the bidding document using the OPRC format and will form the basis for monitoring by the MC and the employer. The SIA findings will be made available to the CE who will prepare the final design. The CE will be expected to review the original RAP in line with the RPF, revise, and update it with other specifications included in the bidding document as part of the detailed design. The CE will adhere to RAP implementation tasks under the supervision of the RDA and will be responsible for reporting the progress. The contractor's team will include qualified staff to implement and report on social aspects, including implementation of the RAP. The PMU will be supported with a designated social specialist to monitor and report on progress of the RAP implementation.

71. The initial road safety review carried out by the Bank on the selected corridor has confirmed five black spots identified by the RDA that are critical to reduce the fatalities that are already high on this corridor. Addressing these black spots and making these locations safe for all road users and communities around the area will require land acquisition and some relocation in these specific locations. Unattended road safety concerns will also pose a significant reputational risk to the Bank and therefore, the Bank will finance the implementation of the LARMP, as a part of the project's approved RAP to remove black spots in the identified critical locations and mitigate safeguard issues identified in the social assessment.

72. Timely payment of compensation will be imperative to adhere to the construction schedule, a delay of which will violate the contractual provisions within the DBMOT contract that will result in financial implications for the RDA. Timely payment will also ensure timely implementation of the project and mitigation of social issues that will arise because of delays in compensation for affected parties. Therefore, under the credit, the project will finance the total cost of compensation with a cap of US$2.1 million consisting of compensation for resettlement expenditures with a cap of US$1 million and compensation for land acquisition with a cap of US$1.1 million. To ensure that payments are being made exclusively to improve road safety outcomes and reduce fatalities, extra measures have been agreed by the RDA to validate compensation payments and close monitoring of fund utilization for the activities included in the LARMP.

73. **Citizen engagement.** The project has three in-built citizen engagement mechanisms: (a) continuous community consultations as part of resettlement planning and implementation; (b) GRCs functioning at divisional secretary level; and (c) independent third party monitoring of

safeguards management including RAP implementation, which involve different types of road user groups and residents living along the road corridor. This will also involve the PMU conducting 'town hall' sessions in each of the divisional secretary areas during and after the road constructions to get beneficiary feedback. The outcome of these citizen engagement exercises will be used in the implementation of the project by the RDA, and actions taken will be communicated to the beneficiaries. These outcomes and actions taken will also be documented and reviewed during implementation support missions. In addition, citizen engagement will be formally measured through the results of the user satisfaction survey that is an outcome indicator of the project.

74. **Gender analysis.** The SIA has identified women, especially workers, traders and children as potential beneficiaries of the project. A series of gender consultations were carried out as a part of the resettlement planning process as women are the majority (52 percent) of the population in 11 Divisional Secretary divisions connected to this road development. Improved road networks will benefit and provide better facilities for working women in urban areas and townships located along the corridor. Except for the impact on those who are occupying affected structures, there appears to be no major adverse impact on women's daily lives as they have access to basic facilities near their dwellings. Informal business such as wayside fruit, vegetable, and fish stalls are mostly run by women; the probable income loss that they may incur during construction will be mitigated through the livelihood compensation package proposed under the RAP. The RAP also includes a tentative Gender Action Plan. The details of the gender analysis are included in Annex 3. Project impacts on women will be measured periodically through collection and analysis of gender disaggregated data. In addition, an Independent Third Party Monitoring consultant is expected to conduct field surveys/interviews to review implementation of safeguards in which one third of respondents and participants selected will be women.

75. Following clearance by the Bank, the SIA and RAP have been disclosed on the InfoShop website on February 22, 2016, followed by the RPF on February 29, 2016.The SIA and RAP have been published on the RDA website on February 20, 2016, followed by RPF on February 23, 2016.

F. Environment (including Safeguards)

76. The potential environmental impacts of rehabilitation, upgrading, and maintenance works for the existing national road, A003, will be mostly localized and can be easily managed through established good practices. Therefore, the project has been assigned Environmental Category B.

77. The project triggers OP 4.01 - Environmental Assessment, OP 4.04 - Natural Habitats, OP 4.36 - Forests, and OP 4.11 - Physical Cultural Resources. OP 4.01 is applicable because of the potential impacts associated with road rehabilitation, upgrading, and maintenance works. OP 4.04 is applicable because the roads works may affect existing natural habitats in the project impact area, particularly wetlands. OP 4.36 is applicable because of the potential impacts linked to extraction of construction material such as gravel and metal. OP 4.11 is applicable because there are known physical cultural resources along the road corridor that require protection when rehabilitation and upgrading activities take place.

78. The project has environmental impacts, including some changes to hydrology, air quality, and noise levels. Disturbances to land and interference to soil stability because of the sourcing of road-building material are not anticipated from the project as this corridor does not have landslide

prone areas and the project will not undertake large bridge constructions. The net effect on air quality and noise levels will have a positive effect with the improvement planned for the road condition. A detailed hydrological study has been undertaken to ensure existing hydrological issues and anticipated changes due to the project are considered when the final designs are completed. Most of the negative environmental impacts triggered under this project will be seen off-site where road-building material will be sourced. If not managed properly, quarry and borrow sites can have substantial impacts on the surrounding environment as well as intrusion on the aesthetic quality of the sites.

79. The RDA has updated the ESMF developed for the Bank-financed projects in the RDA, to be used in the proposed project. This ESMF has provided the foundation for the conceptual design of the project. To ensure all potential impacts are identified in the early stages of the project, a site-specific EA was carried out for the A003 corridor and its potential impact area responding to the above operational policies that were triggered and to the national environmental requirements.

80. The EA preparation also included extensive consultations with the project affected persons and other stakeholders. The Environmental Management Plan (EMP) prepared as part of the EA has been included in the bidding document of the OPRC format and will form the basis for monitoring by the MC and the employer. The EA will be made available to the CE who will prepare the detailed design. The CE will be expected to update the EA/EMP based on the detailed design and prepare an Environmental Method Statement (EMS) in line with the EMP and other environmental specifications included in the bidding document before commencement of physical activities. The CE will also be required to implement the EMP and report to the employer through the MC. Penalties associated with non-compliance will be part of the level of service indicators in the OPRC contract.

81. The environmental management capacity assessment of the implementing agency suggests that the RDA has sufficient experience in the implementation of Bank-financed projects, including knowledge of the environmental safeguard requirements.

82. **Climate and Disaster Risk Screening.** The climate and disaster risk screening undertaken for the project revealed that the selected road corridor, A003 is vulnerable to increased precipitation and flooding. Roads rehabilitated in the past in Sri Lanka are experiencing premature damage of road surfaces and surrounding areas due to water ponding as a result of inadequate drainage systems especially in populated areas. Inadequate designs and drainage and consequential deterioration of road surfaces has a potential to increase road maintenance and rehabilitation costs. Therefore, detailed assessments on potential risks associated with climate variability and related hydrological changes have been carried out for A003 corridor as part of the Environmental Assessment and Hydrological Assessment. Based on the findings of these assessments, road asset management activities (maintenance, rehabilitation and reconstruction) under the project have included implementation of both road safety interventions and climate-related mitigation measures in flood-prone areas.

83. Following clearance by the Bank, the ESMF, EA, and EMP have been published on the InfoShop website on February 22, 2016, followed by the storm water drainage management plan on February 23, 2016. The RDA website has published the ESMF on February 20, 2016, followed

by the EA and EMP on February 23, 2016. The revised EA and EMP have been re- disclosed on the InfoShop and RDA websites on March 9, 2016

G. World Bank Grievance Redress

84. Communities and individuals who believe that they are adversely affected by a Bank-supported project may submit complaints to existing project-level grievance redress mechanisms or the Bank's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed to address project-related concerns. Project affected communities and individuals may submit their complaints to the Bank's independent Inspection Panel, which determines whether harm occurred, or could occur, as a result of Bank non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the Bank's attention, and Bank management has been given an opportunity to respond. For information on how to submit complaints to the Bank's corporate GRS, visit http://www.worldbank.org/GRS. For information on how to submit complaints to the Bank Inspection Panel, visit www.inspectionpanel.org.

Annex 1: Results Framework and Monitoring

SRI LANKA: Transport Connectivity and Asset Management Project (P132833)

Project Development Objectives	
PDO Statement	
The Project Development Objective (PDO) is to strengthen the Road Development Authority's (RDA) capacity for asset management and improve the road service delivery on the selected corridor. The selected corridor means the road section from Ja-Ela to Chilaw on National Highway A003 in Sri Lanka.	
These results are at	Project Level

Project Development Objective Indicators

Indicator Name	Baseline	Cumulative Target Values									
		YR1	YR2	YR3	YR4	YR5	YR6	YR7	YR8	YR9	End Target
Reduction in average roughness on the selected corridor(s) (Number)	3.16	3.16	2.98	2.48	2.08	2.28	2.48	2.68	2.88	3.08	2.50
Increased User Satisfaction on the Corridor. Baseline and Target to be decided by July 31, 2016 and data will be gender disaggregated (Percentage)											
Percentage of the value of new investments on existing road links	20% of the value of investments					50% of the value of new					70% of the value of the investments

selected by the RDA using the Road Asset Management System. (Text)	are selected by the RDA using the pavement management system					investments selected by the RDA using the RAMS					selected through the RAMS

Intermediate Results Indicators

Indicator Name	Baseline	Cumulative Target Values									
		YR1	YR2	YR3	YR4	YR5	YR6	YR7	YR8	YR9	End Target
Number of DBMOT contracts for national roads contracted (Number)	0.00	0.00	1.00	2.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
Reduction in the number of accidents on the corridor (cumulative). The actual number of traffic crashes was 379 in 2015 (Percentage)	0.00	1.50	3.00	4.50	6.00	7.50	9.00	10.50	12.00	13.50	15.00
Asset management system fully operationalized (Text)	System developed, not yet operational	Formulation of core team approved by management of RDA.	Protocol for Data collection initiated.	Protocol for Data collection established.	3 modules populated with Updated data.	5 modules populated with updated data.	7 modules populated with updated data.	All 10 modules updated	All 10 modules updated	All 10 modules updated	Continuous data collection and updating of all 10 modules through the asset management system.

Roads rehabilitated, Non-rural (Kilometers) - (Core)	0.00	0.00	12.00	38.00	58.00	58.00	58.00	58.00	58.00	58.00	58.00
Road Sector Strategy and Policy developed and approved (Text)	No comprehend-sive strategy available at present.					Road Sector Strategy and Policy developed and approved.					Road Sector Strategy and Policy developed and approved.
Asset Management Unit created for coordination of asset management activities. (Text)	A separate Asset Management Unit is currently not in place	Coordination between the Bank and ADB-financed projects' PMU's for procurement and implementation of DBMOT contracts.	Coordination between the Bank and ADB-financed projects' PMUs for procurement and implementation of DBMOT contracts.	Institutional assessment to be completed.	Organizational changes to be discussed and agreed supported by ongoing capacity building.	Asset management unit coordinating asset management contracts and asset management system.					Asset management unit coordinating asset management contracts and asset management system.

Indicator Description

Project Development Objective Indicators

Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Reduction in average roughness on the selected corridor(s)	Road roughness measurements are standardized to the IRI. This index provides a measure of the longitudinal wavelengths in the pavement profile in meters per kilometer and is a measuring tool used for assessing the riding quality.	Annually after the period of rehabilitation.	For baseline - design consultants report; yearly data - progress reports by MC and MTR report by the RDA.	Design consultant, MC and RDA.
Increased user satisfaction on the corridor	Overall user satisfaction on the corridor (This is also a citizen engagement indicator). The data for the baseline is expected to be collected before the commencement of works and services on the selected corridor.	Baseline, MTR and end of project.	User satisfaction survey	Consultant and RDA
Percentage of the value of new investments on existing road links selected by the RDA using the Road Asset Management System.	This will reflect the capacity created in human resources, systems, processes, equipment, decision making etc. in adopting an asset management system. The annual updated investment plan of RDA on existing links will be considered and the selections made will be published in the RDA website. The comparisons will be made between the HDM4 analysis produced through the asset management system and the budgetary proposals submitted to the treasury by the RDA to establish the percentage.	MTR and end of project	RDA/MHEH	RDA

Intermediate Results Indicators

Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Number of DBMOT contracts for national roads contracted	This will reflect the programmatic approach with ADB that is over and above the corridor being covered under the project.	Annually and at end of project.	MHEH/RDA	RDA

Reduction in the number of accidents on the corridor (cumulative). The actual number of traffic crashes was 379 in 2015	The data is based on the number of accidents on the selected corridor collected from the police. The reduction in number of accidents over the project period is indicated as a percentage of the baseline on a cumulative basis.	Annual	Accident data	RDA/MC
Asset management system fully operationalized	Operationalize the web-based asset management system for improved decision making. Protocols will be established to guide quality and responsibility for collection and inputs, data type to be collected, frequency, process and procedures for analysis and parameters for all required interventions on RDA managed national roads.	Annual up to MTR and End of Project.	Consultant report	Consultant and RDA
Roads rehabilitated, Non-rural	Kilometers of all non-rural roads reopened to motorized traffic, rehabilitated, or upgraded under the project. Non-rural roads are roads functionally classified in various countries as trunk or primary, secondary or link roads, or sometimes tertiary roads. Typically, non-rural roads connect urban centers/towns/settlements of more than 5,000 inhabitants to each other or to higher classes of road, market towns and urban centers. Urban roads are included in non-rural roads.	Baseline, MTR and at End of Project	Progress reports from MC	MC and RDA
Road Sector Strategy and Policy developed and approved	Develop a Road Sector Strategy and policy in order to enable better planning, preparation and execution of the transport sector projects. The MHEH/RDA to develop/formulate a Road Sector Strategy to enable prioritization. The proposed Road Sector Strategy is intended to eventually form part of the overall Integrated Transport Strategy.	At MTR.	Existing data and consultant reports	GOSL/MHEH/RDA
Asset Management Unit created for coordination of asset management activities.	To create an asset management unit within the RDA responsible for asset management contracts and asset management system. This should be supported through the institutional assessment to be carried out. This however does not require it to be a physical unit.	At MTR	Proposal from the RDA	RDA / MHEH / GOSL

Annex 2: Detailed Project Description

SRI LANKA: Transport Connectivity and Asset Management Project

I. Project Rationale

1. **Modern road asset management.** The project is expected to bring about change that will allow the RDA to transition toward modern road asset management by moving away from conventional input-based civil works contracts toward OPRC. This transition represents a major change for public institutions as well as for the private road construction industry.

2. Modern road asset management is implemented through contracting the rehabilitation, operation, and management of road assets to the private sector for the entire life cycle of the asset through a PPP. The private sector entity is thereby contracted to design, build, maintain, and operate the road asset and transfer the asset to the RDA at the end of the contract period. The DBMOT approach allows the transfer of certain risks from the government to the private sector entity, which is better positioned to assess, manage, and control such risk.

3. **OPRC.** The DBMOT approach will be implemented through an OPRC format. Under this performance-based contract format, the contractor will be remunerated based on completion of activities and achievement of a predetermined level of services.

4. **Benefits of the DBMOT methodology through the use of the OPRC format.** Adopting an OPRC format will address many of the current well-documented challenges in Sri Lanka's road sector, including cost overruns, substandard construction quality and service delivery, and construction delays. The implementation of the OPRC for asset management in Sri Lanka can be expected to bring significant medium-term benefits with regard to increased economic efficiency, optimize the use of public resources, public asset preservation, and predictability of required government expenditures for road rehabilitation and maintenance, as well as provide opportunities for the long-term development of the construction industry.

5. Successful OPRC implementation requires private sector partners who are capable of carrying out the required detailed design, construction, and maintenance under specified service levels, before transferring the asset back to the RDA. Private partners will be required to bear the project risks associated with the detailed design, construction, and maintenance, as these will be carried out by the private sector CEs. Under an OPRC format, the government can be expected to achieve substantially improved technical, financial, and time control of road asset management projects as payments are made only based on meeting agreed performance criteria and milestones. To guarantee the use of technical and qualitative specifications and other guidelines, the government will appoint an MC who will monitor the achievement of the project milestones and substantiate these through contractually prescribed field and laboratory tests. Piloting under the OPRC format within the project will also provide important lessons on how to further improve and adapt the format to specific country conditions.

II. Programmatic Approach through Bank and ADB Assistance

6. **Piloting the OPRC in Sri Lanka for systemic change.** The Bank, together with the ADB, intends to support a network consisting of approximately 500 km of the national road network, comprising several priority road corridors, which require rehabilitation and maintenance. The RDA intends to apply asset management principles to these road sections through the use of an OPRC format over a long-term contract. The Bank, together with the ADB, is adopting a unified approach for the piloting of these contracts.

7. The Bank has been leading the dialogue with the government on the OPRC format, and the ADB has agreed to adopt the same format and terms in the bidding documents under the iRoad Project. The alignment of the Bank and ADB with regard to piloting a unified OPRC in the respective projects constitutes a programmatic approach that will allow the RDA to coordinate road asset management for greater systemic impact across the identified priority road corridors.

8. **ADB support.** The ADB supports the asset management approach under its iRoad Project, which was approved in June 2014. The project includes a multi tranche facility for the development of national, provincial, and rural roads, with an investment value of US$800 million and a project end date of 2024. This project includes a total of 400 km of national roads, which are included in the identified 500 km of priority corridors. The RDA has already identified four packages for the following corridors that include the 400 km Colombo-Kandy Road (A1), Katugasthota-Kurunegala-Puttalama Road, Chilaw-Wariyapola Road, and several road sections in the southern province totalling 323 km at an estimated value of US$160 million. These packages were originally planned for award in 2015 and are now being revised for bidding in 2016. The remaining corridors are expected to be packaged based on the availability of funding.

III. Project Components

9. **Overall project focus.** The proposed project is designed to support modern road asset management in the RDA. It focuses on creating an enabling environment for more effective asset management and includes interventions to develop systems and capacities within the RDA and the industry. It will demonstrate the implementation of asset management principles in selected priority road corridors of the national road network. The project will particularly focus on the institutional and system changes that are necessary to transform the RDA from a provider of infrastructure to a service provider in line with the ambition and needs of a middle-income country. The project will also include a strong focus on road safety, improvements in M&E, the use of appropriate systems and technology, and the mainstreaming of an appropriate grievance handling mechanism.

Component 1: Institutional Strengthening and Capacity Building for Asset Management (US$22.9 million)

10. This component will finance activities to support the RDA in institutionalizing the use of DBMOT methodology using the OPRC format and implement institutional and system changes necessary to sustain and expand the use of DBMOT methodology using the OPRC format in the RDA and in the construction industry. The following subcomponents have been identified for project support:

(a) **Road asset management.** This subcomponent will provide support to (i) operationalize the web-based, multiuser asset management system to improve network data collection and finance additional software, equipment and technical support for the customization and maintenance of the computerized RAMS; (ii) establish/upgrade an asset management unit within the RDA that will be responsible for planning and implementation of asset management contracts and the implementation of the asset management system; (iii) develop a Road Sector Strategy and policy that will provide inputs to an integrated Transport Sector Strategy; (iv) carry out a study to assess staffing, skills, and institutional capacity-building needs to institutionalize asset management practices within the RDA; (v) enhance capacity of the RDA's technical and managerial staff, contractors, consultants, regulatory bodies, auditors, and other stakeholders to build awareness and capacity in the implementation of DBMOT contracts; (vi) monitor and evaluate the pilot contract through the MC; (vii) carry out the necessary preparatory work for DBMOT methodology using the OPRC formats in the event of a scale-up of the operation; (viii) carry out a cost efficiency assessment of performance-based contracts including DBMOT contracts using the OPRC contract format and will include all performance-based contracts implemented by the RDA including those financed by the ADB and the Bank; and (ix) carry out other studies and surveys that may be required for the implementation of the project.

(i) **Operationalize RAMS.** The RDA currently has a web-based, multiuser RAMS for all road-related assets of the national road network, which will make road data widely available to all relevant stakeholders and assist the RDA in planning and earmarking budgets for road network maintenance on the basis of current and future predicted condition. This asset management system has developed the Highway Information Management System (HIMS), which is a powerful relational database and analytical system software with in-built Geographic Information System (GIS) and reporting platforms. The outputs of the HIMS are also used as inputs for HDM-4 in analyzing network performances, prioritizing road maintenance and rehabilitation, life cycle cost analysis, asset valuation and risk analysis, road user and agency costs etc. It has a Road Information Management system supported by several modules for planning and management of pavement, routine maintenance, slopes, disaster planning, location referencing, traffic information, crash information etc. At present, development of the system by customizing the HIMS, training on the system, and user acceptance testing have been completed. The system will require further customization with increased usage. Furthermore, support will also be required by the RDA for periodic data collection and analysis with continuous discussion and assessment of the outputs and its usage. The data collection will require establishment of protocols for quality and responsibility for collection and inputs, data type to be collected, frequency process, and procedures for analysis.

(ii) **Establish/upgrade an asset management unit.** To ensure sustainability of asset management, it is important to institutionalize it within the RDA and bring both the Bank- and ADB-financed projects' PMUs within this structure

for better synergy and help develop capacity within the division. Furthermore, the asset management system needs to be appropriately housed to ensure continuous focus for effective decision making.

(iii) **Developing a Road Sector Strategy and Policy.** The Road Sector Strategy will identify the direction that the GoSL will want to channel the road sector in the next 10 years and will be embedded within the revision to the National Road Master Plan that has become due. It will also identify the outsourcing requirements for construction and maintenance etc that will also shape the organizational structure of the RDA. Most importantly, it will provide required inputs to the integrated transport strategy.

(iv) **Training on DBMOT methodology using the OPRC format.** The RDA's technical and managerial staff, contractors, consultants, and members of adjudication boards require capacity enhancement in the implementation of these contracts, which is imperative to mitigate risks associated with the implementation capacity. Furthermore, awareness creation is required for indirect parties such as regulatory bodies, auditors, and other stakeholders to ensure their effective contribution.

(v) **MC.** The MC will be appointed to monitor and evaluate the pilot contract as well as carry out some of the capacity-building exercises that is essential to the successful implementation of the project and will be financed separately from the civil contracts. While M&E will be essential during the period of the contract, the MC will be appointed for an initial period of five years to be renewed as necessary.

(vi) **Study to assess the needs of institutionalizing asset management practices within the RDA.** It is necessary to assess the institutional changes that may be needed to respond to expanding the use of DBMOT methodology using the OPRC formats on a long-term basis. This will also assess the skill mix, training needs, deployment of existing labor, etc.

(vii) **Cost efficiency study.** It is important to assess the efficiency of all of the contracts regardless of the source of finance employing performance-based contracting including DBMOT methodology using the OPRC format to understand the impact and issues with clear recommendations at the end of the project period.

(viii) **Preparatory work for scale-up.** If the RDA and the MHEH will like to expand the use of the DBMOT concept, consultant(s) can be retained to supplement the already developed skills of the RDA.

(ix) **Project M&E system.** The RDA at present lacks a system for proper M&E of its projects and is seriously hampered by the absence of information for timely decision making. An institutional assessment of the RDA, carried out by the Bank in 2012, has recommended establishing a system for M&E of projects

for the RDA.

(x) **IOC.** The IOC will support the operation of the project, which will mainly be the cost of the PMU at present but will exclude the cost of RDA staff salaries.

(b) **Operational improvements.** This subcomponent will provide support to the RDA to transform itself into a more efficient and service-oriented organization. Specifically, it will include support to (i) develop a Management Information System for the RDA to obtain timely financial and physical progress information of all activities of the RDA for appropriate decision making; (ii) establish a Grievance Redress System to better enable the RDA to receive, manage, and respond to public complaints related to national roads; and (iii) IOC of the project.

Component 2: Piloting the Implementation of Road Asset Management Principles (US$102.1 million)

11. The following subcomponents have been identified under this component:

(a) DBMOT contract. This subcomponent will finance the DBMOT contract for the approximately 58 km along the Ja-Ela to Chilaw section of the A3 corridor. The conceptual design for the corridor has been carried out through an experienced firm of consultants and the detailed designs will be carried out by the CE once selected. The contract will incorporate all interventions needed during a nine-year period, including road upgrading, rehabilitation, sealing and patching, repaving, drainage structures, widening in selected stretches, sidewalks, and all maintenance requirements to achieve a prescribed level of service of the road. The design features will include enhanced road safety, automated traffic management, and infrastructure demanded by urban population. The corridor will require minimum widening in identified locations to ensure safety.

(b) Compensation payments for land acquisition and resettlement related to removal of black spots identified on the corridor. This will finance the cost of compensation related to land acquisition and resettlement for the five identified black spots to improve the road safety outcomes of the project. The total compensation will not exceed US$2.1 million and will have a cap of US$1.1 million for compensation to be paid for land acquisition and a cap of US$1 million to be paid for compensation for properties, structures, livelihood restoration, and other relocation assistance as identified in the LARMP, which is a part of the approved RAP.

12. **Characteristics of the corridor.** This proposed corridor has been selected by the RDA for intervention as a priority corridor based on the HDM-4 analysis and has a residual value of the pavement which is currently nil. Ja-Ela onward, the Peliyagoda to Puttalama corridor was last rehabilitated in 2001. Certain sections of the road are exposed to extremely high traffic levels of around 60,000 vehicles per day and high traffic congestion in main towns such as Kochchikade is a serious issue. The issues observed on the corridor include potholes, surface cracks, and dilapidated conditions of the drainage along the road, especially around the existing structures, such as culverts, bridges, and road stretches subject to flood inundation and water pooling. In

addition, there are several black spots for which land acquisition will be pursued. The corridor from Ja-Ela to Chilaw has a level of traffic ranging from 19,000–66,000 vehicles per day, which predominantly consist of motorcycles, cars, and goods vehicles.

13. **Initial road safety review.** A 'concept' stage safety review has been carried out for the corridor, to identify the condition of the highway from a road safety perspective and to make recommendations for the concept designs to improve safety. The review has made specific recommendations to reduce crashes at a number of known black spots. The safety enhancements that have been identified in this review are to be included in the detailed design for the highway rehabilitation. In addition, a number of 'high crash frequency' locations were inspected during the review to offer some specific recommendations for locations understood to be 'hazardous'. Once the detailed designs have been completed by the CE, a road safety audit will be carried out by the CE where the recommendations will be incorporated into the final detailed design.

14. At present the A3 highway has a number of safety concerns that can be summarized as follows:

- **Roadside hazard management.** There are numerous roadside hazards (more than 100 mm in diameter) along this road for errant vehicles to strike.

- **Delineation.** There is inconsistent delineation along the existing highway, there are several railway crossings along the A3, and there is a need to upgrade the signage and traffic control at each crossing.

- **Pedestrians.** There are numerous pedestrian (zebra) crossings but these are often in poor condition and most are rarely complied with by drivers/riders. There are limited lengths of footpaths, limited paved shoulders, and few paved bus lay-bys. More attention is needed to help pedestrians cross the highway under heavy traffic conditions, as well as to walk more safely along the highway.

- **Speed management.** There are limited opportunities to overtake slower vehicles because of the heavy traffic flows and the two-lane, two-way nature of the highway. Because of this, some drivers overtake rashly. Slow vehicle turnouts and overtaking lanes will help free up the platoons of traffic and can ease dangerous overtaking. There is no impetus for traffic calming in the towns and no speed restriction signs to continually remind drivers of the speed limit. Therefore, police enforcement of speed is necessary. Vehicle speeds are likely to increase by a few kilometres per hour when the highway is rehabilitated and this is a fundamental safety concern.

15. The review has proposed increasing the radii of nine curves along the A3. 5 'black spots' were identified and some of these were at or close to the curves that the design consultant has recommending for widening.

16. **Preparatory work carried out.** The conceptual designs have been carried out by a specialized firm over a period of 11 months. The scope of the study has included conceptual pavement design, geometric design and structural design, risk analysis, level of service, economic analysis, payment model, and the draft bid documents. In addition, the consultant has carried out

several investigations that have included topographic surveys, bridge survey, traffic survey, geotechnical investigations, and a drainage survey. Given the specific drainage issues within the corridor, the RDA has carried out a further assessment on verifying the adequacy of existing drainage crossings, lead away drains, and their legal status.

17. The conceptual design consultant has considered four technical alternatives and selected the most optimum alternatives that derive the highest NPV of US$57.7 million (using a 12% discount rate) with an EIRR of 23.3 percent. The conceptual designs have been carried out based on this optimum alternative.

18. **Design of the DBMOT contract.** Based on the selected alternative, the rehabilitation/upgrading of the corridor will be carried out during the first 3 to 4 years of the contract period, during which approximately 70–80 percent of the total contract cost will be incurred. Maintenance works will be carried out during years 4 to 8 of the contract period, with an overlay in the latter years before handing over the road asset incurring approximately 20–30 percent of the contract cost during years 4 to 8. Payments to the CE will be made based on completed blocks of continuous 5 km of rehabilitation/improvement road sections in four-lane areas and continuous 2 km sections in the two-lane areas in compliance with the agreed service standards. Any unforeseen interventions that will be identified during the period of contract implementation will be carried out based on rates for completion of major items identified in the contract. Any work on the corridor by public utility agencies can be carried out by their own contractors. These will have to be managed by the CE to provide quality assurance and ensure that any works carried out by such contractors comply with the stipulated service standards. The payment model in the contract defers approximately 15–20 percent of the rehabilitation cost to be paid later during the maintenance period. The contract also includes separate criteria indicated in the levels of service that will need to be satisfied when being transferred at the end of the contract. The performance against these levels of service parameters will be monitored using the indicators given below.

19. **Level of service.** The performance system criteria consists of the following.

(a) **Management performance service levels.** These reflect the ability of the contractor to successfully manage the contract outputs, including the quality and efficiency of reporting. The measures of these will be through the development, implementation, and management of design reports; maintenance reports; environmental and social reports; safety reports; and annual work programs.

(b) **Road user service and comfort performance service levels.** These reflect the road user's expectation of day-to-day serviceability of the roads. These include (i) interventions and compliance requirements in repairing or arresting various types of pavement distresses such as potholes, patches, cracks, raveling, shoving, edge breaks, cleanliness of pavement and shoulders, structures etc (ii) road user comfort measures such as riding quality and roughness; (iii) road safety measures such as signs, markings, delineation, cleanliness, and road accident incident response; and (iv) roadside environment such as vegetation, slope protection, removal of slides, drainage, managing water stagnation etc.

(c) **Road durability performance service levels.** These reflect the measures to protect the pavement and other assets. Pavement deflection values will be monitored and maintained to ensure long life of the pavement.

Project Cost by Category

Component	Cost Items	Cost in US$, millions
1	Asset Management Support	7.00
	Monitoring and other consultancies	5.00
	Capacity building and training	2.00
	Equipment	1.50
	Incremental Operating Cost	7.40
2	Output and performance based road maintenance contracts	100.00
	Land acquisition and resettlement cost for road safety	2.10
	Total	125.00

20. The contract cost under Component 2 includes the cost of detailed design, road rehabilitation, upgrading, raised foot walks, lighting, drainage, junction improvements, maintenance of bridges, structures, and furniture, periodic and routine maintenance of pavement, etc. The cost of pavement is approximately 44 percent of the total contract cost. The cost related to the provision of appropriate drainage is approximately 27 percent.

Annex 3: Implementation Arrangements

SRI LANKA: Transport Connectivity and Asset Management Project

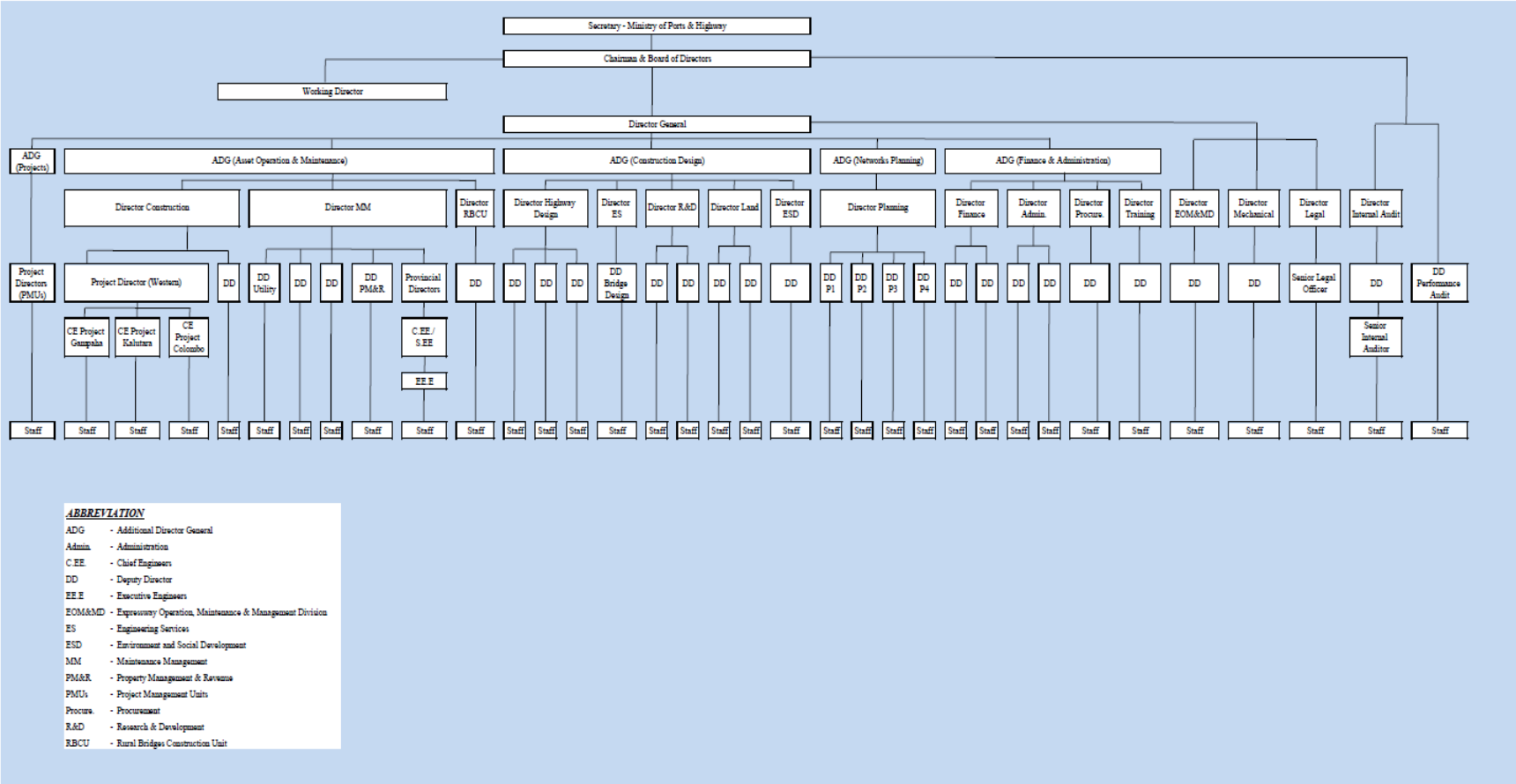
I. Institutional Arrangements

1. The MHEH is responsible for the formulation of policies, programs, and projects and M&E with regard to subjects of university education and highways and therefore will be responsible for the overall execution of the project. The RDA has been established through the 'Road Development Authority' Special Provisions Act No. 05 of 1988 where its powers have been expanded through the National Thoroughfares Act 40 of 2008, especially for private sector participation and investment in road construction. The RDA will continue to be the primary implementing authority. The implementation of projects within the RDA is functionally carried out through the PMU. As the RDA has already implemented the Bank-financed RSAP, an already established PMU headed by a project director, supported by project engineers and dedicated staff responsible for managing the project's social safeguard, environmental safeguard, procurement, and FM aspects, is currently functioning within the RDA.

2. Although the PMU continues to be responsible for the implementation of the project, other divisions of the RDA such as asset operation and maintenance, network planning, and construction design are actively involved in the discussions and the preparation of the project. The MHEH is also in discussion with the RDA to establish separate functional units within the RDA for M&E, road safety, and asset management. In addition, because of the unified approach between the ADB and the Bank, the PMU for the iRoad Project, that will also implement the DBMOT contracts using the OPRC format, is engaged in the discussions in strong coordination with the PMU preparing the proposed project (see the organization chart of the RDA in figure 3.1). The RDA intends to mainstream the functions of the PMU within the RDA, especially in view of the ten-year duration of the project. The asset management unit, once established/upgraded, will absorb the functions of the PMUs without disrupting the activities and create larger space for coordination and synergies within the two PMUs that will strengthen the capacity of the RDA for asset management for greater sustainability.

3. A project Steering Committee chaired by the secretary to the MHEH is responsible for reviewing the progress of the project implementation. The Steering Committee, already in place, for all Bank-financed projects has already been monitoring the preparation of the project and will continue. The Steering Committee comprises the Chairman, Director General, and other senior members of the RDA as well as the Ministry of Finance and Ministry of National Policies and Economic Affairs, as well as relevant contractors and consultants.

Figure 3.1. RDA Organization Chart



Source: Annual Report 2013 - Road Development Authority

II. Implementation Arrangements

4. The PMU within the RDA will be responsible for the overall implementation of both components under the project.

Component 1: Institutional Strengthening and Capacity Building for Asset Management

5. The PMU will carry forward all the necessary procurements and management of consultants who need to be engaged in the areas that have been identified, such as the MC, technical and financial audits, capacity building for the RDA, and contracting industry, institutional assessments, cost efficiency studies, etc. The PMU will liaise with the planning division of the RDA in responding to their requirements for expansion and customization of the asset management system, software, and hardware requirements, outsourcing of data collection, preparation of manuals, capacity building, and so on. The PMU will also liaise with all the divisions, particularly the finance and planning divisions, as well as the RMTF in assisting the implementation of the Management Information System for the RDA that will monitor financial and physical progress of all activities of the RDA. The PMU will also liaise with the MHEH, who is championing the establishment of a communication system to be embedded in the mainstreaming of the grievance redressal mechanism, for all RDA-managed national roads.

Component 2: Piloting the Implementation of Road Asset Management Principles

6. This component entails implementation of the DBMOT contract on one corridor of approximately 58 km length along the Ja-Ela to Chilaw section of the A003 corridor using the DBMOT contracting format. The implementation of this component will be monitored by the PMU. However, given that the proposed concept is being piloted for the first time in Sri Lanka, the PMU will be supported by a MC in the overall monitoring of the civil works contract. In regards to contract management, the Project Director of PMU will be the 'Employer' and the MC will be function as the 'Engineer'. In addition to monitoring of the civil works execution, the MC will also be responsible for the monitoring of the social and environmental safeguards of the proposed DBMOT contract. The DBMOT contract is proposed to be for a period of 9 years in order for the project to support the entire duration of the DBMOT contract.

7. The PMU together with the ESD of the RDA will be involved in the identification and monitoring of the compensation payments to be made for land acquisition and resettlement for the removal of identified black spots.

Financial Management, Disbursements, and Procurement

Financial Management

8. The primary responsibility for FM will rest with the PMU under the MHEH, which will include (a) ensuring compliance with all financial covenants in the Legal Agreement; (b) obtaining funds from the Bank and managing such funds in an efficient, effective, and transparent manner; (c) furnishing financial reports and project audit reports to the Bank; and (d) overall management of payments and accounting functions of the project and any other requests relating to FM made by the Bank team.

9. **FM staffing.** The FM unit of the PMU will be headed by a qualified and experienced accountant who already has prior experience handling FM arrangements of previous Bank-financed operations. The accountant will work for the project on a full-time basis and will provide the guidance and direction required to ensure that the FM arrangements are implemented to the satisfaction of the GoSL and the Bank. Other FM support staff already in the PMU, dedicated to the project, will work under the accountant to handle daily/routine accounting and FM activities of the project.

10. The accountant will be responsible for day-to-day project FM activities. This includes project budgeting, disbursement planning and forecasting, operation of the DA including claiming replenishments, disbursement of project funds, making project payments, maintaining books and records for project financial transactions, submission of quarterly interim financial reports to the Bank, preparation of annual project financial statements and interaction with project internal/external auditors on the audit issues, and their follow-up. Any additional staff may be recruited by the project, as required.

11. To ensure effective discharge of duties, the finance staff will be required to regularly attend trainings/seminars relating to (a) submission of claims to Bank disbursements unit under the interim financial report-based electronic disbursement method; (b) awareness and training to understand the differences between innovative method of contracting and the traditional method of contracting; and (c) additional due diligence and controls required in the processing of transactions relating to the OPRC. A significant portion of the training effort will be concentrated in the initial year of the project to maximize impact.

12. **Payments on the DBMOT contract.** As the contract in this project under Component 2 will be following a DBMOT approach, the payments to be made will be based on outputs/service levels. All the payments to be made to the contractor will be recommended by the project manager/MC who will be the engineer to the project. The contract will be a lump sum contract, apportioned in fixed proportions for the following categories of the contract: payments for improvement works, rehabilitation works, periodic maintenance works, and routine works. Payments for improvement works, rehabilitation works, and periodic maintenance works will be made on the basis of completed continuous road sections as specified in the contract. Payments for routine works will be made on a quarterly basis in accordance with the actual performance of the contractor and conformance to the service level criteria given in the specifications.

13. All of these payments will be verified and recommended by the project manager/MC and reviewed and approved by the PMU technical staff. Failure to meet the outputs or service levels may result in payments deductions in accordance with the contract conditions and specifications. This will also be monitored, recommended, and verified by the MC/project manager. The FM staff of the PMU will execute payments for the DBMOT contracts based on the recommendations of the MC and approval of the relevant project technical staff as stipulated in the various types of payments mentioned above. The internal audit and external audit will also cover a sample of transactions to ensure that this due process has been followed in carrying out payments to the contractors.

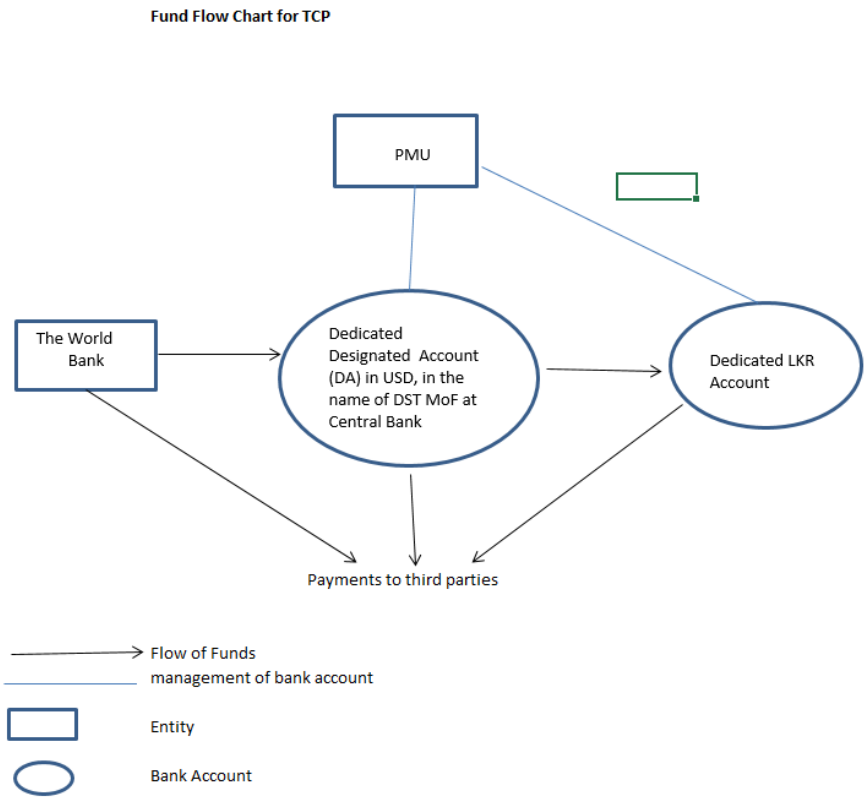
14. **Budgeting.** Currently each department of the MHEH forecasts the budgeted resources and amount required. All the forecasts are then compiled by the MHEH and incorporated in the

ministry budget which is then sent to the Ministry of Finance. A separate budget code (line item) will be allocated to the project. The proposed project will receive budget allocations from treasury under direct foreign funding. The PMU will prepare a detailed implementation plan in line with the detailed project budget to clearly specify the funding requirement for each component and activities. The PMU can implement the activities of the credit by using the budgetary provision provided for the project under the foreign funds.

15. **Funds flow and disbursement arrangements.** It is proposed to open a new DA, which is denominated in U.S. dollars, at the Central Bank of Sri Lanka. This DA will be operated and managed by the PMU. As the PMU will be implementing this project and the CRIP, separate sets of accounts will be maintained for each credit. The disbursements will be report-based. Quarterly Interim Unaudited Financial report (IUFR) will be submitted to the Bank by the PMU within 45 days of the end of each quarter. The Bank will advance funds to the DA in adequate amounts to meet project expenditures for a forecast of six months, as reflected in the quarterly IUFRs. Withdrawal applications will be prepared by the PMU and replenishments to the DA will be based on the IUFRs approved by the Bank.

16. Figure 3.2 shows the flow of funds mechanism for the project.

Figure 3.2. Fund Flow Mechanism



17. The PMU will open a separate dedicated Sri Lanka Rupee account that will be operated by the PMU to make payments for eligible project expenditures. This is to easily track the inflow and outflow of the project funds. This account will continue to operate and track payments being made using IDA finance even in the event that the asset management unit to be established/upgraded is financed through multiple sources. The PMU will maintain separate books of accounts for project activities. Exchange losses arising because of the transfer from the DA to the Sri Lanka Rupee account will not be considered eligible expenditure and will not be absorbed by the IDA credit. The project has an option of requesting a direct payment to the supplier by (a) the Central Bank, using the proceeds in the DA and (b) the Bank, against the credit for large payments.

18. IDA credit proceeds will be used to finance eligible expenditures necessary to meet the development objectives of the project with due attention to considerations of economy and efficiency in accordance with the provisions of the Financing Agreement. If the Bank determines that credit has been used to finance ineligible expenditures, the amounts used for such expenditures shall be refunded to the Bank by the GoSL. It is agreed that all fund transfers will be between bank accounts and that no cash transfers will take place. No withdrawal shall be made for payments made prior to the date of the Financing Agreement, except that withdrawals up to an aggregate amount not to exceed SDR 1,090,000 (US$ 1.5 million equivalent) may be made for payments made prior to this date but on or after June 30, 2015 for eligible expenditures.

19. **Accounting policies and procedures.** All funds for the project will be routed through the PMU which will be responsible for funding all project expenditures, accounting for them, and reporting on the financial and physical progress of the project. The accounting staff will need to liaise closely with the technical staff and the MC, where a systematic verification of invoices need to be carried out before payment. The PMU's accounting practices will be governed by the GoSL's financial regulations. The PMU will maintain accounts on the accrual basis of accounting and will also comply with the government finance regulations and applicable circulars. Separate accounting records will be maintained for the project by the PMU. Bank accounts will be reconciled on a monthly basis and trial balances, and financial statements will be prepared on a monthly basis to facilitate monitoring the project's progress.

20. **Accounting system.** A computerized accounting system was developed by the Sri Lanka Institute of Information Technology for the RSAP, which has password controls and audit trials. The system facilitates generation of expenditure reports by budget classification, thus enabling comparison with the budget and effective monitoring of expenditure. It is advised that a separate chart of accounts be established for the proposed project that enables separate accounting. It is recommended that the existing accounting system be used for the proposed project with a renewed and extended maintenance agreement with the vendors.

21. **Internal audit.** In addition to the annual financial statement audit, the project will be subjected to an internal audit. It is envisaged that the internal audit of the proposed project will be carried out by the internal auditors attached to the MHEH. An internal audit team will be appointed by the secretary of the MHEH, comprising representatives of both the MHEH and RDA to carry out the internal audit of the project. The findings of the internal audit team will be reviewed by the internal audit committee appointed for the project. The internal auditors will assess whether the funds have been disbursed on a timely basis and used effectively and efficiently for the intended purposes. The internal audit will also examine the physical and qualitative aspects of the assets

constructed or procured under the project. This will provide further assurance on the legitimacy and the eligibility of the payments made from the credit proceeds. The PMU will share the internal audit reports with the Bank within 60 days of the end of each quarter.

22. **External audit.** The annual financial statements of the project will be prepared by the PMU and audited by the Auditor General of Sri Lanka. This is the supreme audit institution of the country, ensures full transparency, and provides reasonable assurance to all the stakeholders on the use of project funds. The external audit will cover project activities carried out by all project agencies and all payments made from the various project accounts. The external audits will be conducted every financial year and will be submitted within six months of the end of the financial year. These external auditing arrangements will be agreed with the Auditor General's Department of Sri Lanka. The PMU is responsible for the timely submission of the annual audited financial statements to the Bank.

23. **Audit reports.** The following audit report will be monitored in the Bank's Audit Reports Compliance System in the Portfolio Risk Management System. According to the Bank's Access to Information Policy, the audit reports received by the Bank for the project will be disclosed on the Bank's external website for public access.

Table 3.1. Audit Report

Implementing Agency	Audit Report	Auditor	Date
PMU	Project Annual Financial Statements	Auditor General	June 30 each year

24. **Financial covenants.** The financial covenants are (a) audited annual project financial statements to be submitted to the Bank no later than six months of the following fiscal year and (b) consolidated project IUFRs to be submitted to IDA no later than 45 days following the end of the reporting quarter.

25. **Disbursement categories.** IDA will finance 100 percent of eligible expenditures, including taxes for goods, works, non-consulting services, consulting services, training, and workshops, and IOCs of the project. The GoSL will be expected to fund the salaries and allowances of its civil servants who will be working for the project.

26. The proceeds of the IDA credit will be disbursed against eligible expenditures in the following categories:

Table 3.2. Disbursement Categories

Category	Amount of Financing Allocated (in US$, millions equivalent)	Percentage of Expenditures to be Financed (including Taxes and Duties)
(1) Goods, works, non-consulting services, consultants' services, IOCs, and training	122.9	100
(2) Land acquisition and resettlement related compensation under part 2 (b) of the project	2.10	100
Total	125.0	100

27. **IOCs.** These costs include the normal expenditures of the project such as reasonable costs of goods and services required for the day-to-day implementation of the project, including maintenance of vehicles and equipment, fuel, office supplies, utilities, consumables, office rental and maintenance, bank charges, advertising expenses, travel of staff (including per diems, accommodation), and salaries of selected contracted support staff but excluding salaries of officials of the government's civil service. The GoSL will provide budgetary allocation to finance salaries of GoSL staff, as required. In the event the asset management unit is established or upgraded to include staff from the Bank and ADB financed projects' PMUs, the IOC applicable to this unit will be shared between the Bank and ADB based on actual expenditure.

28. **Project closing.** The closing date of the project is June 30, 2026. All project activities need to be completed and eligible expenditure incurred on or before closing date of June 30, 2026. Hence, all goods need to be delivered, all works and services utilizing Bank financing need to be completed by this date. The project has a disbursement grace period of four months after closing date until October 31, 2026 to make any payments and claim reimbursements from IDA for eligible expenditures incurred on or before the closing date for activities carried out as clarified above, submitting the final disbursement applications to the Bank, finalizing and closing of all project accounts. Accordingly, it is agreed that the PMU will ensure that all eligible expenditure will be incurred by the stipulated project closing date and activities related to payments and application submission could be completed by the grace period end date.

29. **Land acquisition and compensation payments.** The cost of the land is calculated at replacement value and at current market rates, as well as in compliance with the relevant provisions of OP 4.12 and will be further validated through internal and external audit. The existing RDA system of handling compensation payments was reviewed by the Bank and the process was found to be acceptable. Accordingly, all compensation payments will be handled centrally by the PMU with the recommendation and information submitted by the respective divisional secretaries. The eligible beneficiaries who will become entitled to receive compensation payments will be identified through an existing transparent mechanism prevalent in the divisional secretaries' procedures, which is acceptable to the Bank. The list of beneficiaries with the required details (for example, name of beneficiary, NIC number, bank, bank account number, any other supporting documentation) will be submitted by the divisional secretary (who will be the acquisition officer in this case) to the PMU. The PMU will raise account payee checks in line with the relevant information provided by the divisional secretary under the beneficiary's name and transmit the check to the divisional secretary to be distributed to the beneficiary. The divisional secretary will distribute the checks to beneficiaries after performing the necessary checks and balances with an acknowledgement obtained from beneficiary with regard to the receipt of check and pass the information back to the PMU. The PMU will record these transactions in the books of accounts of the PMU and make relevant updates in the accounting system and carry out all necessary checks and reconciliations necessary to ensure that the funds have reached the bank accounts of the intended beneficiaries.

30. The internal audit, external audit, and any other third-party audit will also review these transactions as a part of their audit and report observations, as required in carrying out this process. The various audits will cover the process carried out at the divisional secretaries' office as well. Bank financing will not be used for executing any compensation payments related to properties in dispute (for example, pending court decisions), where the funds will not be transferred to a

beneficiary account but will be transferred to a deposit account of the Government. In the event of such dispute not being resolved and the beneficiary not been determined during the project period, the GoSL funds will be used to carry out compensation payments.

Procurement

31. **Procurement guideline.** All works, goods, consulting services and non-consulting services under the project will be procured in accordance with the World Bank's 'Guidelines: Procurement of Goods, Works, and Non-consulting Services under IBRD Loans and IDA Credits and Grants for World Bank Borrowers', dated January 2011 (revised July 2014), and 'Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers', dated January 2011 (revised July 2014) or the most recent revisions.

32. **Procurement methods.** The following methods will be applicable for all works, goods, and non-consulting services to be procured under the project, consistent with the applicable Bank's Procurement Guidelines:

(a) International Competitive Bidding (ICB)

(b) National Competitive Bidding (NCB)

(c) Shopping

(d) Framework Agreements

(e) Direct Contracting

(f) Performance-based Procurement

33. **Procurement conducted under NCB.** To ensure economy, efficiency, transparency, and consistency with the applicable Procurement Guidelines, all goods, works, and non-consultant services procured under the NCB method will be subject to the following requirements:

(a) Only the model NCB bidding documents agreed with the Bank shall be used for bidding.

(b) Invitations for bids will be advertised in at least one widely circulated national daily newspaper, and bidding documents will be made available at least 21 days before, and issued up to, the deadline for submission of bids.

(c) Qualification criteria will be stated in the bidding documents, and if a registration process is required, a foreign firm declared as the lowest evaluated responsive bidder shall be given a reasonable time for registering, without let or hindrance.

(d) Bids will be opened in public in one location, immediately after the deadline for the submission of bids, as stipulated in the bidding document (the bidding document will indicate the date, time, and place of bid opening).

(e) Except in cases of force majeure or exceptional situations beyond the control of the implementing agency, extension of bid validity will not be allowed.

(f) Bids will not be rejected merely on the basis of comparison with an official estimate.

(g) Except with the prior concurrence of the Bank, there will be no negotiation of price with bidders, even with the lowest evaluated bidder.

(h) A bid security will apply only to the specific bid, and a contractor's performance security will apply only to the specific contract for which they are furnished.

(i) Bids will not be invited on the basis of percentage premium or discount over the estimated cost, unless agreed with the Bank.

34. **Selection of consultants.** Consultant services will include the DBMOT methodology using the OPRC format MC, expertise in M&E, FM, procurement, and specialized fields, training, and environmental and social sciences. Short lists of consultants for services estimated to cost less than US$300,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

35. The following methods will apply for selection of consultants, consistent with the relevant sections of the Bank's Consultant Guidelines:

(a) Quality- and Cost-Based Selection

(b) Quality-Based Selection

(c) Selection under a Fixed Budget

(d) Least-Cost Selection

(e) Selection based on the Consultants' Qualifications

(f) Single-Source Selection

(g) Selection of Particular Types of Consultants - United Nations Agencies

(h) Selection of Individual Consultants

36. The Bank's standard request for proposal document will be used for all consultant services. The document may be customized, as appropriate, for small-value assignments (less than US$300,000).

37. **Contracting strategy.** The procurement of the OPRC has three dimensions: (a) appropriate size of the road sections, which are considered sustainable for a 9-year long engagement with a CE; (b) interest of the CEs to undertake such engagements internationally; and (c) capacity of the national construction entities to undertake such engagements. The Bank experience suggests that a road network of longer stretches are technically and financially viable for the CEs because the rehabilitations generally take 2 to 3 years and the rest of the period is spent

on maintaining the roads, which provides the CEs to plan their activities and stay engaged with a project which ensures resource generation for a longer period. There are several international entities (contractors and consultants) who are specialized in DBMOT and are likely to avail the opportunity to bid for these contracts in Sri Lanka. The national road construction industry has so far not been exposed to this contracting methodology where they have taken full asset management responsibility. However, the national road construction industry is capable enough to perform as road contractors for longer road sections, but they have not yet gained experience in maintaining such roads to certain set service levels. This is a new methodology that needs to be learned by the national road construction industry and the opportunity is being provided through the current OPRC Project**.**

38. **Composition of Procurement and Technical Evaluation Committees.** The appointment of Procurement Committees and Technical Evaluation Committees (TECs) will follow government procedures.

39. **Safety of the price proposal (the second envelope).** The chief accountant (CA)[9] is the custodian of account-related matters and bids received by the procuring entity. All sealed bids shall be kept under the custody of the CA until the time of bid opening. The following protocol will be applied to the DBMOT contract with regard to maintaining the security and confidentiality of the bids:

(a) All the sealed bids will be received by the CA.

(b) Original bids will be handed over to the Tender Opening Committee (TOC) by the CA on the bid opening day and time.

(c) Envelope 1, containing the original technical bids, will be opened in the presence of the bidders' representatives. The TOC will open the envelope containing the technical proposal only and each original technical proposal will be signed by the TOC members. The signed Technical Proposals will then be handed over to the TEC. A bid opening record will be prepared and signed by the TOC.

(d) The unopened envelope 2, containing the financial bid, will be handed over to the CA for safekeeping.

(e) Once the technical evaluation is completed and the results announced, a reasonable period of not less than 10 working days will be allowed for bidders to protest and the borrower will resolve the issues of the complaints before proceeding with the opening of financial proposals.

(f) The qualified bidders will be invited to attend the financial proposal opening. The bid opening record of financial proposals will be prepared and signed by each bidder and the TOC members.

[9] The CA is the accountant assigned to the MHEH.

(g) Envelope 2, containing the original financial proposals, will be handed over by the CA to the TOC.

(h) The financial proposals of the technically qualified bidders will be opened by the TOC in the presence of the bidders.

(i) The opened financial proposals will be handed over to the TEC to evaluate the bids in accordance with the agreed procurement arrangements and the applicable guidelines stated in the Financing Agreement and the issued bidding documents.

(j) During technical and financial evaluations, no meeting with the bidders will take place; clarifications will be sought in writing only and will not result in modifications of the bids or changes to the bid price.

40. **Complaint handling mechanism.** To promote an open, fair, and transparent procurement process, the procuring entity shall establish a complaint handling system for the project. The composition of the complaint handling committee, the form of complaint register, response time, decision-making mechanism, and other features will be outlined in detail in the Operations Manual that will be subject to Bank's review and clearance.

41. **Responsibilities of the procurement specialist.** The PMU will ensure the availability of the services of a qualified procurement specialist who will be responsible for (a) managing all the procurements under the project; (b) design and implement a procurement performance and compliance monitoring system; and (c) project-specific website and a procurement-related grievance handling system. The procurement specialist will also be responsible for reinforcing the project and contract management environment under the project for which s/he shall design and deliver training programs to enhance the capacity of the project staff. The procurement specialist shall also be responsible to train the internal auditors on procurement. The procurement specialist will also prepare a procurement chapter as part of the overall Operations Manual for the project.

42. **Procurement information and documentation.** The following procurement information will be prepared and reported by the PMU: (a) complete procurement documentation for each contract, including bidding documents, advertisements, bids received, bid evaluations, letters of acceptance, contract agreements, securities, complaints (if any), and their resolution and related correspondence, will be maintained by the implementing agency in an orderly manner, readily available for audit; (b) contract award information will be promptly recorded and contract rosters as agreed will be maintained; and (c) the PMU will submit semiannual reports with (i) revised cost estimates, wherever applicable, for each contract; (ii) status of ongoing procurements, including a comparison of originally planned and actual dates of the procurement actions, preparation of bidding documents, advertising, bidding, evaluation, contract award, and completion time for each contract; and (iii) updated Procurement Plans, including any revisions in dates or cost estimates, for procurement actions.

Procurement Thresholds

43. Table 3.3 indicates the procurement thresholds, which shall be used for determining the procurement method and the prior review requirements under the project.

Table 3.3. Procurement Thresholds

Expenditure Category	Contract Value (Threshold)	Procurement Method	Contracts/Processes Subject to Prior Review
Works	≥ US$10,000,000	ICB and Performance-based Procurement	All contracts
	< US$10,000,000	NCB and Framework Agreements	First contract only
	≤ US$50,000	Shopping	None
		Direct Contracting	All contracts
Goods and non-consulting services	≥ US$1,000,000	ICB and Framework Agreements	All contracts
	< US$1,000,000	NCB and Framework Agreements	First contract only
	≤ US$50,000	Shopping	None
Consultant services (firms)	> US$500,000	All competitive methods; advertise internationally	All contracts
	≤ US$500,000	All competitive methods; advertise locally	First contract only
		Selection of particular types of consultants - United Nations Agencies	All contracts
Individual consultants		Individual consultants (Section V of Consultant Guidelines)	• First contract • Subsequently, all contracts over US$200,000 equivalent

44. **Procurement Plan.** The PMU will maintain and update the Procurement Plan for the project throughout the project implementation period. The Procurement Plan will provide the basis for the procurement methods and prior review requirements. It will also be available in the project database and on the Bank's external website. The Procurement Plan will be updated by the PMU in agreement with the Bank before the implementation support mission or as required to reflect actual project needs and improvements in institutional capacity. The project will only finance those procurements which are included in the Procurement Plan and agreed with the Bank in a manner as stated in the applicable Procurement Guidelines.

45. **Frequency of procurement supervision.** The capacity assessment of the implementing agencies recommended semiannual implementation support missions to review procurement performance and actions on a sample basis.

46. One or more dedicated procurement staff members or consultants will be assigned to procurement monitoring, reporting, training, and guidance. Semiannual procurement progress reports will be provided to the Bank that include, to the minimum, status updates, procurement monitoring reports, and analysis of agreed intermediate outcome indicators. The PMU will develop an effective monitoring mechanism during the first six months of the project.

Environmental and Social (including safeguards)

47. **Legal framework.** The policy and regulatory framework in Sri Lanka provides an adequate basis for the mitigation of the potential environmental and social impacts. Under the National Environmental Act, administered by the Central Environmental Authority, and the North Western Province Environmental Statute, administered by the North Western Provincial Environmental Authority, activities that fall into a prescribed category are required to go through a comprehensive environmental screening and planning process. This does not include existing road rehabilitation, upgrading, and maintenance. However, activities in the coastal zone will be subjected to clearance from the Coast Conservation Department, according to the Coast Conservation Act. An agreement has been reached with the RDA that all upgrading, rehabilitation and maintenance work, and related activities outside the corridor and the direct impact areas such a quarry sites, gravel and sand extraction sites etc financed under this project as well as any other activities that may lead to potential adverse environmental and social impacts will be required to undertake an EA, commensurate with the potential for environmental/social impacts and prepare the detailed EMP or RAP that will be included for implementation within the DBMOT contract using the OPRC format.

48. **Required environmental approvals.** Approval from the Geological Surveys and Mines Bureau (GSMB), which is the regulatory authority for all mining and quarrying activities in the country, is mandatory before commencement of extraction activities or material should be obtained from licensed commercial vendors. Licenses by the GSMB are issued for identified sites for a stipulated quantity based on technical evaluations. However, monitoring of such sites and activities to ensure conformity with stipulated conditions are inadequate. Therefore, in addition to the MC being responsible for ensuring that civil works contractors adhere to the GSMB licensing conditions, the MC should also ensure compliance with environmental standards of mining activities. It should also be noted that site clearances for construction material extraction will also require Central Environmental Authority approvals. Details of the role and responsibilities of the project as well as the Department of Archeology will be as outlined in the government's notification on 'The Antiquities Ordinance' and according to the project’s Procedure Regulations No. 01 of 2000. Procedures for dealing with cultural property will be incorporated in the contract documents. The project activities, particularly extraction of construction material and setting up construction-related sites, will not be allowed to take place inside protected areas identified by the relevant legislation of Department of Wildlife Conservation and Forest Department.

49. **The SIA** consists of (a) a desk review; (b) a social screening; (c) a census and socioeconomic survey of inhabitants along the corridor; and (d) a road user survey. The SIA highlights a number of positive social impacts and risks involved. The road stretch proposed for the improvement will provide benefits to all religious and ethnic communities. Sinhalese are the majority of the beneficiary population but Tamils, Christians, and Muslims also live along this road and the improvement will further strengthen the social harmony as they feel as an inclusive community. The SIA also reveals that there is a large resident and cosmopolitan population using this road more frequently as pedestrians and commuters to various destinations are the main group of beneficiaries. Some of the more significant positive outcomes mentioned by people were improvements to the neighborhood, livability, and the development of urban infrastructure. As the middle-class population is growing rapidly around this area, the need for development of roads which provide improved quality of travelling has become important. The development of these

road sections will ensure road safety and easy and comfortable travel, enabling people to contribute to the national development activities while also saving time. This will also contribute to enhance the efficiency at work places of the public and the private sector as the working population can attend their work more effectively. The affected population interviewed had perceived that road improvement will also lead to a reduction in the cost of living because of easy access to service, the prospect of new businesses and industries emerging, and the demand and appreciation in value of land. This corridor has more urban features than those of the other areas of the country as these areas are more exposed to tourism and related activities. Thus, improvement in the road stretch will promote expansion of tourism-related industries and business as well, which will eventually benefit local population in the area.

50. **Gender analysis.** The SIA has identified women, especially workers, traders and children as potential beneficiaries of the project. A series of gender consultations were carried out as a part of the resettlement planning process as women are the majority (52 percent) of the population in 11 Divisional Secretary divisions connected to this road development. Improved road networks will benefit and provide better facilities for working women in urban areas and townships located along the corridor. There appears to be no major adverse impact on women's daily lives as they have access to basic facilities near their dwellings, except for the impact on those who are occupying affected structures. Informal business such as wayside fruit, vegetable, and fish stalls are mostly run by women; the probable income loss that may occur during construction will be mitigated through the livelihood compensation package proposed under the RAP. However, potential issues during the construction period may be summarized as (i) security of women and children; (ii) issues related to access to preschools, schools, and health facilities; (iii) interruptions to basic amenities such as electricity and water; and (iv) issues generated as a result of an influx of construction workers. The potential issues during construction will be addressed by the sensitization of gender issues amongst contractor, MC and RDA staff as well as the third party monitoring of RAP. Project impacts on women will be measured periodically through collecting and analyzing gender disaggregated data. For example, gender disaggregated data will be collected through user satisfaction surveys, review of grievances received and resolved, and number of persons participating in consultations during various stages of the project implementation. The RAP also includes a tentative Gender Action Plan.

51. **Citizen engagement.** The RDA has experience in engaging citizens through GRCs and functioning of 'hotline' service that allows public to communicate their views and concerns directly. This 'good practice' will be continued under this project as well as with few additional citizen engagement methods as follows. Public consultation sessions at divisional secretariat level through 'town hall' sessions. These consultations will take place before construction and are intended for two purposes: first, to provide information on construction-related activities, probable impacts, and mitigation and safety measures during the construction and second, to obtain beneficiary views, suggestions, and cooperation to implement the project activities. This is addressed in several ways: (a) by engaging a third-party independent consultant to review and monitor resettlement and safeguards management performance of the project and (b) by conducting a user satisfaction survey to understand the level of impact and perception of the road users before, during, and after project implementation. The citizen engagement mechanisms adopted by the project will be (a) increased user satisfaction in the selected corridor and (b) number of suggestions and grievances received and resolved through GRCs.

52. **Monitoring of safeguards.** The updated ESMF outlines the framework for managing and monitoring the environmental and social impacts of the project, including a mechanism for addressing grievances. Complementarily, an RPF was developed to provide step-by-step procedure for preparing a road corridor-specific RAP for project activities that will involve land acquisition, and this shall be the responsibility of the CE. The ultimate goal of the ESMF and RPF is to ensure that the proposed project will be environmentally and socially sustainable, including responding to the land acquisition requirements as they arise.

53. The CE is expected to undertake its own EA and SIA and indicate any changes to the existing EA/EMP and SIA/RAP with the agreement of the Bank as part of the detailed design and before commencement of construction. The RDA will finance the implementation of the RAP[10] and ensure that compensation and resettlement costs are appropriately reviewed and approved by the Office of the Chief Government Valuer before passing it to implementation by the CE. The CE is also expected to prepare an Environmental Method Statement (EMS) at the design stage service standard consistent with the approved EA/EMP. The prescriptions detailed in the EMP and RAP are mandatory and will be contractually binding as they will form a part of the contract.

54. Implementation of the EMP/EMS, RAP, and provision of reports on the EMP and RAP implementation is also the responsibility of the contractor and will be a part of the service standards. The MC will lead the monitoring of the implementation of the EMP/EMS and RAP. The environmental and social specialist of the PMU, together with the ESD of RDA, will assess if the MC has ensured adequate due diligence on environmental and social safeguard requirements of the project, including HIV/AIDS, gender, and income restoration plans.

55. The MC will also ensure that penalties are evoked for noncompliance and will implement remedial actions, on time using a third party, if needed. The reporting of the environmental safeguard performance of the contractual entity will be included as part of the MCs reporting requirements. The MC should ensure that the proposed measures are approved by the PMU/ESD and documenting and management of any unforeseeable issue that will arise during the contract period for which mitigation measures have not been identified in the EMP and RAP. The CE and the MC should have qualified and experienced environmental and social officers as part of their respective teams who should be available full-time during rehabilitation and upgrading works.

56. Special emphasis will be given to the IDA financing of land acquisition and rehabilitation. The environmental and social specialist of the PMU and ESD will undertake joint monthly monitoring and minute the discussions and decisions taken. The environmental and social specialist of the PMU will provide a consolidated report based on field observations and reports of the CE and MC, which the PMU will submit to the Bank biannually. Any changes to the approved EMP and/or RAP/LARMP should be agreed with the PMU and the Bank.

57. To further strengthen the above monitoring process, a research-based organization will be hired to support the monitoring of the implementation of the RAP for the A003 corridor. This independent, external monitor will be hired through a competitive process and will directly interact with the MC and the environmental and social specialist of the PMU and will report to the project

[10] The compensation payments related to land acquisition and resettlement related to the identified black spots will be financed by the Association with cap of US$2.1 million.

director. The external monitoring of the RAP/LARMP, will provide for additional consultations during the life of the project and will form the basis of continuous citizen engagement for the project.

58. **Safeguards training.** Based on the training requirements identified in the ESMF, EA, and SA, the PMU, together with ESD, will undertake training activities on safeguards for the RDA staff and CE. Details of all training activities should be reported as part of safeguards reporting to the Bank.

III. Monitoring and Evaluation

59. The overall monitoring of the project will be carried out by the MHEH through the Steering Committee on a monthly basis. The project Steering Committee, chaired by the secretary of MHEH, with participation of the Chairman, Director General, and other senior members of the RDA as well as the Ministry of Finance and Ministry of National Policies and Economic Affairs, will review the progress of the implementation of the project. The project MC, all project staff, contractors, consultants, and the Bank are invited to participate at these meetings, which will be held on a monthly basis.

60. The PMU will be responsible for the monitoring of the outcome indicators of the project included in Annex 1. The PMU will obtain corridor-related indicators from the MC and/or carry out the necessary assessments and surveys to provide the data to the Bank in the frequency required. The PMU will also be responsible to coordinate with other divisions of the RDA and monitor the indicators related to asset management and safety related activities.

61. The overall monitoring of the DBMOT contracts relating to civil works, achievement of the level of service, implementation of environmental and social safeguards etc will be carried out by the MC. The MC will be responsible for producing progress reports on a monthly basis and collating the information related to the civil work contract and will share the information collected with the RDA through a mutually agreed standardized reporting system for further monitoring by the RDA. The reporting system will highlight the project status and critical issues affecting the overall progress of the work. In addition, the report will also capture information related to the quality of work and disputes, if any, among the entities involved in the implementation of the project. The RDA, with assistance from the MC, will periodically carry out audits to further substantiate the achievements of the results. The MC will also ensure the establishment of an asset management system of the CE, review data, and validate. The MC will also facilitate the migration of data in to the asset management system of the RDA for their review and decision making

62. The monitoring of the road asset management component will be carried out through periodic reviews by the RDA as well as Bank implementation support missions.

Role of Partners

63. The project is being prepared and implemented within a unified concept that will require substantial coordination between the ADB and the Bank. The two development partners have in the past coordinated several initiatives in the transport sector and will build on the existing relationship. The discussion is also ongoing with regard to consolidating the functions of asset management, which may include the amalgamation of these functions of the two PMUs.

Furthermore, training and awareness creation for the RDA and the contracting industry will be carried out based on a joint agreement between the Bank and the ADB.

Annex 4: Implementation Support Plan

SRI LANKA: Transport Connectivity and Asset Management Project

I. Strategy and Approach for Implementation Support

1. As it is a pilot project introducing the DBMOT methodology using the OPRC format, the risks associated with the procurement and implementation of the project are substantial. Therefore, the project will require substantial handholding in DBMOT methodology using the OPRC format implementation to bring about the changes envisaged under the project.

2. The project requires rehabilitation of the existing road to meet performance standards which are developed and agreed with the Implementing Agency (IA). These standards are suitable for the Sri Lankan country context. The project will require design development and implantation based on the CE's preferences. However, these designs need to satisfy the industrial norms and must produce the desired performance standards. The conceptual design is developed following conventional road design methodologies with a straightforward traditional road execution. The CE's implementation will be supervised and monitored through an MC.

3. Technical reviews recognized weaknesses in procurement and contract management at the RDA which will necessitate strong implementation support by the Bank Group team, particularly during the procurement stage. The subsequent stages will also require adequate supervision requirements to ensure that the PDOs which also include capacity building are fully achieved.

4. The maturity in policy and strategy dialogue between the GoSL, RDA, and Bank Group along with clarity and consensus in tactical discussions holds the promise that both will work together to ensure successful implementation of the proposed project. The cooperation between all stakeholders (GoSL, RDA, and Bank Group) at the planning stages of the project indicates that the same implementation cooperation will continue at all stages of the project implementation. It is also expected that the RDA will use the same concept and the bidding documents for the procurement of contracts under the ADB-funded iRoad Project where there is a component for the OPRC. It is expected that adequate support and cooperation will be extended between the ADB and Bank Group during the implementation of the DBMOT contract using the OPRC format under the Bank Group- and ADB-financed projects.

II. Implementation Support Plan

5. The strategy adopted therefore is to primarily support the PMU through consultants who have the required experience in having carried out similar work. However, the overall focus is to develop this capacity within the RDA and equip them with the tools and the experience that can be later used by them on other contracts and projects. All of these planned efforts to sustain this capacity within the RDA is included in Component 1 of the project.

6. It is evident that good preparation upstream mitigates risks and undesirable implementation issues downstream, especially in a complex arrangement of this nature. The initial months of implementation support will be on ensuring good quality of technical and procurement documents before tendering starts. To this end, the RDA had appointed an international consultant to develop conceptual design and the bidding documents. The Bank Group team is actively advising the RDA

in formulating appropriate terms of references for different consultancies, with the knowledge of Bank experience, including the consultancy for the appointment of MC. For successful start of the project, the team is bringing to the table extensive experience in similar contracting from different parts of the world including Latin America, Africa, and India, as well as in other countries. For both purposes, the team procurement specialist will work closely with the client and technical team members to ensure bid documents are of high quality, as in other recent projects with the Bank Group; to support this process the team will provide the RDA with targeted procurement and contract management support.

7. During the bidding processes, the Bank Group team will support and advise the RDA to improve the prospect that selection of consultants and CE is of good quality and brings value to the client, helping in implantation of the first DBMOT contract and socialization aspects of the project.

8. For FM, consistent with the risk-based approach to supervision, a substantial portion of the supervision activities will consist of desk reviews of internal and external audit reports including verifying the adequacy of the resolution of major audit observations, reviewing quarterly financial reports, supplemented by dialogue with the project staff as needed, especially in the initial years. The supervision activities will include an FM supervision mission at least once every six months. Other FM supervision tools and resources such as transaction reviews, site visits, will be used in an effort to periodically monitor the adequacy of FM systems as and when required.

9. During implementation of project activities, the team plans to conduct two formal support missions per year along with at least one more streamlined mission, aimed at reviewing progress with client and promptly address any deviations from good project implementation.

10. Throughout the project lifetime, the Bank Group team expects to have road sector policy and strategy discussions with client and consult on occasions other financial partners working in the sector.

Table 4.1. Resource Plan

Time	Focus	Skills Needed	Resource Estimate	Partner Role
First twelve months	Good quality procurement of civil contracts, MC, and consultancies related to asset management	Procurement, asset management environmental/social, FM, team leader	Staff and consultants	Engage in discussions, decision making and implementation
	Drainage and hydrology	Environmental/social	Staff and consultants	Engage in discussions, decision making and implementation
	Consultations with the community	Environmental/social	Staff and consultants	Participate and facilitate

	Asset management Component	Asset management specialist, institutional development specialist	consultants	Engage in discussions, decision making and implementation
12–48 months	Contract management	Contract management specialist, Procurement/PPP/environment/social FM, team leader	Staff and consultants	Engage in discussions, decision making and implementation
	Drainage and hydrology	Environmental/social	Staff and consultants	Engage in discussions, decision making and implementation
	Consultations with the community	Environmental/social	Staff and consultants	Participate and facilitate

Table 4.2. Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Team leader	10	n.a.	Country based
Road engineer	5	2	Regional
Assets management specialist	10	3	Consultant
DBMOT/OPRC specialist	6	2	HQ
Transport economist	4	1	HQ
Social specialists	10	n.a./2	Country based
Environment specialist	6	n.a./2	Country based
Gender specialist	5	n/a	Country based
Procurement specialist	10	n.a.	Country based
Fin. Mgmt. specialist	6	n.a.	Country based
Legal counsel	1	0	HQ
Institutional development specialist	6	2	Consultant

Table 4.3. Partners

Name	Institution/Country	Role
MHEH	Sri Lanka	Executing agency
RDA	Sri Lanka	Implementing agency

Annex 5: Economic Analysis

SRI LANKA: Transport Connectivity and Asset Management Project

Introduction

1. The economic analysis is performed for the second component of the project—road rehabilitation, upgrading, and maintenance of 58 km of the Ja-Ela to Chilaw section of the A3 highway.[11] The A3 corridor is divided into 8 different segments—see Table 5.1. The contract will incorporate all interventions needed[12] during a nine-year period to achieve a prescribed level of service of the road. The design features will also include enhanced road safety and automated traffic management.

Table 5.1. Road Length by Segment

Road	Length (in km)
A3-2	5.7
A3-3	5.1
A3-4	2.5
A3-5	4.6
A3-6	1.4
A3-7	0.9
A3-8	26.0
A3-9P	11.8
Total	**58**

2. The economic analysis has been done using the HDM-4—a globally accepted key analytical tool for economic analysis of highways investment alternatives, which simulates life cycle conditions and costs, and provides economic decision criteria for multiple road design and maintenance alternatives. The main economic benefits are savings in VOCs, travel time costs, and savings in maintenance costs arising from the road works. In addition, we account for benefits because of a reduction in GHG emissions.

Main Assumptions

3. The period of analysis of the project has been taken as 20 years from 2016—the year from which construction is expected to start—to 2035. Year 2015 is used as base year for benefits and cost estimates. All costs are assumed to occur in the first year[13] and benefits are assumed to accrue for 20 years starting in 2016. A discount factor of 12 percent is used where applicable. The economic costs and benefits attributed to the project are calculated by comparing 'without' and 'with' project scenarios using the HDM-4.

[11] From now onwards, we refer to this 64.2 km road as A3 corridor.
[12] It includes road upgrading, rehabilitation, sealing and patching, repaving, drainage structures, widening in selected stretches, sidewalks, and all maintenance requirements.
[13] This is a conservative assumption and does not mean that all budget outlays are expected in the first year.

4. The main inputs for the HDM-4 relate to road and pavement characteristics, traffic volume and its composition, traffic growth rate, vehicle characteristics, and pavement construction and maintenance policies. In addition, economic prices for vehicles, tires, fuel, maintenance crew, labor, passenger time, and cargo time have been considered. The economic prices of these items are net of taxes duties and subsidies.

Without Project and With Project Scenarios

5. Strategies for routine and periodic maintenance have been defined for both 'without' and 'with' project situations for the 20-year period from 2016 to 2035. In the without project scenario, the road section is assumed to deteriorate, from its current condition, to a terminal IRI of 6 m/km, and approximately remain there for the duration of the analysis (the highest measured IRI in the project corridor is 5.64m/km).

6. Four different scenarios 'with' project alternatives are considered. Based on the economic analysis, the alternative with the highest NPV is selected. For a description of the four alternatives, see Table 5.2.

Table 5.2. Description of Alternatives

Alternative	Description
1	10 years design period for rehabilitation or reconstruction; after 10 years, a second intervention is required for another 10 years design period. The terminal serviceability at 20 years is an IRI of 4.0 m/km.
2	10 years design period for rehabilitation or reconstruction; after 10 years, a second intervention is required for another 10 years design period. The terminal serviceability at 20 years is an IRI of 3.0 m/km.
3	6 years design period for rehabilitation or reconstruction; before completion of this first period, a second intervention is required in year 5, with additional 6 years design period (for a total of 11 years design period) and a third intervention is required in year 10 for another 10 years design period (to complete the analysis period of 20 years). The terminal serviceability at 20 years is an IRI of 4.0 m/km.
4	15 years design period for rehabilitation or reconstruction; with an intervention at year 9 extending the design period in additional 11 years (to complete the analysis period of 20 years). The terminal serviceability at 20 years is an IRI of 4.0 m/km.

Costs

7. A price estimate for each treatment alternative was prepared—the unit costs are based on unit prices of recent tenders. The average annual costs in financial terms for project roads are presented in Table 5.3. The average annual l cost of road rehabilitation, upgrading, and maintenance under the four alternative scenarios is presented in Table 5.3.

Table 5.3. Average annual Costs by Alternative (in US$, millions, for 2015)

Alternative	Average annual cost for OPRC
1	10.2
2	10.9
3	10.2
4	9.5

8. Alternative 4 has the lowest cost—US$94.9 million. These costs refer to the direct budget cost in fixed prices (undiscounted) and include supervision, detailed design costs, and routine maintenance costs. Since alternative 4 is selected for the project, the timing is presented in figure 5.1.

Figure 5.1. Timing of Alternative 4

Benefits

9. The direct benefits accrue from the increased level of service on the road and include savings on VOC and time savings for passengers and goods (carried) in transit (Value of Time - VoT). The benefit streams have been computed annually over the 20-year benefit period for the changing traffic volume and composition. Benefits are estimated based on a conservative approach—benefits from a reduction in accidents and from junction improvements are assumed to be zero even though the project design reduces blind spots and improves junctions once land acquisition has been performed.

10. Project roads were divided into homogeneous sections based on traffic. The traffic and its composition in the base year 2016 are presented in Table 5.4. The vehicle composition has been defined into eleven vehicle categories as shown below.

Table 5.4. Base Year Traffic (ADT/year)

Vehicle Type	A3-2	A3-3	A3-4	A3-5	A3-6	A3-7	A3-8	A3-9P
Articulated vehicle 3–6 axles	493	466	383	262	239	222	194	—
Car	18,111	20,953	17,236	6,160	5,626	5,240	5,479	—
Heavy goods vehicles—3 axles	431	200	164	174	159	148	310	—
Large bus	2,464	2,395	1,970	1,249	1,141	1,063	387	—
Light goods vehicle	2,156	1,796	1,477	814	743	692	678	—
Medium bus	1,109	1,530	1,258	1,511	1,380	1,285	116	—
Motor cycle	15,831	13,703	11,272	7,496	6,847	6,377	4,298	—
Medium goods vehicles—1	2,341	2,395	1,970	1,482	1,353	1,261	736	—
Medium goods vehicles—2	4,189	2,927	2,408	1,366	1,247	1,162	794	—
Three-wheeler	7,762	11,508	9,466	5,172	4,724	4,400	4,879	—
Van	6,715	8,647	7,113	3,371	3,079	2,867	1,491	—
Total	**61,601**	**66,519**	**54,717**	**29,056**	**26,539**	**24,717**	**19,362**	**15,336**

11. Traffic growth rate forecast is based on an STRADA model. Traffic growth rate is forecasted in five-year increments (2017–2022, 2022–2027, 2027–2032, and 2032–3035) and the

growth rate for 2016–2017 is assumed to be the same as that for 2017–2022. The forecast is based on expected population growth, GDP growth, and other relevant variables. Some road sections are heavily saturated with traffic and hence have low growth rates on average. In addition, the forecasted growth rates for some of the road segments are higher in later years. This is because of an expected overflow of traffic from competing roads—it is assumed that increased traffic volume on these competing roads will result in a diversion of traffic to the project roads. Some additional adjustments are made when forecasting traffic growth in the last time interval (2032–2035).

Table 5.5. Traffic Growth Rates (%)

Road Segment	2016–2022	2022–2027	2027–2032	2032–2035
A3-2	0.5	1.1	1.6	1.1
A3-3	0.8	2.0	2.4	1.6
A3-4	0.8	1.7	2.4	1.6
A3-5	2.0	1.1	5.8	3.9
A3-6	1.8	1.5	1.4	1.0
A3-7	1.6	1.1	2.4	1.6
A3-8	3.1	0.6	1.3	1.0
A3-9P	3.5	2.4	2.1	1.4

12. The VOC and VoT have been computed using the HDM4 and a full level 1 calibration was performed for eleven vehicle types. The HDM model generates average speeds (km/hr) by vehicle type, in the existing (without project) and improved (with project) road conditions. The VOC computation takes into account pavement characteristics, roughness, traffic characteristics, and vehicle characteristics.

13. A full VoT calculation is performed that utilizes both local and internationally accepted methodologies. Various publications and data sources from the Department of National Planning (Ministry of Finance and Planning), Department of Statistics, Household Income and Expenditure Surveys and Labor Surveys, for Sri Lanka are used in this process. The travel time savings, in monetary terms, are based on fixed value of time for each vehicle and a distinction is made between work and non-work time. A slightly different methodology is used to estimate VoT for trucks and buses. Overall, a conservative methodology is adopted for the VoT calculations—the value of time is assumed to not increase over time.

14. Net GHG yearly emissions are estimated using vehicle kilometers travelled, fuel consumed per kilometer (which varies with speed/IRI), and the carbon emissions per liter of fuel consumed. The tool developed by the Bank Transport and ICT Global Practice was used to estimate reductions in GHG emissions. The GHG benefits are a consequence of improved IRI with the project—a lower IRI allows passengers to travel at a faster speed and thereby reduces GHG emissions per kilometer travelled. However, because of the high levels of traffic in the project road the decrease in IRI triggers a marginal increase in speed. Consequently, the GHG emissions avoided because of the project during the 20-year period of analysis are only 742 tons of CO_2.

15. For the cost-benefit analysis, the net GHG emissions are priced at the recommended Bank Group values to estimate the social cost of carbon.[14] The base estimate starts from US$30 in 2015 and increases to US$65 in real terms by 2040—see Table 5.6. We use the low and the high paths for the social value of carbon to test the sensitivity of the results. We use linear interpolation to infer the price of carbon for the years between those not reported in the table below.

Table 5.6. Bank Group Recommended Social Values of Carbon in US$ (in Real 2014 US$) Per 1 Metric Ton of CO_2 Equivalent

	2015	2020	2030	2040
Low	15	20	30	40
Base	30	35	50	65
High	50	60	90	120

Economic Analysis, Sensitivity Analysis, and Switching Values

16. The cost-benefit analysis indicates that the road rehabilitation, upgrading, and maintenance of the A3 corridor is economically viable. Table 5.7 presents the results of the economic evaluation and sensitivity analysis carried out for all four alternatives without accounting for GHG emissions benefits. In the base case, the EIRRs for all scenarios is greater than 12 percent. Alternative 4 has the highest EIRR (23.3 percent), the highest NPV (US$57.7 million, at 12 percent discount rate), and the lowest cost (US$94.9 million, as noted in Table 5.3). As a result, alternative 4 is selected for implementation.

Table 5.7. Economic Analysis without GHG Emissions

	Base Case	
	NPV	EIRR
Alternative	(US$, millions)	%
1	52.8	22.4
2	47.8	21.0
3	54.3	22.8
4	57.7	23.3

17. The analysis also indicates there is a significant difference in net government outlays between the ‘with’ and ‘without’ project scenarios in a 20-year horizon. The undiscounted stream of economic costs serves as a proxy for the net government outlays under each scenario as it does not include taxes, which in this case are a transfer from one government institution (that is, RDA) to another (that is, Ministry of Finance). This is just a proxy as the contractor will ask for an additional premium when there is a mismatch between the timing of costs and payments, or because of potential risks. Analysis based on international experience indicates that a 10 percent premium seems reasonable. The 20-year undiscounted stream of economic costs in the ‘without’ project scenario adds up to US$164 million, while in the ‘with’ project scenario it adds up to only

[14] Guidance note on social value of carbon in project appraisal, July 14, 2014.

US$99 million. Hence, even including the 10 percent premium in the latter case, the difference in costs is significant.

18. The NPV and EIRR are slightly higher, when benefits because of reduction in GHG emissions are considered in alternative 4 (see Table 5.8). The NPV of benefits from a reduction in GHG emissions under base pricing is approximately US$0.01 million.

Table 5.8. Economic Analysis with GHG Emissions and under Alternative 4

Emissions Prices	NPV (US$, millions)	EIRR %
Low	57.67	23.3
Base	57.68	23.3
High	57.69	23.3

19. The switching value analysis determines the percentage change in costs or benefits for the NPV to become nil. Table 5.9 presents the switching values for two situations: (a) when GHG emissions benefits are excluded and (b) when GHG emissions benefits are included. When GHG emissions benefits are excluded, costs have to increase by 77.2 percent or benefits have the decrease by 81.3 percent for the NPV to be nil.

Table 5.9. Switching Values under Alternative 4

Scenario	Increase in Costs (%)	Decrease in Benefits (%)
Without GHG emissions	77.2	81.3
With GHG emissions (base price)	77.2	81.3

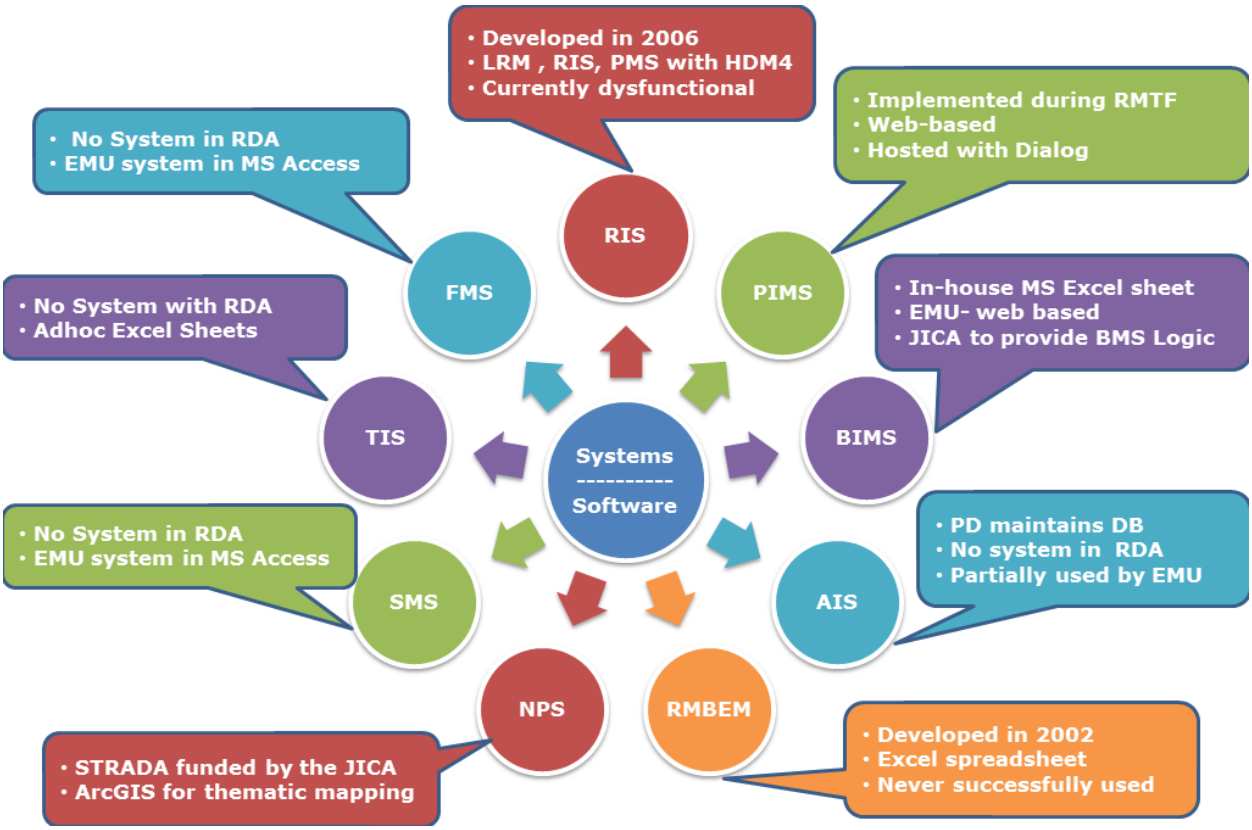
Annex 6: Road Asset Management System of the RDA

SRI LANKA: Transport Connectivity and Asset Management Project

1. The restructuring of the RDA was carried out with assistance from the ADB in the mid-2000s which has produced the organization structure included in Figure 3.1 under Annex 3 which has since remained unchanged. As part of this restructure, the RDA was provided with an Asset Information Management System for pavement assets consisting of the Highway Information Management System (HIMS) database and the Highway Development and Management Model-version 4 (HDM-4) decision support tool. Additionally, various manuals were produced to support the application of the Asset Information Management System within the RDA.

2. Since then, the structure and processes have remained largely unchanged, despite a significant change in the level of investment in the network. The technology available to store and share information has changed dramatically over the past decade, so has the internal communications network in Sri Lanka. With only the Pavement Information Management System module of HIMS purchased, and the version installed being the desktop edition built on a Microsoft Access database, the ability to share and use information across the organization widely was severely limited. Additionally, the RDA had made progress in its asset management activities to the extent that it has developed database systems and/or spread sheets for its bridge and roadside furniture assets, with a desire to also automate its maintenance management process.

Figure 5.2. The System Previously in Place

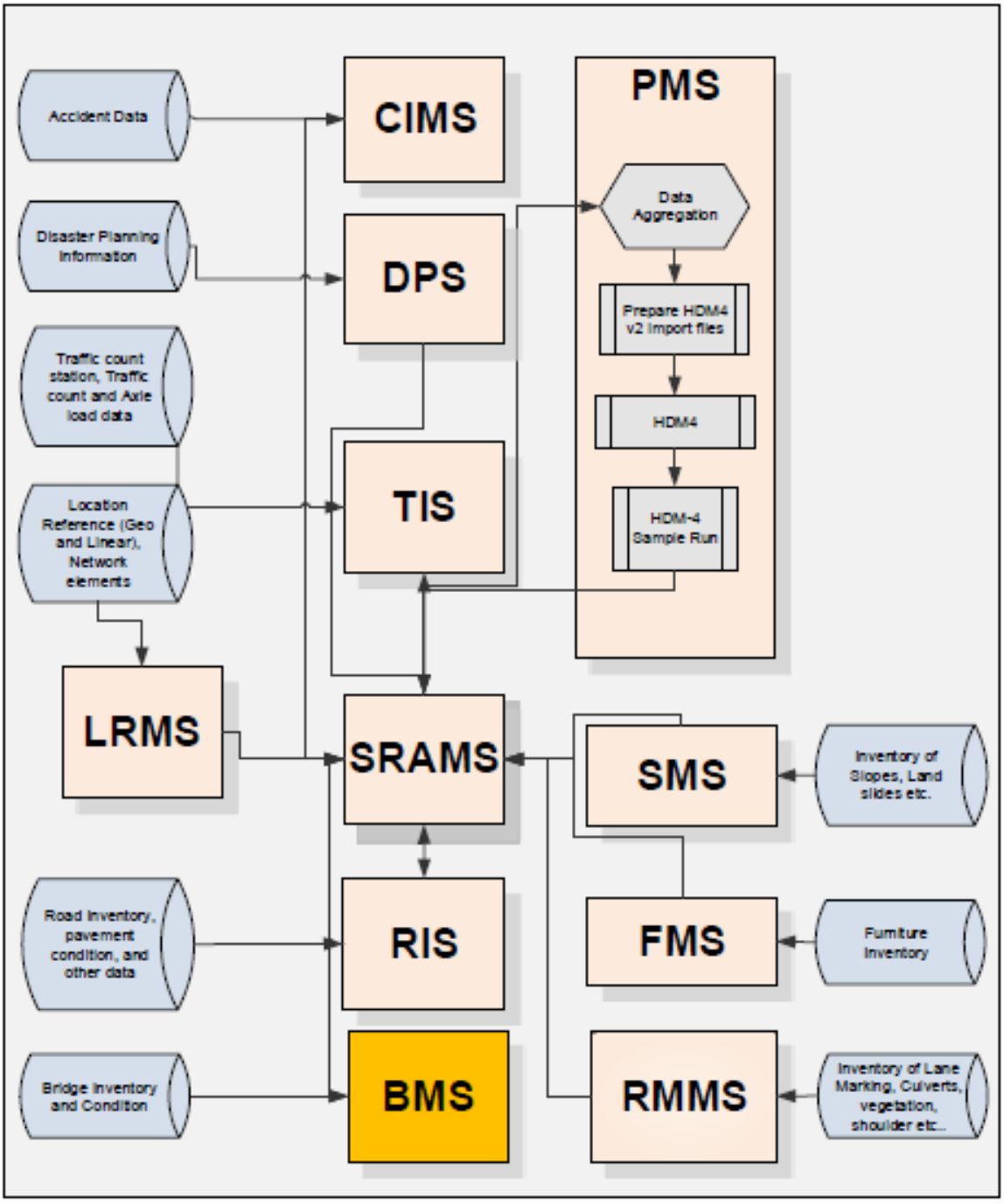


3. The RDA, in the recent past, has implemented and used various disparate systems to manage its road assets and most of them were either non-functional or outdated and were accessible only to the planning division of the RDA. The various systems that were in use by the RDA to manage the road assets were not integrated, with many consisting of spreadsheets, making the analysis and reporting unduly difficult and time consuming. The planning division of the RDA made a considerable effort to provide the information to management using the previous system, although it failed to influence the decision making because of outdated information. These systems were not able to support the appropriate decision making within the RDA which often left the decision makers frustrated with the lack of timely and accurate information necessary for prompt decision-making demanded by the increased level of funding that was being channeled.

4. **System Development.** The RDA, with the assistance provided through the Bank-financed RSAP established a comprehensive multiuser, web-based, computerized Road Asset Management System (RAMS) in 2014/15 for all road related assets, such as pavement, bridge, slope, roadside furniture, and so on, linked to the GIS database. The RAMS was developed on the Commercial Off the Shelf HIMS, based on the detailed consultations within the RDA. The RAMS includes the following modules:

- Road Information System (RIS)
- Location Reference Management System (LRMS)
- Pavement Management System (PMS)
- Bridge Management System (BMS)
- Routine Maintenance Management System (RMMS)
- Traffic Information System (TIS)
- Crash Information Management System (CIMS)
- Furniture Management System (FMS)
- Slope Management System (SMS)
- Disaster Planning System (DPS)
- System Administration (Admin) Module (SRAMS)
- GIS (Global Information System) Module

Figure 5.3. Framework for the RAMS



5. The system implementation has been completed and the assigned personnel trained in the use of the system. The available data is currently been migrated to the new system, although new data will need to be collected for several modules and populated. There is also ongoing support that is being provided by the system developer for the continuous updating and system assistance to induce wider usage of the system which is across the entire RDA.

6. **Data collection.** In addition to the development of the RAMS, the data collection, and management manual that identify the type of data, frequency, data collection practices, data entry and transfer procedures, responsible units, timelines etc have also been updated to cater to the developed system and automated data collection.

Annex 7: Map IBRD 42041

SRI LANKA: Transport Connectivity and Asset Management Project
Bank and ADB financed road sections using DBMOT methodology