



**ENVIRONMENT AND SOCIAL MANAGEMENT FRAMEWORK
FOR
TRANSPORT CONNECTIVITY AND ASSET MANAGEMENT PROJECT**

**MINISTRY OF INTERNAL & HOME AFFAIRS, PROVINCIAL
COUNCILS & LOCAL GOVERNMENT**

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** This ESMF is in lieu of the Resettlement Policy Framework (RPF) dated February 2016 prepared under the original TCAMP Project.*

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Abbreviations

AP	Affected person
BP	Bank Procedures
CBOs	Community Based Organizations
CEB	Ceylon Electricity Board
CE	Chief Engineer
CV	Chief Valuer
DS	Divisional Secretary
DSD	Divisional Secretariat Division
EE	Executive Engineer
ESD	Environment & Social Division
GN	Grama Niladhari (Village officer appointed by the government)
GND	Grama Niladhari Division
GoSI	Government of Sri Lanka
GRM	Grievance Redress Mechanism
GRC	Grievance Redress Committee
LAA	Land Acquisition Act
M&E	Monitoring and Evaluation
MoH	Ministry of Highways
MoL	Ministry of Lands
MLD	Member of Land Division
NGOs	Non-Governmental Organizations
NIRP	National Involuntary Resettlement Policy
OP	Operational Policy
OPRC	Output and Performance Based Road Contract
PAPs	Project Affected Persons
PD	Project Director
PMU	Project Management Unit
RDA	Road Development Authority
RE	Resident Engineer
ROW	Right of Way

CHAPTER 1: BACKGROUND

1.1 Project Background

Sri Lanka's road network is dense and well laid-out providing connectivity to the country's population and centers of economic activity (Map 1). The network's density is among the highest in Asia (table 1.1), as the number of road kilometers per population exceeds the related indicators of densely populated countries in the South East Asian Countries.

Table 1.1: Road Densities of South Asian Countries

Country	Road Density in km/km ²
Sri Lanka	1.50
Bangladesh	1.36
India	0.73
Pakistan	0.32
Nepal	0.06
Bhutan	0.05

(Source: International Road Federation, World Road Statistics (2001))

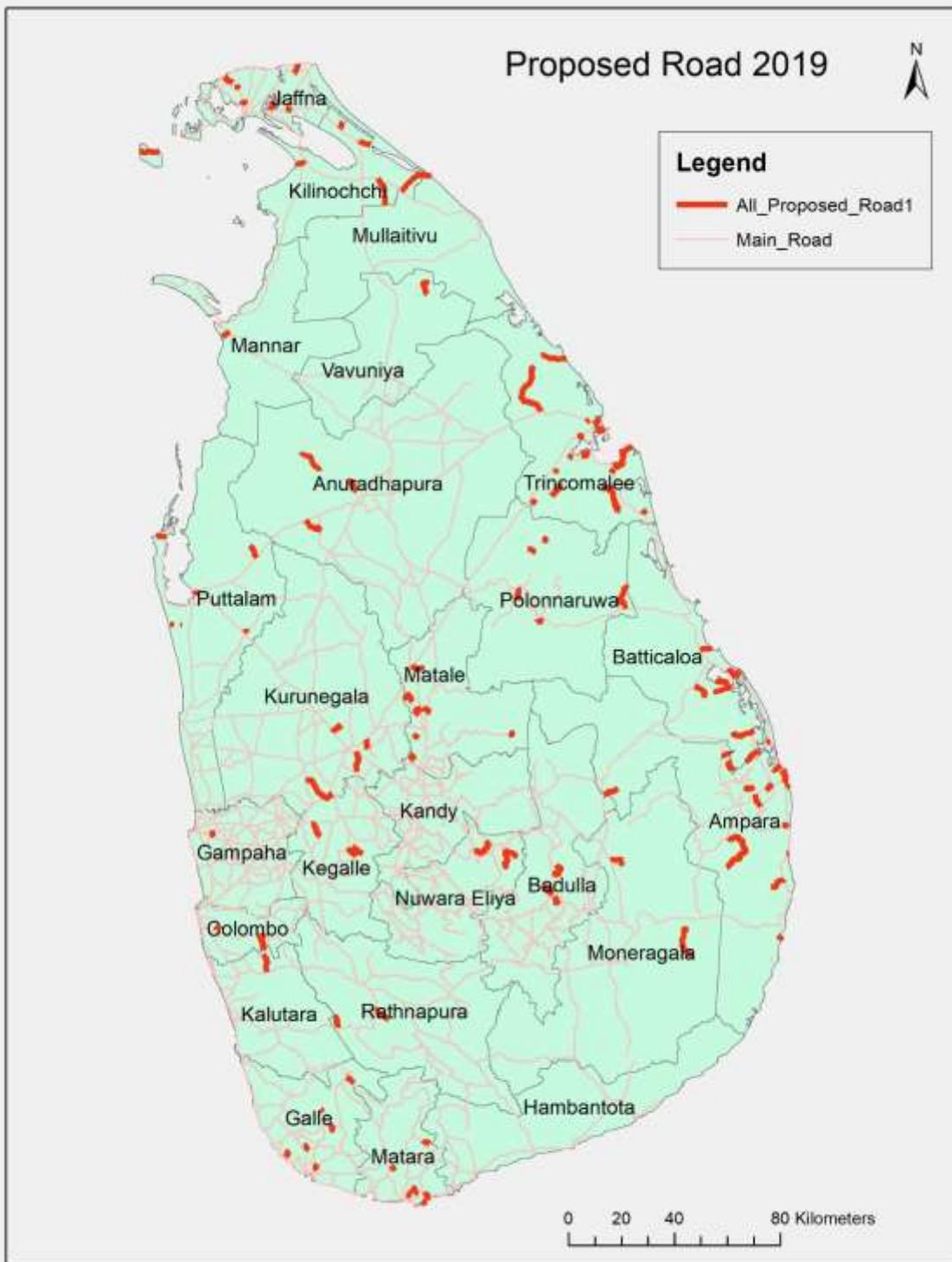
However, the present road network standards and conditions are inadequate to meet the rapidly growing freight and passenger traffic. This situation limits the contribution of roads to national development, economic growth, and poverty reduction. To cope with the constraints, the existing road infrastructure must be improved and upgraded.

1.2 Project Development Objective

The overall **objective** of the project is to strengthen the capacity of the Road Development Authority (RDA) for asset management and to improve access on selected Provincial roads.

1.3 Project Description

The project focuses on creating an enabling environment for more effective asset management and includes interventions to develop systems and capacity within the RDA. With the Government of Sri Lanka's (GOSL) request to the World Bank in 2018 to assist in improving the condition of the provincial road network, Component 2 of the original project is to be restructured to finance the rehabilitation of selected road sections in the provincial road network spread across all nine provinces of the country. The Project will continue to support the establishment and operationalisation of asset management systems, particularly for RDA to transition itself from a provider of infrastructure to a service provider in line with the ambitious needs of a middle- income country. The establishment of systems and such procedures will also include expanding the role of safety within the RDA.



Map I: Class A and B Roads in National Road Network Sri Lanka

1.4 Project Components

The original project has been restructured as follows:

Revised Component 1. Component 1 retains its name, "Institutional Strengthening and Capacity Building for Asset Management" and retains the following of its key original activities: (i) operationalizing the existing web-based, multiuser Road Asset Management System (RAMS) in RDA to complete network referencing, deploy all RAMS modules, outsource data collection, and rationalize the staffing for managing the system; (ii) finalizing a Road Sector Policy and Strategy that was drafted during the first year of the TCAMP; and (iii) developing an Institutional and governance reforms action plan for RDA through institutional study. A new activity related to developing standards and specifications to promote road safety will be added to Component 1. The following original activities related to the DBMOT (later revised to DBM) model are dropped: (i) training on DBMOT methodology using the OPRC format, (ii) monitoring consultant for the pilot contract, (iii) studies of the institutional implications and other aspects of scaling up DBMOT within the RDA; (iv) cost efficiency assessment of performance-based contracts, and (v) Grievance redress system for RDA. The Grievance Redressal system is no longer operationally relevant to the project, as none of the RDA assets are being financed under component 2. The generation of the system was an institution wide effort which is at an advanced stage of development by RDA through ADB-financed Integrated Road Investment Program, i Road.

Revised Component 2. The upgrading of the JaEla to Chilaw section of the A003 highway and the associated land acquisition and resettlement are dropped from the project. The revised Component 2, to be renamed "Provincial Road Improvements", will finance the improvements of 632.7 km of provincial roads in all nine provinces of the country. Component 2 will be implemented in two main phases as follows:

- Phase 1: This will cover 302.7 km of roads at an estimated cost of LKR 7,692.30 million (approximately 40 percent of the total road contracts in value). These road sections are spread across all nine provinces of the country. The bids for the works on these roads will be invited in two stages.
- Phase 2: This will cover the remaining 330 km, at an estimated cost of LKR 8372 covering all nine provinces. The bids for the works on these roads will be invited in three further stages.

The contracts will incorporate, as needed, road rehabilitation, drainage structures, sidewalks, and physical design features to enhance safety. These improvements are expected to result in (a) improved vehicle operating speeds while ensuring the safety of road users and (b) reduced travel times and vehicle operating costs. The contracts will not cover any widening of road sections.

1.5 Types of project activities

Following works are typical for any road rehabilitation, improvement and upgrading project that may incur during the project implementation:

- Improve the existing road within the ROW.
- Strengthen the existing pavement with asphaltic concrete (AC) and ABC (Aggregate Base Concrete) Layers
- Improve the existing pavement with micro surfacing and other sealing techniques.
- Improve the horizontal alignment at selected locations improve driving conditions.

- Widen, repair or reconstruct damaged culverts and bridges and construct new drainage structures.
- Remove any irregularities on the existing vertical profile.
- Provide cycle lanes, pedestrian footpaths, bus bays, separate bus lanes, and rest bays where necessary.
- Provide signage and markings to help promote safer driving conditions.

The above activities will lead to; a) Improve the vehicle operating speeds while ensuring safety of road users and, b) Reduce travel time and vehicle operating cost of vehicles above road sections.

1.6 Implementation Arrangements

Component 1: RDA and its existing PMU will remain the implementing agency for this component.

Component 2: The Ministry of Internal & Home Affairs and Provincial Councils & Local Government MIHAPCLG(MIHAPCLG) will be the implementing agency for the revised Component 2. A new project management unit (PMU) will be established in MIHAPCLG to manage and coordinate the project activities in all nine provinces.

PMU: The PMU will manage project funds, carry out FM and procurement, sign contracts, and make payments for all activities financed under Component 2. It will be staffed by a National Project Director, a Deputy Project Director, a Senior Project Engineer, Procurement Specialist, a Highway cum Road Safety Engineer, a Senior Project Accountant, an M&E Specialist, a Capacity Building Specialist, an Environmental and Social Safeguards Specialist, a Road Design Specialist, and support staff. The PMU will also recruit three Contract Management and Monitoring Consultants (CMMC) to overlook civil works in three provinces each grouped as follows:

Group I: Western Province, Southern Province, Sabaragamuwa

Group II: North Central Province, North Province, North Western Province Easter Province

Group III: Easter Province, Central Province, Uva Province

Provincial Implementation units (PIUs): PIUs will be established at each Provincial Council to carry out implementation activities of the project, in coordination with the PMU. Each PIU will be staffed by a Provincial Project Director, a Deputy Director cum Procurement Specialist, a Project Accountant, an Office Engineer, M&E & Capacity Building Officer, and support staff. The PIUs will not manage project funds.

Project Implementation Consultant (PICs): PICs in each province, staffed by a Chief Resident Engineer (CRE), a Resident Engineer cum Contract Management, a Provincial Assistant Quantity Surveyor, a Provincial Material Engineer, Assistant Resident Engineers, a Material Technician, numerous Technical Officers, an Environmental & Social Safeguard Officer, and various support staff. The CREs in each PIC will report to the relevant CMMC at the PMU in charge of the respective province. The CMMCs will in turn report to the Project Director of the PMU. The PICs will not manage project funds.

CHAPTER 2: PURPOSE OF THE ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

2.1 Objectives and rationale for using the Framework

Broadly, the project is expected to have positive impacts with the most significant benefits perceived by the affected HHs being improvement of the quality of environmental conditions, high demand for land, and prospect of appreciating the value of land. Other notable advantages include improvement of road safety, a perceived reduction in the cost of living, development of business premises, work place and social infrastructure.

Under the revised project components and activities, the project is not expected to have potential large scale, significant and / or irreversible environmental impacts. Instead, the Project has been assigned Environmental Category B because the environmental and social impacts are generic to upgrading, rehabilitation, and maintenance works of existing roads that will be predictable, localized and can be readily mitigated. The potential environmental impacts of the proposed road corridor of the project include: clearance of trees that have been planted on the road side due to realignment and safety needs (to avoid black spots), changes in drainage patterns to address current flooding issues within the road corridor and its immediate impact areas and increase in sediment load into waterways, and soil and water contamination due to spillage and leakage of oils and other toxic materials, noise, dust and air pollution from road works, health and safety issues due to operation of borrow pits, quarries, crushers and asphalt plants. If there are improvements such as widening lanes and shoulders depending on the road locality, there may be possible impacts to the environment and people where the existing roads are running through or closer to forested areas, wetlands, settlements, business premises, etc. The Project does not expect social impacts in terms of loss of land and other assets/ infrastructure /livelihood located on private land, given that improvements will be restricted to the existing right of way (ROW). However, for the enhancement of safety, the Project may require small land parcels at pre-designated places and, as a result, provisions for the voluntary donation of land has been included in this ESMF. Construction related impacts may include public inconvenience due to access restrictions, traffic congestion and labor influx related issues.

The purpose of the Environmental and Social Management Framework (ESMF) is to provide guiding principles for assessment and management of environmental and social impacts of all physical works targeted under this project. In this regard, this ESMF is in lieu of the Resettlement Policy Framework (RPF) dated February 2016 under the original TCAMP project. As such this ESMF will: (i) articulate the criterion and due diligence processes based on risks; (ii) time-bound action plans to assure compliance; and (iii) guidance for public consultation process and disclosure of safeguard documents. It also included institutional capacity assessment to manage safeguard risks and impact and develop a budgeted capacity building plan for safeguard management. The framework also provides numerous applicable guidelines and best practices to be adopted.

This ESMF is consistent with (a) the national requirements that governs the sector and environmental and social management according to, specifically, the National Environmental Act, Land Acquisition Act and other related Acts and Policies that that may be of relevance; and (b) the World Bank's operational policies on environmental and social safeguards.

Overall, consistent with existing national legislation and the World Bank policies, the objective of the Framework is to help ensure that activities under the proposed project will:

- (i) Prevent adverse environmental and social risks and impacts;
- (ii) Enhance positive environmental and social outcomes;
- (iii) Ensure protection of environment, health and safety;
- (iv) Ensure compliance with applicable national environmental and social policies and legislation; and
- (v) Ensure compliance with applicable World Bank environmental and social safeguard policies.

The ESMF will serve as a template to undertake appropriate environmental and social analysis of sub-projects under this project. It will be made available for public review and comment in appropriate locations in Sri Lanka and in IDA's Public Information Center in accordance with BP 17.50 requirements of disclosure. Detailed EAs for individual sub-projects will be carried out (in accordance with the ESMF) by the implementing agency and will be reviewed and cleared by the designated Project Approving Agency (PAA), as applicable, under prevailing national environmental legislation in Sri Lanka and by IDA prior to the approval of disbursement of funds. Similarly, specific social safeguards requirements such as Social Impact Assessments will be prepared and approved prior to project activities takes place.

2.2 Applicability of the ESMF to the project activities

The objective of the project is to provide financing to support modern management of road assets of Sri Lanka. It will be developing systems and capacity within the RDA and the Road Departments Authorities of the Provincial Councils to improve accessibility of the provincial road network as well as enhance road safety.

Under Institutional Strengthening and Capacity Building for Asset Management the project will operationalize the web-based asset management system, support the RDA units, develop new policies and support existing standards, as well as management information system and grievance redress system.

Under the provincial road improvements and rehabilitation, the project will finance the rehabilitation and improvements of provincial roads in all nine provinces of the country. The contracts will incorporate interventions such as road upgrading, rehabilitation, drainage structures, sidewalks and physical design features to enhance safety. The contracts will not cover any widening of road sections.

Given the detailed engineering designs are to be carried out in the future, a framework approach (ESMF) has been adopted based on the conceptual design available. The road-specific specific Environmental and Social Management Plans will be prepared based on the screening processes in parallel to completing the detailed road designs.

CHAPTER 3: ENVIRONMENTAL & SOCIAL BASELINE CONDITION IN SRI LANKA

This chapter describes the overall baseline condition of Sri Lanka in terms of bio-physical environment, as well as the socio-economic environment. It also includes the sector backgrounds for the key sectors covering the 65 potential PPPs and current status of operationalizing environmental management in these sectors.

3.1 Bio-Physical Environment

3.1.1 Geography and climate

Sri Lanka is a tropical island in the Indian subcontinent. It covers an area of about 65,610 km² and lies between 6° and 10°N latitude and 80° and 81°E longitude. A central mountainous massif with an altitude of more than 2500 m and a vast plain surrounding it describe the topography of the island (Figure 2.1).



Figure 2.1 Locality of Sri Lanka

The climatic pattern of Sri Lanka is determined by the generation of monsoonal wind patterns in the surrounding oceans. Four basic seasons based on rainfall exist. These are, the south - west monsoonal period during May to September; an inter-monsoonal period during October– November; the north-east monsoonal period from December to February; and another inter monsoonal period lasting from March to April.

For administrative purposes, the country is divided into nine provinces: Central, Eastern, North Central, Northern, North Western, Sabaragamuwa, Southern, Uva and Western and 25 districts (Figure 2.2).



Figure 2.2. Provinces and districts of Sri Lanka

On the basis of the rainfall regimes, the country is divided into three broad climatic zones. These are designated as the Wet Zone, Dry Zone and the Intermediate Zone. Sri Lanka is further divided into 24 agro-ecological regions based on rainfall expectancy, altitude, soil class, and landform. (Figure 2.3)

The physiography of Sri Lanka comprises of three pen plains or erosion plains made up of a central highland massif, rising in tiers from a low gently undulating plain surrounding it and extending to the sea, (the lowest peneplain). Rising from the inner edge of the lowest pen plain, in a steep step of about 300 meters is the middle pen plain with a maximum elevation of about 800 m above sea level. Within it and rising from it in another step of 1000 to 1300 m is the highest peneplain at a general level of about 2000 m above mean sea level, but rising in places to 2300 to 2700 m.

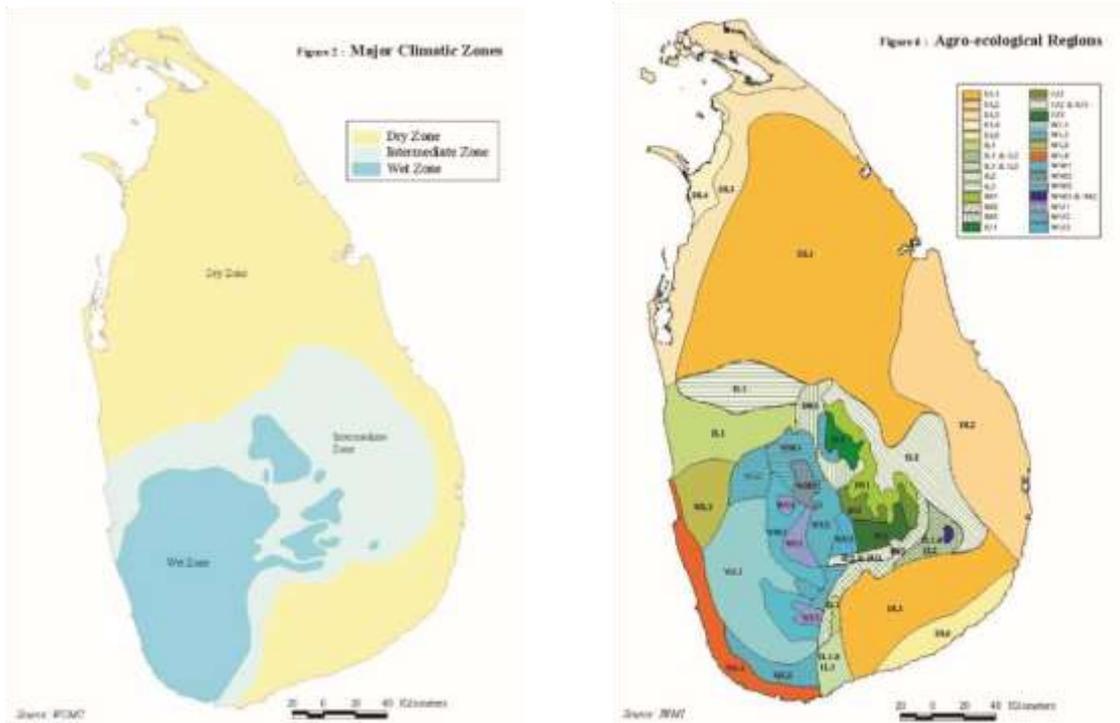


Figure 2.3. Major climatic zones and agro-ecological regions in Sri Lanka

A major part of the country is made up of Precambrian crystalline rocks, which constitute 90% of the land area (i.e., the Highland Complex, Vijayan Complex and Wannu Complex), with Miocene limestone sedimentary deposits extending from Puttalam to the Jaffna Peninsula. There are Jurassic deposits in Tabbowa and Andigama of the North-western province, and quaternary deposits in the coastal area (i.e., sand, sandstone, clay and gravels, and coral reef). Inland deposits of coral debris and gem-bearing gravels are mainly found in Sabaragamuwa Province.

Fourteen Great Soil Groups are found in Sri Lanka. Reddish-brown earth and low humic clay soils are mostly found in the dry zone and drier parts of the intermediate zone. Non-calcic brown soil, red-yellow latosols and alluvial soils are found in the flood plains of larger rivers. Old alluvium, solodized solonetz and regosols are found in more arid areas of the island. Grumusols and rendzinas exist in small extents. The wet parts of the intermediate zone and wet zone consist of red yellow podzolic soils and reddish brown latosolic soils. Immature brown loam and bog and half-bog soils are found mainly in tidal marshes.

The mean annual temperature is approximately 27.5° C in most parts of the island's low-lying areas, while it is around 18° C in the higher altitudes of the central part of the country. The average relative humidity varies from 70% during day to 95% in the night. Rainfall is monsoonal, convectional and depressional. 55% of the island's rainfall comes from the monsoons. The mean annual rainfall ranges between 900 mm to 6000 mm, with an island wide average of about 1900 mm, which is about two and a half times more than the world annual mean of 750 mm. The average rainfall varies from below 1000 mm in the arid regions of the dry zone (north west area and the southeast corner of the island), to over 5000 mm in the wet season in south west of the country.

3.1.2 Terrestrial Water Resources

There are 103 natural *river basins* with catchments ranging from 9 to 10,448 sq. km (Figure 2.4). Seventeen river basins have catchment areas of over than 1000 sq. km. 103 distinct river basins covering 90 percent of the island. The southwestern part of the island has seven major basins with catchment areas ranging from 620 to 2 700 km². They are, from north to south: Maha river (1 528 km²), Attanagalu river (736 km²), Kelani river (2 292 km²), Kalu river (2 719 km²), Bentota river (629 km²), Gin river (932 km²) and Nilwala river (971 km²). An exception to the radial pattern is the largest basin, that of the 335 km long Mahaweli river, which has a catchment area of 10 448 km². After leaving the central highlands, it runs almost north for 90 km from Minipe to Manampitiya and then a further 70 km through several distributaries as far as Verugal and Mutur on the east coast. Most Sri Lankan river basins are small. Only 17 of the 103 basins exceed 1 000 km². Besides the Mahaweli basin, four others exceed 2 500 km². Three of these (Deduru river, Kalu river and Malvathu river) have their entire catchment area in the dry zone, and only Kalu river is in the wet zone. The total runoff in Sri Lanka is an estimated 52 km³/year. Considering 75% and 50% dependability rainfall, annual runoff estimates are 42 and 49 km³ respectively.

There are six types of *aquifers*: the shallow karstic aquifer of the Jaffna Peninsula, deep confined aquifers, coastal sand aquifers, alluvial aquifers, the shallow regolith aquifer of the Hard Rock Region and the southwestern lateritic (cabook) aquifer. Sri Lanka's largest aquifer extends over 200 km in the northwestern and northern coastal areas. The internal renewable groundwater resources are an estimated 7.8 km³, most (estimated as 7 km³/year) returning to the river systems and being included in the estimate for surface water resources. Therefore, the total renewable water resources are an estimated 52.8 km³/year.

The Kalu, Kelani, Gin, Bentota, and Nilwala river basins cover only 13 percent of the land area, but are where 30 percent of the population live and where 38 percent of the total renewable water resources (TRWR) are located. The basin of the Mahaweli river, the longest river, covers 17 percent of the total area of the country, supports 17 percent of the population and carries 19 percent of TRWR. The basin of the eastward flowing Gal river, known for its irrigated rice production, covers 3 percent of the land area and has 2 percent of TRWR.

Most of the studies on *water scarcity* assessment rank Sri Lanka as a country with either little or no water scarcity or moderate water-scarcity conditions, but they do not consider the spatial and temporal variation of water availability. Sri Lanka experiences high seasonal and spatial variations in rainfall as a result of the bi-monsoonal climatic pattern (northeast monsoon from October to March and southwest monsoon from April to September). Large areas of the country are drought prone. Droughts occur to different degrees in both semi-arid and humid zones. Dryzone districts, comprising 75 percent of the country, contribute to only 49 percent and 29 percent of the maha and yala season runoff. Thus, storing water for irrigation in the yala season (April to September) is essential in many river basins. Large-scale development of water resources for irrigation and hydropower has progressed rapidly in the last 50 years. The Eastern, North-Western, and North-Central provinces and Hambantota in the Southern Province account for 76 percent of the total withdrawals.

Groundwater resources are widely used for domestic, commercial and industrial purposes, and small-scale irrigation. About 80 percent of rural domestic water supply needs are met by groundwater from dug wells and tube wells. In many areas, where surface water systems are not fully reliable, groundwater provides industrial and commercial users with a margin of safety. Most industries in the country depend heavily on deep wells where groundwater is safe and of good quality, and can be self-managed. The demand for groundwater in Sri Lanka is steadily increasing, especially for urban and rural water supplies, irrigated agriculture, industries, aquaculture, small and medium enterprises and

urban housing schemes. The rapid expansion of these projects is exerting much pressure on available groundwater resources.

Sri Lanka is covered with a network of thousands of artificial lakes and ponds, known locally as '*tanks*' (after tanque, the Portuguese word for reservoir) (Figure 2.4). Some are truly massive, many are thousands of years old and almost all show a high degree of sophistication in their construction and design. A recent study undertaken by the International Water Management Institute in Sri Lanka's dry zone, where groundwater use for farming is greatest, highlighted a significant rise in the numbers of water pumps and 'agro-wells' (wells used mainly for agriculture) sunk over the past few decades. Researchers estimated that there are close to 50 000 agro-wells in the dry zone. The number of pumps is higher, around 100 000, as it includes those used to pump water from rivers, irrigation canals and tanks, and not just those fitted to agro-wells. This boom in agro-well construction occurred partly because a government subsidy program for brick and concrete-lined wells was introduced in 1989, but also because many aquifers are quite close to the surface, which makes digging shallow wells and drilling tubewells relatively cheap.

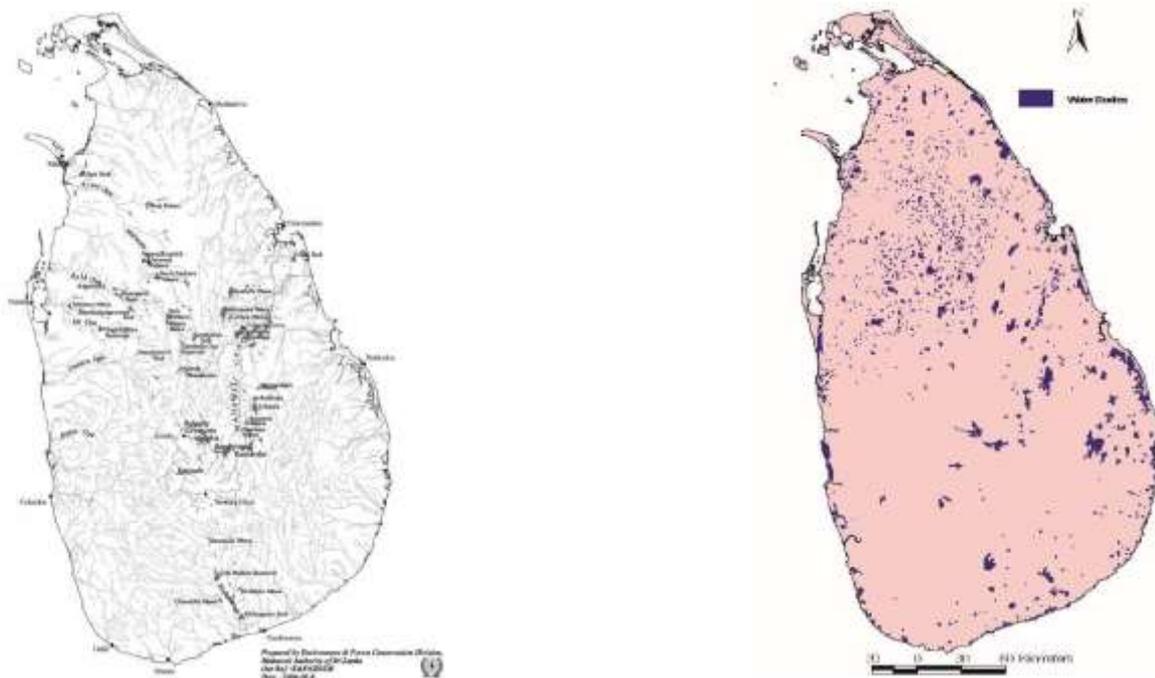


Figure 2.4 Rivers and lentic waters in Sri Lanka

Irrigation activities in Sri Lanka date back 2 500 years. Initially, these activities started with a small-scale village tank and a simple channel system. Later, from the fourth to the end of the twelfth century, these systems were developed. Dams were built to intercept river flows across shallow valleys, or water flowing down perennial rivers was diverted by weirs and it conveyed through long excavated canals to be impounded in large reservoirs at appropriate locations to supply large areas. Given the state of irrigation development and the present level of technology in agriculture and in construction engineering, since the mid-1990s little economic potential is left to be exploited by new irrigation construction. Hence, it is reasonable to assume that the country has reached its irrigation potential, but there is large scope for improvement of the existing areas.

In the wet zone, flood control and drainage schemes have been incorporated into the irrigation system mainly in the lower reaches of rivers. In the coastal areas, saltwater exclusion schemes have been commissioned where water salinity affects agriculture. Flood bunds and pumps are the main features in flood protection schemes, whereas gated regulators are adopted in saltwater exclusion schemes.

3.1.3 Marine and Coastal Resources

Sri Lanka has a coastline of about 1620 km. Sri Lanka and the southern tip of India stand on the same continental shelf and are separated by a shallow sea, the Palk Strait, which is barely 30 m deep. However, the shelf ends more abruptly in the south and east of Sri Lanka, averaging 22.5 km in width and rarely extending beyond 40 km. Within the shelf area, estimated to cover about 30,000 sq. km., the mean water depth is about 75 m, but the submarine elevations drop abruptly to 900 m within 3 km and 1800 m within about 15 km of the shelf's edge. Beyond this there is a steep descent of over 5500 m bringing it to the general bottom level of the Indian Ocean.

The seas around Sri Lanka are micro-tidal and predominantly semi-diurnal. The rise and fall of the tides is within 0.7 m at spring tides and 0.05 m at neap tides. The highest tidal range is generally around Colombo (west coast), while the lowest is around Delft and Trincomalee (east coast). Due to the small tidal range, there is little change in the level of water in most river mouths, leading to the formation of sand and mud banks blocking the entrances to rivers.

Under the *Maritime Zones* Law No. 22 of 1976, Sri Lanka has proclaimed several areas of national maritime jurisdiction, in conformity with the provisions of the United Nations Convention on the Law of the Sea (Figure 2.5). The maritime jurisdiction of Sri Lanka cover the following major areas:

- *Internal waters – Defined as waters in the landward side of the baseline from which the limits of the territorial sea are measured. Internal waters include numerous embayment and areas of coastal sea, as well as all of Sri Lanka's inland waters, and are treated as integral parts of Sri Lanka's national territory.*
- *Historic waters - Include the Palk Bay, Palk Strait, and Gulf of Mannar areas claimed on the basis of traditional use by Sri Lankans. The Historic waters in the Palk Bay and Palk Strait are considered to form part of Sri Lanka's internal waters, while those in the Gulf of Mannar form part of the territorial sea.*
- *Territorial sea extends to a distance of 12 nautical miles. Sri Lanka asserts its sovereign rights over this area, including the right to control movement of foreign ships and aircraft through the water and air spaces of the territorial sea. The extent of the Territorial Sea is reported to be 21,500 km².*
- *Contiguous zone extends to a distance of 24 nautical miles, within which Sri Lanka asserts its rights to take measures necessary to secure the enforcement or prevent the contravention of its laws relating to security, immigration, health, sanitation, customs or other revenue matters.*
- *Exclusive Economic Zone (EEZ) extends to a distance of 200 nautical miles from the baseline. Within this zone Sri Lanka asserts, among others, sovereign rights to explore, exploit, conserve and manage natural resources, both living and non-living and, exclusive rights to authorize regulate and control scientific research. The area enclosed by the EEZ is reported as 517,000 km², which is 7.8 times the total land area of the country.*

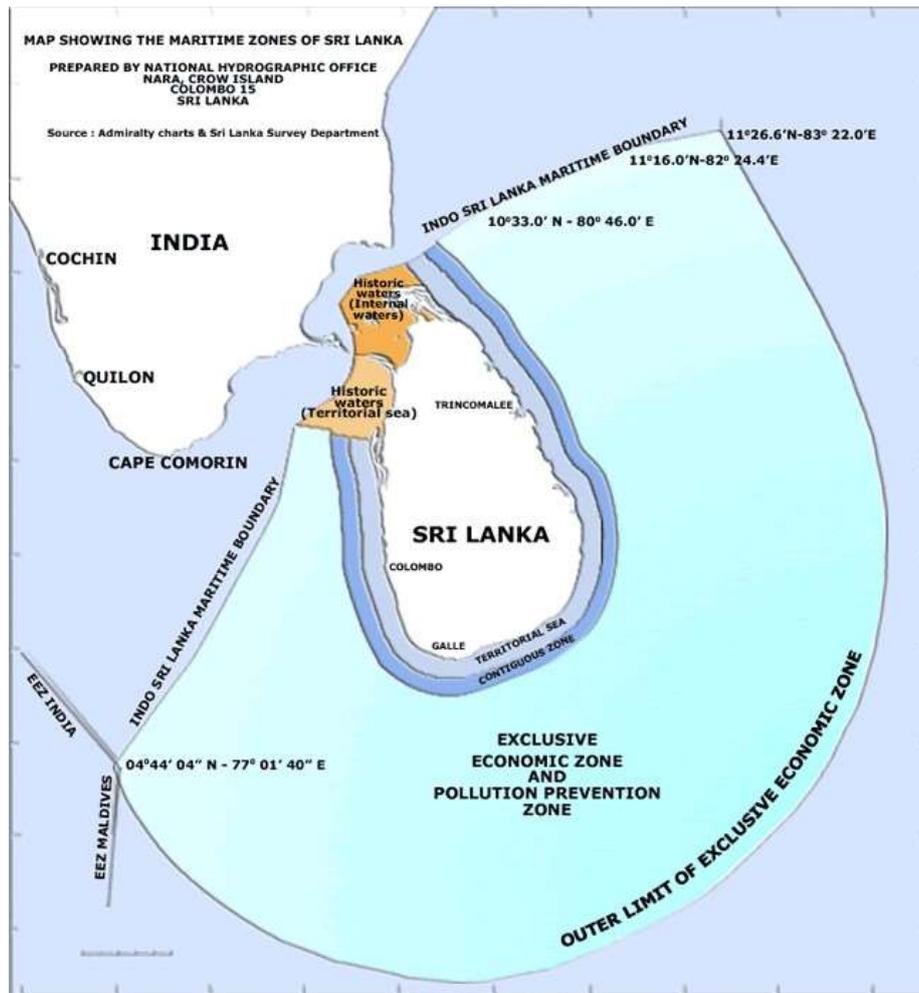


Figure 2.5 Map of Sri Lanka showing the 200 mile Exclusive Economic Zone

Sri Lanka's only international border is its maritime boundary with India. In the north western quadrant of Sri Lanka the EEZ and other areas of maritime jurisdiction adjoin those of India and as a result are restricted to narrower zones than around the rest of the island.

The establishment of EEZs by Sri Lanka and other countries of the region led to Sri Lanka losing access to the Wadge Bank after 1979, as well as to one third of the Pedro Bank, and some areas to the north of it. These areas, which are now in Indian waters, were the only grounds in Sri Lanka known to be suitable for the use of large trawlers.

The country can also claim an extensive but yet to be determined additional extent of seabed area under the United Nations Convention on Law of the Sea. The total area including the EEZ is suspected to be 23 times larger than the total land area and can be used for exploration and exploitation of minerals and hydrocarbon resources.

Sri Lanka's *coastal zone* is defined in the Coast Conservation Act No. 57 of 1981 as "that area lying within a limit of three hundred metres landwards of the Mean High Water line and a limit of 2 km seawards of the Mean Low water line and in the case of rivers, streams, lagoons, or any other body of water connected to the sea either permanently or periodically, the landward boundary shall extend to a limit of 2 km measured perpendicularly to the straight baseline drawn between the natural

entrance points thereof and shall include the waters of such rivers, streams and lagoons or any other body of water so connected to the sea” (Figure 2.6). The area defined for management purposes as the coastal region comprises all of the 74 administrative divisions (Divisional Secretary) with a coastal boundary.

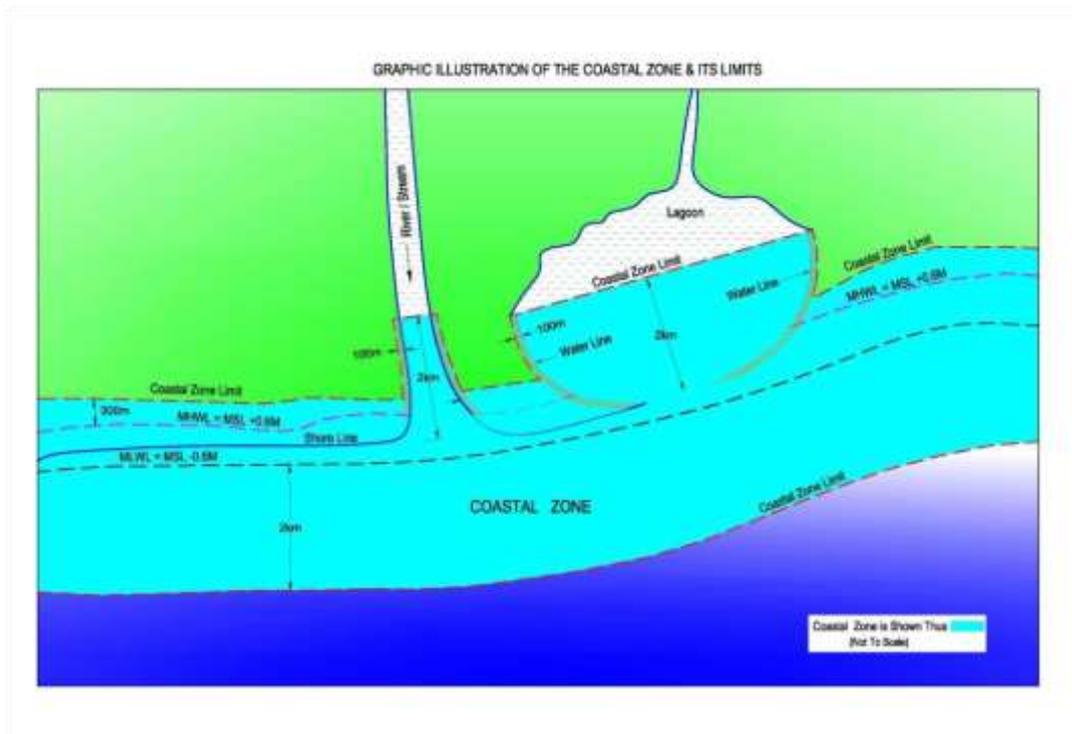


Figure 2.6. Coastal zone as per the Coast Conservation Amendment Act No. 49 of 2011

Coral reefs in Sri Lanka are categorized into three habitat types. They are: (a) true coral reefs consisting of live corals as well as calcareous substances, (b) sandstone reefs, and (c) rocky reefs. The latter two reef types may also be covered by corals in varying degree. All three habitats are distinctly different, but may be found mixed together.

As per the condition of the reef, mainly combined with substrate cover, diversity and abundance of reef organism; indicate that best reefs are associated with the barrier type reefs located offshore. These reefs are found mainly in Northwestern; Southeastern and Eastern waters. Most extensive coral reefs in Sri Lanka are the patchy coral reefs in the northwestern coastal and offshore waters, occurring within the Gulf of Mannar and west of the Kalpitiya peninsula. Patchy coral reefs have also been recorded in the western and eastern coastal areas of the island at a distance of about 15-20 km from the shore, at an average depth of 20 m. The southwestern, eastern and northern coasts also contain fringing coral reefs adjacent to the shore, growing from the sea floor usually on a nucleus of rock. It has been estimated that about 2% of the coastline contains fringing coral reefs. Hikkaduwa, Unawatuna and Rumassala are some of the main fringing reefs along the southwestern coast and Passikudah is one of the known fringing reefs in the eastern coast. Coral reefs also occur around the Jaffna Peninsula - mainly around the small coastal islets, but they are not extensively developed. Barrier coral reefs, consisting of ridges of coral lying some distance from the shore, parallel with it, and forming a broad 'reef lagoon', are rare in Sri Lanka but some are found at Vankalai and

Silavathurai. Sandstone reefs are widespread along the coast. Many of these are located along the bathymetric contours of the continental shelf. Rocky reefs occur from south of Colombo in the west coast to the southern areas of the Trincomalee District in the northeast.

The coral cover in the reefs located in the southern part of the island is extremely low when compared to the reefs located in the eastern and the northern part mainly due to the external impacts. Bottom set netting, stepping, dynamiting, coir industry, glass bottom boat manoeuvring, destructive fisheries activities and excess sediment and fresh water influx are the major causes responsible for the degraded situation in the southern coast. However, current information revealed that the live coral cover at Hikkaduwa National Park had increased from 12% in 2005 to 26% in 2007 mainly due to rapid settlement and growth of *Pocillopora damicornis* which had risen from 6% of the total live coral cover in 2004 to 35% in 2007. It is also reported that the present cover of *Acropora* was only 0.6% due to high level of sedimentation. The live coral cover at Kapparatota also decreased from 52% in 2004 to 22% in 2006. As per the current information it was reported that live coral cover at Polhena is confined to 21.2% while 6.45 % at Madiha due to anthropogenic activities such as coconut retting, ornamental fish collection and reef walking.

The current information revealed that the coral reefs located in the Northern and the Eastern part of the country are in better condition with compared to the southern part of the country. It was reported that live coral cover at Punkudativu and Mandativu island in the Jaffna peninsula was 45% with 29% of limestone substrate. The condition of the coral reef in Dutch Bay in Trincomalee is reported as relatively in good condition and constitute with branching *Acropora spp.*, foliose *Montipora* and *Echinopora lamellose*. According to the previous monitoring reports, the live coral cover of this reef was 52% and 20% coral rubble. As a result of 2004 tsunami, the reef sustained extensive damages and currently supports 38.8% live hard corals with 40.23% rubble cover. The shallow coral reef at Pigeon Island in Trincomalee is dominated by branching and tabulate *Acropora spp* and no damages were reported due to 2004 tsunami. Thus, the live coral cover of 54.38% in 2003 has been increased up to 74.25% by 2005. According to the monitoring studies carried out by National Aquatic Resources and Research Development Agency, the live hard coral cover has increased from 40% in 2004 to 70% in early 2007 in the Bar Reef Marine sanctuary at Kalpitiya. This increase is mainly due to rapid growth of *Acropora cytherea* that constitutes more than 75% of the live hard corals.

Sri Lanka's coastal waters have extensive *sea grass beds*, often occurring in association with coral reef ecosystems or in estuaries and lagoons. They are particularly found in the basin estuaries and lagoons of Puttalam, Mundal, Negombo, Mawella, Rekawa, Koggala, Kokilai, Jaffna and Batticaloa. A total of 16 sea grass species belonging to 10 genera have been reported from Puttalam Negombo, Mundal and Rekawa lagoons. Extensive seagrass beds have been reported from the Dutch bay (in Kalpitiya) to the western end of the Jaffna Peninsula, and from Mannar to the northwest across the Palk Bay and to Rameswaram Island on the Indian coast. However, the distribution of sea grasses along the coast from north east to south east is limited and no records are available. Thus, it is difficult to get a clear picture of total composition and distribution of sea grasses in coastal zone of Sri Lanka. However, in 2008 the extent of sea grass beds in Sri Lanka has been reported as 23,819 ha.

Sea grasses, the marine angiosperms, are among the most productive submerged eco-system. They serve as a source of energy for a complex food web, provide habitats for endangered dugong (Dugong dugong) and other aquatic organisms including epiphytes to consolidate sediment, produce detritus, and area source of dissolved and particulate organic carbon for the aquatic food webs. In addition, they also serve as nursery functions for a large number of fish, crustaceans and bivalves that use these habitats as a refuge, particularly in the larval stage of their life cycles that are vulnerable to sudden environmental changes and susceptibility to predation. In Sri Lanka Bristle worms (Polychaetes) are

harvested from sea grass beds as brood stock for feed aquaculture. In addition to temperature, light and nutrients, sheltered zone with substrate constitute with sand mud and dead, are corals ideal for dense growth of sea grasses that are rich in species diversity. Sea grass also act as filters for coastal waters and stabilizes the floor of the coastal seas, In addition sea grass absorb carbon dioxide from the ocean when they photosynthesize.

Sea grass beds are subjected to various threats due to anthropogenic activities such as destructive fishing practices, collection of invertebrates or shellfish harvesting, construction of physical structures, altering tidal influx, intrusion of agro-chemicals, emergence of macroalgal stands, regulation of water inflows, effluent discharges from shrimp farms and solid waste disposal.

Sri Lanka's coastline is characterized by a series of *estuaries and lagoons* which are transitional ecosystems of diverse tropic statuses, scenic beauties, rich rare and endemic species, aquatic biodiversity and ecosystem productivity. They are complex socio-ecological systems containing a diversity of species and a variety of coastal habitats including, mangroves, salt marshes, seagrass beds and mud flats. The heterogeneous nature and complexities of lagoons and estuaries are primarily determined by geomorphology, climate and weather, tidal fluxes and fluvial inputs and cohesive interactions with land based activities. By and large, the range of ecosystem services provides by the lagoons and estuaries are undervalued and their multiple use and benefits have not been adequately taken into consideration policy formulation and decision making process. Beside the primary features, the knowledge of the ecological significance of the lagoon and estuaries are negligible. A total of 82 lagoons with a shoreline (perimeter) of 2791 km are located in the coastal region and considered to be highly productive and contained economic value associated with biological production of aquatic and semiaquatic habitat and mangrove vegetation. Meaningful approach to management of barrier built estuaries and lagoons must combine bio-physical, socio-economic and political considerations. Therefore, estuaries and lagoons are regarded as Socio-Ecological Systems.

There are two different types of estuaries; Riverine estuaries where the rivers or streams discharge directly into the sea through relatively narrow channels (e.g. the Kelani Ganga, Maha Oya, Kalu Ganga and Nilwala Ganga estuaries), and barrier built basin estuaries where the river or stream first discharges into a relatively shallow basin before entering the sea (e.g. Puttalam, Negombo, Jaffna, Batticaloa estuaries). In some places riverine estuaries open into a bay that opens to the sea (e.g. the Kala Oya riverine estuary opens to Dutch Bay; the Mahaweli estuary opens to Koddiyar and Thambalagam Bays, and the Polatu Modara estuary to Weligam Bay). Overall, there are 45 estuaries of which 28 are of the riverine type and 17 of the basin type. The total extent of basin estuaries in the country amounts to 90,965ha (basin area only), and riverine estuaries cover about 2,110 ha. There are around 89 lagoons ranging from 3 ha to 7,589 ha in extent, of which 8 cover more than 1,000ha each. Total extent of lagoons amounts to about 36,000 ha. Lagoons are more abundant along the north, south, southeastern and eastern coasts where the littoral drift causes an accumulation of sand to form barriers and spits at river mouths through which the freshwater discharge is low.

Salt marshes are found close to the landward margin of the intertidal zone where the soil salinity is relatively high due to insufficient fresh water supply to flush out the accumulated salts. Salt marshes consist of herbaceous, salt resistant plants growing in sandy or mud tidal flats in arid areas and are periodically inundated by the sea. The existing information revealed that there are around 27,520 ha of salt marshes in the country. Extensive salt marshes also occur in the Mannar area (mainly on tidal flats and containing about 56 species of marsh vegetation) in the coastal belt from Mantai to Vankalai. Patchy salt marshes also occur mainly in sedimented lagoon/estuarine areas such as Hambantota, Puttalam, Kalpitiya and Mundel.

Mangroves are highly productive but extremely vulnerable ecosystems confined to intertidal zones of coastal environment including lagoons. Sri Lanka's mangrove areas amounted to about 15,669 ha in extent in 2013. As per the estimates prepared in 2014 using Global Information System (GIS) and remote sensing, the extent of mangrove areas is about 11,656 ha. Sri Lanka's tidal variation being low and rarely exceeding 75 cm, mangroves generally occur as a narrow belt in inter-tidal areas of lagoons, estuaries or associated islands and river mouths. However, they do not occur in all inter-tidal areas and are confined to areas with low wave action. Although mangroves rarely extend beyond 1km landwards from the mean low water tidal level they may spread up-river to the upper limit of brackish water intrusion in some riverine estuaries, even up to a distance of 20 km (e.g. Galatara in the Kalutara district). In addition to the tacit value and environmental services rendered by mangroves, it supports the depending communities by providing fish resources, fuel wood, building materials and dyes for coloration of fish nets. Mangroves serve to reduce the effects of floods while functioning as filters to sift out pollutants that reach the coastal area from inland and trap sediments. It is also important in carbon sequestration.

Sri Lanka's wide and sandy beaches along much of the 1620 km coastline are famed for their scenic beauty and support a distinct littoral fauna and flora. Beaches have been formed by accumulation of sediment deposited on the shore. Among them, barrier beaches, spits and dunes are the most delicate and vulnerable due to their changing nature.

The major mangrove areas in Sri Lanka are located around Jaffna, Vadamarachchi (Thondamanar) lagoons, Nanthikadal lagoons in North coast Kokilai, Nayaru, Trincomalee, Kathiraveli, Upparu Lagoon, Valachchenai, Batticaloa Lagoon, Pothuvil in Eastern coast, Weligama, Gintota, Balapitiya, Bentota in Southern coast, and Panadura estuary, Negombo and Chilaw lagoons, Mundal lake, Puttalam lagoon, Dutch bay, Portugal bay and Mannar in Western and North western coast. According to Amarasinghe (1986), 29 mangrove species are found in Sri Lanka.

Barrier beaches are accumulations of unconsolidated sediments transported ashore by waves and moulded into a form that lies across a body of water, isolating it from the sea. Coastal areas around the island contain barrier beaches that isolate lagoons and swamps from the sea (e.g. the beaches at Rekawa, Kosgoda, and Panama). Barrier beaches are found mainly between Bentota and Balapitiya on the southwest coast. Along the southern coast there is a barrier beach at Weligam Bay, and several between Dondra and Ambalantota. Thambalagam Bay, a westward embayment of Koddigar Bay, is almost entirely cut off as a barrier beach which gets partially breached during the northeast monsoon. Some barrier beaches are free at both ends and form islands (e.g. at Karaitivu).

Spits are incipient barrier beaches that projects from the shore in the direction of the dominant drift and are free at one end. Spits are frequently observed along the western and eastern coasts of the country and are associated with estuaries. Examples are the shoal that builds seasonally at the mouth of the Negombo estuary and the sand spit at the Kalu Ganga estuary. Some of the barrier beaches and spits have extensive dunes associated with them as seen at Kalpitiya. Most spits appear to be unstable, especially those which protrude into estuaries (e.g. the Kalu Ganga spit). Consequently, they shift position from time to time, causing changes in the form and precise location of the inlets of estuaries. For example, the inlet of the Batticaloa estuary has shifted northward to its present position from a previous location 5 km to the south. Some spits are formed seasonally at estuarine inlets and tend to obstruct the natural water flow patterns, often resulting in the inundation of low-lying lands (e.g. the Kalu Ganga and Maha Oya estuaries).

Sand Dunes are wind-blown accumulation of sand which are distinctive from adjacent land forms such as beaches and tidal flats mainly due to the fact that dunes do not get the effects of tides. Coastal dunes are unique terrestrial ecosystem located in the transition zone between the ocean and the

continent. These habitats are naturally dynamic. Therefore, highly fragile and vulnerable to the impacts of human induced activities. There are three types of dunes that have been identified in the country. They are:

- *low, flat to slightly undulating, isolated platforms of sand less than 1m in height (e.g. incipient dunes found at Koggala, Matara, Akurala and Uswetakeiyawa);*
- *transverse primary dunes, consisting of single fore- dune ridges of undulating sand masses associated with stable beaches, exceeding 5 m in height (e.g. dunes at Mannar, Pooneryn, Kalpitiya and along the southeastern coast).*
- *secondary transgressive dunes; usually exceeding 3 m in height (e.g. dunes at Mannar, Pooneryn, Kalpitiya and Jaffna); most of which are longitudinal, some are parabolic, and a few are complex in form.*

The most prominent sand dunes lie along the northeastern, northwestern and southeastern coasts of Sri Lanka. These extend from Mullaitivu and Point Pedro, Elephant Pass and Chavakachcheri across Mannar Island towards Kalpitiya and Ambakandawila. On the southeast, they extend from Ambalantota (Godawaya) in the Hambantota district to Sangamankande Point in the Ampara district. The latter is identified as the longest stretch of dunes in the world, close to the equator. Sand dunes in Sri Lanka are essential components of the coastal vistas and bio-diversity. The materials in sand dunes protect the land behind them from storm erosion and potential sea level rise. Dune vegetation also traps sand and prevent it from being blown further inland. When there are storm surges and waves, sand dunes prevent flooding inland. According to prevailing information, intact sand dunes were the most effective barrier against tsunami waves that affected the coastal region of Sri Lanka in 2004.

3.1.4 Minerals

Minerals and rocks in Sri Lanka can be classified under several categories of economic geology. Economic minerals are classified into four major groups: energy minerals, the ferrous and ferro-alloy group, the non-ferrous group and the non-metallic group. Energy minerals, uranium, uranite, thorite (the silicate of thorium), thorianite (the oxide of thorium) and monazite have been found in Sri Lanka.

Magnetite, hematite and iron oxides are the most common minerals found in the island and the recently found magnetite-hematite deposit at Wellawaya is one of the best ferrous and ferroalloy mineral deposits in Sri Lanka. Forty per cent of the copper-magnetite deposit at Seruwawila is considered as iron while 2 per cent is estimated as copper. Sri Lankan beaches are rich with mineral sands such as ilmenite, rutile, monazite, zircon, garnet and silica. The largest deposit of mineral sands (ilmenite, rutile and zircon) is found in Pulmoddai. The silica sand deposit at Madampe and Naththandiya is used for the glass industry. Non-metallic minerals such as feldspar, gems, apatite, graphite, mica, quartz and halite are widely excavated. Three main types of clays (kaolinite, ball clay and brick clay) are used to produce domestic and export goods. Further, graphite in Sri Lanka is of high purity in carbon (99 per cent), which occurs as massive veins in rocks. Major mines are in Kahatagaha-Kolongaha and Bogala. The Eppawala apatite deposit has been estimated at 40 million tonnes of phosphate. However, this phosphate has a very low water solubility and a concern of many chemists and geologists has been finding a method to increase its water solubility. Silica rich (100%) high-quality quartzite is found in many places of Sri Lanka, such as Galaha, Wellawaya, Ambalamana and Akarella. Mining vein quartz produces a lot of weather-resistant waste material.

The recovery of gems in Sri Lanka has over 2,000 years of history. Sri Lanka has long been recognized for varieties of corundum, chrysoberyl, spinel, garnets, beryl, tourmaline and zircons. Sri Lanka is the

largest producer of gem varieties per square kilometer in the world. The gem trade accounts for nearly 60% of the five mineral-based, foreign-exchange earning industries of Sri Lanka.

3.1.5 Land resources

Land tenure. During the last few decades, natural disasters have been on the increase because of improper land uses in Sri Lanka. For example, human settlement and cultivation of annual crops on steeply sloping lands have resulted in rapid soil erosion, landslides and the silting of rivers, waterways and reservoirs, thereby reducing their capacity and causing floods. Furthermore, the productivity of fertile lands has been reduced due to improper land use. According to the available statistics nearly 44% of agricultural lands have been subject to land degradation.

There is also a significant imbalance between the ownership and tenure patterns of land. There are a large number of fragmented agricultural lands small in size and generally unproductive. Similarly, there is a large extent of agricultural land in plantations areas, a significant proportion of which is underutilized.

In Sri Lanka, 82.25 percent of the country’s land is owned by the State while only 17.75 percent is privately owned, reflecting a history of centralized control over land. Records from as early as 500 B.C. document land allocation by the Kings while successive colonial governments (Portuguese (1505 – 1656), Dutch (1656 – 1796), and British (1796 – 1948)) asserted their control over land while instituting land ordinances and centralized administration systems.

Land use. Sri Lanka is one of the most densely populated countries in the world, and therefore much of the land has been put into productive use. There is limited information to assess the spatial and land use changes that have taken place due to incompatibility of available data. Figure 2.7, based on forest cover assessments, provides gross evidence that forests are the major land use type lost between 1956-1984. It also suggests that the combined increase in area under paddy, settlements and other crops, which can be considered as the major outcome of land settlement and irrigation development, is a compatible gross match with the loss of forest cover. Land use categories in Sri Lanka is provided in Table 2.1.

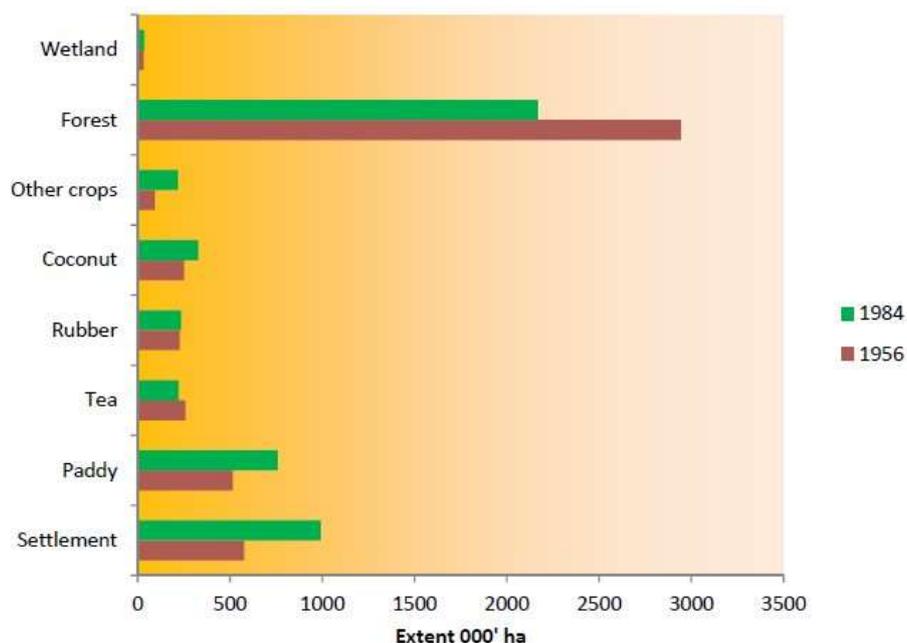


Figure 2.7 Land use changes (1956-1984)

Table 2.1 below shows how land is used throughout the country based on data from Survey Department in 2015.

Table 2.1 Land use in Sri Lanka

Land Type	Land Use	Hectares (Year 2000)	% Area
Urban Land	Urban Land/Settlement	27,830	0.40%
Agriculture	Homesteads (associated non-agricultural land)	943,495	14.40%
	Horticulture Plantation	1,779,245	27.10%
Crop Land	Paddy	912,927	13.90%
	Other Crop Land	176,218	2.70%
Forest Land	Dense Forest	1,070,555	16.30%
	Open Forest	439,050	6.70%
	Forest Plantation	93,910	1.40%
Range Land	Scrub land	590,180	9.00%
	Grass land	97,274	1.50%
	Wetland	55,698	0.80%
	Barren Land	93,810	1.40%
	Water	285,778	4.40%
	Unclassified	124	0%
Total		6,566,094	100 %

A multitude of policies and legislations concerning land resources management exists in the country. Among others, laws and regulations connected to alienation and management of state land has had a significant catalytic effect on deforestation and degradation processes in Sri Lanka. These have significant implications on major proximate drivers in operation, namely, encroachments, infrastructure development projects and private agriculture ventures. All successive governments have followed a policy of periodic regularization of encroachments. The encroached lands were usually unutilized state land, often forested. The permissive policy of regularization of encroachments is therefore a catalyst, and has provided a clear encouragement to encroachers to continue with the expectation that one day the encroached property would be theirs legally.

Poor implementation of existing land use policies has created catalytic conditions for deforestation and forest degradation. This is particularly important in the cases of large government projects for infrastructure development, private sector agriculture and tourism ventures. The country has a number of agencies with some mandate connected to the land use planning. The major institutions are Land Use Policy Planning Department, National Physical Planning Department, Urban

Development Authority and Mahaweli Development Authority. It seems their activities are not fully coordinated or connected through an overall planning framework. As a result, agencies with different sectoral mandates (e.g. forestry, agriculture, infrastructure development) do not have a common guide or framework of reference concerning decisions on land use. For instance, agriculture policy of government promotes expansion of agricultural lands. Given the growing scarcity of land, such expansions could only come at the expense of existing natural forests. Role of land use planning and policy is to harmonize such competing claims so that sustainable solutions can be found.

Liberal economic reforms introduced since 1977 have progressively connected rural economies to the global and domestic markets. The process of commercialization was accelerated recently due to: (a) growing market opportunities for local agricultural products such as offering forward contract arrangements for maize; and (b) development of marketing facilities (e.g. the

Economic Centre in Dambulla) for channeling rural agricultural products to urban markets. Such developments enhanced the market access for agricultural products that had earlier been produced for household consumption. According to farmers in dry zone villages, supply side facilitation for entry to the commercial stream brought several changes to traditional farming systems. One major change occurred the 1990s is the rapid spread of rain-fed commercial farming of maize in the *Maha* season. This accelerated deforestation in dry zone villages significantly, as surrounding forest lands were encroached for commercial cultivation of maize.

Adoption of technological innovations significantly increased the farmers' capacity to expand the area of cultivation within a short period of time. Use of hybrid seeds and adoption of land preparation machinery have played a significant role here. These factors seem to have had a cumulative impact on transforming the traditional farming system in the dry zone to a commercial system. Commercialization and adoption of technological innovations has provided a clear direction for farmers to face resource scarcities by intensifying the production of cash crops to meet the market demand. Overall, the net effect of all key factors has pushed the traditional farming system towards a commercially oriented direction. This has invariably accelerated the deforestation process.

According to Census and Statistics data of 2015, overall cultivate extent was 2,196,306ha. Highest cultivation extent was coming from paddy cultivation that covers 1,253,288ha, followed by coconut (394,836ha), tea (221,969ha), and rubber (143,137ha). Other significant crops such as maize, pepper, and cinnamon remained below 70,000ha each.

Forest land. In Sri Lanka forests cover approximately 29.7% (1.95m ha) of the land area, with dense forest amounting to 21.88% (1.44m ha). Eighty-six percent of the natural forest is located in the dry and intermediate zones of the country, and these areas contain about 85% of the closed canopy forests and 90% of the sparse (open) forests in Sri Lanka. The total area of dense natural forests in the country is 1.44 million ha of which 167,000 ha are identified as primary forest, while the remaining area is categorized as naturally regenerated forests. Approximately 79,941 ha are identified as plantation forests, including coconut and rubber plantations. Table 2.2 reveals the relatively low proportion of primary forest compared to regenerating forest. These primary forests, most important from a biodiversity perspective, are conserved within protected areas. Furthermore, the extent of plantations, while significant, does not indicate widespread conversion

Forest cover in Sri Lanka has declined sharply over the past century as evidenced in a number of studies. Early forest inventories suggest that Sri Lanka's closed canopy (dense) forest cover declined from about 84% of the land area in 1881, to 44% in 1956 and to 31.2% in 1992. It further declined to 29.6% in 1996. A district-level analysis suggests that closed canopy forest cover increased in recent years but the accuracy of this data is unclear. The Forest Resource Assessment indicates that the trend

in forest cover loss has considerably slowed down during the recent past but is still continuing and now increasing.

Findings of a recent study on the drivers of deforestation and degradation suggest that current (i.e., from 1992 onwards) drivers of deforestation in Sri Lanka result from four major proximate drivers including encroachment, infrastructure development projects, large scale private agriculture ventures, and localized drivers of forest degradation scattered around the country. The study also concluded that:

- *Overall, the process of deforestation has slowed down all over Sri Lanka. The current rate of deforestation (7,147 ha/year) has dropped significantly compared with the earlier rate reported in the period 1956 - 1984 (42,200 ha/year).*
- *Even if five hotspots of deforestation have been identified, deforestation also appears to be more scattered and widespread all over the country.*
- *Deforestation still takes place at a higher rate in the dry zone compared to the wet zone.*

As seen on the forest cover map of 2010 (Figure 2.7), what remains of forest cover is highly fragmented, making protection and management challenging. Furthermore, the level of forest degradation has not been clearly assessed. Moreover, regions in the north and east are rapidly changing since the end of the civil war.

For the most part, natural forests in Sri Lanka are owned, managed and protected by the State Forest Department (FD) or the Department of Wildlife Conservation (DWC), which account for approximately 1,767,000 hectares of the total forest estate, equivalent to over 26.5% of the total land area of Sri Lanka (Figure 2.8). Forest resources owned privately or by other parties are negligible in relation to State-controlled forests, but may nevertheless be a significant part of the national Reducing Emissions From Deforestation and Forest Degradation Plus strategy. Much of the State-owned forestland controlled by the FD and the DWC are designated protected areas⁴ falling within a number of sub-categories as follows:

In terms of administration, State forests are tightly controlled. In the case of the FD, staff are assigned to 23 forest divisions that are divided into more than 300 ranges, which are further divided into beats. In the case of the DWC, the island is divided administratively into 12 regions.

In addition, a new category of protected area is administrated by the CEA. These are known as Environmental Protection Areas (EPAs) and are gazetted under the provisions of sections 24C and 24D of the National Environmental Act No. 47 (1980). There are currently eight EPAs detailed in table 7 below and four more are proposed.

Scattered along Sri Lanka's coastline are important mangrove forests that cover 15,669 hectares. These areas are under the authority of the FD, though the Coast Conservation Department's role in overall management in coastal regions is complementary. In the 1990s, mangrove forests were destroyed and converted to areas for shrimp aquaculture. However, the shrimp farming industry failed, and these areas have been abandoned. There could be potential to rehabilitate these areas and replant mangroves; however, one barrier is the long-term leases (99 years) which some of the aquaculture companies still possess. In May 2015, Sri Lanka announced the Sri Lanka Mangrove Conservation Project, a joint program with foreign and domestic non-governmental organizations' support to protect all of the country's remaining mangroves through demarcation, gazettement, legal protection, and enforcement.

Other forest land and tree tenure. Outside the forest lands owned and controlled by the FD, DWC, and CEA which are mentioned above, there are a number of other types of forest land in Sri Lanka, as described here briefly.

Forest Plantations and Woodlots. A number of different entities own forest plantations including State government departments (FD, DWC), State corporations, village collectives, and private plantation owners. Between 1972 and 1975, some 419,100 hectares were nationalized with tea plantations accounting for 39.7%, rubber for 17.8%, coconut for 11.5%, and other land 31%. Most of these lands were vested with two state corporations: the Janatha Estate Development Board and State Plantation Corporation (SPC). Plantations managed by Regional Plantation Companies currently account for approximately 6,000 hectares, while village collectives lease approximately 16,250 hectares of farmers' woodlots.

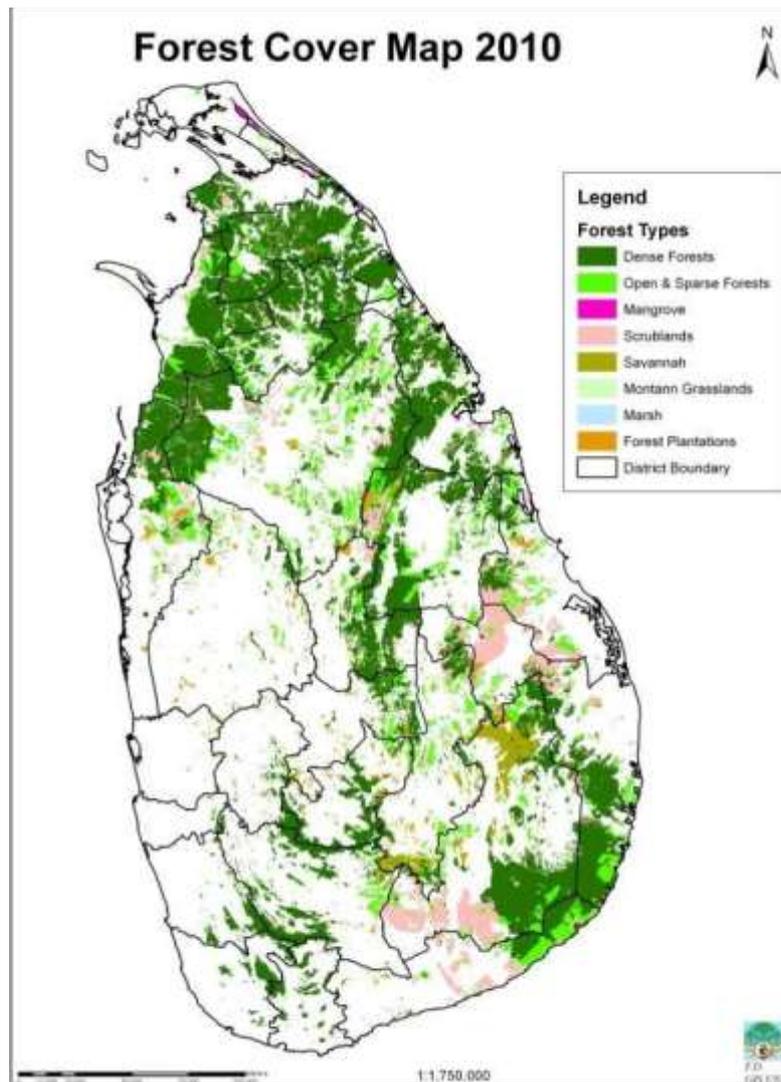


Figure 2.7. Forest cover map of 2010

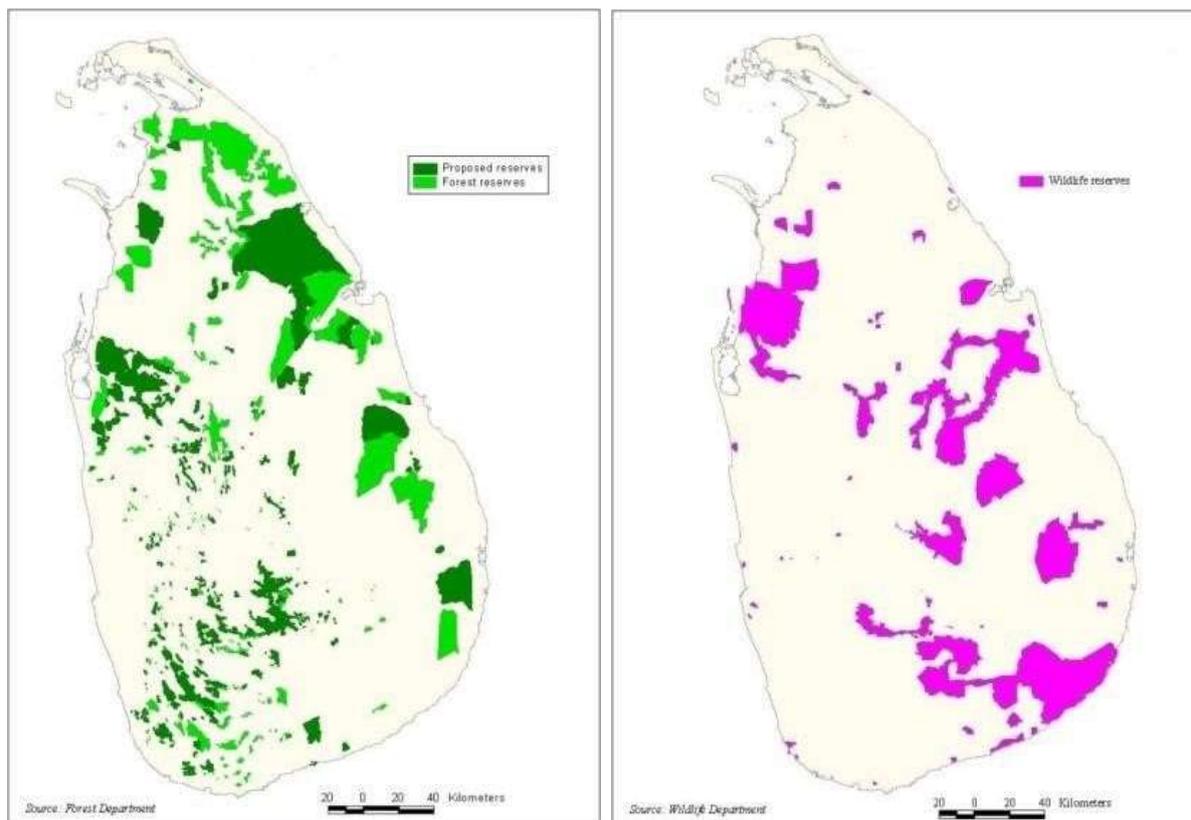


Figure 2.8 Land under the jurisdiction of FD (green) and DWC (purple)

Home Gardens and Tree Tenure. Home gardens are widespread throughout Sri Lanka and represent a significant non-forest carbon sink, classified as ‘settlement’ land. Home gardens are said to cover 858,490 hectares, a relatively large area comparable to about half of natural forest cover. Notably, home gardens provide approximately 40 to 60 percent of household fuelwood supply, among other food and medicinal household goods. There are regulations to protect trees within these systems, and village officers are responsible for monitoring. Since home gardens tend to be part of deeded private property, tenure is generally secure.

Throughout Sri Lanka there is a ban on felling trees in natural forests. Even within home gardens there are restrictions on cutting certain species (i.e. jack tree, wal del and female Palmyrha), requiring a permit from the Divisional Secretariat through the Grama Niladhari, and village officers are responsible for enforcing these rules. In this sense, owners of home gardens are subject to some restrictions on the rights over trees on their properties. As mentioned, home gardens are not considered to be part of Sri Lanka’s forest cover. However, they remain potentially important in addressing drivers of deforestation and forest degradation.

Temple Forests. Traditionally in Sri Lanka temple lands were given by the King to the community in order to facilitate their provision of goods and services to the temples. Some of the temple lands contain forest areas of significant size and richness, and one source estimated that temple forests may cover as much as 30,000 hectares (in sum) though specific figures are not available.

Over time, the authority over temple lands has shifted from the surrounding community into the hands of the high priest. This concentration of power in the hands of the high priest has left the temple

forests vulnerable to conversion. In one notable case in Soragune) the temple forest has been leased and cleared for a golf course while natural forests on the hillside were converted to rubber. Leasing of temple lands must be approved by the Ministry of Buddhist Affairs, but nevertheless with 'proper justification' forests may be converted to other uses. In practice, decisions may be taken by the priest or appointed layman called the Basnayaka Nilame.

3.1.6 Biodiversity

The southwestern region of Sri Lanka, encompassing approximately 20,000 km², is the only aseasonal ever wet region in the whole of South Asia. This region is referred to as the wet zone of Sri Lanka and receives up to 3,000 mm of rainfall annually. Wet-zone of Sri Lanka along with the Western Ghats of India is designated as one of the world's biodiversity hotspots, in demand of extensive conservation investment. This high biodiversity seen in Sri Lanka can be attributed to a wide variety of climatic, topographic and soil conditions that exist in the island that has resulted in a diverse array of aquatic and terrestrial habitats.

Sri Lanka was part of the ancient Gondwanaland and was located adjacent to the African continent. Around 160 million years ago, the Deccan plate which comprised of India and Sri Lanka, broke away from the Gondwanaland, drifted northwards and collided with the Asian plate around 55 million years ago. Thereafter, Sri Lanka separated from India due to submersion of the land bridge between the two countries about 20 million years ago. These zoogeographic, climatic, topographic and edaphic factors have shaped the faunal and floral assemblage seen in Sri Lanka. During the last 2 to 3 thousand years land-use changes brought about by humans have been instrumental in large scale habitat changes that have had both positive and negative influences on Sri Lanka's flora and fauna.

Sri Lanka's biodiversity is significantly important both in a regional and global scale. Sri Lanka has the highest species density (number of species present per 10,000sq. km) for flowering plants, amphibians, reptiles, and mammals in the Asian region. The currently recognized statistics of the major plant and animal taxa treated in this book are given in Table 2.2. However, it should be noted that there are many other taxonomic groups in Sri Lanka that are excluded from this table due to lack of clear data on their current status.

Even though the above table indicates that Sri Lanka is endowed with a rich biodiversity, at present only a small fraction of Sri Lanka's biodiversity is known to science. For instance, higher plants and vertebrates are the only taxa that have been studied in sufficient detail to date.

Lower plants and invertebrates are largely neglected except for few selected groups such as butterflies, dragonflies, land snails, pteridophytes and algae. Even the vertebrates and, for that matter, higher plants are not completely listed, as during the last two decade alone large number of new species have been discovered (Table 2.3).

Table 2.3 Species richness of selected faunal and floral groups of Sri Lanka.

Taxonomic Group	Number of Species	Number of Endemic Species
Angiosperms	3,154	894
Gymnosperms	2	0
Pteridophytes	336	49

Taxonomic Group	Number of Species	Number of Endemic Species
Soft corals	35	
Hard corals	208	
Spiders	501	256
Centipedes	19	
Marine crustaceans	742	
Fresh water crabs	51	50
Dragonflies	118	47
Ants	194	33
Bees	130	
Butterflies	245	26
Leafhoppers	257	
Dung beetles	103	21
Bivalves	287	
Gastropods (marine)	469	
Land snails	253	205
Echinoderms	190	
Marine fish	1377	
Fresh water fish	91	50
Amphibians	111	95
Reptiles	211	125
Resident birds	240	27 + 6 Proposed
Mammals	125	21

The statistics clearly indicate that most of the information available for flora and fauna of Sri Lanka is on higher plants or vertebrates. However, one must keep in mind that higher plants and vertebrates make up only about 3% of all the species described to date while Order Insecta alone make up about 54%. There is no doubt that large number of insect species are awaiting to be discovered in Sri Lanka. It will be rather unfortunate if some of these organisms would perish even before we discover them. Furthermore, so far very little attention has been given to species that inhabit the forest canopy. Studies in Australia and South America have shown that the forest canopy is home to large number of living organisms that will not be detected by the traditional sampling techniques used.

Sri Lanka's exceptional biodiversity is possible due to the high ecosystem diversity it supports on land and in the coastal seas (Table 2.4), and the wealth of plant and animal species they harbour (Tables 2.5 and 2.6). This includes many species that are yet to be discovered. Of note is the remarkably high

percentage of endemic and geographically relict species that are found in the island's forests and wetlands.

Table 2.4 Ecosystem diversity in Sri Lanka: status and trends

Ecosystems	Previous data (ha)	Present (ha)
Forest and related ecosystems	<i>(1999 data, FD)</i>	<i>(2010 survey, FD)†</i>
<input type="checkbox"/> tropical wet lowland evergreen forest (includes lowland and mid elevation rain forests)	124,340.8	123,302
<input type="checkbox"/> tropical sub-montane forest	65,792.3	28,513
<input type="checkbox"/> tropical montane forest	3,099.5	44,758
<input type="checkbox"/> tropical moist monsoon forest	221,977.0	117,885
<input type="checkbox"/> tropical dry monsoon (mixed evergreen) forest [†]	1,027,544.1	1,121,392
<input type="checkbox"/> tropical thorn forest	NA	NA
<input type="checkbox"/> riverine dry forest	18,352.1	2,425
<input type="checkbox"/> grasslands (wet pathana, dry pathana, savannah, etc)	>75,000	68,043 (savannah only)
Inland wetland ecosystems	<i>(4th National Report to CBD)</i>	
<input type="checkbox"/> flood plains	NA	NA
<input type="checkbox"/> lentic waters (tanks/reservoirs and ponds)	179,790	*169,941
<input type="checkbox"/> swamps	NA	NA
<input type="checkbox"/> wet villu grasslands	NA	*12,500
<input type="checkbox"/> Overall water bodies	NA	‡ 488,181
Coastal and marine ecosystems	<i>(4th National Report to CBD)</i>	
<input type="checkbox"/> mangroves	6,080	+15,669
<input type="checkbox"/> salt marshes	23,800	NA
<input type="checkbox"/> sand dunes and beaches	19,394	NA
<input type="checkbox"/> mud flats	9,754	NA
<input type="checkbox"/> sea grass beds	NA	NA
<input type="checkbox"/> lagoons and estuaries	158,017	NA
<input type="checkbox"/> coral reefs	NA	68,000
Agricultural ecosystems	<i>(4th National Report to CBD)</i>	
<input type="checkbox"/> paddy lands	525,000	*845,444.00

Ecosystems	Previous data (ha)	Present (ha)
<input type="checkbox"/> fruit cultivations	97,000	‡135,567
<input type="checkbox"/> small crop holdings or other field crops (pulses, sesame etc)	128,000	‡146,544.69
<input type="checkbox"/> vegetable cultivations (<i>excluding root and tuber crops for 2012</i>)	110,000	‡89,980
<input type="checkbox"/> crop plantations (major export crops)	772,000	‡703682.8
<input type="checkbox"/> minor export crops	NA	‡‡106,232
<input type="checkbox"/> home gardens (cultivated, includes fruit cultivations in home gardens)	367,800	‡1,684,165.60
<input type="checkbox"/> chena lands (slash and burn cultivation)	NA	‡227,710.28

Source: The data for this table are from the following sources except where specifically mentioned: Forest Department 2010 survey data; ‡ AgStats, 2013; * paddy land extent is Asweddumized land area from the DOA for 2012/13; ‡‡ Data from Department of Export Agriculture, 2014; *IUCN and CEA, 2006; *MOE, 2010, **MoENR, 2003.
Note: The discrepancies between areas given for montane and sub-montane forests in the 1999 and 2010 forest assessments are reportedly due to differences in criteria for separation of these forest types. Accordingly, the area under both montane and sub-montane forests has changed from 68,892 ha in 1999 to 73,271 ha in 2010.

Table 2.5 Species diversity among selected groups of Sri Lanka's fauna and flora in terrestrial and freshwater habitats

Taxonomic group	Number of species		Number of endemic species and % endemism
	4th National Report to CBD	Present	Present
Land snails	246	253	205 (81)
Dragonflies	120	118	47 (39.8)
Bees	148	130	NA
Ants	NA	194	33 (17)
Carabid beetles	525	NA	NA
Butterflies	243	245	26 (10.6)
Spiders	501	510	257 (51)
Freshwater crabs	51	51	50 (98)
Freshwater fish	82	91	50 (54.9)
Amphibians	106 +	111	95 (85.6)
Reptiles (terrestrial)	183	193	124 (58.8)
Birds (including migrants)	482 (220 residents)	453, with 240 residents	27 (11.3) definitive and 8 Proposed
Mammals	91	95	21 (22.1)
Angiosperms	3,771	3,154	894 (28.3)
Pteridophytes (Ferns only)	348	336	49 (14.6)
Mosses ‡	560	560	63+
Liverworts*	303	222	NA

Taxonomic group	Number of species		Number of endemic species and % endemism
	<i>4th National Report to CBD</i>	Present	Present
Lichens*	661	661	NA

*NA= data not available; All data are from BDS/MoE &DNBG (2012) except otherwise mentioned
Data source for present status: BDS/MoE &DNBG, 2012 except IUCN and MoENR, 2007 for mosses and MoENR 2006 for Liverworts and Lichens*

Table 2.6 Species diversity among selected groups of fauna in coastal and marine systems

Taxonomic group	Number of species	
	4th report	present
Hard coral species	183	208
Soft corals	NA	35
Echinoderms	213	NA
Echinoderms (Echinoidea)	NA	55
Echinoderms (Crinoidea, Ophuroidea and Holothuroidea)	NA	135
Marine mollusks	228	NA
Marine shelled bivalves and gastropods	NA	756
Marine crustaceans	NA	742
Sharks	61	64
Skates and Rays	31	33
Marine reptiles	18*	18
Marine mammals	28	30
Marine and brackish water bony fishes	NA	916

While association with Peninsular India and its mega biodiversity for millions of years has resulted in a high species diversity in Sri Lanka, the island's separation in the Miocene about 20 million years ago, has resulted in a remarkable endemism. This is underscored by the fact that 28% of Sri Lanka's 3,154 species of indigenous angiosperm flora are endemic to the country, including 14 endemic genera distributed in 186 families. For example, all 58 species of Dipterocarps found in Sri Lanka are endemic. Similarly, the genus *Syzygium* (Myrtaceae) has 30 indigenous species, of which 25 are endemic, while 26 of the 33 species of *Memecylon* (Melastomataceae) are endemic. The lower plant groups are insufficiently identified, but a high biodiversity and endemism is revealed from past studies. Among aquatic plants, the family Araceae harbors the highest number of endemics including 10 species of the genus *Cryptocoryne* and seven species of *Lagenandra*.

Endemism is also high among the indigenous vertebrates, which without the migrant birds, is about 42%. Highest endemism in vertebrates is seen among amphibians, freshwater fishes and reptiles. Most invertebrate groups in the island have been incompletely surveyed, but a high diversity is documented among butterflies, dragonflies, bees, spiders and land snails.

Biodiversity is also high among marine species such as corals, echinoderms, molluscs and pelagic fishes. Fringing coral reefs with high biodiversity such as those in the southwest and eastern coasts of Sri Lanka and offshore reefs such as the Bar Reef are of high tourism value, while echinoderms such as sea cucumber, molluscs such as squid and cuttlefish, crustaceans such as lobster, crabs, prawns and shrimps, and a host of marine fishes are of major importance in the food fishery in terms of national nutrition and export value.

The global recognition of Sri Lanka's unique biodiversity is demonstrated by the fact that in a land area less than 65,250 km², the country has four forests recognized as Natural World Heritage Sites because of their exceptional biodiversity value due to high endemism, and four Biosphere Reserves (with Core Zones recognized as making significant contribution to national and global biodiversity) within the UNESCO World Network of Biosphere Reserves. Sri Lanka also has six Ramsar wetlands (namely: Bundala National Park, Annaiwilundawa Tanks Sanctuary, Maduganga, Vankalai Sanctuary, Kumana Wetland Cluster and the Wilpattu

Ramsar Wetland Cluster) indicating global importance of the island's wetlands. The Bundala Ramsar site harbours a large number of migrant waterbirds, and four marine turtle species come ashore to its beaches. Thus, biodiversity loss in Sri Lanka will contribute significantly to the loss and degradation of the earth's ecosystem services that underlie human well-being in addition to the national impacts of biodiversity loss.

The areas managed and protected by the FD and the DWC have increased from 2008 to 2010 (Table 2.7). The moratorium on logging in all natural forests which came into force in 1990 is continuing. Hence, commercial timber extraction is prohibited from all natural forests in Sri Lanka. The extent of Conservation Forests set aside for strict conservation has increased over the years with more valuable wet zone forests being added to the Protected Area Network based on the biodiversity assessments made through the National Conservation Review.¹ Fifteen mangrove sites have also been protected by the Forest Department along the southwest and north-west coast. There has also been a perceptible increase in the Protected Area extent under the Department of Wildlife Conservation. However, management of all Protected Areas do not always meet the required standards, particularly the forest reserves that are not set aside for strict conservation and the wildlife sanctuaries, due to limitations of staff and other resources in the agencies responsible for conservation of these areas. This is compounded in recent years by poor coordination between agencies concerned directly with development and conservation. Eight (08) Environmental Protection Areas have been gazetted by the CEA under the National Environmental Act. They are Gregory's Lake, Thalangama Lake, Bolgoda, Walauwatte–Wathurana, Muthurajawela (buffer zone), private lands within the Knuckles Conservation Forest boundary, Hantane and Maragala. Although they do not have strict legal protection, only identified development activities are allowed in them by the CEA as specified in the National Environmental Act. The CEA, however, does not have adequate mandate to monitor these areas to see that developers adhere to the conditions that need to be followed during development.

¹ This assessment of natural forests >200 ha (1992 – 1996) occurred in all parts of the country except in areas inaccessible due to the war prevailing at that time (IUCN/WCMC/FAO (1997).

Table 2.6 number and extent of protected areas administered by the Forest Department and the Department of Wildlife Conservation

Protected Area category	Area under each category (ha)	
	4th NR (ha)	2010 (ha)
Forests under the Forest Department (FD)*		
National Heritage Wilderness Area (also a World Heritage Area) [N=1]	11,187	11,427
Conservation Forests* [2008 = 33, now N=75]	76,227	118,758.7
Other Reserved Forests [now N=371]	NA	1,044,008.5
Forest Plantations	72,350 (in 2001)	75,556.7 (in 2014)
Mangroves (now N=15)	2,163	1153.1
Forests under the Department of Wildlife Conservation (DWLC)*		
National Parks (2008=14, now = 22)	495,984	535,182
Nature Reserves (2008=4, now = 5)	32,581	64,585
Sanctuaries (2008=63, now =65)	262,156	376,943
Strict Natural Reserves (3)	31,573	31,574
Jungle Corridors (Kaudulla- Minneriya) (1)	10,360	8,777

The extent (proposed and implemented) as Biosphere Reserves has increased (Table 2.7) with the identification of Transition Zones for the Sinharaja and Hurulu Biosphere Reserves where people live and lead normal lives and demonstrate sustainable livelihoods that do not degrade the adjacent biodiversity rich Core Zones.

Table 2.7 Changes in international protected areas and Ramsar Sites

International PA Category	Number of PAs and area covered in 2008	Number of PAs and area covered in 2014
Natural World Heritage Sites (IUCN category X PA)	n=1, 8864 ha The Sinharaja World Heritage site	n=2, 118,884 New: The Central Highlands Serial World Heritage Site with 3 forests
Biosphere Reserves Recognised by UNESCO (IUCN category IX PA)	n=4, extent 81363.7 ha Sinharaja, Kanneliya, Dediya, Galla, Nakiyadeniya, Hurulu and Bundala BRs	n=4, extent 143106.3 Same reserves, increased area
Ramsar sites	n=3; 8,377 ha	n=6, 198,027 ha

3.1.7 Cultural resources

The culture of Sri Lanka mixes modern elements with traditional aspects and is known for its regional diversity. Sri Lankan culture has long been influenced by the heritage of Theravada Buddhism passed on from India, and the religion's legacy is particularly strong in Sri Lanka's southern and central regions. South Indian cultural influences are especially pronounced in the northernmost reaches of the country. The history of colonial occupation has also left a mark on Sri Lanka's identity, with Portuguese, Dutch, and British elements having intermingled with various traditional facets of Sri Lankan culture. Culturally, Sri Lanka, particularly the Sinhalese people, possesses strong links to both India and Southeast Asia.

The country has a rich artistic tradition, with distinct creative forms that encompass music, dance, and the visual arts. Sri Lankan culture is internationally associated with cricket, a distinct cuisine, an indigenous holistic medicine practice, religious iconography such as the Buddhist flag, and exports such as tea, cinnamon, and gemstones, as well as a robust tourism industry. Sri Lanka has longstanding ties with the Indian subcontinent that can be traced back to prehistory.

The architecture of ancient Sri Lanka displays a rich diversity, varying in form and architectural style from the Anuradhapura Kingdom (377 BC–1017) through the Kingdom of Kandy (1469–1815). Sri Lankan (Sinhalese architecture also displays many ancient North Indian as well as East Asian influences). Buddhism had a significant influence on Sri Lankan architecture after it was introduced to the island in the 3rd century BC, and ancient Sri Lankan architecture was mainly religious, with more than 25 styles of Buddhist monasteries.

Significant buildings include the stupas of Jetavanaramaya and Ruwanvelisaya in the Anuradhapura kingdom and further in the Polonnaruwa Kingdom (11th–13th centuries). The palace of Sigiriya is considered a masterpiece of ancient architecture and ingenuity, and the fortress in Yapahuwa and the Temple of the tooth in Kandy are also notable for their architectural qualities. Ancient Sri Lankan architecture is also significant to sustainability, notably Sigiriya which was designed as an environmentally friendly structure.

Monasteries were designed using the Manjusri Vasthu Vidya Sastra, a manuscript which outlines the layout of the structure. The text is in Sanskrit but written in Sinhala script. The script is believed to be from the 5th century. It is exclusively about Buddhist monasteries and is clearly from the *Mahayana* school. The text shows much originality and there is nothing similar in the existing Indian treatises, which deal only with Hindu temples.

Cave temples. The earliest evidence of rudimentary cave temples is found in Mihintale, a unique feature in these caves was the use of a drip ledge carved along the top edge of the rock ceiling which stopped rain water running into the cave. With time doors, windows and walls of brick or stone were added. The roof and walls were plastered white and finished with decorative paintings, these are evident in the cave temples of Dambulla.

Cave complexes of Dambulla, Situlpahuwa, MulKirigala are significant cave temples which demonstrate rudimentary architectural developments of the island. The Kaludiya Pokuna, Mihintale cave temple was constructed with brick walls, granite window openings, and ceilings. The Gal vihara, Polonnaruwa and the cave temples of Dambulla were initially constructed as cave temples, later on the cave temples were converted to image houses.

Dagobas or stupas. The dagobas or stupas of Sri Lanka are significant to the architectural and engineering development in the island, stupas designed and constructed in Sri Lanka are the largest brick structures known to the pre-modern world. Demala Maha Seya, which was never completed, had a circumference of 2,011 feet (613 m), Jetavanaramaya at the time of its completion was the

largest stupa constructed in any part of the world at 122 m in height. Jetavanaramaya was also the third tallest building in the ancient world, Abhayagiri Dagaba (370 ft) and Ruwanwelisaya (300 ft) were also significant constructions of the ancient world.

The construction of stupas was considered acts of great merit, the purpose of stupas was mainly to enshrine relics of Buddha. The design specifications are consistent within most of the stupas, entrances to stupas are laid out so that their centre lines point to the relic chambers. Stupa design it is admired for its structural perfection and stability, stupas such as Jetavanarama, Abhayagiri, and Mirisaveti Stupa were in the shape of a paddy heap. Other shapes such as the bubble (Ruwanweli), pot and bell developed later, it is suggested that the stupa at Nadigamvila was in the shape of an onion.

An ornamented *vahalkada* was added to stupa design around the 2nd century; the earliest is at Chaitya. The four vahalkadas face the cardinal points, ornamented with figures of animals, flowers, swans and dwarfs. The pillars on either side of the vahalkada carry figures of lions, elephants, horses or bulls, depending on the direction of the structure. The stupas were covered with a coating of lime plaster, plaster combinations changed with the requirements of the design, items used included lime, clay, sand, pebbles, crushed seashells, sugar syrup, white of egg, coconut water, plant resin, drying oil, glues and saliva of white ants.^[2]The fine plaster at Kiri Vehera used small pebbles, crushed seashells mixed with lime and sand were used in the stupas from the 5th to 12th centuries.

Vatadage. The vatadage is considered to be one of ancient Sri Lanka's most prolific architectural creations; this design represented a changing perspective of stupa design independently within the island. Early provincial vatadages have been in the form of a square^[6]later it developed into a circular form enclosing the dagoba. Polonnaruwa, Medirigiriya and Tiriyaya vatadages still have their circles of slender, graceful pillars. The vatadage roof was of a sophisticated design unique to ancient Sri Lanka, it is a three-tiered conical roof, spanning a height of 12–15 m, without a centre post, and supported by pillars of diminishing height. The weight was taken by a ring beam supported on the inner row of stone columns, the radiating rafters met in a cartwheel-like design. The ornamental qualities of the Polonnaruwa vatadage are highly valued and scholars maintain that the Polonnaruwa vatadage represents the best architectural work of the Polonnaruwa period.

Meditation houses. The meditation houses found in the forest monasteries in Ritigala and Arankele are unique to Sri Lanka, Each house consists of two raised platforms, linked to each other by a monolithic stone bridge. The outer platform is open to the sky, larger and higher than the inner platform. These meditation houses achieved a very high degree of perfection in their architecture, the design combined square and rectangular shapes and yet maintained symmetry, indicating the architects' sophisticated knowledge of geometry. The stone masonry is also of a very high standard. The basements of these buildings were constructed of monumental blocks of stone, cut to different sizes, carefully dressed and very finely fitted together. The bridge connecting the two platforms was formed out of a single slab of stone. Some such slabs measured 15 feet (5 m) by 13 feet (4 m). The sides have been cut with precision where the joints between the slab and the stone moulding of the platforms are hardly perceptible.

Vaulted roof shrine. The brick shrine with vaulted roof, as seen at Thuparama, Lankatilaka and Tivanka Pilimage, is also considered unique to Sri Lanka. The Thuparama is almost intact today and gives an idea of the manner in which the vaulted roof was created. The principles of the true arch were known to the ancient Sri Lankans, but the horizontal arch was considered a safer method of construction.

Sky scrapers. The nine-storied Lovamahapaya (3rd century BCE) would have been an elegant building. It had an exposed wooden frame supported on stone pillars. It was plastered in white, with shining copper roof tiles and a pinnacle at its apex. It had lightning conductors or *chumbakam* made of amber

and tourmaline. Its rafters were made of talipot palm. It rose to a height of 162 feet (49 m) and had approximately 179,316 square feet (16,659 m²) of floor space. It could seat 9000 monks. Roland Silva remarked in 1984 that such an extensive floor space would stagger the designers in Sri Lanka "even today". The dominant element in these buildings, was the tiled roof supported by timber beams and rafters. The roofs were tiled, from as early as the 3rd century BCE, with red, white, yellow, turquoise and brown tiles. There were also tiles made of bronze.

Palaces. Five royal residences have been identified. They are Vijayabahu's palace in the inner city at Anuradhapura, the palaces of Nissanka Malla and Parakramabahu in Polonnaruwa, the palace off Sugala in Galabadda in Uva province, and Parakramabahu's palace in Panduwasnuwara near Hettipola, when he was ruling over Malaya rata. All the palaces had the same ground plan. Each was set in a rectangular area enclosed by galleries with an entrance from the east. A spacious courtyard in front acted as a reception room, where sitting was not allowed. A flight of steps led to a central building where there was an imposing pillared hall with a dais at the end. Around the royal complex were over fifty small cells, in two or three rows. The hall in Nissanka Malla's palace was 133 feet (41 m) by 63 feet (19 m). The floors of the upper storey in Parakramabahu's palace were of concrete. [Panduwasnuwara] palace had good provision for ventilation and there were soakage pits for drainage.

Rock Palaces. There was a palace on top of Sigiriya rock as well. The outlines, layout and several detailed features of this Sky Palace are still visible. There was an upper palace that ran parallel to the lower one, but at a much higher elevation. It had a viewing gallery. The innermost royal abode, which was originally a storeyed structure, had a magnificent 360-degree view of the city gardens and countryside below. There was a series of successive courtyards, chambers, and terraces connected by stairs and paved pathways.

Pools. Kuttam Pokuna in Polonnaruwa provides one of the best examples of the construction of a royal bath. A flight of long narrow steps led to an oblong shaped pond that had graduated gangways. The water was conducted by underground pipelines from the canal nearby and led into the bath by two *makara gargoyles*. A stone water lock acted as water locking valve and an exit for used water. There is also a now-ruined changing room. Other magnificent pool designs in Anuradhapura era such as "Twin Ponds" Kuttam Pokuna, "lotus Pond" Nelum pokuna, "hot water pond" Janthagara Pokuna, and Pokuna-built for use of elephants and "black water pool" Kaludiya Pokuna are significant. Also, there are significant series of ponds and pools which contain water fountains at the Sigiriya citadel, which marvels the hydro engineering in the ancient Sri Lanka.

Audience halls. Polonnaruwa also has the remains of two magnificent audience halls. They are the public audience halls of Parakramabahu and council chamber of Nissanka Malla. Parakramabahu's council chamber was a three-tiered oblong structure built on a broad terrace, facing north, and consisted of an entrance provided with two flights of steps, having a gangway in between at ground level. The pillars in the council halls at Polonnaruwa are square at the bottom, octagonal in the middle and square again at the top.

Hospitals. Some idea of hospital architecture can be inferred from the monastic hospitals at Mihintale and Polonnaruwa. This hospital plan can be seen at the National Museum, Colombo. There was an inner and outer court and the rectangular inner court had a series of cells, toilets and bath, with an exit at one end. One cell had a medicinal bath. Alahena had long dormitories instead of cells. The outer court accommodated a refectory, a hot water bath, storerooms and dispensary. A wall cordoned off the hospitals. The provision of two open courts in addition to windows ensured maximum ventilation and free circulation of air within the building itself.

Houses. A house dated to 450 BCE, built of warichchi (wattle and daub) has been discovered near Kirindi oya. Another has been found at Adalla, Wirawila, and at Valagampattu evidence has been discovered of houses dating from 50 CE to 400 CE. The kitchen utensils are still there. In medieval times, the rich had large houses built of stone, mortar and lime, with tiled roofs and whitewashed walls. There were rooms and apartments with doors and windows. The windows had fanlights. The doors had keys, locks, and hinges. The houses had compounds or courtyards and balconies. There were separate rooms for pounding paddy, a storeroom or atuva for paddy, and sheds for keeping chariots. Latrines are also mentioned. All houses however had small kitchens.

Cultural triangle. Sri Lanka's Cultural triangle is situated in the centre of the island and covers an area which includes the World Heritage cultural sites of the Sacred City of Anuradhapura, the Ancient City of Polonnaruwa, the Ancient City of Sigiriya, the Ancient City of Dambulla and the Sacred City of Kandy. Due to the constructions and associated historical events, some of which are millennia old, these sites are of high universal value; they are visited by many pilgrims, both laymen and the clergy (prominently Buddhist), as well as by local and foreign tourists.

Other religious sites. In addition to sites around Buddhism, there are many sites scattered across the entire country that honours religions, especially Christianity and Hinduism.

Cultural heritage sites under UNESCO's World Heritage List.

- *Ancient City of Polonnaruwa - Polonnaruwa was the second capital of Sri Lanka after the destruction of Anuradhapura in 993. It comprises, besides the Brahmanic monuments built by the Cholas, the monumental ruins of the fabulous garden-city created by Parakramabahu I in the 12th century.*
- *Ancient City of Sigiriya - The ruins of the capital built by the parricidal King Kassapa I (477–95) lie on the steep slopes and at the summit of a granite peak standing some 180m high (the 'Lion's Rock', which dominates the jungle from all sides). A series of galleries and staircases emerging from the mouth of a gigantic lion constructed of bricks and plaster provide access to the site.*
- *Golden Temple of Dambulla - A sacred pilgrimage site for 22 centuries, this cave monastery, with its five sanctuaries, is the largest, best-preserved cave-temple complex in Sri Lanka. The Buddhist mural paintings (covering an area of 2,100 m²) are of particular importance, as are the 157 statues.*
- *Old Town of Galle and its Fortifications - Founded in the 16th century by the Portuguese, Galle reached the height of its development in the 18th century, before the arrival of the British. It is the best example of a fortified city built by Europeans in South and South-East Asia, showing the interaction between European architectural styles and South Asian traditions.*
- *Sacred City of Anuradhapura - This sacred city was established around a cutting from the 'tree of enlightenment', the Buddha's fig tree, brought there in the 3rd century B.C. by Sanghamitta, the founder of an order of Buddhist nuns. Anuradhapura, a Ceylonese political and religious capital that flourished for 1,300 years, was abandoned after an invasion in 993. Hidden away in dense jungle for many years, the splendid site, with its palaces, monasteries and monuments, is now accessible once again.*
- *Sacred City of Kandy - This sacred Buddhist site, popularly known as the city of Senkadagalapura, was the last capital of the Sinhala kings whose patronage enabled the Dinahala culture to flourish for more than 2,500 years until the occupation of Sri Lanka by the British in 1815. It is also the site of the Temple of the Tooth Relic (the sacred tooth of the Buddha), which is a famous pilgrimage site.*

3.2 Socio-Economic Environment

3.2.1 Demography

Sri Lanka has a population of about 20 million. Population density is highest in the southwest where Colombo, the country's main port and industrial centre, is located. The net population growth is about 1.3% (Table 2.8).

Table 2.8 Population and Land Area by Provinces

Province	Population ('000)	Land Area (sq. km)	Population Density
Western	5,979	3,593	1,664
Central	2,658	5,575	477
Southern	2,556	5,383	475
Northern	1,094	8,290	132
Eastern	1,615	9,361	173
North Western	2,448	7,506	326
North Central	1,312	9,741	135
Uva	1,316	8,335	158
Sabargamuwa	1,988	4,921	404
TOTAL	20,966	62,705	334

Sri Lanka is ethnically, linguistically, and religiously diverse. Sinhalese make up 75% of the population and are concentrated in the densely populated southwest. Sri Lanka Tamils, citizens whose ancestors have lived on the island for centuries, total about 11% and live predominantly in the north and east. Indian Tamils who constitute about 4% of the population are a distinct ethnic group who were brought to Sri Lanka in the 19th century as tea and rubber plantation workers, and they remain concentrated in the "tea country" of south-central Sri Lanka. Other minorities include Muslims (both Moors and Malays), at about 9.3% of the population; Burghers, who are descendants of European colonists, principally from Portugal, the Netherlands and the UK; and aboriginal Veddahs (Table 2.9).

Table 2.9 Composition of Population

By Ethnicity	%	By Religion	%
Sinhalese	74.9	Buddhist	70.1
Sri Lankan Tamil	11.2	Hindu	12.6
Indian Tamil	4.1	Islam	9.7
Sri Lankan Moor	9.3	Christian & Roman Catholic	7.6
Other	0.5	Other	0

Most Sinhalese are Buddhist; most Tamils are Hindu; and the Malays and Moors are Muslim.

Sizable minorities of both Sinhalese and Tamils are Christians, most of whom are Roman Catholic. The Burgher population is mostly Roman Catholic or Presbyterian. The Veddahs have Animist and Buddhist practices. Sinhala, an Indo-European language, is the native tongue of the Sinhalese. Tamils speak Tamil, a Dravidian language. The moors speak an Arab-Tamil dialect, consisting of a large number of Arabic words. The Malays speak Sri Lankan Creole Malay. Many of the Burghers speak Sri Lankan Indo-Portuguese although its use has declined and all speak Sinhala. The Veddahs speak a language closely related to Sinhala.

3.2.2 Economy

Sri Lanka is a lower middle-income country of 21.2 million people with per capita GDP in 2016 of US\$3,835. Since the civil war ended in 2009, the economy has grown on average at 6.2 percent a year, reflecting a peace dividend and a commitment to reconstruction and growth, but there have been signs of a slowdown in the last three years. The economy is transitioning from being predominantly rural-based to urbanized economy-oriented around manufacturing and services (Figure 2.9).

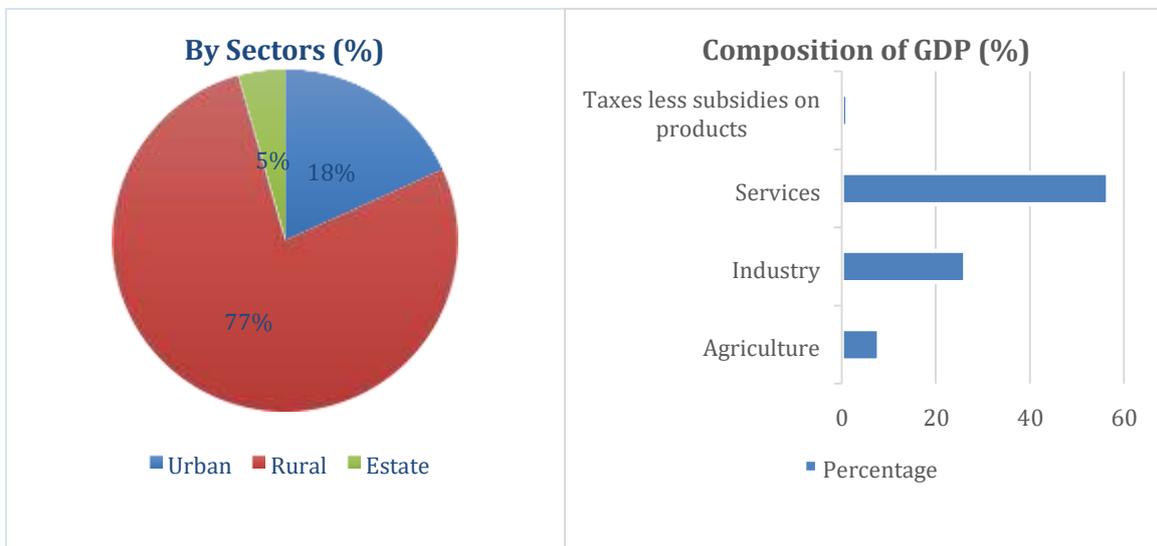


Figure 2.9 Basic Profile of the Economy

The government is carrying out fiscal reforms, improving public financial management, increasing public and private investments, addressing infrastructure constraints and improving competitiveness.

It launched its Vision 2025 on September 4, 2017 to strengthen democracy and reconciliation, inclusive and equitable growth and ensure good governance.

3.2.3 Human Development

Sri Lanka has made significant progress in human development. Social indicators rank among the highest in South Asia and compare favourably with those in middle-income countries. The national poverty headcount ratio declined from 15.3 percent in 2006/07 to 6.7 percent in 2012/13 although disparities remain. Unlike other South Asian countries, Sri Lanka is facing an aging population (Table 2.10).

Table 2.10 Status of Human Development Indicators in Sri Lanka

Indicators	
Labour Force Participation Rate (%)	
Total	53.8%
Male	74.7%
Female	35.9%
Unemployment Rate (% of labour force)	4.7%
Life Expectancy (Avg. years)	74.9
Literacy Rate (Aged 15 years and above)	
Total	93.2%
Male	94.1
Female	92.4
Human Development Index	0.757

3.3 Status of Relevant Sector

The Physical Infrastructure Sector consists of Roads; Public Works; Transport; Energy; Agriculture and Housing Sub-Sectors. In the new long-term development blueprint for the country “Sri Lanka Vision 2025”, infrastructure development has been recognized as an enabler for sustained development of the economy.

Sri Lanka Vision 2025 sets out a course of reforms to make the country more competitive and lift all Sri Lankans’ standards of living. These reforms range from the pressing need for labour law reform to restructuring social safety net programs and boosting technology acquisition and digitisation. It also recognizes the importance of development infrastructure as critical for socio-economic transformation.

The Government recognises that inadequate physical infrastructure services are a significant drag on growth. Physical connectivity, both internal and external, will be an important part of

Sri Lanka’s efforts to position itself as a trade and services hub in the region. Some of the key projects include investments on road infrastructure, Western Megapolis Development, Industrial zones (Charlie Mount, Matara, Kalutara, Seethawaka, Hambantota, and Trincomalee), Kerawalapitiya Liquefied Natural Gas (LNG) Project, and the Floating Terminal.

Sri Lanka aspires to be a country with modern infrastructural facilities that meet international standards to make Sri Lanka a globally competitive and prosperous country. The strategies and measures to be pursued in the medium term include; supporting the development of infrastructure initiatives around flagship projects, strengthening the institutional framework for infrastructure development, raising the efficiency and quality of infrastructure as well as increasing the pace of infrastructure projects so that they are completed as envisaged, protecting the environment as a national asset and conserving it for the benefit of the future generations and the wider international community. Other measures include encouraging Private Sector participation in the provision of infrastructure services through the PPPs framework.

The Government aims to encourage PPPs especially in the Build-Operate-Transfer model in small to medium scale infrastructure projects across the country. The Government aims to encourage the private sector to build small and medium infrastructure projects, which could in turn be leased by the Government with the intention to transfer eventually. These projects are expected to be in education, health and other sectors where Government expenditure is high for infrastructure requirements.

3.3.1 Transport Sector

To increase economic productivity through export oriented growth, the country needs a transport system that functions in a seamless fashion from the perspective of the exporter. This requires more focus on transport facilities and services attending to export regions and products as well as an integrated intermodal transport sector strategy; in particular, maintaining, upgrading, modernizing, and ensuring connectivity between those transport facilities and services.

Successful policy reform in the transport sector can have significant payoffs for the country. Improving the performance of the transport sector could remove major bottlenecks to economic growth and productivity. The transport sector is also an important source of employment. The sector also absorbs, at present, a large share of public investments. Improving the effectiveness of transport expenditures could result in major savings in the projected needs for investment. Estimates indicate that projected savings from reforms in the highway sector alone could be as high as 70% of estimated expenditures without reforms. In other words, with reform the Government could invest 30% of the estimated funds otherwise needed to support economic growth.

The transport sector in Sri Lanka has not performed as well as that of its East Asian neighbors, failing to meet the demands necessary for the country to sustain higher levels of economic growth. Furthermore, rising expectations as a result of Sri Lanka's long-term per capita growth as well as changing characteristics of Sri Lanka's production and trade, have placed new challenges on the sector. Among these challenges is the need for reliable, efficient, and safe services for passenger and freight transport, while managing the negative consequences such as congestion, air pollution, and accidents.

Basic coverage has been good in terms of extending transport networks but existing systems are aged, obsolete, and congested. Misguided capital investments, inadequate balance between transport modes, and inattention to maintenance have further reduced the ability of the transport sector to perform. The transport sector is suffering from a low-level equilibrium trap. Misallocation of expenditures in transport has led to improper modal balance in capital investments as well as an underinvestment in recurrent relative to capital expenditures. This has led to insufficient maintenance, causing deterioration in assets and service quality, and the consequent decline in willingness to use public services. This has made it difficult to raise revenues through higher prices, as users have resisted having to pay more for increasingly deteriorated services. The country, and especially the Greater Colombo Region, has seen a high rate of motorization, and the private vehicle has captured a larger share of the growing demand for transport. In combination with deterioration

in urban bus and rail services, motorization has led to large modal shifts from public transit to private vehicles. The transport sector in Sri Lanka has not performed as well as that of its East Asian neighbors, failing to meet the demands necessary for the country to sustain higher levels of economic growth. Furthermore, rising expectations as a result of Sri Lanka's long-term per capita growth as well as changing characteristics of Sri Lanka's production and trade, have placed new challenges on the sector. Among these challenges is the need for reliable, efficient, and safe services for passenger and freight transport, while managing the negative consequences such as congestion, air pollution, and accidents.

The Government plays a major role in the transport sector in Sri Lanka. Public enterprises are responsible for direct provision of road, railway, and port infrastructure. There is no private provision of infrastructure. The Government plays a smaller role in the direct provision of transport services, with the exception of railways which are in the hands of Sri Lanka Railways, a Government Department, and bus transport where the Government is a 50% shareholder of the peoplized bus companies. The poor performance of the transport sector has been mainly because the public sector has overextended itself as a direct provider of facilities and operator of services and is failing to meet important functions as manager of *competition*, custodian for the *environment*, and guarantor for *social concerns*. The challenges of operating and managing transport infrastructure and services have absorbed a lot of effort from the public sector, fostering weaknesses in planning, implementation, and regulation.

The Government is committed to improving the public transport system. Vision 2025 includes the setting up of multi-modal transport centres with park and ride facilities, electrifying the existing railway system between Veyangoda and Panadura, laying of double tracks on the Kelani Valley railway, and constructing new rail tracks connecting Kurunegala and Habarana via Dambulla. The Government is also committed to innovations in the public transport system, such as bus priority lanes and an advanced traffic management system. Planning studies are to be completed soon for a Light Rail Transit to begin building six lines in the metropolitan Colombo area. These measures are expected to greatly ease current passenger congestion in the system as well as increase facilities for the transportation of goods.

The Road Development Authority (RDA) has significant capacity to manage environmental and social concerns when developing the road network as a result of continuous engagement with financing institutions like the World Bank and Asian Development Bank (ADB). The RDA has its own Environment and Social Unit which was established over a decade ago with the support of ADB. The national environmental management regulations mainly apply to new road construction activities and not for existing road rehabilitation. However, natural resources use during construction/rehabilitation activities require to obtain necessary licenses and permits including the Environmental Protection License. Local authorities which manages roads within their jurisdiction with the technical support from Provincial Roads Development Department has limited capacity and also rarely need to adopt the national regulations due to many of their current activities only involves rehabilitation and maintenance. Maintenance of roads has been relatively weak in the past due to non-allocation of maintenance funds. With the Road Maintenance Trust Fund in place and with the transition towards design, build, operate and maintain type of arrangements, the situation is slowly changing, especially for RDA managed roads.

There is little information available on the environmental management of construction/operations of others agencies that manage railways, seaports, airports, etc. as the usual multilateral financing agencies have not been involved in support such activities in the recent past. Compliance on environmental management regulations have been questioned number of times for recent developments such as siting and construction of Mattala airport and Hambantota seaport, although

both have been subjected to national environmental act and its regulations. There are no recorded significant issues on the operations of international ports due to international requirements, except the Mattala airport where issues related to siting has continue to arise. Land management of railway reservation has been extremely weak, due to proliferation of squatters on the either side of the railways.

3.3.2 Economic Corridors

The Government is committed to establishing economic corridors that are geographically widespread to encourage growth and prosperity for all sections of the population. These are:

1. *The South Western economic corridor will provide connectivity to Galle, Hambantota and Moneragala, Kandy and Colombo utilising the network of highways. The second phase will connect to Dambulla via Pothuhera. This economic corridor already includes Katunayake and Mattala International Airports and regional ports in Colombo and Hambantota.*
2. *The North Eastern economic corridor will bring large-scale development to the Eastern and the Northern Provinces, along with the completion of the Moragahakanda and the Malwatu Oya reservoirs.*
3. *The secondary economic corridor is expected to develop agro-based industries and tourism by connecting Nuwara Eliya and Badulla Districts via the Kandy-Colombo Expressway and the Southern Expressway through Mattala.*
4. *An economic corridor between Colombo and Trincomalee will facilitate industrial development.*

Western Region Megapolis. The Government is committed to fast track the long-term structural transport master plan in line with the Megapolis Development Plan for the Western Region. Major development initiatives under the Western Region Megapolis Development Plan include the:

- *establishment of a multi-modal transport hub;*
- *railway electrification and modernization;*
- *waste to energy projects on PPP basis;*
- *development of East and West terminals of the Colombo Port;*
- *establishment of science parks;*
- *modernisation of the Bandaranaike International Airport; and*
- *flood mitigation projects within metropolitan areas, such as the flood control at Kelani river basin.*

CHAPTER 4: ENVIRONMENTAL AND SOCIAL SAFEGUARDS POLICIES AND THEIR IMPLEMENTATION

4.1 National Policies, legislative and regulatory considerations.

National Environmental Act (NEA) No 47 of 1980, and its' amendment Act No. 56 of 1988 and Act No. 53 of 2000

Under provisions of Part IV C of the NEA No. 47 of 1980 as stipulated in Gazette (Extra Ordinary) No. 772/22 dated June 24, 1993 GOSL made Environmental Assessment (EA) a legal requirement for a range of development projects. The list of projects requiring an EIA/ IEE is prescribed in the above Gazette notification. In addition, the Gazette notification includes a list of line ministries and agencies that are designated as Project Approving Agencies (PAA). The PAA's are responsible for the administration of the EIA process under NEA. Further amendments to the NEA stipulated environmental approvals for material extraction, emissions, noise and vibration levels. These regulations will also have a bearing on this development project.

According to provisions of the NEA regulations, the only prescribed project type under the Transport and Highways Sector relevant to the proposed project requiring an EA is the construction of national and provincial highways involving a length exceeding 10 Km.

In addition, other prescribed projects requiring environmental assessments, listed in the same regulations relevant to the proposed project include;

1. Reclamation of land, wetland area exceeding 4 hectares;
2. Conversion of forests covering an area exceeding 1 hectare into non-forest uses;
3. Involuntary resettlement exceeding 100 families, other than resettlement effected under emergency situations;
4. Extraction of timber covering land areas exceeding 5 hectares;
5. Clearing of land areas exceeding 50 hectares;
6. Inland deep mining and mineral extraction involving a depth exceeding 25 meters;
7. Inland surface mining of cumulative areas exceeding 10 hectares;
8. Mechanized mining and quarrying operations of aggregate, marble, limestone, silica, quartz, and decorative stone within 1 kilometer of any residential or commercial areas;

All projects and undertakings irrespective of their magnitude, if located partly or wholly within 100 meters from the boundaries of or within any area declared under the National Heritage Wilderness Act; the Forest Ordinance; 60 meters from a river or stream bank and having a width of 25 meters or more at any point of its course; any archeological reserve, ancient or protected monument as defined or declared under the Antiquities Ordinance (Chapter 188); any areas declared under the Botanical Gardens Ordinance; and within 100 meters from the boundaries of or within any areas declared as a Sanctuary under the Fauna and Flora Protection Ordinance.

Considering the scope of activities supported under this project, the most likely PAA's would be the CEA, Ministry of Highways or Ministry of Provincial Councils and Local Government. The CEA will formally decide on the PAA depending on the scope and location of the project on a case by case basis.

According to GOSL procedure, all development activities require environmental clearance. In order to obtain such clearance, the project proponent has to fill in a Basic Environmental Information Questionnaire. The questionnaire requires information from the project proponent to enable the CEA to determine the level of environmental analysis required prior to providing approval for the project. Upon reviewing the questionnaire, the CEA determines whether the project requires an Initial Environmental Examination (IEE), or an Environmental Impact Assessment (EIA), or whether no further environmental analysis is required, depending on the nature of the potential impacts.

Coast Conservation Act No. 57 of 1981

A project or any development activity that falls within the “Coastal zone” as stipulated in the Coast Conservation Act (CCA) will have to obtain approval/ permit from the Coast Conservation Department (CCD).

Fauna and Flora Protection Ordinance (FFPO) No.2 of 1937 (amended in 1993)

Implemented by the Department of Wildlife Conservation, this act specifies that any development activity that takes place within one mile of the boundary of a National Reserve declared under the Ordinance require an EIA/IEE. The FFPO follows a similar process as the NEA in conducting scoping, setting the ToR, preparation of EA, review of EA and public consultation and disclosure. The decision of project approval or disapproval is finally granted by the Director of the Department of Wildlife Conservation.

Provincial Environmental Act (PEA) of 1991

Implemented by the North Western Provincial Council for areas coming under the North Western Province. Environmental Assessments are required for prescribed projects that have been gazetted in Gazette Extraordinary 1020/21 of 27th March, 1998. It specifies two lists of project types (a) where EIA/IEE is mandatory and (b) where the EA can be requested if the PAA decides so. The scoping process is similar to that of the NEA and will be headed by one of the two listed PAAs; (a) Provincial Environmental Authority and (b) Provincial Ministry of Fisheries and Aquaculture. Representation of the CEA and the Ministry of Environment in the scoping committee is a mandatory requirement. Setting up of the Terms of Reference (ToR), preparation of the EA, review and public disclosure and consultation, granting of the project decision are the same as specified in the NEA.

Land Acquisition Act (LAA) No.09 of 1950

The acquisition of land for public purposes is guided by the provisions and procedures outlined in the Land Acquisition Act No. 9 of 1950 (LAA) and its subsequent amendments. The Act provides a framework for land acquisition and guarantees that no one can be deprived of land except under the provisions of the LAA, and it entitles Affected Persons (APs) to a hearing before acquisition. The Act is based on the principle of eminent domain and lays down the general procedure for the acquisition of private land for 'public purpose' (e.g. development projects). The acquisition of land for public purposes is a time-consuming process and can take a minimum of 72 weeks for its completion. The Act discourages unnecessary acquisition and lands that have been acquired for one purpose cannot be used for a different purpose and lands that remain unused have to be returned to the original owners. The major causes of delay in land acquisition arise from disputes over land titles, disagreements over property valuation and the compensation procedure and attendant legal proceedings.

Under the LAA, the Ministry of Land is responsible for land acquisition, which is carried out by acquiring officers who are appointed by the Minister of Lands, and gazetted for the information of the public. All Divisional Secretaries are the ex-officio Acquiring Officers, whereas the Valuation Department is responsible for the valuation. The law only provides for compensation to affected persons who are in possession of valid titles, and have their titles registered in the respective Land Registries. It does not recognize the rights of the non-title holders such as squatters, who do not possess legal title to the lands they live in or make a living from. The non-titleholders will receive compensation only for any development activities that they have carried out on such land including for structures built on the land.

Land Acquisition Regulations (LAR) 2008

The LAA provides for the payment of compensation on the basis of 'market value' defined as the 'amount which the land might be expected to have realized if sold by a willing seller in the open market as a separate entity'. This 'separate entity principle' resulted in hardships particularly when a small part of a larger land was acquired since such small areas of land fetched a minimum value in the open market. The Land Acquisition Regulations of 2008 approved by the Cabinet of Ministers and the Parliament under Section 63 (2) (f) of LAA 1950 and published in the Government Gazette of 07th April, 2009 (Gazette notification No.1596/12 of 7.4.2009) gave the legal status to these Regulations and bound all development projects by the consolidated land acquisition and resettlement/rehabilitation processes outlined in the National Involuntary Resettlement Policy of 2001 (see below for description of this policy). The Regulations redefine the valuation approach for determining market value and states that 'in the case of land where part of a land is acquired and when its value as a separate entity deems to realize a value proportionately lower than the Market Value of the main land the compensation should be proportionate to the value of the main land'. The Regulations also provides additional compensation beyond 'market value' and incorporates compensation for injurious affection and severance (equivalent to the full cost of damage based on the market value of land acquired) and disturbances (in terms of Section 3.11, and based on the principle of 'value to owner' of the property affected as per the written claims submitted by the AP). The regulations also provide for payment of compensation to non-titleholders.

The 2008 Regulations incorporates the concept of replacement cost in the valuation of land and other assets. The regulations require compensation for land to be paid at market rates, along with the cost of reconstruction for houses and other structures, without taking into account depreciation of the buildings. The Regulations also include provision to compensate for loss of business income, as well as relocation assistance and other benefits. Further, the 2008 Regulations provides for affected persons to be entitled for a hearing before their land is acquired. However, the level of compensation can only be determined by the Valuation Department. The LAR 2008 endeavored to incorporate the NIRP principles into the regulations and to introduce a uniform system and methodology for the payment of compensation as required by the National Policy for the Payment of Compensation (2008). The regulations also contributed minimizing the incongruence between the local regulatory framework for land acquisition and resettlement and international best practices for involuntary resettlement.

State Lands (Recovery of Possession) Act No. 7 of 1979

The provisions for the recovery of possession of State lands from persons in unauthorized possession or occupation thereof are contained in the State Lands (Recovery of Possession) Act No. 7 of 1979. Furthermore, Section 10 stipulates that no appeal is maintainable against an order of eviction by a Magistrate. Section 13 provides for reasonable compensation for damages sustained by reason of the

affected person having been compelled to deliver up possession of such land. While under the provisions of this Act, such persons with unauthorized occupation of land could be removed, the project will pay compensation based on the guidelines of this RPF before these affected persons are displaced from such locations.

Temple and Devalagam (Compensation) Ordinance, No.28 of 1944

This Act deals with lands donated to the temples and Devala (Places of religious significance) by rulers under a deed of dedication or 'Sannasa' (Order) for the maintenance of such institutions. The rights of the custodian of temples and Devala for the receipt of compensation in the event of land acquisition for public purposes are spelt out in this Act in addition to the other provisions. The compensation for the acquired land belonging to temples and devales will be received by the public trustee and will be deposited in the joint names of himself and the trustee and the chief incumbent of the temple in a bank account approved by the Minister. The public trustee in consultation with the trustee or the chief incumbent of the temple will authorize the funds to be utilized for promoting the aims and objectives of the temple.

National Involuntary Resettlement Policy (NIRP)

The National Involuntary Resettlement Policy (NIRP) of 2001 principled on human and ethical considerations entails the payment of replacement cost to the persons affected by land acquisition and arranges for their resettlement and where necessary even their rehabilitation. NIRP was a significant milestone in the development of a systematic approach to addressing resettlement issues in Sri Lanka. The policy ensures that (i) project affected persons are adequately compensated, relocated and rehabilitated; (ii) delays in project implementation and cost overruns are reduced; and (iii) better community relations are restored. It aims at ensuring that people affected by development projects are treated in a fair and equitable manner, and ensuring that they are not impoverished in the process. The policy also enables establishing the framework for project planning and implementation that would meet international best practices in involuntary resettlement through preparation and formal acceptance of a comprehensive Resettlement Action Plan (RAP) where 20 or more families are affected. Even when the number of affected families is less than 20, the compensation, rehabilitation and resettlement processes must be arranged through a resettlement planning document of a lesser magnitude to be assessed and approved by the relevant agencies. The responsibility for reviewing and approving RAPs is vested with the Ministry of Lands.

Road Development Authority Act No. 73 of 1981-

The Road Development Authority Act (1981) provides for the establishment of the RDA and specifies the powers; Section 22 deals with land acquisition for road development as a "public purpose" and provides for the acquisition by, and transfers to, the RDA of immovable or moveable property within any declared road development area.

Thoroughfare Ordinance (40 of 2008)

Salient features of the above Act are:

- *It empowers the Highways Authority to establish Road Network Development Advisory Council and District Road Development Coordinating Committees and:*
- *Prevent unauthorized constructions within the road reservations.*
- *Construct new roads divert roads.*
- *Acquire lands vested in a local authority for widening and construction of roads.*

- *Make special grants under the Crown land Ordinance. Power of authority to alienate lands.*
- *Purchase lands for resettlement sites.*
- *The power to purchase land by the Highways Authority would accelerate the process of resettlement, Officers are authorized to pay compensation for the damages caused to properties.*

In totality this act promotes the construction of new roads and improvement to existing roads in a more accelerated phase due to build in mechanisms to acquisition of land, payment of compensation and resettlement speedily.

Mahaweli Authority Act of 1977 –

Under the Mahaweli Authority Act of 1977, with in the area declared under the Act, all matters pertaining to the administration of land, falls within the Mahaweli Authority.

Forest Ordinances Amended –

Land declared as forest land is administered by the Department of Forest Conservation. They have no authority to release land on long term lease. They can release land only on renewable annual permits, still land within conservation and strict reserves would not be released for other activities by the Department of Forest Conservation. Land required for public purposes should be released by the DFC when requested by the relevant PMUs, after satisfying the conditions laid down in the NEA for prescribed projects.

Vihara (temple) and Devalagam Ordinance –

Any construction within a land belonging to a temple or devalaya, in the event of an acquisition should be paid to the Commissioner General of Buddhist Affairs on behalf of the temple and trustees on behalf of the devalayas even if the construction had been done by a third party. The Prescriptive Ordinance does not apply to Temple and Devalagam lands

Mines and Minerals Act No. 32 of 1992

The Geological Survey and Mines Bureau was established under the Mines and Minerals act to regulate the exploration of mines and minerals, transportation, processing, trading in or export of minerals.

4.2 World Bank policies on environment and social safeguards

OP/BP 4.01 Environmental Assessment (EA)

Projects financed with IDA resources normally need to comply with World Bank Operational Policies. World Bank OP 4.01 requires Environmental Assessment (EA) of projects proposed for Bank financing to help ensure that these projects are environmentally sound and sustainable. EA is a process whose breadth, depth and type of analysis depend on the nature, scale and potential for environmental impacts of the proposed project.

Considering the work involved and resultant environmental repercussions in road resurfacing and upgrading and/or provision of drainage in non-sensitive environments, this project is to be treated as Category B. No subprojects that fall into Category A will be financed by the project. Additional relevant guidelines and materials can be found here:

- WBG Environmental Health and Safety [Guidelines](#);

- [Toll Roads](#); and
- Construction [Material Extraction](#).

World Bank OP 4.01 is very clear that for a project in Category B proposed for financing under an IDA Credit, the developer must consult project affected groups and local non-governmental organizations (NGOs) about the project's environmental aspects and take their views into account in the design and implementation. The EA should particularly incorporate such comments to improve social acceptability and environmental sustainability. Such consultations should be initiated as early as possible, in the Project cycle and it is mandatory that consultations are undertaken after the draft EA is prepared. In addition, the RDA and contractor are expected to consult with stakeholders throughout project implementation as necessary to address EMP related issues that affect them. The OP 4.01 also highlights the importance of analyzing alternative designs, technologies and operational strategies systematically in terms of their potential environmental impacts in order to select the most environmentally friendly and economically viable option.

OP/BP 4.04 Natural Habitats

This policy is triggered to ensure due diligence actions are in place as part of the EAs if projects are carried out closer to sensitive natural habitats require specific measures to mitigate potential impacts to these natural habitats and associated fauna and flora. The World Bank does not support projects that, in the its opinion, involve the significant conversion or degradation of critical natural habitats. Therefore, the short-listed PPP projects should not conduct any activities within designated or on the buffer zones of protected areas and project interventions will facilitate in mitigating pollution and degradation of such ecosystems due to project investments.

Wherever feasible, the projects should be sited on lands already converted (excluding any lands that in the Bank's opinion were converted in anticipation of the project). The Bank does not support projects involving the significant conversion of natural habitats unless there are no feasible alternatives for the project and its siting, and comprehensive analysis demonstrates that overall benefits from the project substantially outweigh the environmental costs. If the environmental assessment indicates that a project would significantly convert or degrade natural habitats, the project includes mitigation measures acceptable to the Bank. Such mitigation measures include, as appropriate, minimizing habitat loss (e.g., strategic habitat retention and post-development restoration) and establishing and maintaining an ecologically similar protected area. The Bank accepts other forms of mitigation measures only when they are technically justified.

In deciding whether to support a project with potential adverse impacts on a natural habitat, the Bank considers the borrower's ability to implement the appropriate conservation and mitigation measures. If there are potential institutional capacity problems, the project includes components that develop the capacity of national and local institutions for effective environmental planning and management. The mitigation measures specified for the project may be used to enhance the practical field capacity of national and local institutions.

OP/BP 4.36 Forests

Similar to OP 4.11, while the foot prints of the PPPs that will be selected are unknown, it is anticipated based on current practices in the country, these projects may bring about impacts on the health and quality of forests due to construction material extraction. While, the World Bank-financed projects explicitly prohibits such activities particularly in protected areas, the public-sector projects still carry out such activities. Therefore, this policy is triggered.

The Bank does not finance projects that, in its opinion, would involve significant conversion or degradation of critical forest areas or related critical natural habitats. If a project involves the significant conversion or degradation of natural forests or related natural habitats that the Bank determines are not critical, and the Bank determines that there are no feasible alternatives to the project and its siting, and comprehensive analysis demonstrates that overall benefits from the project substantially outweigh the environmental costs, the Bank may finance the project if it incorporates appropriate mitigation measures. The Bank also does not finance projects that contravene applicable international environmental agreements. In accordance with OP/BP 4.01, *Environmental Assessment*, the EA for the PPP projects should address the potential impact of the project on forests and/or the rights and welfare of local communities where applicable.

OP/BP 4.10 Indigenous Peoples

There are no known indigenous communities in the project area that would fall under the category of 'indigenous people' as defined by OP 4.10 and would be adversely impacted due to the project. In the instances where the road network traverses through the areas of the Veddas (forest dwellers), the project will provide additional support as defined for 'vulnerable groups' in this ESMF.

OP/BP 4.11 Physical Cultural Resources

This policy addresses physical cultural resources, which are defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, pale-ontological, historical, architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be located in urban or rural settings, and may be above or below ground, or under water. Their cultural interest may be at the local, provincial or national level, or within the international community.

The Bank assists countries to avoid or mitigate adverse impacts on physical cultural resources from development projects that it finances. The impacts on physical cultural resources resulting from project activities, including mitigating measures, may not contravene either the borrowers' national legislation, or its obligations under relevant international environmental treaties and agreements. The Bank adheres to the following project financing policies:

- *The Bank finances only those projects that are sited and designed so as to prevent significant damages to non-replicable cultural property. This policy pertains to any project where the Bank is involved, irrespective of whether the Bank is itself financing the part of the project that may affect cultural property.*
- *Deviation from this policy may be justified only where expected project benefits are great, and the loss of or damage to cultural property is judged by competent authorities to be unavoidable, minor, or otherwise acceptable. The Bank also requires a discussion with specific details for their justification in the documents.*

Furthermore, should any other site get identified the Project will do the following: Whenever chance finds are made during the construction of the roads, the contractor will immediately inform the project execution agency which will, in turn, inform the government department concerned with cultural property.

- *The project execution agency will be responsible for securing the artefacts from theft, pilferage and damage until the responsibility is taken over by the relevant authorities.*
- *Failure to report a chance find immediately by the contractor will result in cancellation of the contract and punishment according to the relevant laws.*

- *These conditions and procedures regarding chance finds will be included as standard provisions in the construction document in details and made available for IDA review and other interested persons and entities.*

OP/BP 4.12 Involuntary Resettlement Policy

Involuntary resettlement policy applies where a project may cause physical and economic displacement require to compensate people for loss of land, other assets, livelihood, or standard of living. The WB operational policies seek to avoid where feasible or minimize involuntary resettlement, exploring all viable alternative project designs. Resettlement planning has the objectives of providing displaced persons with a standard of living equal to, if not better than, their pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher. The required measures to address the impacts resulting from involuntary taking of land. If project has significant impacts or physical displacement over 200 persons, a full Resettlement Action plan (RAP) is required to ensure that the displaced persons are informed about their options and rights pertaining to resettlement; consulted on and provided with technically and economically feasible resettlement alternatives and provided compensation at full replacement cost. Where the impacts include physical relocation the RAP includes measures to ensure that the displaced persons are provided moving allowances and provided with residential housing. Where impacts on the entire displaced population are minor, or fewer than 200 people are displaced, an abbreviated resettlement plan may be agreed with the borrower. Impacts are considered “minor” if the affected people are not physically displaced and less than 10 per cent of their productive assets are lost.

CHAPTER 5: GENDER AND INCLUSION

Issues relating to gender, vulnerability, and inclusion will be considered from various perspectives within the context of the Project and this ESMF, including: (i) gender-sensitive analysis and identification of risks and benefits associated with activities under the Project; (ii) Project-specific gender considerations to enhance Project benefits to women, vulnerable groups, and local community members; (iii) measures for ensuring that any risks and impacts arising from Project interventions, that have differential impacts on women and other vulnerable groups, are identified and mitigated; (iv) enhancing the voice and representation of women, especially through continuous engagement and consultations with women, and (v) gender-disaggregated monitoring indicators.

5.1 Gender and Vulnerability Analysis

As part of the sub-project preparation, a detailed baseline analysis will be carried out to understand how communities obtain project related information, and how these different communities, including women, people with disabilities, the elderly, or any other such vulnerable groups, can be effectively informed about such information availed through the Project. Based on the findings of the assessment, an action plan for addressing inclusion issues, including gender, in this operation, will be prepared.

5.2 Enhancing Gender Outcomes under the Project

Gender considerations will be made an integral part of the sub-project preparation and implementation. To address the gap in leadership, voice, and agency that women experience, the Project will:

- Organize focused information dissemination and awareness raising for female citizens on the likely adverse impacts faced as a result of road rehabilitation works, including likely issues faced with labor influx;
- Explore the use of citizens' monitoring committees that review and follow up on quality, safety, and progress aspects of the road rehabilitation. Measures will be put in place to ensure women's involvement and increasing leadership in citizens' monitoring committees. Women will be supported and trained to play leadership roles in these community groups;
- Enhance gender sensitivity of decision-makers, including at the PMU and PIAs, through orientation trainings on gender, and ensure women's voice and participation in decision-making bodies established under the Project, including the PMU;
- Ensure the inclusion of women in the different consultation activities, including through organizing targeted meetings for women. Such consultations will seek to address the needs and explore opportunities to support women and other vulnerable groups;
- Develop a robust Grievance Redressal Mechanism (GRM) that is sensitive to the needs of women and other vulnerable groups.

5.3 Mitigating Adverse Impact on Women and Other Vulnerable Groups

Gender is a key issue in the social safeguard management in view of the differential vulnerabilities of affected men and women, where the latter often tend to experience the impact much more. In view of their higher vulnerability levels, specific measures will be undertaken to enable the affected

women – especially the poor and vulnerable – to cope with the Project related impacts. These actions/activities will be detailed in each of the subproject-specific ESMPs.

A GBV risk assessment was carried out using the tool provided by the World Bank, and this Project was considered as moderate risk, with score at 13.75 out of 25. The purpose of the GBV assessment tool is essentially to assess the risk of GBV, particularly SEA, and takes into consideration both project-specific details, such as labor influx levels, as well as the country context where the project takes place—such as situations of conflict. Through 25 questions, the tool draws on information to give each project a risk ‘score’ based on the responses to the questions. The risk score is calculated on a scale of 0 to 25: projects that score 0-12.25 are considered ‘Low’ risk; 12.5-16 ‘Moderate’ risk; and projects that score 16.25-18 represent a ‘Substantial’ risk, and project that score 18.25-25 are considered ‘High’ risk projects.

A scoring of 13.75 for this project means that the potential for incidents of GBV to arise due to the proposed investment is moderate. To take appropriate mitigation action, the Project will follow the guidance put forth in the World Bank’s Good Practice Note on GBV for moderate risk projects. Specifically, the following measures will be put in place to address the risks:

- Develop a GBV Action plan including the Accountability and Response Framework as part of the ESMP. The contractor/consultant’s response to these requirements will be required to be reflected in their C-ESMP [Annex 17 includes a sample GBV Action Plan for ‘Moderate’ risk project).
- Awareness-raising and sensitization trainings for relevant staff at the RDA and the MIHAPCLG on the importance of addressing GBV
- Information relating to GBV risks to those affected by the project during stakeholder consultations
- Map out GBV prevention and response actors in project adjoining communities
- All the procurement documents for civil works will clearly define the GBV requirements and expectations in the bid documents
- Codes of conduct for workers/contractors will be prepared which will be signed by contractors and their employees for appropriate mitigation and prevention actions;
- The GRM will be gender sensitive through: (i) representation of women as GRM committee members; and (ii) training and capacity building activities for GRM members on gender issues;
- A special procedure will be set up as part of the GRM that can allow GBV-related complaints to be captured and referred to existing credible care service providers as necessary.

5.4 Measuring the impacts

The Project will monitor the changes in women’s voice and agency using the following indicators:

- (i) Number of women who have direct access to Project-related information;
- (ii) Percentage of grievances resolved in timely manner.

CHAPTER 6: MANAGING THE RISKS OF ADVERSE IMPACTS FROM LABOR INFLUX

Road rehabilitation activities supported under the Project will involve the construction of civil works for which the required labour force and associated goods and services cannot be fully supplied locally for a number of reasons, among them worker unavailability and a lack of technical skills and capacity. In such instances, the labour force (total or partial) will have to be brought in from outside the project area. In many cases, this influx is compounded by an influx of other people (“followers”) who follow the incoming workforce with the aim of selling them goods and services, or in pursuit of job or business opportunities.

6.1 Potential adverse impacts due to labour influx

On the one hand, an appropriately managed labor influx can provide potential benefits for the community, including economic opportunities through employment and/or training by the project, contributions to the local economy by selling goods and services, the provision of local infrastructure (such as access roads, power, or water connection) which is developed for the project and which serves the community beyond the project duration. However, the rapid migration to and settlement of workers and ‘followers’ in the project area can affect project areas negatively in terms of:

- Risks of social conflict, especially between the local community and the construction workers, and also between different groups within the labour force;
- An increased risk of illicit behaviour and crime through the influx of workers and service providers into communities and the resultant perception of insecurity by the local community;
- Discontent amongst the local community on the engagement of outsiders in the project, especially in terms of job opportunities and crowding out of locals;
- An increased burden on and competition for public service provision, such as water, electricity, medical services, transport, education, and social services;
- Local inflation of prices, with the increase in demand for goods and services due to labor influx, and increased pressure on accommodations and rents, which may lead to price hikes and crowding out of local residents;
- An increased risk of communicable diseases and burden on local health services, including sexually transmitted diseases;
- GBV, particularly in the form of inappropriate behaviour, such as sexual harassment of women and girls, exploitative sexual relations, and illicit sexual relations with minors from the local community;
- Child labour and school dropout, especially following the increased opportunities for the host community to sell goods and services to the incoming workers;

- Risks of exploitation of labourers, especially in the form of hiring underage labourers, low and unequal wage payments, forced labour, and discrimination on basis of the basis of gender, caste, religion, or ethnicity.

The potential for these risks is more likely in project sites that are in isolated areas and/or in areas where the scope of construction work is large and the possibilities for hiring local laborers is limited, thus requiring laborers and workers to be brought in from outside.

To address the above-mentioned impacts from labor influx on local communities, the Project will:

- Reduce labour influx by tapping into the local workforce, to the extent possible;
- Assess and manage labor influx risks based on appropriate instruments; and
- Incorporate social and environmental mitigation measures, including those relating to GBV, into the civil works contract.

6.2 Assessment and management of risks and impacts

To address the risks and adverse impacts on communities from the Project induced labor influx, the following steps will be adopted:

- Administer the Social Screening Checklist prepared for this ESMF to identify and assess the type and significance of potential social impacts on local communities that may be generated by labor influx;
- As part of the SIA, carry out an assessment of the location of the Project, contextual factors of the location, and the legal and policy framework of the GoSL, if the screening suggests potential impacts;
- Incorporate the recommendations of the SIA and define mitigation measures, including those recommended by the World Bank's Good Practice Note on GBV, which has been prepared based on the recommendation of World Bank's Global GBV Task Force;
- Develop specific measures to mitigate the risks associated with the social and environmental impacts from labor influx into the ESMP in consultation with affected communities, in the civil works bidding documents, and subsequent contracts (contractor responsibilities are outlined in Box 1 below);
- Implement the appropriate mitigation and monitoring programmes, which includes the development and implementation of a stakeholder engagement programme;
- Establish a GRM for workers and host community which among others will integrate protocols established by the World Bank's Good Practice Note on GBV;
- Monitor and supervise regularly, including on GBV-related issues, in co-ordination with other government agencies and civil society organisations; and
- Prepare periodic reports for submission to the PMU, the World Bank, and other relevant Ministry/government agencies on implementation and the results of the ESMP and other relevant plans, as well as the GRM resolutions relating to labour and GBV-related issues.

Further, mitigation measures will be driven by consultations with stakeholders and in alignment with the World Bank's Guidelines on 'Managing the Risks of Adverse Impacts on Communities from Temporary Project Induced Labor Influx'. It will be the contractor's obligation to prepare and submit a plan that outlines code of conduct for workers, worker camp management plan and measures to address GBV.

Box 1. Contractors' Responsibilities

The Environment and Social Management Plan (ESMP) and/or the Social Impact Mitigation Plan (SIMP) is developed during project preparation. Based on the findings of the screening report of the sub-project activities, the management plans contain general mitigation measures. These mitigation measures will be part of the tender package and construction contract.

Prior to starting construction, the Contractor will be required to prepare and submit its own ESMP/SIMP to the supervision engineer (who is the GoSL's representative) for acceptance. The Contractor's ESMP/SIMP will provide a detailed explanation of how the Contractor will comply with the Project's safeguards documents, including the ESMP, and SIMP, and demonstrate that sufficient funds are budgeted for that purpose. The Contractor's ESMP/SIMP will include management plans for: (i) work activities; (ii) traffic management; (iii) occupational health and safety; (iv) environmental management; (v) social management; (vi) labour influx and worker camp management plan; (vii) code of conduct for workers, including measures to address GBV; and (viii) chance-finds, where relevant.

The PMU will verify and ensure the adequacy of the Contractor's ESMP/SIMP and the plan prepared under each sub-project. If issues emerge during implementation for which the Contractor's ESMP/SIMP does not contain appropriate mitigation measures, the Contractor will be required to update their ESMP/SIMP to include such mitigation measures and, if necessary, the civil works contract will be amended.

Civil works for the sub-projects will not commence until the Contractor prepares an appropriate ESMP/SIMP, which properly identifies and proposes risk mitigation measures, and it is approved by the PMU.

During implementation, the Contractor will implement civil works in accordance with its ESMP/SIMP, including all works conducted by sub-contractors under the Contractor's control. The Contractor will also be required to train workers on the roles and responsibilities under these plans, policies, and standards.

The Contractor will submit regular reports to the PMU and/or other relevant Ministry/Agency, and proactively address any issues that arise.

CHAPTER 7: ENVIRONMENTAL ASSESSMENTS AND MITIGATION MEASURES

Road specific environmental assessments (EA), social impact assessments (SIA), and respective Environmental and Social Management Plans (ESMP) should be conducted before commencement of each sub-project (during detail design). Such approach will provide more specific information on the environment and socio-economic profile along a given road section. It will also generate project specific impacts on environment and society and help to formulate mitigation measures. However, this ESIMF will outline all possible impacts to the environment and society on a generic basis.

Different types of baseline data on environmental characteristics, socio-economic baseline information and project affected persons information may be necessary for formulating detailed EAs/ SIAs. Therefore, it is necessary undertake collection of baseline data on environmental characteristics and a socioeconomic study of the project area and project affected persons.

TOR for road specific EA, SIA and ESMP is attached as annex 5.

7.1 Potential environmental issues and impacts

The purpose of this section of the report is to identify the possible environmental and social impacts and issues that could arise as a result of the proposed project activities. The nature and scale of impacts (500 m belt to the both side of the road considered as the impact zone) will be determined by the type of interventions undertaken by the project to assist the road sector, which focuses on rehabilitation, improvement and upgrading the existing road section through resurfacing and provision of drainage. The section also discusses environmental and social issues that may arise during periodic maintenance of the rehabilitated and improved roads.

Impacts and issues of any road development project could be distinguished between physical, biological/ ecological and social environments. These impacts could be significant or non-significant, positive or negative, direct or indirect and could be immediate or long-term impacts.

As stated previously this project is categorized as a category B project in which the impacts are mostly non-significant and manageable. Some of the impacts to physical and ecological environment during construction phase are as follows:

1. *Adverse impacts on soil at construction and material extraction sites and yard could occur due to; Loss of productive top soil due to site preparation work, Soil erosion caused by clearing & grubbing operations which removes the vegetative cover on the roadway and in the immediate surroundings Soil erosion caused by mining and quarrying operations, Soil erosion caused by temporary diversions of water ways, Contamination of soil by heavy metals & chemicals discharged by construction vehicles and from material storage sites, Erosion of uncovered temporary stock piles and soil dumps.*
2. *Impacts on surface and ground water sources occur due to following activities;*

Adverse impacts	Siltation of waterways due to modifications to surface water flow and drainage patterns, Flooding of local areas due to re-channelization of waterways intersected by the road, Impacts of impoundment, channel deepening and filling, Degradation of surface water quality due to equipment and material piling on the site, Degradation of water quality due to waste water from worker camps, Degradation of water quality in water bodies in the vicinity of quarry and borrow sites Reduction in groundwater recharge due to road drainage and excavation, especially in dry areas.	Short term (during construction) Short term (during construction) Long term Short term (during construction) Short term (during construction) Short term (during construction) Long term
Beneficial impacts	Improvement of surface water quality due to better run off management	Long term

3. Ambient air quality within construction sites, material extraction sites and yards will be affected due to following operations;

- *Operation of construction vehicles and plants (AC plant and concrete batching plants) that emit obnoxious gases*
- *Exposure of soil surface due to excavation, clearing of surface vegetation which generates dust*
- *Mining operations of metal and gravel for construction material will emit dust and other particulate matter*
- *Improper storage of chemicals that could emit fumes of stored chemicals*

4. Impacts on Eco-systems, Fauna and Flora could occur due to following operations and activities;

- *Clearing of roadside vegetation for construction activities may lead to disturbance to natural habitats (wetlands, forestry areas, lagoons, etc)*
- *Clearing of surface vegetation in quarry sites and burrow sites may lead to the loss of land/ natural habitats*
- *Loss of fauna and flora in the road site due to construction works*
- *Disturbance to animal migration routes and patterns*
- *Pouching and hunting of animals by workers*
- *Disturbance to animal migration routes and patterns*
- *Changes to aquatic eco-systems due to siltation of waterways, changes to speed and volume of water flow*
- *Contamination of biota by emissions to air, water and soil during construction and material extraction works*
- *Loss of standing crops, fruit trees and commercially valuable trees due to construction works close to home gardens, chena lands and paddy fields*

5. Increased noise nuisance and vibration issues to public living close to construction areas and quarries. Following adverse impacts could occur after construction has been completed and during operational stage where periodic maintenance of the rehabilitated road and road furniture;

1. Flooding of road and surrounding areas due to blocking of culverts and other drainage structures
2. Threats of modification of previously pristine areas by humans as a direct result of improved accessibility

3. Road safety issues of road users
4. Encroachment in to new ROW

As indicated, rehabilitation of roads will have minimal amount of on-site environmental impacts. Disturbances to land, interference to soil stability and the hydrology in the area will be minimal. Impacts on air quality and noise levels during project operational stage will depend on the projected traffic flow increases and the anticipated reduction in traffic congestion both due to improved road conditions.

Issues and impacts identified will be mitigated through actions stipulated in table 4.1. Provincial offices of PRDA will execute these mitigation measures through respective Chief Engineers and Executive Engineers. ESD of RDA will monitor the effectiveness of implementation of the selected mitigation measures.

7.2 Mitigation measures for potential environmental issues and impacts

Impacts and issues relating to the development works discussed in the previous section could be avoided/ minimized by adopting various mitigation measures that could be applied during the preconstruction, construction and operation phases of the project. Below table outlines the impacts/ issues and possible mitigation measures that could be adopted to avoid/ minimize the impacts on physical, biological and social environments.

Table 7.1: Possible impacts and issues and mitigation measures

Environmental Issues	Protection and preventive measures	
1.0 Advance Works		
1.1	Land Acquisition	
	1.1.1	Removal of structures built within the existing road reservation
	(a)	Providing labour to shift and restore the structures outside the new road corridor.
	(b)	Possible livelihood restoration measures for affected persons should be considered in line with Environmental and Social Safeguard Policies of World Bank, National Involuntary Resettlement Policy (NIRP) and concession arrangements made by Ministry of Highways and Road Development for compensating project affected persons
	1.1.2	Acquisition of private/ state land for adjustments to road alignment
	(a)	Compensation based on the Land Acquisition Act (LAA), National Involuntary Resettlement Policy (NIRP) and concession arrangements made by Ministry of Highways and Road Development for compensating project affected private lands that may need to be acquired for road construction.
	(b)	Consent of Department of Forest (DoF), Department of Wildlife Conservation (DWLC), for releasing forest land that may need to be acquired due to minor adjustment to alignment within such areas.
	(c)	Identification of wildlife transition locations should be carried out in order to avoid any impacts such as potential of collision and run over of animals and disturbance to their natural movement.
	(b)	RDA should obtain prior consent from DoF and DWLC for the construction works near lands belonging to these institutes.
1.2	Road sections near archaeological sites	
	(a)	Prior consultation and consent should be taken from Department of Archaeology for proposed construction works close to archaeological sites.
1.3	Identification of utility supply lines that may need to be shifted	
	(a)	Prior consultation and consent should be taken from relevant service provider if sections of utility lines need to be shifted due to design requirements or shift in alignment.

Environmental Issues	Protection and preventive measures	
1.4	Design for culverts and bridges	
	(a)	RDA should obtain prior consent from relevant authorities such as Department of Irrigation, Department of Agrarian services, etc., for any proposed construction works on reservoir embankments, irrigation canals etc.
	(b)	Designs for bridges should conform to the requirements of the "Bridge Design Manual" of RDA considering a flood return period of 100 years. For culverts appropriate designs should be considered to allow sheath flow or cross drainage without any blocking.
2.0 Construction Phase		
2.1	Earthwork and Soil Conservation	
	2.1.1	Disposal of Debris and Spoil
	(a)	All debris and residual spoil material including any left earth shall be disposed only at locations approved by the engineer for such purpose and subjected to the clauses 2.1.1.b and 2.1.1.c.
	(b)	If directed by the engineer the contractor shall obtain the approval from the relevant Local Authority (LA) such as Pradeshiya sabha, Municipal Council and other government agencies (as required) for disposal and spoil at the specified location.
	(c)	The debris and spoil shall be disposed in such a manner that; (i) waterways and drainage paths are not blocked (ii) the disposed material should not be washed away by runoff and (iii) should not be a nuisance to the public
	(d)	If directed by the Engineer the debris and residual spoil material including any left earth shall be used, to refill the borrow areas as directed by the engineer, subjected to laying of topsoil as per EMAP clause 2.1.2.
	(e)	If consented by the engineer, contractor can dispose the debris and spoil as a filling material provided that the contractor can ensure that such material is used for legally acceptable purposes with disposed in an environmentally acceptable manner.
	2.1.2	Conservation and reuse of top soil
	(a)	Top soil of the agricultural areas and any other productive areas where it has to be removed for the purpose of this project shall be stripped to a specified depth of 150mm and stored in stockpiles of height not exceeding 2m, if directed by the engineer. If the contractor is in any doubt on whether to conserve the topsoil or not for any given area he shall obtain the direction from the engineer in writing
	(b)	Removed top soil could be used as a productive soil when replanting/establishing road side vegetation
	(c)	Such stockpiled topsoil must be returned to cover the areas including cut slopes where the topsoil has been removed due to project activities. Residual topsoil must be distributed on adjoining/proximate barren areas as identified by the engineer in a layer of thickness of 75mm – 150mm.
	(d)	Topsoil thus stockpiled for reuse shall not be surcharged or over burdened. As far as possible multiple handling of topsoil stockpiles should be kept to a minimum.
	2.1.3	Protection of Ground Cover and Vegetation
	(a)	Construction vehicle, machinery and equipment shall be used and stationed only in the areas of work and in any other area designated/ approved by the engineer. Entry and exit of construction vehicles and machinery should be restricted to particular points as directed by the engineer
	(b)	Contractor should provide necessary instructions to drivers, operators and other construction workers not to destroy ground vegetation cover unnecessarily
	2.1.4	Borrowing of Earth
	(a)	Earth available from excavation for roadside drains as per design, may be used as embankment materials, subject to approval of the engineer

Environmental Issues	Protection and preventive measures
(b)	Contractor shall comply with the environmental requirements/guidelines issued by the Central Environmental Authority (CEA) and the respective local authority with respect of locating borrow areas and with regard to all operations related to excavation and transportation of earth from such sites.
(c)	All borrow pits/areas should be rehabilitated at the end of their use by the contractor in accordance with the requirements/guidelines issued by the CEA and the respective local authority.
(d)	Borrow areas shall not be opened without the permission of the engineer. The location, depth of excavation and the extent of the pit or open cut area shall be as approved by the engineer.
(e)	Establishment of borrow pits/areas and its operational activities shall not cause any adverse impact to the properties. Also shall not be a danger of health hazard to the people.
(f)	Contractor shall take all steps necessary to ensure the stability of slopes including those related to temporary works and borrow pits.
2.1.5	Prevention of soil erosion
(a)	Embankment slopes, slopes of cuts, etc shall not be unduly exposed to erosive forces. These exposed slopes shall be graded and covered by grass as per the specifications. All fills, back fills and slopes should be compacted immediately to reach the specified degree of compaction and establishment of proper mulch.
(b)	Work that lead to heavy erosion shall be avoided during the raining season. If such activities need to be continued during rainy season prior approval must be obtained from the Engineer by submitting a proposal on actions that will be undertaken by the contractor to prevent erosion.
(c)	The work, permanent or temporary shall consist of measures as per design or as directed by the engineer to control soil erosion, sedimentation and water pollution to the satisfaction of the engineer. Typical measures include the use of berms, dikes sediment basins, fiber mats, mulches, grasses, slope drains and other devices. All sedimentation and pollution control works and maintenance thereof are deemed, as incidental to the earthwork or other items of work and no separate payment will be made for their implementation.
2.1.6	Contamination of soil by fuel and lubrications
(a)	Vehicle/machinery and equipment servicing and maintenance work shall be carried out only in designated locations/ service stations approved by the engineer
(b)	Approval from CEA in the form of an Environmental Protection Licenses (EPL) should be secured by the contractor if he intends to prepare his own vehicle servicing yard
(b)	Waste oil, other petroleum products and untreated wastewater shall not be discharged on ground so that to avoid soil pollution. Adequate measures shall be taken against pollution of soil by spillage of petroleum/oil products from storage tanks and containers. All waste petroleum products shall be disposed of in accordance with the guidelines issued by the CEA or the engineer.
(c)	Sites used for vehicle and plant service and maintenance shall be restored back to its initial status. Site restoration will be considered as incidental to work.
2.1.7	Disposal of harmful construction wastes
(a)	Contractor prior to the commencement of work shall provide list of harmful, hazardous and risky chemicals/ material that will be used in the project work to the Engineer. Contractor shall also provide the list of places where such chemicals/materials or their containers or other harmful materials have been dumped as waste at the end of the project.
(a)	All disposal sites should be approved by the engineer and approved by CEA and relevant local authority.

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(b)	The contractor shall clean up any area including water-bodies affected/contaminated (if any) as directed by the engineer at his own cost.
2.1.8.	Quarry operations
(a)	Utilizing the existing quarry sites available in the project influential area as much as possible which are approved by GSMB or local authorities, operating with EPL and Industrial Mining Licences (IML); If new quarries are to be opened, prior approval should be obtained from GSMB, CEA and local authorities such as Pradeshiya Sabha; Selected quarry sites should have proper safety measures such as warnings, safety nets etc., and third party insurance cover to protect external parties that may be affected due to blasting.
(b)	It is recommended not to seek material from quarries that have ongoing disputes with community.
(c)	The maintenance and rehabilitation of the access roads in the event of damage by the contractors operations shall be a responsibility of the contractor.
2.2	Storage and handling of construction material
2.2.1	Emission of dust
(a)	Storage locations of sand, metal, soil should be located away from settlements and other sensitive receptors and covered (with artificial barriers or natural vegetation). Measures given under clauses 2.4.1 (c), (d), (e) should be considered within material storage site to minimize dust during handling of material. All access roads within the storage site should be sprinkled with water for dust suspension.
2.2.2	Storage of fuel, oil and chemicals (avoid fumes and offensive odour)
(a)	All cement, bitumen (barrels), oil and other chemicals should be stored and handled on an impervious surface (concrete slab) above ground level. Storage facility of cement, bitumen (barrels), oil and other chemicals should be an enclosed structure ensuring that no storm water flows in to the structure. A ridge should be placed around the storage facility to avoid runoff getting in to the structure. Adequate ventilation should be kept to avoid accumulation of fumes and offensive odour that could be harmful to material handlers. Measures given under clause 2.9 should be considered to avoid any accidents and risks to worker population and public.
2.2.3	Transportation of material
(a)	The contractor should avoid over loaded trucks to transport material to construction sites.
2.3.	Water – Protection of Water Sources and Quality
2.3.1.	Loss of minor water sources and disruption to water users
(a)	Contractor should make employees aware on water conservation and waste minimization in the construction process.
(b)	Contractor shall protect sources of water (potable or otherwise) such as water sources used by the community so that continued use these water sources will not be disrupted by the work. In case the closure of such sources is required on temporary basis contractor shall provide alternative arrangement for supply. Alternative sources such as wells thus provided should be within acceptable distance to the original sources and accessible to the affected community.
(c)	Contractor shall not divert, close or block existing canals and streams in a manner that adversely affect down – stream intakes. If diversion or closure or blocking of canals and streams is required for the execution of work, contractor must obtain the engineers approval in writing. Contractor shall also obtain the approval from

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	the National Water Supply and Drainage Board (NWS&DB) or local authority of Divisional Secretary depending on the operating agency of the intake/water supply. Contractor shall restore the drainage path back to its original status once the need for such diversion or closure or blockage ceased to exist. During the affected period contractor shall supply water to the affected community.
(d)	In case the contractors activities going to adversely affect the quantity or quality of water, the contractor shall serve notice to the relevant authorities and downstream users of water sufficiently in advance.
	2.3.2 Siltation into water bodies
(a)	Contractor shall take measures to prevent siltation of water bodies as a result of his work including construction of temporary/ permanent devices to prevent water pollution due to siltation and increase of turbidity. These shall include the measures against erosion as per EMAP 2.1.6.
(b)	Construction materials containing small/ fine particles shall be stored in places not subjected to flooding and in such a manner that these materials will not be washed away by runoff.
(C)	Temporary soil dumps should be placed at least 200m away from all water bodies
(d)	If temporary soil piles are left at the site for a long time those piles should be covered with thick polythene sheets
(f)	All fills, back fills and slopes should be compacted immediately to reach the specified degree of compaction and establishment of proper mulch
	2.3.3 Alteration of drainage paths
(a)	Contractor shall not close or block existing canals and streams permanently. If diversion or closure or blocking of canals and streams is required for the execution of work (e.g. for construction of bypass), contractor must first obtain the Engineers approval in writing. Contractor shall carry out an investigation and report to the Engineer, if an investigation is requested by the Engineer. Contractor shall also obtain the approval from the relevant agency such as Department of Irrigation (DI)/Agrarian Services Department (ASD)/Divisional Secretary (DS) prior to such action is taken. Contractors shall restore the drainage path back to its original status once the need for such diversion or closure or blockage is no longer required.
(b)	The debris and spoil shall be disposed in such a manner that waterways and drainage paths are not blocked.
(c)	Avoid/ minimize construction works near/ at such drainage locations during heavy rain seasons such as Mara rains from November to December.
	2.3.4. Contamination of water from construction wastes
(a)	The work shall be carried out in such a manner that pollution of natural watercourses, inland tanks and irrigation canals is avoided. Measures as given in 2.1.6., 2.1.7, 2.1.8, 2.3.2 and 2.3.6. clauses shall be taken to prevent the wastewater produced in construction from entering directly into streams, water bodies or the irrigation systems.
(b)	Avoid/ minimize construction works near/ at such drainage locations during heavy rain seasons such as Mara rains from November to December.
(b)	The discharge standards promulgated under the National Environmental Act shall be strictly adhered to. All waste arising from the project is to be disposed in a manner that is acceptable to the engineer and as per the guidelines/instructions issued by the CEA.
	2.3.5. Contamination from fuel and lubricants
(a)	All vehicle and plant maintenance and servicing stations shall be located and operated as per the conditions and /or guidelines stipulated under the EPL issued by CEA. In general these should be located at least 200m away from water bodies and wastewater shall not be disposed without meeting the disposal standards of the CEA. Wastewater from vehicle and plant maintenance and servicing stations

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	shall be cleared of oil and grease and other contaminants to meet the relevant standards before discharging to the environment.
(b)	Vehicle, machinery and equipment maintenance and re-filling shall be done as required in EMAP clause 2.1.6. to prevent water pollution as well
	2.3.6. Locating, sanitation and waste disposal in construction camps
(a)	Locations selected for labour camps should be approved by engineer and comply with guidelines/ recommendations issued by the CEA/Local Authority (LA). Construction labourer's camps shall not be located within 200m from waterways, within an area coming under DWLC or DoF, near to a site or premises of religious, cultural or archaeological importance and school.
(b)	Labour camps shall be provided with adequate and appropriate facilities for disposal of sewerage and solid waste. The sewage systems shall be properly designed, built and operated so that no pollution to ground or adjacent water bodies/watercourses takes place. Garbage bins shall be provided the camps and regularly emptied. Garbage should be disposed off in a hygienic manner, to the satisfaction of the relevant norms. Compliance with the relevant regulations and guidelines issued by the CEA/LA shall be strictly adhered to.
(c)	Contractor shall ensure that all camps are kept clean and hygienic. Necessary measures shall be taken to prevent breeding of vectors
(d)	Contractor shall report any outbreak of infectious disease of importance in a labour camp to the engineer and the Medical Officer of Health (MOH) or to the Public Health Inspector (PHI) of the area immediately. Contractor shall carry out all instructions issued by the authorities, if any.
(e)	Contractor shall adhere to the CEA recommendations on disposal of wastewater. Wastewater shall not be discharged to ground or waterways in a manner that will cause unacceptable surface or ground water pollution.
(f)	All relevant provisions of the Factories Act and any other relevant regulations aimed at safety and health of workers shall be adhered to.
(g)	Contractor should remove all labour camps fully after its need is over, empty septic tanks, remove all garbage, debris and clean and restore the area back to its former condition.
	2.3.7. Wastage of water and waste minimization
(a)	The contractor will minimize wastage of water in the construction process/operations by reusing water as much as possible, utilizing only the required amount of water for the construction works etc...
(b)	The contractor shall educate and made employees aware on water conservation, waste minimization and safe disposal of waste following guidelines given by CEA and LA.
	2.3.8. Extraction of water
(a)	The contractor is responsible for arranging adequate supply of water for the project purpose throughout the construction period. Contractor shall not obtain water for his purposes including for labour camps from public or community water supplies without approval from the relevant authority. Such extraction (if approved) should be under direct supervision of the engineer
(b)	Extraction of water by the contractor for the project purposes shall comply with the guidelines and instructions issued by relevant authority. The Contractor shall not extract water from groundwater or from surface water-bodies without permission from the Engineer.
(c)	Construction over and close to the non-perennial streams shall be undertaken in the dry season. Construction over the irrigation canals, if disruption to the flow, quality of water and impact on the irrigation structure is expected (or probable in the view of the Engineer), will be undertaken under necessary permission from the Department of Irrigation.

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	(d)	The Contractor may use the natural sources of water subject to the provision that any claim arising out of conflicts with other users of the said natural sources of water shall be made good entirely by the contractor
2.4.	Flood Prevention	
	2.4.1.	Blockage of drainage paths and drains
	(a)	Contractor's activities shall not lead to flooding conditions as a result of blocked drainage paths and drains. The contractor shall take all measures necessary or as directed by the Engineer to keep all drainage paths and drains clear of blockage at all times.
	(b)	If flooding or stagnation of water is caused by contractor's activities, contractors shall provide suitable means to (a) prevent loss of access to any land or property and (b) prevent damage to land and property. Contractor shall compensate for any loss of income or damage as a result.
	2.4.2	Work in Flood Prone Areas
	(a)	Contractor's activities shall not lead to aggravate floods in flood prone areas when working in flood prone areas.
	(b)	When working in flood prone areas during rainy season the contractor shall avoid storing materials, chemicals and other items of work in areas where those can be washed away by the floods.
2.5	Air Pollution	
	2.5.1.	Generation of Dust
	(a)	The contractor shall effectively manage the dust generating activities such as topsoil removal, handling and transporting sand, rubble, bitumen, and cement during periods of high winds or during more stable conditions with winds directed towards adjacent residences and other facilities.
	(b)	All stockpiles shall be located sufficiently away from sensitive receptors.
	(c)	All vehicles delivering materials shall be covered to avoid spillage and dust emission.
	(d)	The Contractor should avoid, where possible and take suitable action to prevent dirt and mud being carried to the roads (particularly following wet weather).
	(e)	The contractor should enforce vehicle speed limits to minimize dust generation.
	(f)	The Contractor shall employ a water truck to sprinkle water for dust suppression on all exposed areas as required (note: the use of waste water / waste oil for dust suppression is prohibited)
	(g)	All cleared areas shall be rehabilitated progressively.
	(h)	All earthwork shall be protected in a manner acceptable to the minimize generation of dust.
	(i)	All existing highways and roads used by vehicles of the contractor, or any of his sub-contractor or supplies of materials or plant and similarly roads which are part of the works shall be kept clean and clear of all dust/mud or other extraneous materials dropped by such vehicles or their tyres.
	(j)	Clearance shall be affected immediately by manual sweeping and removal of debris, or, if so directed by the Engineer, by mechanical sweeping and clearing equipment. Additionally, if so directed by the Engineer, the road surface will be hosed or sprinkled water using appropriate equipments.
	(k)	Plants, machinery and equipment shall be handled (including dismantling) so as to minimize generation of dust.
	(l)	The contractor shall take every precaution to reduce the level of dust emission from the hot mix plants and the batching plants up to the satisfaction of the Engineer in accordance with the relevant emission norms.
	(m)	The hot mix plant be sited in accordance with CEA guidelines and operated with an EPL. The hot mix plants shall be fitted with the requirements of the relevant current emission control legislation.
	2.5.2	Emission from Hot-Mix Plants and Batching Plants

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	(a)	The hot mix plants and batching plants shall be sited in accordance with CEA guidelines. It is recommended that hot mix plants and batching plants to be located sufficiently away from sensitive receptors such as vulnerable habitats, religious, cultural and archaeological sites, residential areas, schools and industrial areas (locations given in item 2.4.1).
	(b)	The exhaust gases shall comply with the requirements of the relevant current emission control legislation. All operations at plants shall be undertaken in accordance with all current rules and regulations protecting the environment as well as the conditions given in the EPL.
	2.5.3.	Odour and offensive smells
	(a)	Contractor shall take all precautions such as storing all chemicals used for construction works in properly closed containers with good ventilations to prevent odour and offensive smell emanating from chemicals and processes applied in construction works or from labour camps. In a situation when/where odour or offensive smell does occur contractor shall take immediate action to rectify the situation. Contractor is responsible for any compensation involved with any health issue arisen out of bad odour and offensive smells.
	(b)	The waste disposal and sewerage treatment system for the labour camps shall be properly designed, built and operated so that no odour is generated. Compliance with the regulations on health and safety as well as CEA and LA guidelines shall be strictly adhered to.
	2.5.4.	Emission from construction Vehicles, Equipment and Machinery
	(a)	The emission standards promulgated under the National Environment Act shall be strictly adhered to.
	(b)	All vehicles, equipment and machinery used for construction shall be regularly serviced and well maintained to ensure that emission levels comply with the relevant standards.
	(c)	Contractor should obtain the certificate issued by the Vehicular Emission Test (VET) for all construction vehicles, plants and other machineries and it should be renewed annually
	2.5.5.	Air Pollution from Crusher
	(a)	Crusher plants should operate under an EPL and shall confirm to relevant dust emission levels as stated in the EPL. Only the quarries approved by GSMB and holding current EPL shall be used for material extraction.
	(b)	Crushing plants shall be sited sufficiently away from sensitive receptors such as houses, schools, hospitals, temples, shrines and outdoor recreation areas (locations given under item 2.4.1) or as required by the Engineer.
	(c)	Sprinkling of water (through a sprinkler system) for dust suppression.
2.6.Noise Pollution and Vibration		
	2.6.1	Noise from Vehicles, Plants and Equipment
	(a)	All machinery and equipment should be well maintained and fitted with noise reduction devices in accordance with manufacturer's instructions.
	(b)	In construction sites within 150 m of the nearest habitation, noisy construction work such as crushing, concrete mixing and batching, mechanical compaction, etc., will be stopped between 20.00 hours to 06.00 hours .In silence zone (areas up to 100 m around such premises as hospitals, educational institutional and courts) no hot-mix, batching or aggregate crushing plant will be allowed. No construction shall take place within 100m around hospitals between 20.00 hours to 06.00 hours. Near noise sensitive sites, such as hospitals, educational institutional and courts noisy equipment shall not be used during noise sensitive times of the day.
	(c)	All vehicles and equipment used in construction shall be fitted with exhaust silences. During routine servicing operations, the effectiveness of exhaust silencers shall be checked and if found to be defective shall be replaced.

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	Notwithstanding any other conditions of contract, noise level from any item of plant(s) must comply with the relevant legislation for levels of sound emission. Non-compliant plant shall be removed from site.
(d)	Noise limits for construction equipment used in this project (measured at one meter from the edge of the equipment in free field) such as compactors, rollers, front loaders, concrete mixers, cranes (moveable), vibrators and saws shall not exceed 75 dB(A)c Day time and shall not exceed 60 in the night time.
(e)	Maintenance of vehicles, equipment and machinery shall be regular and proper, to the satisfaction of the Engineer, to keep noise from these at a minimum.
(f)	Workers in vicinity of strong noise, and workers working with or in crushing, compaction, batching or concrete mixing operations shall be provided with protective gear.
2.6.2	Vibration
(a)	Contractor shall take appropriate action to ensure that construction works do not result in damage to adjacent properties due to vibration.
(b)	Prior to commencement of excavation, blasting activity, the Contractor shall undertake a condition survey of existing structures within the zone of influence, as agreed with the relevant government agencies and the engineer.
(c)	Contractor shall carry out monitoring at the nearest vibration sensitive receptor during blasting or when other equipments causing vibration are used.
(d)	The contractor shall modify the method of construction until compliance with the criteria, if vibration levels exceed the relevant vibration criteria.
(e)	Contractor shall pay due consideration on vibration impacts of blasting on adjoining structures. Explosive loads shall be determined so that excessive vibration can be avoided and blasts shall be controlled blasting in nature. Notwithstanding to these provisions contractor is liable for any damage caused by blasting work.
2.6.3	Noise from Blasting or Pre splitting Operations
(a)	Blasting shall be carried out only with permission of the Engineer and approval from GSMB for road side blasting all the statutory laws, regulators, rules, etc., pertaining to acquisition, transport, storage, handling and use of explosives shall be strictly followed.
(b)	Blasting shall be carried out during fixed hours (preferably during mid-day), as permitted by the Engineer. The timing should be made known to all the people within 500 m (200 m for pre-splitting) from the blasting site in all directions. People, except those who actually light the fuse shall be excluded from the area of 200 m (50 m for pre-splitting) from the blasting site in all directions at least 10m minutes before the blasting.
2.7.	Impacts to Flora
2.7.1	Loss or Damage to Trees and Vegetation
(a)	All works shall be carried out in a manner that the destruction to the flora and their habitats is minimised. Trees and vegetation shall be felled / removed only if that impinges directly on the permanent works or necessary temporary works. In all such cases contractor shall take prior approval from the Engineer.
(b)	Contractor shall make every effort to avoid removal and/or destruction of trees of religious, cultural and aesthetic significance. If such action is unavoidable the Engineer shall be informed in advance and carry out public consultation and report on the same should be submitted to the Engineer.
(c)	Contractor shall adhere to the guidelines and recommendations made by the Central Environmental Authority, if any with regard to felling of trees and removal of vegetation.

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	(d)	If the trees and vegetation that require removal is in a forest plantation or natural forest under the jurisdiction of the DoF the contractor shall take prior approval from the DoF for such removal and adhere to conditions /guidelines imposed by the DoF if any.
	(e)	If the trees and vegetation that require removal is in a protected area under jurisdiction of the Department of Wildlife Conservation, the contractor shall take prior approval from the DWLC for such removal and adhere to conditions /guidelines imposed by the DWLC if any.
	(f)	Removed trees must be handed over to the Timber Corporation.
	(g)	A compensatory tree planting program should be developed in consultation with DoF, local authorities and communities in order to replenish the loss of trees. At least 2 good specimens of same tree species (having > 4 cm DBH) should be planted for each tree removed. Compensatory tree planting should be attended for about two years to promote survival of the replanted specimens Replanting should be as near as possible to the removal location Planting of selected fast growing trees which are of native species Replanting in the private lands could be encouraged to compensate impact due to loss of vegetation in private lands
	2.7.2	Chance found important Flora
	(a)	During construction, if a rare/threatened/endangered flora species is found, it shall be immediately informed to the PMU by the contractor. All activities that could destroy such flora and/or its habitat shall be stopped with immediate effect. Such activities shall be started only after obtaining the Engineer's approval. Contractor shall carry out all activities and plans that the Engineer instructed him to undertake to conserve such flora and/or its habitat.
2.8.	Impact on Fauna	
	2.8.1.	Loss, Damage or Disruption to Fauna
	(a)	All works shall be carried out in such a manner that the destruction or disruption to the fauna and their habitats is minimum, including disturbance, disruption of movement, and direct or indirect killing of wildlife. Forest Department (FD) and / or Department of Wildlife Conservation (DWC) shall be consulted for specific mitigation measures in known areas of elephant and other wild large mammals crossings or in case of their sighting by workers.
	(b)	Construction workers shall be instructed to protect fauna including wild animals and aquatic life as well as their habitats. Hunting, poaching and unauthorized fishing by project workers is not allowed.
	(c)	Strict worker force supervision should be carried out by the contractor when conducting construction work close to forest lands of DoF and DWLC Construction workers shall not be allowed to trespass into such forest land
	(d)	Siting of all hot mix plants, crushing plants, workshops, depots and temporary worker camps and storing of toxic and hazardous materials at approved locations, and recycling and dumping of solid waste matter at locations approved by local authorities, maintenance of vehicles and equipment in good operable condition, ensuring no leakage of oil or fuel and the fitting of proper exhaust baffles. Any solid waste should not be dumped into water bodies.
	(e)	Regular and adequate fuel supplies of Liquid Petroleum Gas (LPG) or kerosene to worker camps in order to avoid workers scavenging for fuel wood from the proposed forest reserves and sanctuary areas.
	2.8.2	Chance found important Fauna
	(a)	During construction, if a rare/threatened/endangered fauna species is found, it shall be immediately informed to the PMU by the contractor. All activities that could destroy such fauna and/or its habitat shall be stopped with immediate

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		effect. Such activities shall be started only after obtaining the Engineer's approval. Contractor shall carry out all activities and plans that the Engineer instructed him to undertake to conserve such fauna and/or its habitat.
2.9.	Disruption to Users	
	2.9.1	Loss of Access
	(a)	At all times, the Contractor shall provide safe and convenient passage for vehicles, pedestrians and livestock to and from side roads and property accesses connecting the project road. Work that affects the use of side roads and existing accesses shall not be undertaken without providing adequate provisions to the prior satisfaction of the Engineer.
	(b)	The works shall not interfere unnecessarily or improperly with the convenience of public or the access to, use and occupation of public or private roads, railways and any other access footpaths to or of properties whether public or private.
	(c)	On completion of the works, all temporary obstructions to access shall be cleared away, all rubbish and piles of debris that obstruct access be cleared to the satisfaction of the Engineer.
	(d)	Providing advance information to the public about the planned construction works and activities causing disruption to access roads, and the temporary arrangements made to give relief to public in order to avoid any inconveniences due to the construction activities.
	(e)	Use of flagmen and/or temporary traffic lights to control traffic flows at constricted sites, including safe crossing for pedestrians especially at town areas and near schools.
	2.9.2	Traffic Jams and Congestion
	(a)	Detailed Traffic Control Plans shall be prepared and submitted to the Engineer for approval 5 days prior to commencement of works on any section of road. The traffic control plans shall contain details of temporary diversions, details of arrangements for construction under traffic and details of traffic arrangements after cession of work each day. If directed by the Engineer the contractor shall obtain the consent for the traffic arrangement from the Local Police.
	(b)	Temporary diversion of traffic to facilitate construction work shall have the approval of the Engineer. If directed by the Engineer the contractor shall obtain the consent for the traffic arrangement from the Local Police.
	(c)	Special consideration shall be given in the preparation of the traffic control plan to the safety of pedestrians and workers at night.
	(d)	The contractor shall ensure that the road surface is always properly maintained, particularly during the monsoon so that no disruption to the traffic flow occurs.
	(e)	The temporary traffic detours shall be kept free of dust by frequent application of water.
	(f)	Personnel used for traffic control by the contractor shall be properly trained, provided with proper gear including communication equipment, luminous jackets for night use. All signs, barricades, pavement markings used for traffic management should be to the standards and approved by the Engineer/ Police.
	(g)	The manual of traffic control devices of RDA Should be followed during construction period in order to ensure the safety and traffic control.
	2.9.3	Traffic Control and Safety
	(a)	The Contractor shall take all necessary measures for the safety of traffic during construction and provide, erect and maintain such barricades, including signs, markings, flags, lights and flagmen as may be required by the Engineer for the information and protection of traffic approaching or passing through the section of the highways under improvement. The provision of traffic safety measures shall be considered incidental to work and follow The Institute for Construction Training and Development (ICTAD) guidelines and instructions given by the Police, if any.

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	(b)	Informing the public through newspapers/ announcements/ radio/ TV etc. about the construction activities in order to avoid any inconveniences due to the construction activities.
2.10.	Accidents and Risks	
	2.10.1	Public and Worker safety
	(a)	All reasonable precautions will be taken to prevent danger of the workers and the public from accidents such as fire, explosions, blasts, falling rocks, falling to excavated pits, chemical sprays, unsafe power supply lines etc.
	(b)	The Contractor shall comply with requirements for the safety of the workmen as per the international labour organisation (ILO) convention No. 62 and Safety and Health regulations of the Factory Ordinance of Sri Lanka to the extent that those are applicable to this contract. The contractor shall supply all necessary safety appliances such as safety goggles, helmets, masks, boots, etc., to the workers and staff. The contractor has to comply with all regulations regarding safe scaffolding, ladders, working platforms, gangway, excavations, trenches and safe means of entry and egress.
	2.10.2	Prevention of Risks of Electrocutation
	(a)	All electrical wiring and supply related work should conform to British Standards (BS) or relevant Sri Lankan Standards. Adequate precautions will be taken to prevent danger of electrocuting from electrical equipment and power supply lines including distribution boards, transformers, etc. Measures such as danger signboards, danger/red lights, fencing and lights will be provided to protect the public and workers. All electric power driven machines to be used in the construction shall be free from defect, be properly maintained and kept in good working order, be regularly inspected and as per BS provisions and to the satisfaction of the Engineer.
	2.10.3	Risk at Hazardous Activity
	(a)	All workers employed in hazardous activities shall be provided with necessary protective gear. These activities include mixing asphalt material, cement, lime mortars, concrete etc., welding work, work at crushing plants, blasting work, operators of machinery and equipment such as power saws, etc.
	(b)	The use of any toxic chemical shall be strictly in accordance with the manufacturer's instructions. The Engineer shall be notified of toxic chemicals that are planned to be used in all contract related activities. A register of all toxic chemicals delivered to the site shall be kept and maintained up to date by the Contractor. The register shall include the trade name, physical properties and characteristics, chemical ingredients, health and safety hazard information, safe handling and storage procedures, and emergency and first aid procedures for the product.
	2.10.4	Lead Pollution
	(a)	No paint containing lead or lead products will be used except in the form of paste or readymade paint. Face masks shall be supplied to workers who are working in spray painting or scraping lead paints.
	2.10.5	Handling of Explosives (when applies)
	(a)	Except as provided in the contract or ordered or authorized by the Engineer, the Contractor shall not use explosives. Where the use of explosives is so provided or ordered or authorized, the Contractor shall comply with the requirements of the following Sub-Clauses of this Clause besides the law of the land as applicable.
	(b)	The Contractor shall at all times take every possible precaution and shall comply with relevant laws and regulations relating to the importation, handling, transportation, storage and use of explosives. Contractor shall obtain Ministry of

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		Defence (MoD) approval for importing and handling explosives and keep the Local Police informed of the same.
	(c)	Contractor shall take precaution to prevent injury to people and damage the structures/houses and vehicles in the vicinity at the locations of blasting work. Blasting should be controlled to prevent vibration damage to structures and injury to people. The vehicles and road users should be stopped at a reasonable distance from the site and people in the vicinity should be informed when the blasting is carried out. Any debris on the road should be removed promptly before clearing the road for users. Blasting work should be carried out in off peak hours but not during the hours of darkness or at other times, which may cause unacceptable disturbance to religious or other ceremonies.
	(d)	Sufficient and adequate warning shall be given prior to blasting. Use of flagmen, siren, etc. should be arranged to the full satisfaction of the Engineer. The public in the area should be informed well in advance about the blasting operation and timing.
2.11.	Health and Safety	
	2.11.1	Prevention of Vector based Diseases
	(a)	Contractor shall take necessary actions to prevent breeding of mosquitoes at places of work, labour camps, plus office and store buildings. Stagnation of water in all areas including gutters, used and empty cans, containers, tyres, etc shall be prevented. Approved chemicals to destroy mosquitoes and larvae should be regularly applied. All burrow sites should be rehabilitated at the end of their use by the contractor in accordance with the requirements/guidelines issued by the Central Environmental authority and relevant local authorities
	(b)	Contractor shall keep all places of work, labour camps, plus office and store buildings clean devoid of garbage to prevent breeding of rats and other vectors such as flies.
	2.11.2	Workers Health and Safety
	(a)	Contractor shall comply with the provisions in Health and Safety regulations under the Factory Ordinance with regard to provision of health and safety measures and amenities at work place(s).
	2.11.3	First Aid
	(a)	At every workplace, first aid kit shall be provided as per the regulations. At every workplace an ambulance room containing the prescribed equipment and nursing staff shall be provided.
	2.11.4	Potable Water
	(a)	In every workplace and labour camps portable water shall be available throughout the day in sufficient quantities.
	2.11.5	Hygiene
	(a)	The contractor shall provide and maintain necessary (temporary) living accommodation and ancillary facilities for labour to standards and scale approved by the resident engineer.
	(b)	At every workplace and labour camps sufficient number of bathing facilities, latrines and urinals shall be provided in accordance with the Health and Safety regulations and/or as directed by the Engineer. These bathroom and toilet facilities shall be suitably located within the workplace/buildings. Latrines shall be cleaned at least three times daily in the morning, midday and evening and kept in a strict sanitary condition. If women are employed, separate latrines and urinals, screened from those for men and marked in the vernacular shall be provided. There shall be adequate supply of water, within and close to latrines and urinals.

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	(c)	The sewage system for the camp must be properly designed, built and operated so that no health hazard occurs and no pollution to the air, ground or adjacent watercourses takes place.
	(d)	Garbage bins must be provided in the camp, work sites and regularly emptied and the garbage disposed off in a hygienic manner. Construction camps shall have a clean hygienic environment and adequate health care shall be provided for the work force.
	(e)	Unless otherwise arranged for by the Local Authority, the contractor shall arrange proper disposal of sludge from septic tanks. The contractor shall obtain approval for such disposal from the Public Health Inspector of the area.
2.12	Protection of Archaeological, Cultural and Religious Places and Properties	
	2.12.1	Prevention of damage to Archaeological, Cultural and Religious Places and Properties
	(a)	During construction activities the contractor should take all necessary and adequate care to minimize impacts on archaeological and cultural properties which includes cultural sites and remains, places of worship including temples, mosques, churches and shrines. Workers should not be allowed to trespass in to such areas.
	(b)	Conservation and protection measures shall be taken up as per design and as per the instructions issued by the Department of Archaeology (DoA) or Department of Cultural Affairs when working close to such sites. Contractor shall seek advice from the Engineer if such instructions are not available. Access to such properties from the road shall be maintained clear and clean.
	(c)	Blasting work shall not be allowed near or within archaeological and historical sites without prior approval of the Department of Archaeology and the Engineer.
	2.12.2	Chance found Archaeological property
	(a)	All fossils, coins, articles of value of antiquity and structures and other remains or things of geological or archaeological interest etc. discovered on the site and/or during construction work shall be the property of the Government of Sri Lanka, and shall be dealt with as per provisions of Antiquities Ordinance of 1940 (Revised in 1956 & 1998)
	(b)	The contractor shall take reasonable precaution to prevent his workmen or any other persons from removing and damaging any such article or thing and shall, immediately upon discovery thereof and before removal acquaint the Engineer of such discovery and carry out the Engineer's instructions for dealing with the same, awaiting which all work shall be stopped within 100m in all directions from the site of discovery.
	(c)	If directed by the Engineers the Contractor shall obtain advice and assistance from the Department of Archaeological of Sri Lanka on conservation measures to be taken with regard to the artefacts prior to recommencement of work in the area.
2.13	Environmental Enhancement	
	2.13.1	Roadside Landscape
	(a)	Road landscape plantation, re-vegetation of road embankments and other slopes, edge treatment of water bodies shall be taken up as per either detailed design or typical design guidelines given as part of the Bid Documents. The contractor also shall remove all debris, piles of unwanted earth, spoil material, away from the roadsides and from other work places and disposed at locations designated or acceptable to the Engineer or as per Clause 2.1.1.
	(b)	On completion of the works, the temporary structures shall be cleared away in full, all rubbish burnt, waste dumps and septic tank shall be filled and closed and roadsides, workplaces and labour camps, cleared and cleaned.
	2.13.2	Utilities and Roadside Amenities

Environmental Issues		Protection and preventive measures
	(a)	Contractor shall replace all amenities such as bus shelters that were removed/ relocated during the construction unless the Engineer directed the contractor not to do so.
	(b)	Contractor shall take care not to damage/destroy or affect the functional purposes of utilities such as water, electricity, telephone posts. The arrangements the contractor made with those service providers shall be informed to the Engineer in writing (advance work). Contractor shall assist the service providers in whatever possible manner to minimize disruption to such services.
	(c)	In case of an inadvertent damage cause to a utility, the contractor shall immediately inform the service provider and help to restore the service without delay.
	2.13.3	Road Furniture
	(a)	Road furniture including footpaths, railings, storm water drains, crash barrier, traffic signs, speed zone signs, pavement markers and any other such items will be provided as per design given in the Bid Documents.
	(b)	Intersections, rotaries, traffic islands, roadside protection and other structures or furniture shall be constructed, complete with the landscape elements as per design in the above manner.
2.14	Handling Environmental Issues during Construction	
	(a)	The Contractor will appoint a suitably qualified Environmental Officer following the award of the contract. The Environmental Officer will be the primary point of contact for assistance with all environmental issues during the pre-construction and construction phases. He/ She shall be responsible for ensuring the implementation of EMAP.
	(b)	The Contractor shall appoint a person responsible for community liaison and to handle public complaints regarding environmental/ social related matters. All public complaints will be entered into the Complaints Register. The Environmental Officer will promptly investigate and review environmental complaints and implement the appropriate corrective actions to arrest or mitigate the cause of the complaints. A register of all complaints is to be passed to the Engineer within 24 hrs they are received, with the action taken by the Environmental Officer on complains thereof.
	(c)	Contractor shall develop suitable method to receive complaints. The complain register shall be placed at a convenient place, easily accessible by the public.
	(d)	Contractor shall prepare detailed Environmental Method Statement (EMS) clearly stating the approach, actions and manner in which the EMAP is implemented. It is required from the contractor to prepare the EMS for each work site, if work will be carried out at more than one site at once and time plan for implementation. The EMS shall be updated regularly and submit for Engineers review.
3.0 Operational stage (periodic maintenance)		
	3.1	Stagnation of water at culverts during heavy rains due to siltation and blocking of openings with debris
		Regular clearing/ cleaning and maintenance of all culverts to reduce the chances of failures and blocking due to debris. Maintenance manual of RDA should be followed to maintain the road drainage system. Debris and materials that are removed from blocked drains and culverts should be disposed at only suitable sites.
	3.2	Loss, damage or disruption to fauna
		Placing warning signs at locations where wild animal movement corridors cross the road. Such sign posts should be placed at least 1 km before approaching the area in order for the drivers to be more vigilant and reduce speed.

Environmental Issues	Protection and preventive measures
	3.3. Road safety
(a)	All road furniture described under item 2.12.3 should be maintained by RDA
(b)	A management plan should be formulated with the local police to avoid any vehicle to carry loads that exceed the carrying capacity (load) of the rehabilitated road. Weigh stations could be introduced at selected locations to measure the load of vehicle.
	3.4. Encochement of new ROW
	Continuous monitoring and strict regulations should be followed to avoid the encroachment. Executive Engineers under direct supervision of Chief Engineer and Provincial Director should conduct regular checking along the road and remove any unauthorized activities within the ROW.

7.3 Environmental indicators to ensure implementation of mitigation measures

Effectiveness of suggested mitigation measures should be assessed in order to determine the implementation of the EMAP and compensation given to project affected persons (APs). Following is a list of such indicators and how best they could be assessed;

Impacts on soil

Soil should not be exposed to water or air erosion. The works, permanent or temporary, shall consist of measures as per design or as directed by the engineer to control soil erosion, sedimentation and water pollution. Typical measures include the use of berms, dikes sediment basins, fiber mats, mulches, grasses, slope drains and other devices. Measures to prevent soil contamination (petroleum products, wastewater, etc.) shall be taken in accordance with the ESMP or the engineer. Relevant past project experience in similar physical settings could be used for mitigating impacts to soil in the current project.

Impacts on surface and ground water

The reconnaissance survey to the study area should be targeted to identify the hydrological character of the area and an understanding of the likely modifications to the baseline conditions that could occur due to road improvements works will be required to assess the impacts on surface and ground water. It should be noted that a hydrological study should be conducted under detailed design; therefore this information should be reflected in the EA.

In terms of impacts to water quality baseline conditions for sensitive and important water bodies should be established using physical, chemical and biological parameters. When establishing the baseline conditions, it is very necessary that the selection of appropriate parameters to be monitored is carried out instead of testing the whole range which would result in the collection of large sets of data that would not be useful.

Impacts on ambient air quality

Generation of dust will be the main concern during construction phase of the project. However, this impact will be localized as the construction works will be mainly limited to the existing ROW. Measuring selected air quality parameters at the nearest receiver will be the ideal approach in determining the effectiveness of mitigation measures that are used to suppress dust.

Impacts on eco-systems

Evaluation of ecological impacts should be done with three objectives, that is; to take stock of the existing conditions, determine the sensitivity of these conditions to the proposed project and to predict the short term and long term environmental response. As the rehabilitation works are to be limited to the ROW, it is anticipated that impacts on flora and fauna will be not significant. However, trees close to the existing road edges will need to be removed for road widening. Hence a tree survey should be undertaken at very initial stage of the project.

Impacts of noise

Noise generated through construction operations and vehicle movement will have an impact on settlements through which the road passes fauna living in forest areas close to road sections under the project. Establishing baseline noise levels at sensitive receivers will assist to minimize noise impacts during construction stage.

CHAPTER 8: POTENTIAL SOCIAL IMPACTS AND MITIGATION MEASURES

Social screenings carried out indicate that the proposed rehabilitation and maintenance activities involve improvement of the surface, construction of side drains, widening or replacement of culverts and bridges, removal of the roadside structures and trees. As such, these activities are not expected to require the acquisition of land (and as a result, may not involve physical displacement) but there may be some temporary economic displacement of people in certain locations, while the civil works are being carried out. In rare instances, there may also be the need for small parcels of land primarily for safety reasons. The ESMF establishes a process by which members of potentially affected communities participate in design of project components, determination of measures necessary to achieve the said objectives, and implementation and monitoring of project activities.

8.1 Potential Social Issues and Impacts

The selected roads under the Project are currently in-use public roads under the respective provincial councils. Further, when rehabilitating these roads, road widening is not in scope. Therefore, there is no impact to dwellers on either side of these roads with regards to their land titles or ownership. In rare cases in the past, there have been instances of dwellers blocking a road drain or culvert by constructing building or foot path to cross over to their land.

In general, the following are potential beneficial as well as adverse impacts from the project.

8.1.1 Potential Positive Social Impacts

The positive social impacts include the following:

1. Savings in travel time with improved roads;
2. Savings in fuel cost;
3. Savings in repair and maintenance of vehicles;
4. Better prices of agricultural products and inputs for farmers who would get better market accessibility with better roads network;
5. Regular and on-time attendance of children in schools;
6. Regular public and private bus services;
7. All categories of people, particularly the vulnerable (patients, elderly people, pregnant women, etc) would benefit from improved roads with better access to hospitals, dispensaries, markets, offices, etc;

8.1.2 Potential Negative Social Impacts

The anticipated negative impacts include the following:

1. Increase in road accidents due to high speed driving of vehicles once the roads are improved;
2. Long term negative impacts such as rural-urban migration;
3. Change of attitudes and values as a consequence of the impact of the urban culture;

4. Problems with laying of water pipes on roads once the asphalt layer is placed on the roads as digging again would damage the road;
5. Negative impact during construction phase particularly regarding loss of access, storing of building material on the roadside, dust and noise generated by construction work, unusual delay in public and private transportation;
6. Fears of meddling in village affairs and loss of privacy due to labor influx;
7. Potential loss or damage to private or community owned land, assets/infrastructure/livelihood, though expected to be minimal, if any;
8. Loss of access to houses and shops during construction;
9. Loss of livelihood for vulnerable groups including mobile vendors, encroachers/squatters and others without land title;
10. Issues concerning mobility of women and children during construction.

8.2 Social Management Planning

This chapter provides strategies and principles for identifying project affected individuals, families, and communities; to assess potential social impacts of sub-projects; and suggests measures to avoid/minimize and manage any adverse impacts. The ESMF is meant to enable the PMU to adequately incorporate social safeguard considerations in the planning, execution, and operation/management of different activities under the project. The process for social and environmental impact screening and subsequent preparation of mitigation and management measures will follow the steps as outlined below. The World Bank will review the documentation prepared and may undertake site visits on a periodic basis to ensure that World Bank procedures were followed.

8.2.1 Social Screening

All physical interventions will be subject to a social and environmental review and will be categorised based on the magnitude of potential impacts and risks. Screening of sub-projects for assessing their potential impacts will be carried out by the PMU. The process of the screening, and subsequently, the screening reports will be prepared on the basis of: (i) field visits, data collection, and stakeholder consultations; (ii) data analysis and interpretation; (iii) impact identification; and (iv) using the 'Social Screening Format,' including recommendations for the next steps. It is anticipated that under the project, the social impacts will not be significant (but needs to be verified by applying the Social Screening Checklist), and as such, a Social Screening Report (SSR) will be prepared by the social specialist and/or consultant.

8.2.2 Social Impact Assessment, inventory of losses, and valuation

If the social screening indicates that the Project will potentially lead to adverse impacts, the Project will carry out an Environmental and Social Impact Assessment, if the screening indicates adverse impacts on land, assets, livelihoods, etc. *As mentioned earlier, impacts on private or community land or other assets due to minor realignments and resurfacing works, are expected to be temporary and minimal, if any.*

8.2.3 Preparation of Social Management Plans

For all physical activities carried out under the Project, an Environment and Social Management Plan (ESMP) that also includes monitoring indicators will be prepared. Such safeguards management plans will address the relevant findings and draw on the conclusions of the screening/assessments as they relate to non-land related impacts of the Project interventions. Further, for activities that involve temporary losses due to construction (e.g., access restrictions, damages to private assets such as gates, parapet walls, damages to crops, temporary loss of income, etc.) and/or voluntary land donation, a Social Impact Management Plan (SIMP) will be developed. . The SIMP will describe and prioritize the actions needed to implement mitigation measures, corrective actions, and monitoring measures necessary to manage the impacts and risks identified in the assessments. These actions will be costed and reflected as part of the contractual documents of the civil works contractors, wherever relevant. Where relevant, the ESMPs and SIMPs will also include specific measures relating to gender, community consultations, vulnerable groups, labour influx, and GBV, among others as described in the SMF.

8.2.4 Review and Clearance of Safeguards Documents

The PMU will be responsible for preparing and implementing the social management plans, including the ESMPs. These management plans will have to be reviewed and approved by the PMU and submitted to the World Bank for review on a sample basis. The World Bank Task Team will also review the documents, conduct a due diligence review as needed, and provide feedback (as necessary) to the PMU, leading to approval and clearance of the safeguard instruments.

8.2.4 Implementation – Supervision, Monitoring, and Evaluation

Timely and effective monitoring is fundamental to ensure compliance, timely decision-making, to facilitate adaptive management and effective implementation of mitigating measures, and to adequately inform project evaluation and closure. Implementation of sub-project safeguards instruments is the responsibility of the PMU, contractors, and other relevant government agencies, if necessary. Costs associated with the GoSL processes and the cost of monitoring will be borne by the PMU, and the PMU will also be responsible for employing monitoring teams. Members of the monitoring teams will have been trained in the application of the ESMF to undertake safeguards compliance monitoring. PMU compliance monitoring reports will be prepared on a monthly basis and reported to the World Bank on a semi-annual basis, or as and when required.

8.3 Impact Mitigation Principles and Modalities

This ESMF will assist in mitigating the social safeguards impacts resulting from project interventions. This has been prepared in keeping with World Bank's operational policies relating to social safeguards and GoSL's regulations. The following are principles that will be adopted in considering the impacts and mitigation measures:

- Absence of title, formal registration, etc., will not be considered a bar to compensate for loss of assets, livelihoods, etc
- Vulnerability of project affected persons, in terms of economic, social, and gender characteristics will be identified and mitigated with appropriate policies;

- Where community owned facilities or restricting access to common property resources etc., occurs as a result of the project related interventions, the project will rebuild such facilities and provide alternative access;
- Cut-off dates will be established to determine compensation eligibility of persons and their assets. These are the dates on which census of the affected persons and their assets will be taken. Any claim for compensation by affected people after the cut-off date will be ineligible for compensation;
- There will be no land acquisition in the project. Any land that is required will be voluntarily donated or the project will use land owned by the government, using the procedures set out in this ESMF.

The following types of losses are expected to result from Project intervention and will be mitigated as per the entitlement matrix provided in the table below:

- Temporary displacement of mobile vendors and other vulnerable encroachers. The project will ensure that their livelihood is not affected by helping to relocate them during the construction phase and they may return to their original place subsequently;
- Encroacher owners of the affected businesses will be compensated for temporary loss of income based on net income, or a one-time lump sum grant;
- Where physical assets of the affected (walls, gardens, gates, etc.) located in the ROW come in the project's area of construction, the facility will be re-built, or the owners will be compensated at replacement cost;

As per the screening carried out so far, the following will qualify for compensation:

Unauthorized or informal users of public lands, such as squatters and encroachers, are not eligible for compensation for land, but for other losses covered by the mitigation policies;

Business and Wage Income/ informal Users of public land: Vulnerable squatters and encroachers residing on public lands and undertaking income earning activities in the ROW will be assisted to cope with the change;

Provision of alternative permanent place: Temporary encroachers who have been provided with a permanent place for business earlier will not be eligible for assistances;

Structures on Public Lands: All built up structures would be rebuilt or compensated at replacement cost;

Impacts on community facilities, such as educational institutions, places of worship, graveyards, and cremation grounds etc., no financial compensation will be paid directly to the affected however, the Project will rebuild the affected facilities, or provide alternatives in consultation with the user communities.

Loss of income earning opportunities/access to common property resources: Where local communities and groups are likely to lose income earning opportunities or access to crucial common property resources, the project will introduce measures to provide alternatives to restore and improve the livelihood of such affected persons.

Unforeseen losses/impact: All other losses/impacts that are not known but may get identified in PAP census will be mitigated with appropriate measures (where they qualify);

8.4 Procedures for Use of Government/State-Owned Land and Voluntary Donation

All land requirements under the Project is expected to be met within the existing ROW of the respective Provincial Council. However, for the enhancement of safety, there may be instances where small additional parcels of land would become necessary to implement safety measures such as drop-off and pick up zones near schools, pedestrian facilities, etc. As the Project does not encourage land acquisition, the required land parcels will be obtained either through voluntary land donation or confined to government/state lands [Annex 16: Template for Legal Contract for Voluntary Land Donations]. However, the extent of land requirements will be known only during implementation once the Provincial roads to be supported are selected. As such, the Project will have the following options for taking the possession of land for proposed sub-project interventions:

Use of Government/State Land - Land vested with the Divisional Secretary or any other State agency can be transferred to the Project Implementing Agency through a memorandum of understanding/legal land transfer agreement.

Voluntary land donation - Past Provincial roads project experience shows that this is a viable strategy to obtain small plots of land in rural areas to widen the existing ROW.

8.4.1 Procedure for utilizing Government/State-owned land

Utilization of state- owned land will be in accordance with the State Lands Act No 13 of 1949. This Act deals with the provision for the grant and disposition of state lands in Sri Lanka; for the management and control of such lands and the foreshore; for the regulation of the use of the water of lakes and public streams; and for other matters incidental to or connected with the matters aforesaid. Section 53 exempts state from liability to pay compensation for improvements effected on reservations. However, the social screening checklist will be administered to ensure that the land to be utilized is free of encumbrances (i.e., there are no squatters and encroachers). If some encumbrances are found, a Social Impact Assessment will be carried out and the concerned individuals will be provided with assistance and compensation as presented in the Entitlement Matrix of this ESMF.

8.4.2 Procedure for voluntary land donation

The experience from the previous Provincial road project suggest that small plots of lands can also be made available through voluntary donations. Although project does not encourage voluntary donations in principle, there might be cases where the Provincial Councils participating in project activities will have to accept such donations for safety purposes. For any voluntarily donated land, a participatory and transparent process will be followed, and an agreement/MOU will be signed between the donor and the recipient. The agreement will be signed in presence of the DS, and the DS' signature will be placed as a third party. [Annex 16: Template for Legal Contract for Voluntary Land Donations].

In case of voluntary land donations, the Project will:

- Ensure the ownership of the land and voluntary nature of the donation; and the land is appropriate for the intended purpose; The voluntary nature of donation will be fully and independently verified;
- Impact on donor household will be marginal, i.e., the land size will be a small area (less than 10% of total land owned by individual owner), that there will be no physical relocation, that its donation does not negatively impact on the livelihood of the owner;

- Land does not belong to any donor who is below the poverty line or whose holding would be reduced below the minimum size as stipulated to be economically viable (2.5 acres), and remaining assets of the household donating land will be economically viable to ensure livelihood and shelter;
- There are no encumbrances on the land; i.e., land to be obtained through voluntary donation is free of squatters, tenants, sharecroppers or any other dependents, and conflicting interests;
- Land donation does not negatively impact on the livelihood of any vulnerable group, and if so, that community developed mitigation measures are acceptable to the affected persons;
- No compensation will be paid for the land, and the owner will give up all claims on the land and the title will be transferred to the recipient through the notary public or a registered deed or any other procedure prescribed by law.
- The land will be transferred in the name of the recipient institution through a legal process
- The community-based mitigation measures will be acceptable and a consent letter from the land owner will be obtained granting permission for the use of the land for project activities, and a legal contract will be instituted which would include details of the land being donated; formal consent of the land owner/interested parties, and the witnesses. Template for legal agreement on land donation is provided in Annex 16.

The Provincial-level Project Implementation Unit (PIU) will be responsible for ensuring that the above conditions regarding land donation are fulfilled. The ESO of the PMU will visit sub-project site, consult land donor, and other local stakeholders to verify that the donation is marginal and that it was not coerced.

8.5 Entitlement Matrix

The entitlement matrix (EM) has been developed to address impacts/losses, entitlements and entitled persons. These are for known impacts while any unknown impact that might be unique to a sub-project location will be addressed under “unanticipated adverse impact due to project intervention” of the entitlement matrix. Since the Project does not envision any land acquisition, relocation or resettlement, the potential impacts are largely associated with temporary impacts likely during construction stage. In some instances, it might also be necessary to clear encroached lands in the ROW of the roads. Hence, the entitlement matrix is reflective of this issue. However, should any land acquisition or resettlement or relocation be required, the Project will not include such roads under the project. In rare instances, where small parcels of land are required for safety reasons or for safety enhancements of particular road stretches, such land will be availed through voluntary land donation following the procedure set above.

Entitlement Matrix

Type of Loss	Definition of Entitled Person	Compensation Policy
Loss of land	Non-title holder(s) (encroachers, informal settlers)	No compensation or loss of land Compensation for lost assets and other improvements made to land at full replacement cost; Additional compensation for vulnerable households (see below).
Loss of structures (compound walls, tube wells, pumps shed, store etc.)	Legal titleholders Informal settlers Non-title holders	Replacement of affected structure with similar/improved facilities; Provision of alternative space/ facilities for similar use as at present, during period of demolition/reconstruction; If reconstruction is not possible due to insufficient/unavailability of land to build, replacement value of structure; Where actual loss of structure is partial, and the remaining portion is not viable for use, compensation for whole structure, otherwise, compensation only for affected structure; Right to salvage material from existing structure <i>For tenants and non-titleholders:</i> Compensation for structures erected by tenants/squatters and encroachers to be paid directly to them
Loss of livelihood	<i>Legal titleholder(s):</i> - licenced vendors, - Tenants/ leaseholder(s); <i>Non-title holder(s)</i> - Hawkers, vendors, - employees of commercial establishments, - wage labourers	Assistance for lost income for 3 months at net average adjusted profit of the 3 years immediately preceding the census survey; Assistance for lost income at LKR 15,000 for 3 months preceding census survey, if books of accounts or tax declaration cannot be produced; Additional compensation for vulnerable households (see below); Consideration for project employment; Development assistance, such as land development, credit facilities, training; Transitional allowance based on three months' minimum wage rates
Loss of agricultural income	Legal titleholders, tenants/ leaseholders, Informal settlers Non-title holders	Compensation for value of lost yields. If perennial crops are involved, cost for establishment of crops elsewhere and compensation for lost yields up to one year at market price.
Temporary disruption of livelihood	Legal titleholders, licenced vendors Tenants, leaseholders; and Persons with non-recognisable claims (non- licenced hawkers, vendors,	Compensation for lost income at replacement cost or a transitional allowance for the period of disruption whichever is greater ²

² All businesses identified in the project-impacted areas (sections ready for construction) on the cut-off date will be entitled to compensation for lost income based on the tax record, or, in its absence, comparable rates from registered businesses of the same type with tax records, or for shops not qualifying under these categories (hawkers, vendors, etc.), the option of using the actual income based on survey followed by a verification of the income data based on comparable incomes in the project area.

Type of Loss	Definition of Entitled Person	Compensation Policy
	employees of shops, wage labour, etc.)	
Partial or total damage to government or private structures and assets ³ during construction	Legal titleholders, Tenants, leaseholders; and Persons with non-recognisable claims (informal settlers)	Replacement cost of restoring to original or better condition; ⁴ Immediate replacement and restoration of connection (if damage to connections during pipe replacement/rehabilitation) Alternative sources of water made available during the construction period (if temporary disruption in water supply service);
Temporary loss of structures in the area of impact (eg., stalls and other assets)	Legal titleholders, licenced vendors Tenants, leaseholders; and Persons with non-recognisable claims (informal settlers, non- licenced hawkers, vendors etc.)	Replacement cost of the structure and other assets (or part of the structure and other assets, if remainder is viable); Shifting assistance from and back to the location; Right to salvage materials from structure and other assets; Additional compensation for vulnerable households
Loss or temporary impacts on common resources, structures and facilities (e.g., places of worship, playgrounds, footpaths/ trails, culverts, water points/ connections, toilets, etc.)	Local community, including non-titleholders using and dependent on land/common resources and facilities	Restoration or replacement of access to lost facilities in areas identified in consultation with affected communities and relevant authorities; Provision of temporary services during construction work to avoid inconveniences
Temporary acquisition and/or impacts of civil works (e.g., loss of access, damage to property or land, safety hazards, impact on mobility)	Legal titleholder; licenced vendor, Tenant/leaseholder; Non-titled; Hawkers, vendors, employees of commercial structure, wage labourers; Local communities	Public notice at the site informing the people about: work schedule, likely temporary impacts, signage; contact details of the officer in charge and GRM; Cash compensation for any assets affected (e.g., boundary wall demolished, trees removed); Necessary traffic management measures for facilitating mobility; Special measures to provide access for continuing trade/business

³ These could include tube wells, storage tanks, walls, fences, sheds, trees, any improvements made to land, etc.

⁴ The replacement cost of structures and other immovable properties will be determined on the basis of market cost of materials to build a replacement structure with an area or quality similar or better than those of the affected structure, or to repair a partially affected structure, plus the cost of transporting building materials to the construction site plus any labour and contractor's fee. All costs to be current for the period of actual replacement.

Type of Loss	Definition of Entitled Person	Compensation Policy
Impacts on vulnerable PAPs ⁵	Vulnerable PAPs	In case of income losses, vulnerable households provided with additional 25% compensation over and above actual loss or minimum wage rate, whichever is higher; Vulnerable households given priority in project construction employment (unskilled labour)
Any other loss not identified	Legal titleholders, Tenants, leaseholders; and Persons with non-recognisable claims (informal settlers, hawkers, vendors, employees of commercial establishments, wage labour, etc.)	Unanticipated involuntary impacts will be documented and mitigated based on principles in WB's OP/BP 4.12 and OP/BP 4.01.

8.6 Social indicators to ensure implementation of mitigation measures

Effectiveness of suggested mitigation measures should be assessed in order to determine the implementation of the ESMP and compensation given to project affected persons (APs). A list of such indicators can be seen under section 11.2 below.

⁵ Vulnerable APs consist of women-headed households, the very poor (those below the poverty line), the disabled, the elderly, landless families, and informal waste workers (including scavengers, waste pickers, and informal waste recyclers) whose livelihoods are dependent on informal waste-picking activities and scavenging.

CHAPTER 9: CONSULTATION AND INFORMATION DISSEMINATION

Public consultation and community participation will be fundamental in ensuring the Project's acceptability and establishing a constructive relationship between the community and the Project. It is essential to provide accurate information about the Project to stakeholders (including people affected by the Project) from the planning stage onwards, to prevent misunderstanding and misinformation, and to build trust between the different stakeholders and the Project team. A solid and comprehensive consultation programme will help the Project team to engage in more effective and focused manner with the stakeholders, to share ideas about planning and implementation, to benefit from local knowledge, and to take more informed decisions. This chapter contains steps that will be taken to engage with stakeholders during the entire project cycle.

Consultations during preparation of the ESMF

In terms of consultations and disclosure, the draft ESMF was disclosed on the project website on 14 May 2019 for comments. Further, a national-level stakeholder consultation was carried out on 6 June 2019. The consultation was attended by 26 representatives from the PMU, World Bank, environmental expert, provincial road development authorities, Road Development Authority, and civil society representatives. The issues raised, and the responses provided are as follows with details on the consultations provided in Annex 18.

	Issues raised	By whom	Response provided (i.e., how the project will address the issue raised)
01	There were many good points discussed today as a framework for ensuring Environmental and Social management. How will you ensure this knowledge and framework gets implemented at ground level	PRDA Engineers, Civil society	9 officers will be appointed as Social and Environmental Safeguard Officers under the project implementation consultant in all 9 provinces, for ensuring the proper delivery of the mitigation of arising issues and problems in implementing the project.
02	Where can we find the Environmental Social management framework and the Contractors plan? .	Civil society	The ESMF has been made available on the web site and the document of the ESMP has been printed and made available in all relevant DS offices for the public to read and understand
03	Temporary displacement of mobile vendors and other vulnerable encroachers. We need to ensure that their livelihood is not affected, and when relocating need to take this into account. There needs to be a plan around this, and the affected party consent should be obtained.	PRDA Engineers	The project will ensure that their livelihood is not affected by helping them to temporarily relocate during the construction phase and they may return to their original place subsequently. Cut-off dates will be established to determine the eligibility for compensation to the project affected persons and their assets as per the entitlement matrix in the ESMF. These are the dates on which census of the affected persons and their assets will be taken. Any claim for

	Issues raised	By whom	Response provided (i.e., how the project will address the issue raised)
			compensation by affected people after the cut-off date will be ineligible for compensation.
04	What action will be taken where physical assets of the affected (walls, gardens, gates, etc.) located in the ROW come in the project's area of construction,	PRDA Engineers	This will not be a major issue as there is no road widening. However, even in the rare case of such a situation, the facility will be re-built. The timing of rebuilding is the most important to give civil society confidence that action is taken.
05	The ESMP has described a grievance redress mechanism with how to record the grievance and how to prioritize and implement the actions required for the grievances based on some principles; namely simplicity, accessibility, transparency, timeliness, fairness, confidentiality. How will this be done?	PRDA Engineers, Civil society	There will be a complaint box at every ARE office as well as the engineer's office. These offices will also collate verbal complaints and get them in writing. A register will be maintained for this purpose. At every monthly meeting, the engineer will share a summary of all complaints received, how many were successfully resolved, how many are still pending, and what support needed. To make this more efficient we plan to launch a MIS system and a website for the convenience of the public.
06	When the rural roads have been rehabilitated, it improves the use of more vehicles on those roads thus raising the issue of the level of safety. This is because of more and more vehicles coming in, more vehicle purchases and the improved vehicle speed. To minimize the issues related to the safety, community awareness on road safety need to be implemented as has been highlighted and appreciated by the project.	Senior Project Engineer	Awareness programs, sign boards giving commuters and road users adequate warnings of potential dangers, will be addressed by the project. Crossings and other markings will also be fixed at important locations to enhance road safety.
07	Sometimes there can be family relocations to avoid the risk of any environmental impact (e.g. landslip during construction).	Civil society	In such situations, which is not likely to be very minimal and isolated, the contractor and engineer will ensure temporary housing for the family. This will be included in the ESMP. Payments will be made for the temporary housing through the ESHS payments as mentioned in the ESMF
08	The replanting of trees as environmental compensation needs to be considered. The project also needs to think twice when removing trees and consult the communities whenever possible. If possible, the project should try to	RDA engineer, PD	There will be minimum tree cutting in this project as there is no road widening. However, in case a tree needs to be cut, replanting will be done with immediate effect by the contractor. In case there are special

	Issues raised	By whom	Response provided (i.e., how the project will address the issue raised)
	change the road design to prevent removal of trees especially the trees with cultural importance.		trees such as those with religious significance or heritage trees (e.g. Ambagas handiya), the project will review the possibility of diverting the road in consultation with the relevant stakeholders.
09	There can be some crack appearing in houses along the road due to various reasons (e.g. heavy vehicles causing vibrations) and these have to be identified and measured in order to consider for rectification.	Engineer Kalutara	A crack survey will be carried out prior to the start of the civil works. In cases where additional cracks are observed, the affected persons and if relevant, the community members need to inform the consultant, and the consultant will send a team along with the community members and gramaseveka to photograph the cracks and document and take necessary corrective action.
10	There have been instances in the past where a land owner will donate a piece of his land as a charity to the society. But they will later claim compensation for the same land.	Engineer planning WP	In such instances where the project is required to voluntary acquire land, there will be an MoU signed between the project and the donor, as outlined in the ESMF.
11	The environmental and safeguard plan should be area specific as has been highlighted by PRDP and it has been mentioned that the action has already been taken in this regard. However, do all officers, engineering sites, etc have the relevant knowledge to implement this plan?		Capacity building sessions will be carried out not only for the project staff, but also for the contractors and for the community leaders to minimize the possible social and environment negative effects. This will help to minimize the number of complaints as well.
12	Having the drain along the road for longer distance create problems as it carries heavy quantity of rain water which can damage some properties. Therefore, shorter distance drains are preferred which can divert less volume of water thus minimizing the damages to the green and agriculture.	Civil society	To avoid this, when the project carries out the transact walk with the civil society representatives, community members and the consultant, the project will keep this in mind and make note of such places.
13	How to prevent the spread of dengue is a big risk for the project. This is due to water collection in open drains / burrow sites. Also, it will be important to ensure regular watering of roads to prevent dust	PD/Civil Society	Prior to making the payment, road inspection will be carried out on a weekly basis with the contractor. If not, the payment will not take place
14	Know the criteria for selection of roads for rehabilitation – justify to donor and public	PD/ Civil Society	Awareness campaigns to educate civil society and community members will be carried out. Even though the road at a glance looks good, the road design in many instances is not sufficient to bear the current traffic load and

	Issues raised	By whom	Response provided (i.e., how the project will address the issue raised)
			hence may require rehabilitation. Beneath the current surface, there are failures which is why certain roads have been nominated for this this project.
15	Obtain police records of accidents – to identify black spots, and this should be criteria for road selection. Also, what are the features of the project to mitigate road accidents	PD	The project will put sign boards to warn motorist of the risky, accident prone areas
16	How will the project minimize the increase in accidents – both people and animals? It is also suggested that the project monitor social impacts after project	TCAMP senior project engineer	Awareness campaigns during the constructions and immediately after the constructions to avoid human related accidents as well to warn motorist of the risk of animal crossings, will be carried out by the project
17	Use of roads by heavy vehicles / trucks after road improvement – the road surface has been designed for this purpose, however, the project does not cover the rehabilitation of existing culverts and bridges.	Planning engineer PRDA	The project and the PRDA will study the RDA act and other legal documents to be applied in such situations, and have sign boards with weight limits/ restrictions on the type of heavy vehicle usage of the rehabilitated roads.
18	Material extraction should have legal permits and disposal sites should be safely managed	Civil society	The contractor will be required to propose the extraction and disposal sites at the very beginning. The contractor will also be required to get a clearance from the engineer who will ensure that the legal and safety aspects and procedures have been followed by the contractor prior to commencing the works. The engineer will also inspect the sites and legal documents and give a no-objection before commencing the works.
19	Will there be contractor maintenance mechanisms?	PRDA engineer NWP	The issue of maintenance will be not be addressed through this project. However, all provincial road agencies have agreed to maintain their respective roads after this rehabilitation
20	Increased number of marriages – due to labour influx following road construction	PD	The contractor staff will be advised on the need to maintain labour discipline and to be aware of any negative incidents relating to the conduct of the workers. These issues have been mentioned in the ESMF and the

	Issues raised	By whom	Response provided (i.e., how the project will address the issue raised)
			contractors will be required to prepare labor management plans
21	Schools in the rural area closed down – students now go to schools in the town due to improved road access to towns	PD	The project will inform the relevant stakeholders of this issue. On a positive side, parents and students are happy to gain access to better school facilities in the town thanks to the improved road condition
22	Labours should to be screened and registered with police due to current security situation	PD/ DGM - PRDA	At first site meeting, this issue will be taken and the contractor will be advised to submit a comprehensive report including all the details of the laborers' including a photograph of each person. This report then will be shared with the gramaseveka of the area

During planning and Design stage

During the current project planning and designing stage, two major activities will take place, which include the preparation of the Engineering estimate and the Environmental and Social Management Plan (ESMP). During this stage, the Divisional Engineers and Technical staff will review all areas that can impact the environmental and social areas pertaining to the project. While carrying out the review, they will proactively engage with dwellers in locations where there are likely to be potential social and environmental impacts. In the past, a frequent complaint received is in dust management, and disposal management, in addition to minor dweller related issues highlighted above.

All these issues will be included in the engineering estimate, and under ESMP items. All these identified ESMP activities will be published as a Poster in the Divisional Secretaries office and the relevant road engineer's office for purpose of public awareness. In addition, it will be published in the Provincial council websites as well. This ESM Framework (ESMF) will also be published in the same manner.

Further, a public awareness campaign will be carried out while selecting a few community members from the relevant roads through Community based Organisations (CBOs) and Community centers, in order to ensure full public awareness, participation and support for these projects. For this purpose, representatives from Divisional secretaries and the Environmental officer from the DA's office, and two representatives from the Road Engineers office.

During these public awareness meetings, all concerns and issues discussed during the meeting will be minuted and shared through the village/ community representative for the general public awareness. Also, any issues identified over and above the published ESMP will be included and in case there are any such additions, it will be incorporated as an addendum to the contract under ESMP.

During Implementation stage

The contractor will be required to submit a communication and/or stakeholder engagement plan based on the ESMP issued. The Divisional Engineer's Technical team will monitor the contractors plan and ensure the actions are implemented well, and the desired results and output is obtained.

Further, a robust Grievance Redress Mechanism (GRM) will be established (see, Chapter 10 for details). The public will have access to the GRM access to raise complaints if any. When paying the contractor on a monthly basis, the GRM will be monitored, and if any significant shortcomings are noted on the contractor's part, the monthly payment can be withheld, until the contractor rectifies the complaint related issues.

In order to ensure good governance and public good will, community representative(s) will be invited to attend progress meeting once in 3 months, to share and contribute their views.

The PMU will keep records of public consultations, noting dates, locations, participants, salient issues raised, and responses to such issues. The procedures for consultation and communication, as well as the dissemination of information, will be formalized by the PMU.

During Project implementation, sub-project specific instruments and plans will be disclosed after review and clearance by the World Bank. These documents and plans, including sub-project specific ESMPs or other environmental and social impact mitigation plans to be implemented, will be publicly disclosed in-country as well as on the World Bank's external website.

As part of the overall results monitoring framework, the Project will also track the number of communication and citizen engagement programs implemented, the number of participants involved in consultation activities during Project implementation, and the resolution of grievances/complaints filed. Those will also include gender disaggregated data.

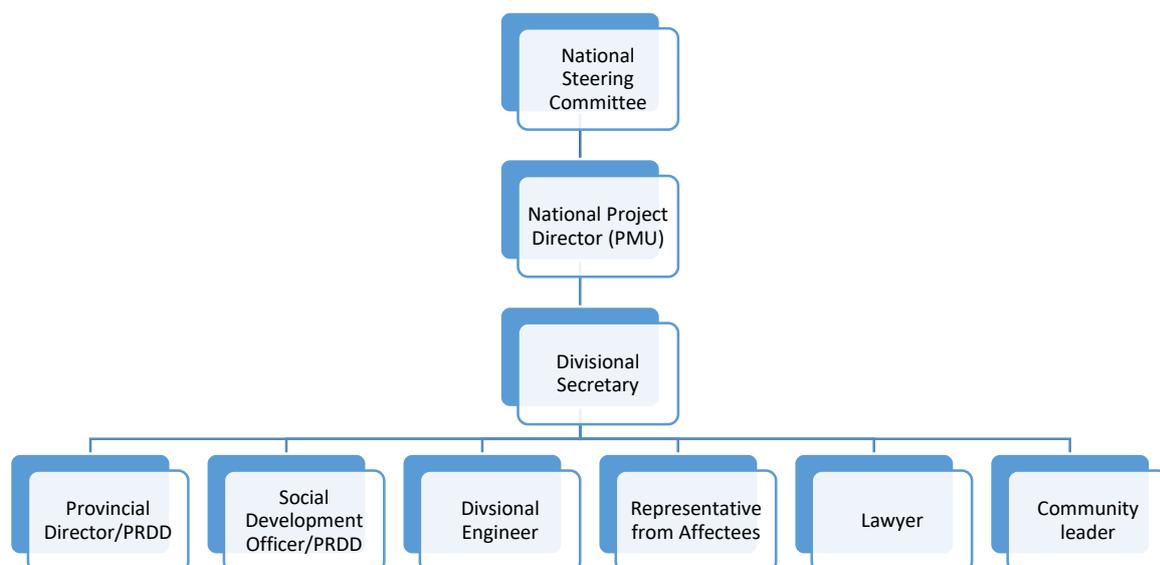
CHAPTER 10: GRIEVANCE REDRESS MECHANISM

The project is not expected to lead to large-scale irreversible environmental and/or social impacts; however, it is almost inevitable that there will be some complaints and grievances relating to temporary loss of income, public inconveniences, and construction activities such as site clearing, excavation, compaction, noise, dust, etc. These issues can to some extent be resolved by good planning and good project implementation, and above all by ensuring full and honest participation and consultation with the people that will be affected by the project, supported through regular interaction between the community and project staff, transparency and monitoring. However, not all grievances can be addressed at this level so, a formal Grievance Redress Mechanism (GRM) will be set up to resolve these concerns rather than leaving them to the often time-consuming and expensive procedures of the formal legal system.

The objective of the GRM is to help claimants resolve their problems through a process of mutual understanding and consensus with the relevant parties at the level of the project. This is in addition to the formal legal channels for resolving unsatisfied appeals from the public. Further, a special procedure will be set up as part of the GRM that can allow GBV-related complaints to be captured and referred to existing credible care service providers as necessary.

Specifically, a Grievance Redress Mechanism (GRM) will be established by the respective PCs that will be transparent, accessible to all, inclusive, participative and unbiased. Affectees/Affected persons will be made fully aware of their rights and the procedures for making a grievance – whether verbally or in writing – during consultation. The structure of GRM, as shown below will entail a multi- tiered approach.

Structure of the GRM



At the sub project level minor issues may be informally settled at the field level through consultation and involvement of the project Social Safeguard Officer/Specialists, supervision consultant and local implementing officer.

For complaints related to project related impacts of any kind, a complaint register will be maintained at the sub project office. This will state the type of complaint, the name of the complainant, date of the complaint and person responsible to resolve it. At the next level the GRM will be headed by the Divisional Secretary with the members as shown in the chart below. If the complaint cannot be resolved by the DS, it will seek assistance from the Samatha Mandala.⁶

All GRMs will be established before awarding contract of each subproject. The functional role of GRM will be notified to all GNs in project influenced area. The period of summoning a GRM is based on the requirement. Normally, the meetings of the GRM will be conducted once every two months of its establishment. The DE is responsible to set up GRM with support of Social Safeguard Officer of the project.

Under the subproject, there is a potential for three types of grievances: 1) grievances related to land donations, 2) grievances related to affected structures, and other properties or entitlements, and 3) grievances related to construction activities.

The following are some issues that could be taken up at different levels of the GRM:

- Entitlement or eligibility for compensation and other benefits;
- Dust, noise, and vibration nuisance at the construction site;
- Loss of access;
- Damages to public and private property (especially damage caused by vibration);
- Removal of religious shrines, statues, or trees;
- Problems caused to the public due to road closures;
- Storage of construction material obstructing community activities.
- Damages caused to improper management of storm water

Principles of the GRM

The GRM will be implemented based on the following principles:

- **Simplicity:** procedures in filing complaints is easy to understand and recall;
- **Accessibility:** filing complaints is easy through means that are commonly used by stakeholders, especially by the APs;

⁶ The *Samatha Mandala* (Peace Council) is the conflict resolution committee appointed by the Ministry of Justice in all Judicial Districts, as part of the grievance redress process. The members of this committee are well respected as they are educated, and citizens drawn from towns and villages. The *Samatha Mandala* attempts to resolve conflicts prior to complaints being referred to the courts. If a conflict cannot be resolved by the committee, it can still be pursued through the court system. Furthermore, since the *Samatha Mandala* is not involved in the decision-making process associated with project related land issues and properties, it can therefore provide adjudication unencumbered by any specific interest in the project.

- Transparency: information about the system is made widely available to all stakeholders and the public;
- Timeliness: grievances are attended to and resolved in a timely manner;
- Fairness: feedback or complaints are validated thoroughly, and subjects of complaints are given due process and opportunities for appeal;
- Confidentiality: the identity of complainants remains confidential.

Creation of Awareness of the Grievance Redress Mechanism

MLGPC should inform the relevant APs/Communities, Grama Niladharis, Local Samurdhi Officers and Social Development officers of the Divisional Secretariats and Pradeshiya Sabhas of the areas about the existence of grievance redress mechanism.

MLGPC should prepare flyers indicating:

- Project brief including the benefits of the rehabilitated road for the public
- Procedures for registering a complaint
- Categories of persons, institutions and property/assets affected that can claim compensation
- Explanation of those who would not be considered as an affected person, property etc.
- The address of the authority to receive and register the application with the name of the officer in-charge, address, and telephone/fax numbers to contact.

The GRM will be included as part of the Project's monitoring system. All complaints will be registered and tracked through the MIS system. The system will provide, monthly, quarterly and annual summaries of the GRM covering the following issues:

- How many complaints have been raised?
- What types of complaints have been raised?
- What is the status of the complaints (rejected or not eligible, under assessment, action agreed upon, and action being implemented or resolved)?
- How long did it take to resolve the problems?
- How many people have used the grievance redress procedure?
- What were the outcomes?

The monitoring system will also assess the overall effectiveness and the impact of the GRM. Such evaluations will be carried out annually, and the results will be used to improve the performance of the GRM and provide valuable feedback to Project management. The following questions can be addressed in such evaluations:

- Is the GRM effective in realizing the stated goals, objectives, and principles?
- Is the GRM capable of responding to the range of grievances specified in their scope?
- Is the GRM equipped with an adequate and diverse set of resolution approaches?
- Has the GRM adopted measures to improve the resolution approaches, e.g., capacity building, consultation, with technical experts.
- Was the GRM effectively integrated into overall Project management?

CHAPTER 11: INSTITUTIONAL ARRANGEMENTS FOR IMPLEMENTATION OF ESMF

11.1 Institutional Mechanism

The roles and responsibilities of the major actors in the implementation of the ESMF are the following:

Provincial Director: S/he has the overall responsibility for implementing the project and the ESMP . He will allocate the following tasks to the District Chief Engineer, the Divisional Engineer and Social and Environmental staff:

- Carry out stakeholder consultation on project objectives, scope, and potential adverse/positive impacts of project intervention; and process the stakeholder feedback for consideration to the project.
- Explain the mitigation policies and measures of the project. Identify PAPs (who are informal users of public land in the ROW) and process the entitlements stipulated in the ESMF and the ESMP.
- Explain to the PAPs the grievance redressal mechanism and its scope, functions and the procedure to bring grievances to the Grievance Redressal Committees (GRCs). Designated staff from the PD's office will record the GRC proceedings and include summary reports in the periodic progress reports.
- Plan, design and conduct census of the project affected persons and households listed by the surveyors; and collect all information required to identify the losses; and determine the entitlements, application guidelines and implementation issues as suggested in the 'compensation/entitlement matrix'.

The Divisional Secretary: S/he will facilitate the signing of the MOU for voluntary land donations.

Environment & Social Officer:

- *Provide overall policy and technical direction for safeguards management under the Project, as defined by the project environmental and social safeguards instruments.*
- *Co-ordinate closely with the PMU staff in planning and managing project implementation as per the safeguards instruments; and provide necessary technical assistance to facilitate the implementation, management and monitoring of environmental and social safeguards*
- *Ensure environmental and social due diligence is carried out for each sub-project by the line ministry and line agency as soon as conceptual technical design and scope have been defined, as outlined in the safeguards instruments.*
- *Closely co-ordinate with the MPCLG and PRDD technical colleagues for timely preparation of Environmental/Social Assessments/Management Plans for sub-projects, as necessary (depending on screening outcome); co-ordinate for hiring technical assistance, where necessary, and for review and endorsement of these safeguard documents*
- *Ensure consistency of safeguard documents with national environmental regulations and World Bank policy requirements as defined in this ESMF; work with MPCLG to obtain necessary clearances from local environmental/archaeological regulatory authorities for sub-projects, where applicable.*
- *Prepare terms of references together with the line ministry or line agency to undertake requisite safeguards assessments for complex activities that will warrant EA as per the environmental screening*

conducted and obtain necessary clearances from the World Bank and/or designated project approving agencies.

- *Manage the consultants hired to undertake the preparation of environmental safeguards instruments, including environmental assessments, site contamination audits and other safeguards assessments, where applicable, and provide coordination support with implementation agencies and individuals*
- *Review draft and final environmental safeguard instruments for quality and ensure that the relevant line ministry or agency obtain necessary clearances as per the safeguards instruments.*
- *Ensure that applicable measures in the ESMPs are included in the design, and conditions on compliance with ESMPs are included in the bidding documents.*
- *Liaise closely with the procurement team of the RDA on the above.*
- *Develop, organize and deliver environmental training programs and workshops for the Implementing Agencies at the field level, contractors, field supervision staff and other implementing agency officials as needed, on safeguard requirements and their management*
- *Ensure compliance with ESMPs during the construction period and maintain close coordination with the technical teams who will conduct monitoring.*
- *Prepare additional technical guidelines, if necessary, to support the safeguards instruments in order to strengthen the implementation of environmental and social safeguards*
- *Ensure adequate public consultation during the preparation of safeguards instruments*
- *Ensure public complaints relating to nuisance and inconvenience caused by sub-project implementation are addressed with corrective action and adequately documented*
- *Report to MPCLG and the World Bank on the overall environmental and social performance of the project as part of PMU's periodic progress reporting.*
- *Hold regular review meetings with the technical colleagues and visit selected project sites to monitor implementation of the safeguards instruments.*
- *Prepare routine monitoring reports, in collaboration with the MPCLG / PMU as set forth in the safeguards instruments.*
- *Liaise closely, where technical guidance is required, with the Environmental and Social Specialists of the World Bank task team.*
- *Promote community participation in the process of planning, management and monitoring of environmental/social impacts of sub-projects; provide guidelines on community participation in environmental/social monitoring.*
- *Prepare terms of references for the systemic environmental and social audits for all project components and obtain clearances.*
- *Review and comment on audit reports, take necessary actions to address audit issues raised and obtain comments from World Bank.*

11.2 Monitoring and Evaluation Mechanism

Monitoring and evaluation are vital activities of the project. The objectives of monitoring of the SIMF are: 1). to ensure that the standard of living of affectees is restored or improved, 2). to monitor whether the time lines are being met, 3). to assess whether mitigation efforts are sufficient, 4). to identify construction related problems or potential problems, and 5) to identify methods of responding immediately to mitigate hardships. Internal monitoring will be conducted by project staff of each PC, and b). External monitoring which will be conducted by an independent body.

The monitoring indicators include the following:

- Number of households affected
- Size and quantity of properties and assets (lands and structures) affected

- Method of compensating or restoration of all affected properties and assets
- Number of households who donates lands and the extent
- Nature of Livelihood affected/lost
- Method of livelihood restoration followed
- Number of construction related incidents
- Number of conflicts between villagers and workers of the projects
- Number of GRM resolutions relating to labour and GBV-related issues
- Number of vulnerable people/households faced impoverishment
- Number of reported cases to the GRM
- Number of reported cases resolved
- Number of women participated in project related activities
- Number of women who have direct access to Project-related information;
- Percentage of grievances (related to women) resolved in timely manner
- Number of CBOs/NGOs involved in project related activities

Reporting:

Based on the above monitoring indicators, monitoring reports will be generated by the PMU and this will be the basis for formulation of corrective measures, if required, for a sub-project under this Project. The PMU will submit ESMPs and monitoring reports for review and will include quarterly updates of progress in preparation and implementation of social and environmental safeguards concerns (disaggregated by sub project).

11.3 Capacity Building Program

For all successful project implementation, a capacity building program will be conducted for all staff of the project. It should cover the following areas:

- National Involuntary Resettlement Policy
- World Bank Policies on Involuntary Resettlement, Indigenous People, Women Participation in Development, Information Disclosure
- Environmental and Social Management Framework of the Project
- Grievances Redress Mechanism
- Labour code of conduct
- HIV/AIDS: The Project will need to ensure that awareness raising is provided by all contractors to their staff.

The training/awareness workshops should be organised at the level of the PC. Such workshops should be attended by all Chief Engineers, DEs, TOs and Project staff who deal with social and environmental issues. It may be worthwhile to have two workshops for each PC to address a). Conceptual framework and b). Its applications in this project.

11.4 Training and capacity building plan

The Environmental Officer will be trained by the Environmental Specialist of the World Bank on the EAMF implementation, safeguards and procedural requirements of the World Bank

- *All contractors are expected to disseminate and create awareness within the workforce ESMP compliance, and any staff training necessary for their effective implementation – may become relevant to the selected pilot. Where contractors do not have existing environmental staff, Environmental & Social Officer will plan for adequate capacity building within the workforce to be involved.*

- *Training on safeguards regarding operation of the project systems and facilities and associated safeguards will be provided to the designated authority officials who will in due course manage the operation and are inbuilt in to the project modality.*

CHAPTER 12: MONITORING AND REPORTING

A robust monitoring and reporting system will be established by the Environmental and Social Safeguards Division of the RDA. The monitoring and reporting system will be integral to social safeguards and the Project will establish a monitoring and reporting system for ensuring efficient and effective implementation performance of the delivery of the project social safeguard program.

The monitoring and reporting system of ESD will be responsible for the systematic collection of information on the progress of the application of the social safeguards program and reporting the findings to the stakeholders through the RDA. Overall the objective of monitoring and reporting will be to ensure that the proposed mitigation measures are producing the intended results. The monitoring system will involve: guidelines and terms and reference, monitoring indicators, mechanisms and methodologies, frequency, documentation and reporting arrangements.

Monitoring will be both internal and external (Third Party) with details as described below:

12.1 Internal monitoring

Internal monitoring will be done by the RDA and ESD will play an active role in implementing the M&E system. Internal monitoring will be focused on timely execution of safeguard activities in line with the ESMF including screening, survey, mitigation planning, SIMP implementation (if needed), scheduling with civil works, monitoring the role of contractors, managing safeguards consultants and their outputs, documentation of progress with regard to eligibility list preparation, disclosure and consultation, grievance registration and resolution, disbursement of entitlements, day-to-day relocation support, etc. Internal Monitoring will pay special attention to the following:

- Efficiency and effectiveness of the day to day planning and implementation of the ESMP and SIMP;
- Efficient and transparency in disbursement of compensation and R&R benefits;
- Data collection, feedback information, identification of bottlenecks and troubleshooting;
- Documentation for informed decision making, and efficient response to implementation issues;
- Maintenance of each APs entitlement updated file;
- Management of baseline information on socio economic conditions of the APs, to assess whether the socio-economic conditions improve and income and living standard are improved restored;
- Preparation of progress reports; and
- Coordination within the implementing organization as well as with outside agencies.

12.2 External monitoring

The RDA will engage an external monitoring and review agency/consultant for independent review of the safeguard implementation program to determine whether intended goals are being achieved, and if not, what corrective actions are needed. External monitoring will have two objectives.

- *Verify if the safeguard program is being implemented in accordance with the approved framework;*
and

- *Verify whether APs, households and communities are able to address negative impacts and either improved or at least restore their livelihoods and living standards.*

External Monitoring is intended to:

- *Verify that the SIMP/ESMP has been implemented according to approved plans and procedures;*
- *Assess that the objectives of the RP has been achieved;*
- *Determine that APs livelihood and living standards have been restored or improved and if not suggesting ways and means of improving performance;*
- *Obtain views of the APs on their relocation, entitlements and Grievance Redress committee's performance;*
- *Evaluate the performance of all implementing Agencies including PMU, PPAs, registered civil societies, CBOs and other Government Agencies associated with the implementation of the project;*
- *All social development objectives have been met accordance to the ESMF*

The External Monitoring (Third party) will be carried out by an experience research-based institution and which is expected to involve road users and other stakeholders as well. This also will perform the task of Citizen Engagement mechanism for the project.

12.3 Monitoring arrangements

The project may undertake a Social Impact Assessment at mid-term and project closure, where the overall impact of the project will be assessed, in particular its impact on local communities and their livelihood.

ANNEX I. SCREENING CHECKLIST TO DETERMINE THE LEVEL OF ENVIRONMENTAL IMPACTS

Screening checklist to determine the level of environmental impacts. SCREENING QUESTIONS	Ye s	No	REMARKS
A. Project Siting Is the Project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Cultural heritage site	<input type="checkbox"/>	<input type="checkbox"/>	
▪ Protected Area	<input type="checkbox"/>	<input type="checkbox"/>	
17 Wetland	<input type="checkbox"/>	<input type="checkbox"/>	
18 Mangrove	<input type="checkbox"/>	<input type="checkbox"/>	
▪ Estuarine	<input type="checkbox"/>	<input type="checkbox"/>	
▪ Buffer zone of protected area	<input type="checkbox"/>	<input type="checkbox"/>	
▪ Special area for protecting biodiversity	<input type="checkbox"/>	<input type="checkbox"/>	
Potential Environmental Impacts Will the Project cause...			
encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries?	<input type="checkbox"/>	<input type="checkbox"/>	
encroachment on precious ecology (e.g. sensitive or protected areas)?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing?	<input type="checkbox"/>	<input type="checkbox"/>	

Screening checklist to determine the level of environmental impacts. SCREENING QUESTIONS	Ye s	No	REMARKS
<ul style="list-style-type: none"> ▪ noise and vibration due to blasting and other civil works? ▪ dislocation or involuntary resettlement of people 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ▪ other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ▪ hazardous driving conditions where construction interferes with pre-existing roads? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ▪ poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ▪ creation of temporary breeding habitats for mosquito vectors of disease? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ▪ dislocation and compulsory resettlement of people living in right-of-way? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ▪ accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials and loss of life? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ▪ increased noise and air pollution resulting from traffic volume? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ▪ increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road? 	<input type="checkbox"/>	<input type="checkbox"/>	

ANNEX 2. SCREENING CHECKLIST TO DETERMINE THE LEVEL OF SOCIAL IMPACTS

Project :

Province:

Subproject :

District:

Level of Project

Design:

Potential for Involuntary Resettlement Effects*	NotKnown	Yes	No	If yes, consider potential scope of resettlement effects
Will the project include any new physical construction work?				
Does the project include upgrading or rehabilitation of existing facilities?				
Is the proposed sub-project likely to lead to loss of housing, other assets, resource use or incomes?				
Is land acquisition likely to be necessary?				
Is the site for land acquisition known?				
Is the ownership status and current usage of the land known?				
Will easements be utilized within an existing site or Right of Way?				
Are non-titled people present on the site/within the Right of Way?				
Will there be loss of housing?				
Will there be loss of crops, trees, and other fixed assets through land use related changes?				
Will there be loss of incomes and livelihoods?				
Will people lose access to facilities, services, or natural resources through land use-related changes?				
Will any social or economic activities be affected through land use-related changes?				
Affected Persons and Severity of Impacts				
Any estimate of the likely number of those affected by the project? No () Yes ()				
If yes, approximately how many?				
Any estimate of the severity of impact at the household level?				
If yes, what?				
Any of these people poor, indigenous, or vulnerable to poverty risks? No () Yes ()				
If yes, how?				

ANNEX 3. POLICY FRAMEWORK: ENVIRONMENTAL ASSESSMENT AND IMPACT MITIGATION

The importance of the Environmental Impact Assessment as an effective tool for the purpose of integrating environmental considerations with development planning is highly recognized in Sri Lanka. The application of this technique is considered as a means of ensuring that the likely effects of new development projects on the environment are fully understood and taken into account before development is allowed to proceed. The importance of this management tool to foresee potential environmental impacts and problems caused by proposed projects and its use as a mean to make project more suitable to the environment are highly appreciated. The Environmental Impact Assessment (EIA) unit of the Central Environmental Authority (CEA) is involved in the implementation of the EIA procedure under the National Environmental Act.

Environmental Impact Assessment (EIA)

Realizing the need for integrating environment, economic and social considerations with the planning and decision making process in a more formal manner, the Government of Sri Lanka decided to introduce Environmental Impact Assessment for development projects. The importance of the Environmental Impact Assessment as an effective tool for the purpose of integrating environmental considerations with development planning is highly recognized in Sri Lanka.

The Environmental Impact Assessment (EIA) unit of the Central Environmental Authority (CEA) is involved in the implementation of the EIA procedure under the National Environmental Act. Administration of the EIA process, co-ordination between Project Approving Agencies (PAA's) that have been appointed for this purpose, preparation of manuals and guidelines on EIA and maintenance of a data base on EIA is done by the CEA.

EIA under the National Environmental Act (NEA)

EIA was mandated island wide by the 1988 amendments to the National Environmental Act. Part IV C of the Amendment Act No. 56 of 1988 mandated that CEA require “prescribed” development project proposals to be subjected to Environmental Impact Assessment, where adverse and beneficial impacts of the proposed projects on the environment would be identified together with measures to minimize such adverse impacts.

The procedure stipulated in the Act for the approval of projects provides for the submission of two types of reports Initial Environmental Examination (IEE) report and Environmental Impact Assessment (EIA) report. If the environmental impacts of the project are not very significant then the project proponent may be asked to do an Initial Environmental Examination (IEE), which is a relatively short and simple study. However, if the potential impacts appear to be more significant, the project proponent may be asked to do an Environmental Impact Assessment (EIA) which is a more detailed and comprehensive study of environmental impacts. Such reports are required in respect of “prescribed projects” included in a Schedule in an Order published by the Minister of Environment in terms of section 23 Z of the act in the Gazette Extra Ordinary No. 772/22 dated 24th June 1993 (ANNEX II). Once an EIA report is submitted NEA provides for a public inspection and comment on the report during a mandatory period of 30 days. A public hearing may be held to provide an opportunity to any member of the public (who has submitted his comments) to be heard in support of his comments if the PAA considers it to be in the public interest to do so. A decision whether to approve the project has to be arrived at thereafter. IEE reports have been exempted from this requirement. However, an

Initial Environmental Examination report shall be deemed to be a public document for the purposes of sections 74 and 76 of the Evidence Ordinance (Chapter 21) and shall be open for inspection by the public.

The EIA process is implemented through designated Project Approving Agencies (PAAs) specified under Section 23 Y of the NEA. At present 23 state agencies, including Ceylon Tourist Board have been specified by the Minister as contained in Gazette Extra Ordinary No. 859/14 dated 23rd February 1995 and Gazette Extra Ordinary No. 1373/6 of 29th December 2004. The National Environmental Act stipulates that all “prescribed projects” must receive approval from the appropriate project approving agencies (PAAs), which must be those that are “concerned with or connected with such prescribed projects”. A PAA, which is also the project proponent, is disqualified from acting as the PAA for the project by NEA-EIA Regulation 2(1) of June 1993. When the PAA is also the project proponent, the CEA is required to designate an appropriate PAA. Again in cases where there are more than one PAA is involved, the CEA must determine the appropriate PAA. In the event of doubt or difficulty in identifying the appropriate PAA, it has been practice for the CEA to take on the role of PAA.

Prescribed projects

Prescribed projects are listed in two groups in Schedule included in the first ministerial order of June 24, 1993. Part I of the Schedule includes 31 projects and undertakings if located wholly or partly outside the Coastal Zone. The projects in this group irrespective of size if located wholly or partly within the coastal zone must undergo the approval process that is laid down in the Coast Conservation Act. In other words only those projects located totally outside the Coastal Zone will be subject to the approval process laid down in the NEA.

Item 19 in this list of 31 projects and undertakings is described as the “Development of Industrial Estates and Parks exceeding an area of 10 hectares”. Once an industrial estate or industrial park is approved under Part IV VC of the NEA, any individual project or undertaking located in it, even though prescribed, will be exempted from the approval process. Projects and undertakings, which are listed as Items 20 to 30, belong to the category of high polluting industries. They will be required to go through the EIA process only if they are located outside an approved industrial estate or industrial park.

Implementation of projects in environmentally sensitive areas that are listed in Part III of the Schedule is not prohibited, but regardless of their magnitude such projects and undertakings must go through the approval process. This itself acts as a disincentive to project proponents. Similarly, even though Part I of the Order exempts projects and undertakings proposed to be established within the Coastal Zone from the approval process set out in Part IV C of the NEA, the law requires that such projects must be subject to the NEA approval process if they are located in environmentally sensitive areas of the Coastal Zone. In short, the EIA process set out in the Coast Conservation Act applies to projects prescribed under the NEA only when they are located wholly within the Coastal Zone but not in any environmentally sensitive area therein.

Part II of the Schedule of prescribed projects includes Item 32 industries (Items 33 to 52). Item 32 is described as “All projects and undertakings listed in Part I irrespective of their magnitudes and irrespective of whether they are located in the coastal zone or not, if located wholly or partly within the areas specified in Part III of the Schedule”. The industries included as Items 33 to 52 are not described by magnitude and are subject to the approval process only if located within the environmental sensitive areas mentioned in Part III of the Schedule.

Operational Procedure for EIA/IEE

The Basic Information Questionnaire (BIQ) form prepared by the CEA has to be filled by the project proponent and submitted to the CEA. On examination of the BIQ, the CEA decides on the need for an EIA/IEE. If it is determined that an EIA/IEE is required, the CEA will decide a suitable Project Approving Agency (PAA).

The PAA in turn will appoint a technical committee (TC) to scope the project based on the preliminary information. If the PAA determines that the project would have no long-term adverse environmental impacts, an initial environmental examination (IEE) would be considered adequate. The project proponent must submit a detailed IEE for review and approval by the PAA. The IEE should identify potential environmental and social issues and the possible remedial actions. Upon reviewing the IEE, if the TC identifies any substantial environmental issues that may arise as a result of the proposed project, the proponent will be advised to undertake a detailed EIA and issue the TOR for the EIA. In developing the TOR, the PAA will also consider the views of other state agencies and the public. If the PAA decided that no further environmental analysis is needed, the process ends with approval/rejection of the IEE.

If an EIA is a necessity, then the project proponent must conduct the EIA according to the TOR issued, prepare the report in all three languages and submit it to the PAA. The PAA will then declare open the EIA report for a period of 30 days for public comments and the comments received will be conveyed to the proponent. The project proponent can then prepare a response to the public comments and submit it to the PAA. The TC will then evaluate the report with respect to adherence to the TOR, quality of the report contents and adequacy of the responses to public comments.

Based on the recommendations of the TC, the PAA in concurrence with CEA would either grant approval for the implementation of the proposed project subject to specific conditions or refuse approval for implementation of the project, giving reasons for doing so. The PAA will also specify a period within which the approved project should be completed. If the project proponent is unable to complete the project within the specified period, written permission for an extension must be obtained from the PAA, 30 days prior to the expiration of the approved completion date.

EIA in the Coast Conservation Act

The Coast Conservation Act No. 57 of 1981 together with the Coast Conservation (Amendment) Act, No. 64 of 1988 governs the Coastal Zone. This Zone comprises mainly “the area lying within a limit of three hundred meters landwards of the Mean High Water line and a limit of two kilometers seawards of the Mean Low Water line”. The EIA process is part of the permit procedure mandated in Part II of the Coast Conservation Act for the approval of prescribed development projects and undertakings within the Coastal Zone. The Act states that the Minister in charge of the subject of Coast Conservation “may, having regard to the effect of those development activities on the long term stability, productivity and environmental quality of the Coastal Zone, prescribe the categories of development activity, which may be engaged in within the Coastal Zone without a permit”. Such activity should not however include any development activity already prescribed under the NEA.

Section 16 of the Coast Conservation Act confers on the Director of Coast Conservation the discretion to request a developer applying for a permit (to engage in a development activity within the Coastal Zone) to furnish an Environmental Impact Assessment relating to the proposed development activity. The Coast Conservation Act does not however specify how and when this discretion should be exercised. The Coast Conservation Department interprets this provision as requiring an EIA when the impacts of the project are likely to be significant. The application form for a permit includes several questions, the answers to which would help determine whether the development activity is likely to have significant impacts on the environment.

The Act requires the Director of Coast Conservation, on receiving an EIA Report, to make it available for public inspection and to entertain comments on it. The Act also requires the Director of Coast Conservation to refer the EIA report to the Coast Conservation Advisory Council for comment. The Council is an inter-department, inter-disciplinary advisory body. The Director of Coast Conservation may decide to Grant approval for the implementation of the proposed project subject to specified conditions, or Refuse approval for the implementation of the project, giving reasons for doing so.

Part I of the Schedule (annex II) containing the list of projects prescribed under the NEA states that the Coast Conservation Act applies in the case of those projects, which lie wholly within the Coastal Zone. This indicates that the NEA expects the Coast Conservation Department to consider these projects as prescribed and that an Environmental Impact Assessment is required albeit under the provisions of the Coast Conservation Act.

In practice however the Coast Conservation Department is guided by their own rules and regulations in determining whether any of the prescribed projects under the NEA require an EIA.

Certain parts of the Coastal Zone, which are considered environmentally sensitive and declared as “no-build” areas automatically, rule out the need to consider development projects in such areas. Similarly, development projects proposed for location in environmentally sensitive areas within the Coastal Zone are required to be submitted to the approval process specified in the NEA. Many of these environmentally sensitive areas have already been identified and listed by the Coast Conservation Department as “set-back” areas comprising reservation areas and restricted areas in which development activities are prohibited or significantly restricted.

Coast Conservation Department Planning Division officers submit their recommendations regarding proposed development projects to the Planning Committee of the Coast Conservation Department. The three technical divisions of the Coast Conservation Department recommend the issue of a permit with or without an EIA. Where an EIA is recommended, scoping sessions are convened with representatives of concerned state agencies to determine the Terms of Reference for the EIA.

The long title of the Coast Conservation Act states that the Act is established to regulate and control development activities within the Coastal Zone. Therefore, the Coast Conservation Department is the final authority in determining whether to permit a development activity in terms of the CCA, even though such activity may be required go through the approval process laid down in the NEA.

EIA in the Fauna and Flora (Protection) Ordinance

The Fauna and Flora (Protection) Ordinance No. 2 of 1937, as amended by the Fauna and Flora (Amendment) Act No. 49 of 1993, requires that any development activity of any description whatsoever proposed to be established within one mile of the boundary of any National Reserve, should receive the prior written approval of the Director of DWC. The Ordinance as amended mandates that the project proponent should furnish an IEE or EIA report in terms of the National Environmental Act. The information that a project proponent applying for permission to establish a development project within one mile of any National Reserve has to submit is much more comprehensive than the information required for the approval process stipulated under the NEA. This is because every development project or activity to be established within one mile of any National Reserve is subject to the approval process of the DEC regardless of its magnitude or category. Success in the implementation of this requirement will be tested to the extent that the term “development activity” is not defined in the Act. This procedure could also discourage any development activity however environmentally compatible it is, proposed to be established within any environmentally sensitive area.

EIA in the Provincial Administration

The Provincial Level environmental protection and management is introduced in Sri Lanka through the 13th amendments to the constitution certified in November 1987, which specifies three lists, the Reserved list, the Provincial Council list, and the Concurrent list. Provincial Councils have the exclusive right to legislate through statues on matters specified in the provincial Council list. The subject of environmental protection is placed in the Concurrent list as well as on the Provincial Council list. Provincial councils and Parliament can both legislate on matters on the Concurrent list provides it is done in consultation with each other. Only the North Western Provincial Council enacted legislation on environmental protection by Statute No. 12 of 1990. The National Environmental Act remains suspended and in operative within the North Western Province with effect from 10th January 1991.

Operational Framework for Implementation of EIA under national regulations

Activity	Agency	Duration
Submitting Preliminary information - A project proponent is required to provide the CEA with preliminary information on the proposed project, in order for the EIA process to be initiated. The best time for a project proponent to submit the preliminary information on the proposed project is as soon as the project concept is finalized and the location of the project is decided. The Basic Information Questionnaire (BIQ) form prepared by the CEA can be used for this purpose (Annex 2). When a prescribed project is referred to CEA, the CEA will decide a suitable Project Approving Agency (PAA).	CEA	2 months
Environmental Scoping - Then the PAA will carry out scoping and Terms of Reference (ToR) for the EIA/IEE will be issued to the project proponent	PRDA	2 months
EIA/ IEE report preparation	Proponent	3 months
Public participation and evaluation - On receipt of an EIA report, it will be subjected to an adequacy check in order to ensure that the ToR issued by the PAA has been met. It will then be open for public inspection / comments for a period of 30 working days. If there are any public comments on the EIA report, they will be sent to the project proponent for response. Subsequent to the public commenting period the PAA will appoint a Technical Evaluation Committee	PRDA	3 months
(TEC) to evaluate the EIA report and make its recommendations. IEE reports are not required to be opened for public comments and are thus subjected to technical evaluation only.		
Decision making - Based on the recommendation of the TEC, the PAA makes it's decision on whether to grant approval for a project. If the PAA is not the CEA, it should obtain the concurrence of the CEA prior to granting approval	PRDA	2 months

Generally, the approval is valid for 3 years. If the Project Proponent does not commence work within 3 years of the decision, renewal of the approval from the Project Approving Agencies is necessary. The validity period is usually stated in the letter of approval.

ANNEX 4. ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN

Introduction

The Roads Development Authority of Sri Lanka (RDA), in order to ensure compliance with the World Bank's environmental and social safeguard policies and the relevant provisions under the National Environmental Act (NEA) and associated regulations, as well as other relevant legislation and policies linked to road works, prepares an Environmental & Social Management Plan (ESMP) for the Transport Connectivity and Asset Management Project (Provincial Road Development Project). The purpose of this TOR is to outline the scope of work for preparing the ESMP in accordance with the project's Environmental and Social Management Framework (disclosed in January 2016).

Background

The Environmental and Social Screening Assessment is a decision-support mechanism to ensure that the TCAMP project design and implementation are environmentally and socially sound and sustainable. In order to achieve this, the RDA is initially undertaking screening activities of the proposed road sections for identifying and managing environmental and social impacts, designing mitigation measures and standards to be adhered to, as well as for the RDA to monitor the performance of the TCAMP Contractors in accordance with the ESMP.

It is expected that Environmental and Social Screening Assessment will be prepared in close collaboration with the team preparing conceptual designs. The road-specific screening should be ready prior to finalization of the ESMP and TCAMP's bidding documents. Sufficient conditions should be specified in the bidding documents, as well as the contractual agreements clearly defining requirements of compliance based on standards and specific requirements necessary to reduce impacts on sensitive sites. The ESMP will be cost estimated.

It is important to put additional emphasis in collecting environmental and social baseline data such as river/stream flows/hydrology, ambient air quality, noise levels and water quality in random locations along the road, as well as strategic locations where increased levels of disturbances are expected (e.g. strengthening/widening bridges, town development, etc.) or sensitive sites are located. While it is recognized that collection of some of the environmental and social baseline data related to various sites such as crusher and asphalt plant sites and labor camps may not be possible prior to bidding process, standards to be maintained should be clearly defined including the needs to collect additional data prior and post operations.

The following objectives are expected from the Environmental and Social Screening Assessment:

- Establish the environmental and social baseline in the project areas and to identify any significant environmental and social issues based on detailed surveys, analysis of data, assessment of impacts;
- Assess impacts of the project and provide for measures to address the adverse impacts by the provision of the requisite avoidance, mitigation and compensation measures, as well as standards;
- Integrate the environmental and social issues in the project activities planning, design, and supervision; and

- Conform the Environmental and Social Screening Assessment, the ESMP, and reporting requirements to the Government of Sri Lanka guidelines and regulations and the World Bank Operational Policies.

Environmental Assessment Legislative and Policy Requirements

National laws and regulations: The National Environmental Act (NEA) has made Environmental Assessments (EA) a legal requirement for a range of development projects. A list of projects requiring an EA is prescribed in Gazette (Extra Ordinary) No. 772/22 dated June 24, 1993. Road rehabilitation, improvement and maintenance are not listed as prescribed projects requiring EAs under the above gazette notification. Agreement has been reached with the Central Environmental Authority (CEA) and the World Bank that projects financed through World Bank resources will be required to undertake an environmental analysis commensurate with the potential for environmental impacts of roads selected for rehabilitation, improvement and maintenance and prepare detailed EMPs that will be included for implementation as part of the Contractors contracts.

The GOSL environmental clearance process, in principle, is consistent with World Bank environmental and public disclosure requirements. The exception being the screening criteria adopted in the GOSL process under the NEA, where project thresholds are used to determine the type of clearance required and the content of public consultation. However, all activities under the proposed project will be subjected to the EA process regardless of the project threshold, prior to disbursement of funds. The implementing agency will share the final versions of EAs and EMPs with the CEA for information. However, under the project activities including setting up and operating crusher plants, asphalt plants and quarry sites require obtaining an Environmental Protection Licenses (EPLs) and be valid at all times during operations.

In addition to the National Environmental Act, which is the most important legislation governing the process of EA, there are three other legislations under which EA can be required. These are (1) Coast Conservation Act (CCA) No.57 of 1981 implemented by the Coast Conservation Department (CCD) and applicable to the coastal zone as defined in the Act and its amendments; (2) Fauna and Flora Protection Ordinance (FFPO) No.2 of 1937 and its amendments implemented by the Department of Wildlife Conservation. This act specifies that any development activity that takes place within one mile of the boundary of a National Reserve declared under the Ordinance require an EIA/IEE; (3) The Forest Ordinance of Sri Lanka No. 17 of 1907 and its amendments.

World Bank Policies: Projects financed with IDA/IBRD resources normally need to comply with World Bank Operational Policies. TCAMP has the following WB Policies triggered: OP/BP/GP 4.01 – Environmental Assessment, OP/BP/GP 4.04 – Natural Habitats, OP / BP 4.36 – Forests, OP/BP/GP 4.11 – Physical Cultural Resources, and OP / BP 4.12 Involuntary Resettlement.

Scope of Work

The consultant is required to supervise the road-specific Environmental and Social Screening Assessments and prepare the ESMP for the TCAMP project activities that will be managed through the TCAMP contracts to ensure the objectives and requirements of the ESMF are fully addressed during the project implementation.

Task 1. Description of the Proposed Project

Major components of the project to be described include, description of the project; covering geographical location, road route(s), road length specifying start and end chainages, type of development envisaged including a description of upgrading/widening and/or maintenance

treatments. In addition, to understand the proposed project activities information on ROWs, adjustments to alignments, including earthworks, repair/replacement of bridges, widening and stabilization of embankments, improvements to drainage and service ducts, sources of materials used during proposed road works, generation of wastes and their disposal, expected volume of use and traffic impacts, necessary rehabilitation activities resettlement, land acquisition and temporary re-routing of traffic, safety features, staffing and accommodation of employees, site clearance requirements, scheduling of project activities, road paving and road signs and markings, operation and maintenance activities (e.g. clearing of ditches, prevention of erosion, especially at culverts) will need to be provided as much as possible. Any information currently not available that may have a bearing on the environment or people should be also identified.

Define the road-specific influence area in consultation with the RDA and the World Bank. The basis of the next tasks should be on analyzes conducted within the influence area.

Task 2. Description of the Environment

Assemble and evaluate and baseline data on the environmental characteristics of the study area. Include information on any changes anticipated before the project commences. (a) *Physical environment*: geology (general description for overall study area); topography; soils; monthly average temperatures, rainfall and runoff characteristics; ambient air quality; noise levels; surface and ground water hydrology; identity of streams, lakes, or marine waters and their flows; receiving water quality. In addition, identify potential natural disaster and climate change risks. (b) *Biological environment*: flora and fauna; rare or endangered species within or in areas adjacent to project-related development sites and any adjustments to the present alignment; sensitive habitats, including wetlands, protected areas or reserves in areas affected by construction, facility siting, land application or disposal; aquatic, estuarine or marine communities in affected waters; significant natural habitats; species of commercial importance in land application sites and receiving waters. (c) *Sociocultural environment*: present and projected population; present land use/ownership; planned development activities; community structure; present and projected employment by industrial category; distribution of income, goods and services; recreation; public health; cultural properties; indigenous peoples, customs and aspirations; significant natural, cultural or historic sites, etc. Identify land or water-based activities such as agriculture (eg. paddy cultivation), fisheries etc. within the project influence area.

The consultant shall:

- collect information from primary and secondary sources that are relevant to understanding the baseline, as well as the design of mitigation and enhancement measures, as pertaining to physical, biological and socio-cultural environments defined, but not limited to the above;
- carry out site visits and investigations of all the protected areas, forests reserves and other environmentally sensitive locations and document them on base maps to identify conflict points with the likely design of the project; and
- prepare detailed specific maps showing details of candidate sites for environmental enhancements.

The consultant shall extensively use the video or other records of the project road (carried out as part of the engineering surveys), as well as photo document significant sites in terms of environmental and social sensitivity and safety. All recognized environmental resources and features within the TCAMP road's influence area shall be clearly identified and studied in relation to activities proposed under the TCAMP activities. Typically, these will include stretches with significant roadside trees; environmental

and common property resources such as forests, wetlands, significant water bodies; and major physical cultural properties. All these may be depicted using a line diagram or a strip map.

All surveys shall be carried out including techniques, tools and samples employed for the surveys to conform to the international practices. Environmental quality (air, water and noise) monitoring shall include an adequate number of samples so as to provide a representative sample of the entire TCAMP corridors. Additional sample data for sensitive environmental/ecological receptors, if any, shall be collected such as to analyze and predict the possible impacts to a degree and precision of acceptable professional standards. Further, additional specialized surveys, such as biodiversity assessment survey, and/or hydrological surveys shall be conducted to be agreed during the inception phase.

Task 3. Legislative and Policy Considerations

Describe the pertinent laws, regulations and standards governing water quality and use, noise levels to be maintained, air quality to be maintained, pollutant discharges to surface waters and land, health and safety, protection of sensitive areas and endangered species, siting, land use control, etc., at national, regional and local levels. The report should describe the national laws and that need to be adhered to and to be implemented during the project including,

1. The Flora and Fauna Protection Ordinance;
2. Forest Ordinance;
3. Coast Conservation Act;
4. Geological Survey and Mines Bureau (GSMB) established under Mines and Minerals Act. Mining and exploitation for minerals, including sand, must be licensed under the Act of the GSMB;
5. Water Resources Board Act where promotion of afforestation, control of soil erosion, prevention of the pollution of rivers, streams and other water sources are required;
6. State Land Ordinance Act provides guidelines to the protection of the source, course or bed of any public stream, springs, reservoirs, lakes ponds lagoons, creeks, canals, aqueducts, etc., prevention of the erosion of soil and preservation of water supplies;
7. Soil Conservation Act makes provision for the conservation of soil resources for prevention or mitigation of soil erosion and for protection of land against damage by floods and droughts. It is possible to declare any area defined in the order to be an erodable area for the purpose of this act;
8. Prevention of Mosquito Breeding Act;
9. relevant legislation/regulation that governs the use of land, and
10. other relevant laws and regulations that should be taken into consideration.

The consultant should also specify various licenses, permits and approvals and relevant authorities that are required to be maintained by the contractors for sourcing of material for road construction and site utilization. It should also specify in all cases, according to the World Bank Policy, no activity including setting up of burrowing sites, dumping sites, quarry and sites for stock piling, storage or any other facility siting related to the project within protected areas or forest reserves will be allowed even with the permits and approvals by the relevant agency.

Task 4. Determination of the Potential Impacts of the Proposed Project

Identify all significant changes that the project is likely to generate. Distinguish between significant positive and negative impacts, direct, indirect and cumulative impacts, and immediate and long-term impacts. Include indirect impacts (e.g., increased access to forests and other sensitive areas and increased urbanization). Identify impacts that may occur due to accidental events (e.g., spillage of toxic materials). Identify impacts that are unavoidable or irreversible. Wherever necessary, describe impacts quantitatively, in terms of environmental costs and benefits. Assign economic values when feasible. Characterize the extent and quality of available data, explaining significant information deficiencies and any uncertainties associated with predictions of impact.

Identify any significant developments proposed in the project influence area such as township development, industrial zones, etc. that may have impact on the level of road use as well as to the environmental and people and level of impacts. The EA should focus on the potential for negative environmental and social impacts caused by planned and unplanned (spontaneous) in-migration of people if applicable to the given road section; clearing of forest lands for agriculture; increased pressure on fuel wood, fodder and water resources; social disruptions and conflicts; threat to natural habitats and important wildlife species, etc.

Determine the impacts due to likely changes to hydrology due to design or construction time. Specifically describe impacts on agriculture and fisheries where applicable due to temporary and/or long-term changes to hydrology in the area.

Special attention should be given to:

- Air quality: air pollution from asphalt plants; dust; noise from construction, equipment and blasting.
- Land resources: landslides; erosion; roadside litter; material for road construction.
- Hydrology: crossing of rivers, streams, canals and ravines; temporary closure of water flow (such as due to bridge construction); foreclosure of other land uses (if new alignment proposed); landslides; erosion; roadside litter; modifications to natural drainage patterns and groundwater elevation; flash-flooding; setting up of or clearing of lead aways; upstream activities that will have impacts to the project, as well as downstream impacts.
- Water quality: river/stream and lake sedimentation; use of pesticides; fuel and oil spills; water pollution from spills or accumulated contaminants on road surfaces.
- Biological: impacts on biodiversity caused by facilitation of access to and spontaneous settlements in natural areas; impacts on coastal/wetland management; control of hunting and poaching/wood-cutting; removal of existing trees along the roadsides
- Socio-economic: loss of agricultural and residual lands; loss of water sources for drinking and agriculture purposes; unplanned settlements; noise; threat to cultural and historical sites or artifacts.

Task 5. Analysis of Alternatives to the Proposed Project

Describe alternatives that were examined in the course of developing the proposed project and identify other alternatives that would achieve the same objectives. The concept of alternatives extends to siting and design of new alignments, rehabilitation techniques and phasing of activities, and operating and maintenance procedures. The alternatives should be also proposed based on the experience of road rehabilitation in the recent past. Compare alternatives in terms of potential environmental and social impacts, capital and operating costs (including mitigation measures and their monitoring), and institutional, training, and monitoring requirements and recommend the best

possible options. To the extent possible, quantify the costs and benefits of each alternative, incorporating the estimated costs of any associated mitigating measures.

The alternatives shall reflect "best practices" in road alignment and construction to ensure that potential negative environmental impacts are minimized (e.g., through measures to prevent soil erosion, to ensure proper drainage, and provide for waste disposal such as of cut and fill material and used oil, spoil and borrow area restoration; avoidance of cutting trees; avoidance/control resettlement, etc.), avoidance of significant socio-economic changes; and safety.

Task 6. Development of an Environmental Management and Monitoring Plan (ESMP)

For each impact predicted, feasible and cost-effective mitigation measures shall be identified to reduce potentially significant adverse environmental impacts to acceptable levels. The capital and recurrent costs of the measures, and institutional, training and monitoring requirements to effectively implement these measures shall be determined. The consultant shall explore and recommend environmental enhancements including roadside landscaping, separation of non-motorized lanes in an aesthetically appealing manner, provision of walking pathways, and development of cultural properties or improving access along the corridor. At this stage, it would be important to identify the need for further environmental studies for issues that cannot be dealt with during this stage, but should be undertaken by the TCAMP Contractors.

Estimate the site-specific impacts and costs of the mitigation measures and of the institutional and training requirements to implement them. If appropriate, assess compensation to affected parties for environmental impacts that cannot be mitigated – example closure of water flow of a river that will impact the planting of paddy downstream where compensation may have to be provided to the affected communities. Prepare an ESMP, including proposed work programs, budget estimates, schedules, staffing and training requirements, and other necessary support services to implement the mitigating measures, monitoring, etc. Include measures for emergency response to accidental events (e.g. entry of raw sewage or toxic wastes into rivers, streams, etc.).

Prepare a detailed plan to monitor the implementation of mitigating measures and the impacts of the project during rehabilitation and operation including monitoring indicators (e.g. emission and ambient levels of pollutants where these may be detrimental to human health, soil erosion, changes in the floodplain). Include in the plan an estimate of capital and operating costs and a description of other inputs (such as training and institutional strengthening) needed to implement the plan. Include a regular schedule of monitoring the quality of surface and ground waters, air quality and noise to ensure that mitigation measures are effective. Provide guidance for reporting, enforcement and conducting environmental audits.

Review the responsibilities and capability of institutions at local, provincial/regional, and national levels and recommend steps to strengthen or expand them so that the ESMP may be effectively adopted and implemented by the TCAMP contractor. The recommendations may extend to agency functions, intersectoral arrangements, management procedures and training, staffing, operation and maintenance training, budgeting and financial support.

Identify environmental and social standards to be maintained which can be translated to environmental and social specifications for the TCAMP contractors. Each specification should also have a measurable indicator(s) for monitoring purposes.

ESMP should be also presented in summary as part of an appendix (es) in a format agreed with the PMU. The ESMP should have the following:

- Site-specific impacts identified, and mitigation measures proposed (e.g. removal of trees, need for drainage, etc.)
- Standards to be maintained which are applicable throughout the road (e.g. safety measure, traffic management, noise and dust management, water and air quality maintenance, etc.) and/or the site is unknown (e.g. site of the labor camp, asphalt plant, etc.).
- Potential list of sites for material sourcing and siting of burrowing sites, dumping sites, quarry and sites for stock piling, storage, crusher plants, asphalt plants, etc. in the vicinity of the road sections. Potential sites identified for stock piling, storage, crusher plants, asphalt plants, etc. should be also checked for existing necessary clearances/permits and reported. This should include information such as existing site clearance details (including the quality of the source as per the GSMB, amount available for extraction, expiry dates of the clearances/permits if a commercial site, etc.), as well as details of requirements of permits for such activities. Such site identification should adhere to the condition specified under the Task 3, paragraph 2.
- Staffing requirement for the Contractor and supervising entity

Task 7. Assist in Inter-Agency Coordination and Stakeholder Participation

The Consultant shall assist the PMU/RDA in coordinating the Environmental and Social Screening Assessment with relevant agencies and the government will consult with groups likely to be affected by the proposed project and with local NGOs on the environmental and social aspects of the proposed project – the detailed consultation requirements are presented separately in the next section of the ToR. These groups should be consulted during the initial stages of the assessment as well as when Environmental and Social Screening Assessment is ready. The draft assessment should also be available in a public place accessible to affected groups and stakeholders. Relevant information will be provided to affected groups in a timely manner prior to consultation and in a form and language that is understandable and accessible to the groups being consulted. The Consultant should maintain a record of the public consultation and the records should indicate: means other than consultations (eg, surveys) used to seek the views of affected stakeholders; the date and location of the consultation meetings, a list of the attendees and their affiliation and contact addresses; and, summary minutes. It should be also reported on how the suggestions and requirements of stakeholders have been influenced in proposing mitigation measures proposed under ESMP, as well as the conceptual design. The summary of the above should be presented as part of the main text of the Environmental and Social Screening Assessment and detailed information including photographs should be annexed.

Environmental and Social Screening Assessment Report

Provide Environmental and Social Screening Assessment reports for the TCAMP project activities in a concise form limited to significant environmental and social issues. The summary text should focus on findings, conclusions and recommended actions, supported by summaries of the data collected and citations for any references. Organize the Environmental and Social Screening Assessment report according to the following outline: a two page summary of the assessment followed by a detailed data table generated through the online form: <https://goo.gl/forms/aJl2AD6HrOS8RwD02>

Qualifications

The consultant should possess verifiable experience and skills in conducting environmental and social assessments in the roads sector development and excellent communications and writing skills. The consultant will be reaching out to the PMU and PRDA staff to solicit environmental, social,

hydrological, and technical / engineering inputs relevant to the TCAMP project activities and the scope of this TOR.

Reporting and feedback schedule

All submissions related to the assignment should be submitted to Project Director of Project Management Unit (PMU), as hard copies and electronically. Electronic version of the final report should be in Word form and not PDF. During the final submission of the reports, if changes requested during the draft report stage are not satisfactory to the RDA, the consultant will be required to work further on the document until it is considered satisfactory. All reports will be also reviewed by the World Bank.

Timeline

- Completion of the Environmental and Social Screening Assessment
- Draft Environmental and Social Screening Assessment Report shared with the World Bank
- Draft Environmental & Social Management Plan shared with the World Bank
- Feedback provided by the World Bank
- Two Reports finalized and completed

The format to present the EMP in a matrix is provided below:

Activity	Environmental Impact	Proposed mitigation Action	Location	Frequency	Implementation Responsibility	Monitoring Responsibility	Monitoring Frequency	Implementation progress
Pre-Construction Phase								
Construction Phase								
Demobilization Phase								
Operational Phase								

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Important to note the following when using this template:

The EMP that will be prepared should have all sections in place, except the last column on Implementation Progress. What go in as the ESMP to the bid and contract documents of construction contractor is the sections highlighted in blue, as Implementation Progress is not relevant at the time of bidding and Operational responsibilities would lie with the council. Any activity that may be identified as the responsibility of design engineers should not be part of the ESMP that goes into the bid and contract documents of construction contractors.

Important to note: The consultant is responsible to ensure the ESMF requirements are taken into consideration in the designing of infrastructure. The EMP should follow the same sequence as the tasks described above including the ESMP matrix provided above.

Generic Environmental & Social Management Plan (ESMP)

The following Generic ESMP identifies environmental and social impacts and mitigatory measures that need to be in place during the construction of ancillary facilities, such as office buildings, staff accommodation facilities, storage facilities and other facilities that are also part of the solid waste management facilities. This generic example should be used in line with site screening and assessment in the preparation of site specific ESMPs.

Generic Environmental & Social Management Plan (ESMP) for Construction of New Infrastructure and/or Rehabilitation of Existing Infrastructure

Activities	Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
				Implementation	Supervision
1.0	Advance Works				
1.1	Identifying Location for new infrastructure				
	New infrastructure to be set up should be located in areas that are least sensitive to wildlife and land. At all times attempts, should be made to identify areas where minimal land clearance impacts are envisioned	Design stage	Design cost	RDA	
1.2	Incorporation of Green Building Design				
	Green infrastructure guidelines should be followed in designing and construction. The use of natural material sourced from sustainable sources (not from within the protected areas) should be used where suitable. Structures built should incorporate earthy and natural colors that will mingle in with the natural scape and not hinder the aesthetic value of the area	Design stage	Design cost	RDA	
1.3	Design of slope protection / land-slide management structures				

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
		Design must ensure structural integrity and safety of structures to address issues such as physical trauma associated with failure of structures and address potential reduction of stabilization of the nearby land due to slope protection activities. Incorporate as appropriate the following during planning, siting and design phases, especially in hilly terrain: Inclusion of buffer strips or physical separations around project sites Incorporation of siting and safety engineering criteria to prevent failures due natural and/or man-made risks (such as wind, flooding, landslides, etc.)	Design stage	Design cost	RDA	
		Application of locally regulated building codes to ensure structural integrity Certification of designing and constructing infrastructure, the applicability and appropriateness of structural criteria				
	1.3	Environmental Management Plan (EMP)				
		A site specific. EMP and relevant guidelines should be included as a Special Condition in the Bid Document; and EMP should be attached to contract to form part of the contract requirement	Prior to bidding	To be provided as a provisional sum and/or as part of the engineering cost	PPP partners	
2.0 Construction Phase						
	2.1	Earthwork and Soil Conservation				
	2.1.1	Site Clearance and Land Development				

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
		<p>Prevention of the removal of trees should be carried out as far as possible. No trees that are of rare endemic value are to be removed for the purpose of the project</p> <p>During removing, attention should be paid to maintain minimum disturbances to soil cover and also care should be taken not to damage adjoining trees.</p> <p>Compensation for the trees removed should be conducted at 1:2 at least Water spraying should be done at a regular interval to avoid dust generation due to site clearance</p>	Applicable throughout the construction areas	Engineering cost	Contractor, IA	PRDA /PRDD
	2.1.2	Disposal of Debris and Spoil				
	(a)	<p>All debris and residual spoil material including any left earth shall be disposed only at locations approved by the engineer for such purpose and subjected to the clauses 2.1.1.b and 2.1.1.c.</p> <p>All material that is reusable or recyclable shall be used for such purposes either by the contractor or through dealers.</p>	Disposal sites to be identified by the contractor and approved by Engineer.	Engineering cost	Contractor	PRDA /PRDD
	(b)	The contractor shall obtain the approval from the relevant Local Authority such as Prdeshiya Sabha, Municipal Council and other government				
		<p>agencies (as required) for disposal and spoil at the specified location, as directed by the Engineer</p> <p>Private land that will be selected for disposal should also require written consent from the land owner</p>				
	(c)	<p>The debris and spoil shall be disposed in such a manner that;</p> <p>(i) waterways and drainage paths are not blocked</p> <p>(ii) the disposed material should not be washed away by runoff and (iii) should not be a nuisance to the public</p>				

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(d)	The debris and residual spoil material including any left earth shall be used, to refill the burrow areas as directed by the engineer, subjected to laying of topsoil as per EMP clause 2.1.2.	All burrow sites (licensed sites) identified by contractor and approved by engineer.			
	(e)	Excavated earth materials and all debris materials shall be disposed immediately without allowing to stockpile at identified locations for debris disposal, recommended by the engineer. During transportation, dispose materials should be covered with tarpaulin.	Applicable throughout the project sites			
	(f)	If approved by the engineer, contractor can dispose the debris and spoil as a filling material provided that the contractor can ensure that such material is used for legally acceptable purposes with disposed in an environmentally acceptable manner.	In identified filling sites subjected to the approval of engineer			
	2.1.2	Conservation and reuse of top soil				
	(a)	Top soil of the agricultural areas and any other productive areas where it has to be removed for the purpose of this project shall be stripped to a specified depth of 150mm and stored in stockpiles of height not exceeding 2m, if directed by the engineer. If the contractor is in any doubt on whether to conserve the topsoil or not for any given area he shall obtain the direction from the engineer in writing	Within the project sites where topsoil from productive land to be removed	Engineering cost	Contractor	PRDA /PRDD
	(b)	Removed top soil could be used as a productive soil when replanting/establishing vegetation	Site(s) identified for replantation program			

Activities	Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
				Implementation	Supervision
(c)	Stockpiled topsoil must be returned to cover the areas including cut slopes where the topsoil has been removed due to project activities. Residual topsoil must be distributed on adjoining/proximate barren areas as identified by the engineer in a layer of thickness of 75mm – 150mm.	Within the project sites where slope stabilization is carried out and/or on barren land			
(d)	Topsoil thus stockpiled for reuse shall not be surcharged or overburdened. As far as possible multiple handling of topsoil stockpiles should be kept to a minimum.	Locations where topsoil is stockpiled for reuse	-		
2.1.3	Protection of Ground Cover and Vegetation				
(a)	Construction vehicle, machinery and equipment shall be used and stationed only in the areas of work and in any other area designated/ approved by the engineer. Entry and exit of construction vehicles and machinery should be restricted to particular points as directed by the engineer	Within the project areas	-	Contractor	PRDA /PRDD
(b)	Contractor should provide necessary instructions to drivers, operators and other construction workers not to destroy ground vegetation cover unnecessarily	Within the project areas			
2.1.4	Burrowing of Earth				
(a)	Earth available from construction site excavation works as per design, may be used as embankment materials, subject to approval of the engineer	All excavation areas and embankments	-	Contractor	PRDA /PRDD
(b)	Contractor shall comply with the environmental requirements/guidelines issued by the CEA and the respective local authorities with respect of locating burrow areas and with regard to all operations related to excavation and transportation of earth from such sites.	All burrow sites identified and used by the contractor			

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
		Contractor can also find suitable soil materials from currently operated licensed burrow pits in the surrounding area, subject to approval of the engineer No burrow-sites be used (current approved) or newly established within areas protected under FFPO and FO				
	(c)	Burrow areas shall not be opened without having a valid mining license from the GSMB. The location, depth of excavation and the extent of the pit or open cut area shall be as approved by the engineer.				
	(d)	All burrow pits/areas should be rehabilitated at the end of their use by the contractor in accordance with the requirements/guidelines issued by the CEA and the respective local authority.		Engineering cost		
	(e)	Establishment of burrow pits/areas and its operational activities shall not cause any adverse impact to the near-by properties. Also shall not be a danger of health hazard to the people.	All excavation areas, slopes and burrow sites	-		
	(f)	Contractor shall take all steps necessary to ensure the stability of slopes including those related to temporary works and burrow pits.		Engineering cost		
	2.1.5	Prevention of soil erosion				
	(a)	Debris material shall be disposed in such a manner that waterways, drainage paths would not get blocked. Drainage paths associated with the infrastructure should be improved / erected to drain rain water properly. Silt traps will be constructed to avoid siltation into water ways where necessary. To avoid siltation, drainage paths should not be directed to streams, other water bodies and sea directly and they should be separated from streams / other water bodies / sea	Applicable throughout project sites	Engineering cost	Contractor	PRDA /PRDD

Activities	Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
				Implementation	Supervision
(b)	Barricades such as humps will be erected at excavated areas for culverts, silt traps, toe walls, filling and lifting with roper sign boards, as some work in these sections will have to be stopped during heavy rains due to heavy erosion. To prevent soil erosion in these excavated areas, proper earth drain system should be introduced.	Applicable throughout project sites			
(c)	Embankment slopes, slopes of cuts, etc. shall not be unduly exposed to erosive forces. These exposed slopes shall be graded and covered by grass or other suitable materials per the specifications. All fills, back fills and slopes should be compacted immediately to reach the specified degree of compaction and establishment of proper mulch.				
(d)	Work that lead to heavy erosion shall be avoided during the raining season. If such activities need to be continued during rainy season prior approval must be obtained from the Engineer by submitting a proposal on actions that will be undertaken by the contractor to prevent erosion.		-		
(e)	The work, permanent or temporary shall consist of measures as per design or as directed by the engineer to control soil erosion, sedimentation and water pollution to the satisfaction of the engineer. Typical measures include the use of berms, dikes sediment basins, fiber mats, mulches, grasses, slope drains and other devices. All sedimentation and pollution control works and maintenance thereof are deemed, as incidental to the earthwork or other items of work and no separate payment will be made for their implementation.		Engineering cost		
2.1.6	Contamination of soil by fuel and lubrications				
(a)	Vehicle/machinery and equipment servicing and maintenance work shall be carried out only in designated locations/ service stations approved by the engineer	Servicing yards to be used for vehicle servicing	Engineering cost	Contractor	PRDA /PRDD
(b)	Approval from CEA in the form of an Environmental Protection Licenses (EPL) should be secured by the contractor if he intends to prepare his own vehicle servicing yard				PRDA /PRDD

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(c)	Waste oil, other petroleum products and untreated wastewater shall not be discharged on ground so that to avoid soil pollution. Adequate measures	Servicing yards to be used for			
		shall be taken against pollution of soil by spillage of petroleum/oil products from storage tanks and containers. All waste petroleum products shall be disposed of in accordance with the guidelines issued by the CEA or the engineer.	vehicle servicing and locations where vehicles will be temporarily stationed			
	(d)	Sites used for vehicle and plant service and maintenance shall be restored back to its initial status. Site restoration will be considered as incidental to work.	New servicing yards developed by the contractor for the project			PRDA /PRDD
	2.1.7	Disposal of harmful construction wastes				
	(a)	Contractor prior to the commencement of work shall provide list of harmful, hazardous and risky chemicals/ material that will be used in the project work to the Engineer. Contractor shall also provide the list of places where such chemicals/materials or their containers or other harmful materials have been dumped as waste at the end of the project.	Locations identified to store chemicals and waste disposal	-	Contractor	PRDA /PRDD
	(b)	All disposal sites should be approved by the engineer and approved by CEA and relevant local authority.				PRDA /PRDD
	(c)	The contractor shall clean up any area including water-bodies affected/contaminated (if any) as directed by the engineer at his own cost.	All affected water bodies close to material storage and waste disposal sites			

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	2.1.8	Quarry operations				
	(a)	Utilizing the existing quarry sites available in the project influential area as much as possible which are approved by GSMB with valid EPL and Industrial Mining Licences; If new quarries are to be opened, prior approval should be obtained from GSMB, CEA and local authorities such as Pradeshiya Sabha.	All, quarry sites which will be used during construction phase.	Engineering cost	Contractor	PRDA /PRDD
		Selected quarry sites should have proper safety measures such as warnings, safety nets etc., and third party insurance cover to protect external parties that may be affected due to blasting. Quarry sites should not be established within protected sites identified under the FFPO and FO				
	(b)	It is recommended not to seek material from quarries that have ongoing disputes with community.		-		
	(c)	The maintenance and rehabilitation of the access roads in the event of damage by the contractors operations shall be a responsibility of the contractor.		Engineering cost		
2.2		Storage and handling of construction material				
2.2.1		Emission of dust				
	(a)	Storage locations of sand, metal, soil should be located away from settlements and other sensitive receptors and covered (with artificial barriers or natural vegetation). Measures given under clauses 2.5.1 (c), (d), (e) should be considered within material storage site to minimize dust during handling of material. All access roads within the storage site should be sprinkled with water for dust suspension.	At all material storage locations (stock piles of sand, gravel and metal)	Engineering cost	Contractor	PRDA /PRDD
	2.2.2	Storage of fuel, oil and chemicals (avoid fumes and offensive odor)				

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(a)	<p>All cement, bitumen (barrels), oil and other chemicals should be stored and handled on an impervious surface (concrete slab) above ground level. Storage facility of cement, bitumen (barrels), oil and other chemicals should be an enclosed structure ensuring that no storm water flows in to the structure.</p> <p>A ridge should be placed around the storage facility to avoid runoff getting in to the structure.</p> <p>Adequate ventilation should be kept to avoid accumulation of fumes and offensive odor that could be harmful to material handlers.</p> <p>Measures given under clause 2.9 should be considered to avoid any accidents and risks to worker population and public.</p>	At all material storage locations (cement, bitumen, fuel, oil and other chemicals used for construction activities)	Engineering cost	Contractor	PRDA /PRDD
	2.2.3	Transportation of material				
	(a)	<p>The contractor should avoid over loaded trucks to transport material to construction sites. During transportation, materials should be covered with tarpaulin. Avoid peak hours in roads with moderate to high traffic'; the contractor shall minimize possible public nuisance due to dust, traffic congestion, air pollution, etc., due to such haulage; If local roads are used, select routes based on the truck load; divide the load to prevent damages to local roads and bridges; observe speed limits and maintain vehicles in the good condition; transport material under cover; avoid peak hours in roads with moderate to high traffic.</p> <p>If there are damages to local roads and other utilities due to hauling in roads which were not identified during design stage, Contractor shall attends to repair all damaged infrastructure/ roads, if needed through relevant authorities</p>	Within the project locations and the vicinity	-	Contractor	PRDA /PRDD
	2.3	Water – Protection of Water Sources and Quality				
	2.3.1	Loss of minor water sources and disruption to water users				

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(a)	Contractor should make employees aware on water conservation and waste minimization in the construction process.	Project sites and worker camps	-	Contractor	PRDA /PRDD
	(b)	Arrange adequate supply of water for the project purpose throughout the construction period. Not obtain water for project purposes, including for labour camps, from public or community water supply schemes without a prior approval from the relevant authority. Not extract water from ground water or surface water bodies without the permission from engineer & relevant authority. Obtain the permission for extracting water prior to the commencing of the project, from the relevant authority.		Engineering cost		
	(c)	Contractor shall protect sources of water (potable or otherwise) such as water sources used by the community so that continued use these water sources will not be disrupted by the work. In case the closer of such sources is required on temporary basis contractor shall provide alternative arrangement for supply. Alternative sources such as wells thus provided should be within acceptable distance to the original sources and accessible to the affected community.	Wells and other public water sources locations within the project sites			
	(d)	Contractor shall not divert, close or block existing canals and streams in a manner that adversely affect downstream intakes. If diversion or closure or blocking of canals and streams is required for the execution of work, contractor must obtain the engineers approval in writing. Contractor shall also obtain the approval from the National Water Supply and Drainage Board (NWS&DB) or local authority or Divisional Secretary depending on the operating agency of the intake/water supply. Contractor shall restore the drainage path back to its original status once the need for such diversion or closure or blockage ceased to exist. During the affected period contractor shall supply water to the affected community.	Waterways located in the surrounding areas of road sections or the contractor's work sites.			
	(e)	In case the contractors activities going to adversely affect the quantity or quality of water, the contractor shall serve notice to the relevant authorities and downstream users of water sufficiently in advance.	Project sites			

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(f)	Apply best management practices to control contamination of run-off water during maintenance & operation of equipment. Maintain adequate distance between stockpiles & water bodies to control effects to natural drainage paths.	construction sites, material and soil storage areas, and equipment and machinery service areas	-		
	2.3.2	Siltation into water bodies				PRDA /PRDD
	(a)	Contractor shall take measures to prevent siltation of water bodies as a result of construction work including, construction of temporary / permanent devices to prevent water pollution due to siltation and increase	All water bodies located around the project areas	Engineering cost	Contractor	PRDA /PRDD
		of turbidity. These shall include the measures against erosion as per EMP 2.1.6.				
	(b)	Construction materials containing small / fine particles shall be stored in places not subjected to flooding and in such a manner that these materials will not be washed away by runoff.				
	(c)	Temporary soil dumps should be placed at least 200m away from all water bodies				
	(d)	If temporary soil piles are left at the site for a long time those piles should be covered with thick polythene sheets				
	(e)	All fills, back fills and slopes should be compacted immediately to reach the specified degree of compaction and establishment of proper mulch				
	2.3.3	Alteration of drainage paths				

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(a)	Contractor shall not close or block existing canals and streams permanently. If diversion or closure or blocking of canals and streams is required for the execution of work (e.g. for construction of bypass), contractor must first obtain the Engineers approval in writing. Contractor shall carry out an investigation and report to the Engineer, if an investigation is requested by the Engineer. Contractor shall also obtain the approval from the relevant agencies such as ID/ /Divisional Secretary prior to such action is taken. Contractors shall restore the drainage path back to its original status once the need for such diversion or closure or blockage is no longer required.	All drainage paths impacted by the project activities	Engineering cost	Contractor	PRDA /PRDD
	(b)	The debris and spoil shall be disposed in such a manner that waterways and drainage paths are not blocked.				
	(c)	Avoid/ minimize construction works near/ at such drainage locations during heavy rain seasons such as monsoon rain periods.				
	2.3.4	Contamination of water from construction wastes				
	(a)	The work shall be carried out in such a manner that pollution of natural water courses rivers, lagoons, sea and other minor stream paths located within construction areas or downstream. Measures as given in 2.1.6., 2.1.7, 2.1.8, 2.3.2 and 2.3.6 clauses shall be taken to prevent the wastewater	At all water courses located adjacent construction sites and downstream	Engineering cost	Contractor	PRDA /PRDD
		produced in construction from entering directly into streams, water bodies or the irrigation systems.				
	(b)	Avoid / minimize construction works near / at such drainage locations during heavy rainy seasons	At all water courses located adjacent construction sites	-		

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(c)	The discharge standards promulgated under the National Environmental Act shall be strictly adhered to. All waste arising from the project is to be disposed in a manner that is acceptable to the engineer and as per the guidelines/instructions issued by the CEA.	At all water courses located adjacent construction sites and downstream	Engineering cost		
	2.3.5 .	Contamination from fuel and lubricants				
	(a)	All vehicle and plant maintenance and servicing stations shall be located and operated as per the conditions and /or guidelines stipulated under the EPL issued by CEA. In general these should be located at least 200m away from water bodies and wastewater shall not be disposed without meeting the disposal standards of the CEA. Wastewater from vehicle and plant maintenance and servicing stations shall be cleared of oil and grease and other contaminants to meet the relevant standards before discharging to the environment.	Vehicle and plant maintenance and servicing centers	Engineering cost	Contractor	PRDA /PRDD
	(b)	Vehicle, machinery and equipment maintenance and re-filling shall be done as required in EMP clause 2.1.6. to prevent water pollution as well	Yards, servicing centers			
	2.3.6 .	Locating, sanitation and waste disposal in construction camps				
	(a)	Locations selected for labour camps should be approved by engineer and comply with guidelines/ recommendations issued by the CEA/Local	At all labour camps	Engineering cost	Contractor	PRDA /PRDD
		Authority. Construction of labourer camps shall not be located within 200m from waterways or near to a site or premises of religious, cultural or archeological importance and school.				

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(b)	Labour camps shall be provided with adequate and appropriate facilities for disposal of sewerage and solid waste. The sewage systems shall be properly designed, built and operated so that no pollution to ground or adjacent water bodies/watercourses takes place. Garbage bins shall be provided the camps and regularly emptied. Garbage should be disposed of in a hygienic manner, to the satisfaction of the relevant norms. Compliance with the relevant regulations and guidelines issued by the CEA/LA shall be strictly adhered to.				
	(c)	Contractor shall ensure that all camps are kept clean and hygienic. Necessary measures shall be taken to prevent breeding of vectors				
	(d)	Contractor shall report any outbreak of infectious disease of importance in a labour camp to the engineer and the Medical Officer of Health (MOH) or to the Public Health Inspector (PHI) of the area immediately. Contractor shall carry out all instructions issued by the authorities, if any.		-		
	(e)	Contractor shall adhere to the CEA recommendations on disposal of wastewater. Wastewater shall not be discharged to ground or waterways in a manner that will cause unacceptable surface or ground water pollution.		-		
	(f)	All relevant provisions of the Factories Act and any other relevant regulations aimed at safety and health of workers shall be adhered to.		-		
	(g)	Contractor should remove all labour camps fully after its need is over, empty septic tanks, remove all garbage, debris and clean and restore the area back to its former condition. A consent letter from the land owner should be obtained that certifies the decommissioning has taken place to the level acceptable to the land owner		Engineering cost		
	2.3.7	Wastage of water and waste minimization				

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(a)	The contractor will minimize wastage of water in the construction process/operations by reusing water as much as possible, utilizing only the required amount of water for the construction works etc...	Within project sites and labour camps	-	Contractor	PRDA /PRDD
	(b)	The contractor shall educate and made employees aware on water conservation, waste minimization and safe disposal of waste following guidelines given by CEA and LA.				
	2.3.8 .	Extraction of water				
	(a)	The contractor is responsible for arranging adequate supply of water for the project purpose throughout the construction period. Contractor shall not obtain water for his purposes including for labour camps from public or community water supplies without approval from the relevant authority. Such extraction (if approved) should be under direct supervision of the engineer	Within project sites and labour camps	Engineering cost	Contractor	PRDA /PRDD
	(b)	Extraction of water by the contractor for the project purposes shall comply with the guidelines and instructions issued by relevant authority. The Contractor shall not extract water from groundwater or from surface water-bodies without permission from the Engineer.		-		
	(c)	Construction over and close to rivers, minor streams and lagoon shall be undertaken in dry season.	All drainage and irrigation activities			
	(d)	The Contractor may use the natural sources of water subject to the provision that any claim arising out of conflicts with other users of the said natural sources of water shall be made good entirely by the contractor	At all natural water sources used for construction works			
2.4.		Flood Prevention				
	2.4.1 .	Blockage of drainage paths and drains				

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(a)	Contractor's activities shall not lead to flooding conditions as a result of blocked drainage paths and drains. The contractor shall take all measures	All construction work sites	Engineering cost	Contractor	PRDA /PRDD
		necessary or as directed by the Engineer to keep all drainage paths and drains clear of blockage at all times.				
	(b)	If flooding or stagnation of water is caused by contractor's activities, contractors shall provide suitable means to (a) prevent loss of access to any land or property and (b) prevent damage to land and property. Contractor shall compensate for any loss of income or damage as a result.				
	2.4.2	Work in Flood Prone Areas				
	(a)	Contractor's activities shall not lead to aggravate floods in flood prone areas when working in flood prone areas.	All construction work sites and their impacts areas	-	Contractor	PRDA /PRDD
	(b)	When working in flood prone areas during rainy season the contractor shall avoid storing materials, chemicals and other items of work in areas where those can be washed away by the floods.				
	2.5	Air Pollution				
	2.5.1	Generation of Dust				
	(a)	The contractor shall effectively manage the dust generating activities such as topsoil removal, handling and transporting sand, rubble, bitumen, and cement during periods of high winds or during more stable conditions with winds directed towards adjacent residences and other facilities.	Within the construction area where earth work will take place, storage locations of	Engineering cost	Contractor	PRDA /PRDD
	(b)	All stockpiles shall be located sufficiently away from sensitive receptors.				
	(c)	All vehicles delivering materials shall be covered to avoid spillage and dust emission.				

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(d)	The Contractor should avoid, where possible and take suitable action to prevent dirt and mud being carried to the roadway (particularly following wet weather).	sand, rubble, bitumen, cement and all sub roads used for material transportation, paying special attention to sensitive locations.			
	(e)	The contractor should enforce vehicle speed limits to minimize dust generation.				
	(f)	The Contractor shall employ a water truck to sprinkle water for dust suppression on all exposed areas as required (note: the use of waste water / waste oil for dust suppression is prohibited)				
	(g)	All cleared areas shall be rehabilitated progressively.				
	(h)	All earthwork shall be protected in a manner acceptable to the minimize generation of dust.				
	(i)	All existing roads used by vehicles of the contractor, or any of his subcontractor or supplies of materials or plant and similar roads which are part of the works shall be kept clean and clear of all dust/mud or other extraneous materials dropped by such vehicles or their tires.				
	(j)	Clearance shall be affected immediately by manual sweeping and removal of debris, or, if so directed by the Engineer, by mechanical sweeping and clearing equipment. Additionally, if so directed by the Engineer, the road surface will be hosed or sprinkled water using appropriate equipment.				
	(k)	Plants, machinery and equipment shall be handled (including dismantling) so as to minimize generation of dust.				
	(l)	The contractor shall take every precaution to reduce the level of dust emission from the hot mix plants and the batching plants up to the satisfaction of the Engineer in accordance with the relevant emission norms.				
	2.5.2	Emission from Hot-Mix Plants and Batching Plants				

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(a)	The hot mix plants and batching plants shall be sited in accordance with CEA guidelines. It is recommended that hot mix plants and batching plants to be located sufficiently away from sensitive receptors such as vulnerable habitats, religious and cultural sites, residential areas, schools and industrial areas	Locations at which hot mix plant/s and concrete batching plant/s to be located	-	Contractor	PRDA /PRDD
	(b)	The exhaust gases shall comply with the requirements of the relevant current emission control legislation. All operations at plants shall be undertaken in accordance with all current rules and regulations protecting the environment as well as the conditions given in the EPL.				
	(c)	The hot mix plant be sited in accordance with CEA guidelines and operated with an EPL. The hot mix plants shall be fitted with the requirements of the relevant current emission control legislation. Road side mixing should be avoided				
	2.5.3	Odor and offensive smells				
	(a)	Contractor shall take all precautions such as storing all chemicals used for construction works in properly closed containers with good ventilations to prevent odor and offensive smell emanating from chemicals and processes applied in construction works or from labour camps. In a situation when/where odor or offensive smell does occur contractor shall take immediate action to rectify the situation. Contractor is responsible for any compensation involved with any health issue arisen out of bad odor and offensive smells.	Within construction and work sites including all sites used for store all chemicals and places where chemical reactions take place.	Engineering cost	Contractor	PRDA /PRDD
	(b)	The waste disposal and sewerage treatment system for the labour camps shall be properly designed, built and operated so that no odor is generated. Compliance with the regulations on health and safety as well as CEA and LA guidelines shall be strictly adhered to.	At all labour camps			

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	2.5.4 .	Emission from construction Vehicles, Equipment and Machinery				
	(a)	The emission standards promulgated under the National Environment Act shall be strictly adhered to.	All plants, machinery and vehicles used for construction	-	Contractor	PRDA /PRDD
	(b)	All vehicles, equipment and machinery used for construction shall be regularly serviced and well maintained to ensure that emission levels comply with the relevant standards.		Engineering cost		
	(c)	Contractor should obtain the certificate issued by the Vehicular Emission Test (VET) for all construction vehicles, plants and other machineries and it should be renewed annually				
	2.5.5 .	Air Pollution from Crusher				
	(a)	Crusher plants should operate under an EPL and shall confirm to relevant dust emission levels as stated in the EPL. Only the quarries approved by GSMB and holding current EPL shall be used for material extraction.	Location of crusher plants	-	Contractor	PRDA /PRDD
	(b)	Crushing plants shall be sited sufficiently away from sensitive receptors such as houses, place of worships and outdoor recreation areas (locations given under item 2.4.1) or as required by the Engineer.				
	(c)	Sprinkling of water (through a sprinkler system) for dust suppression.		Engineering cost		
	2.6	Noise Pollution and Vibration				
	2.6.1	Noise from Vehicles, Plants and Equipment.				
	(a)	All machinery and equipment should be well maintained and fitted with noise reduction devices in accordance with manufacturer's instructions.	All machinery and vehicles used for construction works	Engineering cost	Contractor	PRDA /PRDD

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(b)	In construction sites within 150 m of the nearest habitation, noisy construction work such as crushing, concrete mixing and batching, mechanical compaction, etc., will be stopped between 20.00 hours to 06.00 hours. No construction shall take place within 100m around hospitals between 20.00 hours to 06.00 hours. Near noise sensitive sites, such as schools noisy equipment shall not be used during noise sensitive times of the day.	Within the construction sites and their vicinity	-		
	(c)	All vehicles and equipment used in construction shall be fitted with exhaust silences. During routine servicing operations, the effectiveness of exhaust silencers shall be checked and if found to be defective shall be replaced. Notwithstanding any other conditions of contract, noise level from any item of plant(s) must comply with the relevant legislation for levels of sound emission. Non-compliant plant shall be removed from site.		Engineering cost		
	(d)	Noise limits for construction equipment used in this project (measured at one meter from the edge of the equipment in free field) such as compactors,		-		
		rollers, front loaders, concrete mixers, cranes (moveable), vibrators, and saws shall not exceed 75 dB(A).	vehicles used for construction works	Engineering cost		
	(e)	Maintenance of vehicles, equipment and machinery shall be regular and proper, to the satisfaction of the Engineer, to keep noise from these at a minimum.				
	(f)	Workers in vicinity of strong noise, and workers working with or in crushing, compaction, batching or concrete mixing operations shall be provided with protective gear.	Within the construction sites and their vicinity			
	2.6.2	Vibration				
	(a)	Contractor shall take appropriate action to ensure that construction works do not result in damage to adjacent properties due to vibration.	Within the	-	Contractor	PRDA /PRDD

Activities	Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
				Implementation	Supervision
(b)	Prior to commencement of excavation, blasting activity, the Contractor shall undertake a condition survey of existing structures within the zone of influence, as agreed with the relevant government agencies and the engineer.	construction sites and their vicinity			
(c)	Contractor shall carry out monitoring at the nearest vibration sensitive receptor during blasting or when other equipment causing vibrations are used.				
(d)	The contractor shall modify the method of construction until compliance with the criteria, if vibration levels exceed the relevant vibration criteria.				
(e)	Contractor shall pay due consideration on vibration impacts of blasting on adjoining structures. Explosive loads shall be determined so that excessive vibration can be avoided and blasts shall be controlled blasting in nature. Notwithstanding to these provisions contractor is liable for any damage caused by blasting work.				
2.6.3	Noise from Blasting or Pre splitting Operations				
(a)	Blasting shall be carried out during fixed hours (preferably during midday), as permitted by the Engineer. The timing should be made known to all the people within 500 m (200 m for pre-splitting) from the blasting site in all directions. People, except those who actually light the fuse shall be	At quarry sites and landslide mitigation sites	-	Contractor	PRDA /PRDD
	excluded from the area of 200 m (50 m for pre-splitting) from the blasting site in all directions at least 10m minutes before the blasting. Only chemical blasting where rocks have to be removed for landslide mitigation measures				
2.7	Impacts to Flora				
2.7.1	Loss or Damage to Trees and Vegetation				

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(a)	All works shall be carried out in a manner that the destruction to the flora and their habitats is minimised. Trees and vegetation shall be felled / removed only if that impinges directly on the permanent works or necessary temporary works. In all such cases contractor shall take prior approval from the Engineer.	All project sites	-	Contractor	PRDA /PRDD
	(b)	Contractor shall make every effort to avoid removal and/or destruction of trees of religious, cultural and aesthetic significance. If such action is unavoidable the Engineer shall be informed in advance and carry out public consultation and report on the same should be submitted to the Engineer.				
	(c)	Contractor shall adhere to the guidelines and recommendations made by the Central Environmental Authority, if any with regard to felling of trees and removal of vegetation.				
	(d)	Removed trees must be handed over to the Timber Corporation.				
	(e)	The contractor shall plant over 5 year old root-balled native trees suitable for the location as identified by the Engineer. The planting should take place in public land suitable for the purpose The contractor shall build hardy structures around the trees for protection. The contractor shall be responsible for ensuring the well-being of the trees/plants until the end of the contract	Indicative number of trees / plants and indicative number of planting structures necessary are to be identified by	Engineering cost		

Activities	Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
				Implementation	Supervision
		the contractor. Planting should take place as soon as the plant removal takes place			
	2.7.3	Spread of Invasive Plant Species			
		<p>There is a possibility of introducing / spreading of invasive species during material transportation and disposing cleared vegetation from one site to another, thus the following measures are to be undertaken.</p> <p>Close monitoring of transportation, storage of borrowing material for the spread of any invasive species must be done.</p> <p>Vehicles should be covered during transportation of cleared vegetation to and from the construction site.</p> <p>Borrow material to be brought from properly identified borrow pits and quarry sites, the sites should be inspected in order to ensure that no invasive plant species are being carried with the borrow material.</p> <p>Washing the vehicles should be conducted periodically to prevent carrying any invasive species</p> <p>The construction site should be inspected periodically to ensure that no invasive species are establishing themselves at the site.</p>		Contractor	PRDA /PRDD
	2.7.2	Chance finds of important Flora			

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(a)	During construction, if a rare/threatened/endangered flora species is found, it shall be immediately informed to the relevant agency by the contractor through the engineer. All activities that could destroy such flora and/or its habitat shall be stopped with immediate effect. Such activities shall be started only after obtaining the Engineer's approval. Contractor shall carry out all activities and plans that the Engineer instructed him to undertake to conserve such flora and/or its habitat.	All project sites	-	Contractor	PRDA /PRDD
	2.8.	Impact on Fauna				
	2.8.1	Loss, Damage or Disruption to Fauna				
	(a)	All works shall be carried out in such a manner that the destruction or disruption to the fauna and their habitats is minimum.	All project sites	-	Contractor	PRDA /PRDD
	(b)	Construction workers shall be instructed to protect fauna including wild animals and aquatic life as well as their habitats. Hunting, poaching and unauthorized fishing by project workers is not allowed.				
	(d)	Siting of all hot mix plants, crushing plants, workshops, depots and temporary worker camps and storing of toxic and hazardous materials at approved locations, and recycling and dumping of solid waste matter at locations approved by local authorities, maintenance of vehicles and equipment in good operable condition, ensuring no leakage of oil or fuel and the fitting of proper exhaust baffles. Any solid waste should not be dumped into natural habitats.	Locations selected for erecting the asphalt, crusher and concrete batching plants and workshops	Engineering cost		
	2.8.2	Chance found important Fauna				
	(a)	During construction, if a rare/threatened/endangered fauna species is project sites it shall be immediately informed to the relevant agency by contractor. All activities that could destroy such fauna and/or its habitat stopped with immediate effect. Such activities shall be started only after the Engineer's approval. Contractor shall carry out all activities and plans Engineer instructed him to undertake to conserve such fauna and/or its	found, All the shall be obtaining that the habitat.	- Contractor	PPP partners	

Activities	Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
				Implementation	Supervision
2.9	Disruption to people				
2.9.1	Loss of Access				
(a)	At all times, the Contractor shall provide safe and convenient passage for vehicles, pedestrians and livestock. Work that affects the use of existing accesses shall not be undertaken without providing adequate provisions to the prior satisfaction of the Engineer.	All project sites	Engineering cost	Contractor	PRDA /PRDD
(b)	The works shall not interfere unnecessarily or improperly and ensure convenience of public at all times		-		
(c)	On completion of the works, all temporary obstructions to access shall be cleared away, all rubbish and piles of debris that obstruct access be cleared to the satisfaction of the Engineer.		Engineering cost		
(d)	Providing advance information to the public about the planned construction works and activities causing disruption to access and the temporary arrangements made to give relief to public in order to avoid any inconveniences due to the construction activities.				
2.9.3	Traffic Control and Safety				
(a)	The Contractor shall take all necessary measures for the safety of traffic during construction and provide, erect and maintain such barricades, including signs, markings, flags, lights and flagmen as may be required by the Engineer for the information and protection of traffic approaching or passing through the section of the highway under improvement. The provision of traffic safety measures shall be considered incidental to work and follow The Institute for Construction Training and Development (ICTAD) guidelines and instructions given by the Police, if any.	Road-side construction sites	Engineering cost	Contractor	PRDA /PRDD
(b)	Vehicles travelling in and out of the PA should maintain low speeds when transporting material inside the boundaries of the PA in order to avoid disturbing the wildlife and avoid the risk of accidents. In the event the road within the PA is blocked by wildlife the contractor will not disturb the wildlife until they move away from the path, with noise or other means.	Construction areas			

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	2.10	Accidents and Risks				
	2.10.1	Public and Worker safety				
	(a)	All reasonable precautions will be taken to prevent danger of the workers and the public from accidents such as fire, explosions, blasts, falling rocks, falling to excavated pits, chemical sprays, unsafe power supply lines etc.	Construction areas, material	Engineering cost	Contractor	PRDA /PRDD
	(b)	The Contractor shall comply with requirements for the safety of the workmen as per the international labour organization (ILO) convention No. 62 and Safety and Health regulations of the Factory Ordinance of Sri Lanka to the extent that those are applicable to this contract. The contractor shall supply all necessary safety appliances such as safety goggles, helmets, masks, boots, etc., to the workers and staff. The contractor has to comply with all regulations regarding safe scaffolding, ladders, working platforms, gangway, excavations, trenches and safe means of entry and egress.	storage and worker camps			
	(c)	Construction activities on existing facilities where operation is underway should be conducted post times of operation, post operational hours of the center if on the same site.				
	2.10.2	Prevention of Risks of Electrocutation				
	(a)	All electrical wiring and supply related work should confirm to British Standards (BS) or relevant Sri Lankan Standards. Adequate precautions material will be taken to prevent danger of electrocuting from electrical storage and and power supply lines including distribution boards, etc. worker camps Measures such as danger signboards, danger/red and lights will be provided to protect the public and workers. All electric machines to be used in the construction shall be free from defect, be maintained and kept in good working order, be regularly inspected and as provisions and to the satisfaction of the Engineer.	Construction areas, equipment transformers, lights, fencing power driven properly per BS	Engineering cost partners	Contractor	PPP

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	2.10.3	Risk at Hazardous Activity				
	(a)	All workers employed in hazardous activities shall be provided with necessary protective gear. These activities include mixing asphalt material, cement, lime mortars, concrete etc., welding work, work at crushing plants, blasting work, operators of machinery and equipment such as power saws, etc.	Construction areas, material storage and worker camps	Engineering cost	Contractor	PRDA /PRDD
	(b)	The use of any toxic chemical shall be strictly in accordance with the manufacturer's instructions. The Engineer shall be notified of toxic				
		chemicals that are planned to be used in all contract related activities. A register of all toxic chemicals delivered to the site shall be kept and maintained up to date by the Contractor. The register shall include the trade name, physical properties and characteristics, chemical ingredients, health and safety hazard information, safe handling and storage procedures, and emergency and first aid procedures for the product.				
	2.10.4	Lead Pollution				
	(a)	No paint containing lead or lead products will be used except in the form of paste or readymade paint. Facemasks shall be supplied to workers who are working in spray painting or scraping lead paints.	Workshops, yards where spray painting is done	-	Contractor	PRDA /PRDD
	2.10.5	Handling of Explosives				
	(a)	Except as provided in the contract or ordered or authorized by the Engineer, the Contractor shall not use explosives. Where the use of explosives is so provided or ordered or authorized, the Contractor shall comply with the requirements of the following Sub-Clauses of this Clause besides the law of the land as applicable.	All locations where blasting activities will commence	-	Contractor	PRDA /PRDD

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(b)	The Contractor shall at all times take every possible precaution and shall comply with relevant laws and regulations relating to the importation, handling, transportation, storage and use of explosives. Contractor shall obtain Ministry of Defense (MoD) approval for importing and handling explosives and keep the Local Police informed of the same.		Engineering cost		PRDA /PRDD
	2.11	Health and Safety				
	2.11.1	Prevention of Vector based Diseases				
	(a)	Contractor shall take necessary actions to prevent breeding of mosquitoes at places of work, labour camps, plus office and store buildings. Stagnation of water in all areas including gutters, used and empty cans, containers,	At worker camps, stores, yards	Engineering cost	Contractor	PRDA /PRDD
		tires, etc. shall be prevented. Approved chemicals to destroy mosquitoes and larvae should be regularly applied. All burrow sites should be rehabilitated at the end of their use by the contractor in accordance with the requirements/guidelines issued by the Central Environmental authority and relevant local authorities				
	(b)	Contractor shall keep all places of work, labour camps, plus office and store buildings clean devoid of garbage to prevent breeding of rats and other vectors such as flies.				
	2.11.2	Workers Health and Safety				
	(a)	Contractor shall comply with the provisions in Health and Safety regulations under the Factory Ordinance with regard to provision of health and safety measures and amenities at work place(s).	Within construction sites, workshops and worker camps	-	Contractor	PRDA /PRDD
	2.11.3	First Aid				

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(a)	At every workplace, first aid kit shall be provided as per the regulations. At every workplace an ambulance room containing the prescribed equipment and nursing staff shall be provided.	Within construction sites, quarry, crusher, concrete batching plants, workshops and worker camps	Engineering cost	Contractor	PRDA /PRDD
	2.11.4	Potable Water				
	(a)	In every workplace and labour camps portable water shall be available throughout the day in sufficient quantities.	Within construction sites, quarry, crusher, concrete batching plants, workshops and worker camps	Engineering cost	Contractor	PRDA /PRDD
	2.11.5	Hygiene				
	(a)	The contractor shall provide and maintain necessary (temporary) living accommodation and ancillary facilities for labour to standards and scale approved by the engineer.	Worker camps and temporary sheds at work sites	Engineering cost	Contractor	PRDA /PRDD
	(b)	At every workplace and labour camps sufficient number of bathing facilities, latrines and urinals shall be provided in accordance with the Health and Safety regulations and/or as directed by the Engineer. These bathroom and toilet facilities shall be suitably located within the workplace/buildings. Latrines shall be cleaned at least three times daily in the morning, midday and evening and kept in a strict sanitary condition. If women are employed, separate latrines and urinals, screened from those for men and marked in the vernacular shall be				

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
		provided. There shall be adequate supply of water, within and close to latrines and urinals.				
	(c)	The sewage system for the camp must be properly designed, built and operated so that no health hazard occurs and no pollution to the air, ground or adjacent watercourses takes place.				
	(d)	Garbage bins must be provided in the camp, work sites and regularly emptied and the garbage disposed of in a hygienic manner. Construction camps shall have a clean hygienic environment and adequate health care shall be provided for the work force.				
	(e)	Unless otherwise arranged for by the Local Authority, the contractor shall arrange proper disposal of sludge from septic tanks. The contractor shall obtain approval for such disposal from the Public Health Inspector of the area.				
	2.11 6	Gender				
	(a)	The structure and plan of the labour camp and all living, hygiene, health and ancillary facilities for labour must take into consideration gender sensitivities.				
	(b)	All labour camps and work places shall be safe spaces for women workers. Contractors must show that adequate steps have been taken to provide a safe working environment for women.				
	2.12	Protection of Archaeological, Cultural and Religious Places and Properties				
	2.12. 1	Prevention of damage to Cultural and Religious Places and Properties				

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(a)	During construction activities the contractor should take all necessary and adequate care to minimize impacts on cultural properties which includes cultural sites and remains, places of worship. Workers should not be allowed to trespass in to such areas.	Near physical cultural resources	-	Contractor	PRDA /PRDD
	2.12. 2	Chance finds of Archaeological property				
	(a)	All fossils, coins, articles of value of antiquity and structures and other remains or things of geological or archaeological interest etc. discovered on the site and/or during construction work shall be the property of the Government of Sri Lanka, and shall be dealt with as per provisions of Antiquities Ordinance of 1940 (Revised in 1956 & 1998)	In all project sites	-	Contractor	PRDA /PRDD
	(b)	The contractor shall take reasonable precaution to prevent his workmen or any other persons from removing and damaging any such article or thing and shall, immediately upon discovery thereof and before removal acquaint the Engineer of such discovery and carry out the Engineer's instructions for dealing with the same, awaiting which all work shall be stopped within 100m in all directions from the site of discovery.		Engineering cost		
	(c)	If directed by the Engineers the Contractor shall obtain advice and assistance from the Department of Archaeological of Sri Lanka on conservation measures to be taken with regard to the artefacts prior to recommencement of work in the area.				
	2.13	Environmental Enhancement				
	2.13. 1	Landscaping				

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(a)	Landscape plantation, re-vegetation etc, shall be taken up as per either detailed design or typical design guidelines given as part of the Bid Documents. The contractor also shall remove all debris, piles of unwanted earth, spoil material, away from the roadsides and from other work places and disposed at locations designated or acceptable to the Engineer or as per Clause 2.1.1. Special care should be taken to ensure that the species selected for replanting are not invasive to the said site.	All project sites and associated sites	Engineering cost	Contractor	PRDA /PRDD
	(b)	On completion of the works, the temporary structures shall be cleared away in full, all rubbish burnt, waste dumps and septic tank shall be filled and closed and roadsides, workplaces and labour camps, cleared and cleaned.				
	(b)	In case of an inadvertent damage cause to a utility, the contractor shall immediately inform the service provider and help to restore the service without delay.	All project sites			
2.14		Handling Environmental Issues during Construction				
	(a)	The Contractor will appoint a suitably qualified Environmental Officer following the award of the contract. The Environmental Officer will be the primary point of contact for assistance with all environmental issues during the pre-construction and construction phases. He/ She shall be responsible for ensuring the implementation of EMP.	Relevant construction sites during the construction period	Engineering cost	Contractor	PRDA /PRDD
	(b)	The Contractor shall appoint a person responsible for community liaison and to handle public complaints regarding environmental/ social related matters. All public complaints will be entered into the Complaints Register. The Environmental Officer will promptly investigate and review environmental complaints and implement the appropriate corrective actions to arrest or mitigate the cause of the complaints. A register of all complaints is to be passed to the Engineer within 24 hrs. They are received, with the action taken by the Environmental Officer on complains thereof.				

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(c)	<p>Contractor shall develop suitable method to receive complaints and establish a Grievance Redressal Mechanism (GRM). The complaint register shall be placed at a convenient place, easily accessible by the public.</p> <ul style="list-style-type: none"> Grievances submitted in writing shall be referred to the IA/PMU by the safeguard officer of the Contractor through the Engineer. Verbal communications shall be directed to IA/PMU through Engineer. Contact information of Engineer/IA/IA/PMU/in print form shall be available at the site. The grievances shall be submitted to the Engineer on the same day of receiving. It has to be recorded and the safeguard officer of the Engineer shall ensure the timely redress through the IA/PMU 				
	(d)	Contractor shall prepare detailed Environmental Method Statement (EMS) clearly stating the approach, actions and manner in which the EMP is implemented. It is required from the contractor to prepare the EMS for each work site, if work will be carried out at more than one site at once and time plan for implementation. The EMS shall be updated regularly and submit for Engineers review.				
3.0 Operational stage						
	3.1	Hygienic Conditions				
	(a)	Regular clearing/ cleaning and maintenance of the facility should be conducted, especially of Kitchens and Sanitary facilities in in order to maintain hygienic conditions.	All buildings supported by the project	Maintenance cost	IA	PRDA /PRDD
	3.2	Solid Waste Management				
	(a)	Solid Waste should be segregated and collected in covered bins and arrangements should be made with the LA for removal of solid waste from the site as per the set solid waste management scheme in the area. Daily collection should be conducted in facilities located within the PA boundaries.	In all project sites	Maintenance cost	IA	PRDA /PRDD

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	3.3	Mosquitoes and Vector Breeding				
	(a)	Regular checks should be conducted to ensure that there is no storm water collection and stagnation at the site which will facilitate the breeding of mosquitoes. Clearing should be conducted accordingly to prevent collection and stagnation of water.	In all project sites	Maintenance cost	IA	PRDA /PRDD

ANNEX 5. TERMS OF REFERENCE FOR PREPARATION OF SOCIAL IMPACT ASSESSMENT (SIA) AND SOCIAL IMPACT MANAGEMENT PLAN (SIMP)

Introduction and Objectives

The purpose of this TOR is to outline the scope of work for carrying out a Social Impact Assessment (SIA) in accordance with the project's Environmental and Social Management Framework.

GoSL and World Bank policy is based on the principle that the population affected by the project should receive benefits from it, or at the very least not be worse off than before. Acquisition of land and other assets, both of private holdings and within the ROW, are integral part of project design and implementation. Undertaking a social impact assessment should be incorporated as part of the project design from the start, and undertaken in close coordination with environmental analysis, the Environmental action plan, and the engineering design and implementation.

The Terms of Reference for the work undertaken may be modified according to local contexts, subject to approval by GoSL and the World Bank.

Scope of Work

Task 1. Social Impact Assessment (SIA)

The objectives of the Social Impact Assessments are:

- to provide the minimum information on social impacts as part of the preliminary screening of road sections;
- to verify the legal boundaries of the Right of Way, document existing structures, land plots, and other physical assets within the ROW to establish a cut-off date for entitlements in accordance with the policy to be developed, identify project affected persons including those who are vulnerable; and
- to provide the socio-economic baseline information required for preparation of the entitlement framework.

Preliminary Screening: The consultant shall make initial visits to all the different stretches of road under consideration for project. Coordinated with the other screening exercises being undertaken (environmental, techno-economic), an assessment shall be made of the potential magnitude of social impacts. Any major social impact issues such as large scale resettlement, relocation or impact on dense urban clusters, loss of livelihood, acquisition of private land and other vulnerable groups shall be identified. Stretches with no or minor social impacts shall be identified, and given priority in the selection of roads to be improved.

Following the selection of road stretches to be included in the project, a verification exercise shall be undertaken. The verification shall establish the legal boundaries of the Right of Way, and identified current usage of the land in terms of squatters, land encroachments, fixed and movable structures, trees and wells, etc. This shall be jointly verified by the (RDA) and the respective Provincial Council, in the field, the information gathered should be reflected in maps and records, jointly verified by signature of the responsible senior (RDA) and PC officials. The following guidelines shall be followed:

1. Where it is likely that dislocation of people will be required, suitable resettlement sites of government owned land in close proximity to the current locations of the affected persons should be recorded. The resettlement sites should be identified and finalized in consultation with the displaced persons;
2. All encroachments within the public ROW, as well as private holding of land and other assets in areas where it is probable that the corridor of impact will go shall be documented;
3. Assets both within and outside of the ROW such as structure, land holdings, trees and wells, etc shall be recorded on strip maps, and be numbered in each named settlement and administrative unit;
4. The information gathered shall be recorded on strip maps, and if possible computerized Photography and/or video recordings should be used to document existing structures and land holdings, and circumstances for identification and planning.

Following this a public notification of the intent to undertake a project shall be issued, in accordance with the legal requirements of GoSL. This represents the cut-off date for entitlements under the project. Only those people with land or other assets identified as existing prior to this date will be entitled to support under the project. This is to prevent land invasions, erection of new structures for speculation purposes, and other attempts at false claims. The consultants shall assist the appropriate authorities in undertaking this work.

Socio-economic baseline information: This will be collected by means of a sample socio-economic survey of the pre-selected roads. The survey shall gather information on the various categories of losses and other adverse impacts likely under the project. The losses shall be categorized according to type. These losses will vary based on the local context. They may include, but not be limited to, types of impact and number of PAPs against each impact type such as:

- loss of land and other productive resources such as trees
- Loss of livelihood or sources of livelihood
- Temporary loss of assets, livelihood or sources of livelihood
- How project will impact women differently – on livelihood, displacement, access to resources, etc;
- loss of structures, temporary or fixed, within or outside of ROW;
- loss of access to public services (roads, water supply, schools, medical facilities, shops);
- loss of customers and supplies;
- loss of access to forest or protected areas
- Loss of fishing, grazing, or forest areas;
- loss of access to common property resources; and

- Disruption of social, cultural, religious, or economic ties and networks.
- Furthermore, the sample socio-economic survey shall identify potentially affected populations, with special attention to vulnerable groups such as landless households and women-headed households. It shall include but not be limited to:
 - demographic characteristics (age, sex, marital status, literacy level, peer relations, numbers, and categories of affected people);
 - ethnic composition of the population and settlement pattern;
 - main and secondary forms of livelihood including specification of the resource base, seasonal and permanent use of resources including land based and salaried employment for different household members, labor mobility and migration, the importance of informal networks and labor exchange patterns and the potential impact of disrupting these patterns, skill base, training need assessment for livelihood enhancement income through various sources, expenditure pattern, economic vulnerability, asset base;
 - status of access to market, health facilities, banking, communication, etc;
 - if any persons have already been displaced, information on them should be collected for two time periods at the time of displacement and at present.

As part of the sample socio-economic survey, an assessment shall also be made of what the likely replacement value of the various assets lost is based on the following considerations:

1. entitlements to affected persons shall be based on replacement value rather than registered land prices etc. which tend to be undervalued;
2. this assessment is also important as a means of preventing inflated claims to compensation;
3. as part of this assessment, consultations and discussions shall be held with a representative number to the different categories of affected persons, to assess their views on what constitutes fair compensation or assistance, their preferences for resettlement actions, and reactions towards the project; and
4. a suitable methodology shall be developed to classify different types of assets, and the measurements taken to determine quantities of losses, i.e different types of land, tree, crops, structures, businesses etc, and the unit of measurement such as area of land, number of trees, floor area or other measurements for houses etc.

The sample survey shall form the basis for the full base line socio-economic survey to be undertaken subsequently of all PAPs. By conducting it first for a sample population, it may be modified and improved prior to undertaking the full survey.

Reporting. The findings from the Social Impact Assessment shall be presented in a report. The information collected shall be gender segregated. This shall include:

- a) Baseline information on socio-cultural and economic parameters of the project area;
- b) assessment of current land acquisition practices, their appropriateness and potential impacts for this project;
- c) estimates of the type of losses expected as a result of the project, broken up in categories of cultivated, homestead, enumeration of structures, trees and other assets;

- d) identification of the categories of affected persons, bases on the identified losses, and estimates of their numbers;
- e) it is important to analyze the data in such a way that the report captures the likelihood that some persons may lose different kinds of assets. Therefore, the number under each category is not mutually exclusive and in identifying different person's losses and entitlements, provision must be made for recording and compensation for more than one kind off loss; and
- f) the status of squatters and encroachers within the public Right of Way.

Based on this information the consultants shall prepare a draft Entitlement Framework, which will form part of the agreement between GoSL and the Bank. The following considerations are essential:

- a) the framework will be adopted as policy for this project;
- b) the entitlement framework shall be prepared by the consultants. However, it is essential that this be done in close consultation with the agencies responsible for the subsequent implementation of the Resettlement Action Plan, to ensure full understanding and agreement on the issues;
- c) the framework should be placed within the legal context of Sri Lanka and the Bank's applicable Operational Policies must be adhered to. If there is a divergence between domestic law, the practice, and the World Bank's Policies, this should be clearly identified and analyzed before the framework is finalized. If necessary, consultation between the Bank and GoSL authorities should be held to arrive at a framework acceptable to both;
- d) a key consideration should be to develop a methodology to document to what extent the objectives are achieved. Indicators should be developed which can be used for systematic monitoring and comparison with the baseline data over time;
- e) as a general principle, there ought to be more than one option offered to PAPs within each category of impact. The entitlement framework should analyze these options, the risks and benefits of each, and how to implement the various programs in a transparent manner;
- f) Wherever possible, land for land ought to be a priority. Cash compensation should only be undertaken when it can be clearly documented that land for land or other types of assistance are not available. If cash payments are made, special arrangements should be made to assist the most vulnerable in making productive use of the money. The entitlement framework should also describe how payments can be made in a transparent manner, for example, by doing it publicly with independent verification;
- g) the entitlement framework shall specify the period of notification about acquisition of assets, and establish that no civil works may start on a stretch of road before the Resettlement Action Plan has been implemented there. This is a key principle, and must be taken account of when awarding contracts for civil works. Improper or delayed implementation of the SIMP may lead to costly delays in civil works;
- h) As the project will work in different areas at different times, the framework and SIMP should be prepared in such a way that the period between the acquisition of people's assets and the actual start of work is the shortest possible. The framework should, therefore, also contain provisions as to how the compensation and assistance levels may be re-evaluated and adjusted in case of price increases. Such reassessment should be done at least on an annual basis (ideally every six months).

The framework shall be presented in a tabular form as below:

Type of Loss	Entitled person	Entitlement	Implementation Issues/Guidelines	Organizations Responsible

Task 2. Preparation of Social Impact Management Plan (SIMP)

The information collected during the Social Impact Assessment shall form the basis for preparing a Social Impact Management Plan (SIMP). The SIMP should contain, at a minimum, the following sections:

- Summary findings from the Social Impact Assessment;
- Summarized description of applicable legal framework of the Country and the World Bank's policies and Entitlement framework. The SIMP should clearly bring out why and how laws and policies are applicable and what measures have been taken in the project to address them;
- Data on expected impacts, numbers and categories of affected persons;
- Consultation and participation arrangements of SIMP and other stakeholders, and framework for continued consultation during implementation stage;
- Mitigation measures;
- Gender action plan;
- Institutional arrangements, including grievance procedures;
- Implementation procedures;
- Timetable of activities, with Gantt charts showing the various elements of the plan, coordination of land with road design, contracting, and construction;
- Monitoring and evaluation of land acquisition and resettlement process; and
- Budget and costs.

In preparing the SIMP, the likely alignment and corridor of impact for the roads to be improved shall be determined. This shall be done as a joint exercise, coordinating the various design aspects of the project (engineering, environmental, socio-economic). The corridor of impact is defined as the width required for the improved road and the civil works necessary to construct it, including the new pavements, shoulders, support slopes, and necessary safety zones. People who live or have assets outside of this corridor of impact and who will not be affected by the project will not be considered as PAPs and will not be entitled to compensation of other forms of assistance. The following considerations are important:

- a) The identification of the corridor of impact shall be undertaken as a joint exercise between the planners responsible for engineering design, environmental assessment, social impact and R & R planning;
- b) Public consultation shall be undertaken to determine what local people consider to be the best alignment for the improved road;
- c) The corridor of impact will normally fall within the existing Right of Way but the study shall assess where private land acquisition may be required;

- d) It is likely that the exact road alignment, and therefore the corridor of impact, may shift following detailed engineering designs. The purpose of this early estimate is to get as complete a picture as possible of the expected scope of land acquisition required, number of PAPs categories and entitlements, and budgets and time frame required for the implementation of the Resettlement Action Plan. However, this shall be updated and corrected as required following the final engineering designs;
- e) the consultant, along with the engineering team, shall carry out analysis of alternatives to ensure that requirement of private land is minimum to improve and upgrade the existing road alignment to the defined technical standard;
- f) the analysis of alternatives should take into account the usage of land, vulnerability of land owner, productivity of land and land cost while determining land acquisition. The lower value land should be acquired where possible;
- g) wherever possible, the alignment should be designed so as to avoid acquiring residential buildings and buildings in which permanent businesses operate;
- h) re-alignments should only be done where it is necessary for safety reasons or when it is preferable for environmental reasons or because it has less asset acquisition impact.

Based on the agreed entitlement framework, the full baseline socio-economic survey and a joint on-site verification shall take place for the total length of road to be improved. The baseline socio-economic survey shall be conducted within the corridor of impact.

The survey shall be a full census of all entitled persons and a baseline socio-economic survey. It shall uniquely identify all entitled persons under the policy. The survey shall use the methodology developed for the sample survey undertaken earlier and provide the data for an overall estimate of total numbers of people affected, assets to be acquired by the project, and scope of resettlement and rehabilitation measures to be taken. The joint on-site verification will determine the precise nature and quantity of assets to be acquired and the losses to be compensated.

The consultants shall advise the project authorities about the best way to coordinate this activity. The following considerations are important:

- the survey and verification should be done jointly by representatives of the project authorities and the PAPs and other authorities (as appropriate);
- during this survey, the PAPs shall be explained of the likely impact by the project authorities and presented with a copy of the entitlement framework in his/her local language;
- the assets to be acquired shall be tabulated, bearing in mind that each PAP may have losses in more than one category. The compensation or assistance he/she is entitled to shall be clearly explained, as well as the likely timetable for when the acquisition is to take place;
- where different options have been developed, these shall be explained along with the likely risks involved. Wherever possible as part of the analysis of alternatives, the principal of high vulnerability/ low risk should be followed, i.e. those among the PAPs identified as particularly vulnerable should be encouraged to choose the assistance or compensation that offers the least risk. This choice shall not be made on the spot but provision should be made in the SIMP for further consultation and sufficient time should be given to the PAPs to make their choices;
- the table of likely losses and types of entitlements shall be verified by the three parties present and signed by each of them. The PAP shall be given a copy, which will serve as proof of his/her

status as PAP, and each PAP should be given a unique identification code. Other measures such as identity cards may be considered if necessary;

- this information should be coded and computerized, and updated as required following finalization of the data. Developing a database to track PAPs entitlement and compensation of assistance given should be considered to ensure accurate and efficient implementation of the SIMP;
- it should be made clear to the PAP that if the final road design and the choice of alignment mean that he/she is no longer within the corridor of impact, no compensation will be given;
- the PAP shall also be informed about the mechanism set up for grievance procedures;
- provision should be made for how missing data can be collected later, and other mechanisms for information sharing and local participation should also be developed;
- undertaking the baseline socio-economic survey and joint verification is a time consuming exercise. People are not always available, and it may be difficult to coordinate the movements of local government officials with the project authorities. It is therefore essential to allow sufficient time for the survey and verification before any civil work start, and to coordinate the planning of the different project components.
- Summary information shall be tabulated based on districts, with length of road, land to be acquired (cultivated and homestead listed separately), temporary and permanent buildings, and number of households and total persons affected (broken down by gender and other relevant categories such as major/minors, etc.)

Institutional Arrangements. Responsibilities for implementation of various parts of the SIMP should be clearly delineated:

- while elements of the plan may be undertaken by other institutions (for example by NGOs), the consultant shall prepare terms of reference for hiring the NGO; (b) for coordination among different agencies of government of community organization, appropriate mechanisms should be identified and established. The organizational structure and type of skills required should lead to the creation of a joint task force or steering committee with representation from different agencies, involving participation from local government and representatives of the PAPs;
- Appropriate monitoring and evaluation arrangements should be developed. It should be the responsibility of the implementing agency to systematically monitor the progress of the SIMP, and analyze and report on its impacts compared with the baseline data. Suitable indicators should be developed. Independent evaluation or supervision should be provided for, and guidelines prepared for how this is to be undertaken;
- A grievances and appeals mechanism should be evolved;
- It is essential to document the institutional capacity of the agency or agencies responsible for implementing the SIMP. Where institutional capacity is yet to be developed or identified, a realistic plan shall be presented for how this is to be achieved, bearing in mind likely constraints and delays.

Assessment of institutional capacity will be a key factor in the appraisal of the SIMP.

Following agreement on an entitlement framework, a summary publication with project description, estimates of land acquisition losses and entitlements should be prepared, both in English and in the local language. This is to be distributed among the local communities and other stakeholders.

Requirements of the Assignment

Consulting team: The consultant team shall, as a minimum, be staffed as follows:

- Senior Social/Resettlement Specialist with overall responsibility for the assignment - MA or above in social sciences, with relevant previous experience in land acquisition and resettlement planning with a minimum of 10 years' experience. Knowledge of the World Bank's related guidelines and operational directives will be required;
- Senior Social Specialist(s), with background in social sciences, proven ability in qualitative and quantitative methodology, and at least 5 years' experience from development related research. Practical experience in working on community development / livelihood restoration projects will be essential;
- National research assistants

Reporting and feedback schedule: All submissions related to the assignment should be submitted to Project Director of Project Management Unit (PMU), as hard copies and electronically. Electronic version of the final report should be in Word form and not PDF. During the final submission of the report(s), if changes requested during the draft report stage are not satisfactory to the employer, the consultant will be required to work further on the document until it is considered satisfactory. All reports will be also reviewed by the World Bank. Any feedback/discussions in addition to below can be requested by the employer as well as the consultancy firm.

Description	Deadline	Feedback
Submission of the inception report	01 week after signing the contract agreement.	Within 1 week, comments and suggestions will be provided in writing A meeting will be organized by the employer to discuss clarifications and provide additional feedback
Submission of the draft SIA report & SIMPs	07 weeks after receiving comments.	Within 1 week, comments, corrections and further information necessary will be provided in writing
Submission of the final SIA and SIMPs	02 weeks after receiving comments	Submission of Final Reports (one soft copy and two hard copies for each road)

Information to be provided by Employer: In order to expedite the process, the PMU will provide copies of the most recent SIA reports and SIMPs (also available in the Info shop of the World Bank) of RSAP phase 2, as well as the Environmental and Social Management Framework of the project on the day of contract signing. The PMU will also provide any documents related to OPRC. In addition, relevant sections of the bid document of RSAP phase 2 will be provided. A meeting to discuss any clarifications with PMU and the World Bank in reference to this ToR can be arranged on request.

ANNEX 6: GUIDANCE NOTE ON SELECTING MITIGATION MEASURES TO BE INCLUDED IN THE ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR CONSTRUCTION PROJECTS IN SRI LANKA

Pre-Construction Impact Mitigation

Utility Relocation

- *Identify the common utilities to be affected such as: telephone cables, electric cables, electric poles, water pipelines, public water taps, etc.*
- *Affected utilities shall be relocated with prior approval of the concerned agencies before construction starts.*
- *Ensure community consensus and minimum impact to common utilities like telephone cable, electric cables, electric poles, water taps and etc., Proper clearance to be obtained from the concerned authorities and sent to the PMU before commencement of works.*

Tree Removal

- *Attempt to save the trees by changing the alignment of the designs*
- *Provide adequate protection to the trees to be retained with tree guards (e.g. Masonry tree guards, Low level RCC tree guards, Circular Iron Tree Guard with Bars) as required.*
- *Identify the number of trees that will be affected with girth size & species type*
- *Trees shall be removed from the construction sites before commencement of construction with prior permission from the concerned department.*
- *Compensatory plantation by way of Re-plantation of at least twice the number of trees cut should be carried out in the project area. (Please Refer Tree Protection/ Tree Re-Planting Procedures outlined in Section X)*

Construction of labour camps

- *The location, layout and basic facility provision of labour camp must be submitted to Engineer prior to their construction.*
- *The construction will commence only upon the written approval of the Engineer.*
- *The contractor shall maintain necessary living accommodation and ancillary facilities in functional and hygienic manner taking in to account gender sensitivities and as approved by the Engineer.*
- *All temporary accommodation must be constructed and maintained in such a fashion that uncontaminated water is available for drinking, cooking and washing. The sewage system for the camp must be planned and implemented with concurrence from the Local Public Health Officer (PHI)*
- *Adequate health care is to be provided for the work force taking in to account gender sensitivities. The layout of the construction camp and details of the facilities provided should be gender sensitive, provide a safe environment for women workers and shall be prepared and approved by the engineer.*
- *Labour camp sites after use should be cleared and the site should be reinstated to previous condition at the close of the construction work.*

Planning of temporary Traffic arrangements

*Temporary diversion will be provided with the approval of the engineer. Detailed traffic control plans will be prepared and submitted to the engineers for approval, one week prior to commencement of works. *

The traffic control plans shall contain details of temporary diversion, details of arrangements for construction under traffic, details of traffic arrangement after cessation of work each day, Signage, safety measures for transport of hazardous materials and arrangement of flagmen.

Site Management and Mitigation of Impacts during Construction Phase

Information Disclosure among Stakeholders

Discussions should be conducted with the residents who reside around the immediate vicinity of the construction site; provide them with information on the project activities muster their views for possible impact mitigation as this will also ensure a good rapport and less complains. This should be done immediately once the contractor is mobilized.

A copy of the EMP should be available at all times at the project supervision office on site.

Material Sourcing

Significant impact on geological resources is anticipated at quarry sites and borrow areas the PIA shall ask contractors to ensure that sand, aggregates and other quarry material is sourced from licensed sources.

It is recommended that all burrow and/or quarry material should be sourced from licensed sources.

The contractor is required to maintain the necessary licenses and environmental clearances for all burrow and quarry material they are sourcing to obtain soil, fine aggregate and coarse aggregate.

Sourcing of any material from any protected areas and/or designated natural areas are strictly prohibited.

The Project Supervision Engineer will require maintaining the numbers and relevant details of all necessary licenses etc. and report of their status accordingly.

Transport and Storage of construction materials

Sites for storage of construction materials should be identified, without affecting the traffic and other common utilities that will lead to access issues as the compound is operational.

All material should be transported in fully covered trucks. Overloading of vehicles with materials should be controlled and done in a manner to suit the trucks capacity.

Construction material such as cement, sand and metal should be stored in closed structures or in a contained manner.

Dust

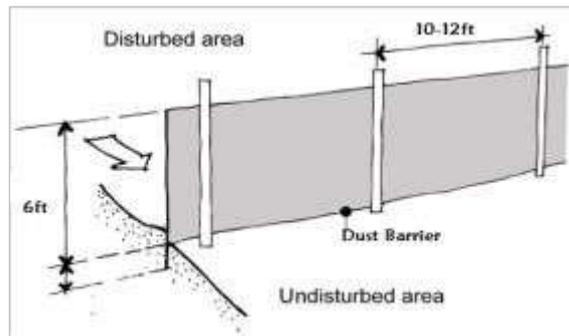
All construction materials such as sand, metal, lime, bricks etc. should be transported under cover to the site and stored under cover at the sight. Plastic sheeting (of about 6 mm minimum thickness) can be used and held in place with weights, such as old tires or cinder blocks, with the edges of the sheeting buried, or by the use of other anchoring systems. This will minimize the levels of airborne dust.

Mud patches caused by material transporting vehicles in the access road should be immediately cleaned Continual water sprinkling should be carried out in the work and fill areas and the access road if dust stir is observed. Water sprinkling should be done more frequently on days that are dry and windy (at least four time's day) as the levels of dust can be elevated during dry periods.

Dust barriers should be used during all construction activities, especially in areas along roads with heavy traffic, commercial and residential areas.



- The maximum height of barriers should be 6ft at minimum. Material such as Amano roofing sheets, fine mesh geo textiles are recommended materials to be used for setting up dust barriers.



Dust masks should be provided to the labourers for the use at required times.

Noise

Noise generating work should be limited to day time (6:00AM to 6:00PM). Other type of construction work which will not disturb the environment by noise or vibration could be carried out during the night time. No work that generates excessive noise should be carried out during night hours (from 6:00PM to 6:00AM on the following day).

Even during day time use of the access road should be minimized during departure times (7:00AM to 8:30AM), school time (1:00PM-2:00PM) and arrival times (After 4:30PM -6:00PM). This will not only reduce noise levels but also help mitigate congestion issues in the area due to the construction activities. All equipment and machinery should be operated at noise levels that do not exceed the permissible level of 75 dB (during construction) for the day time. For all construction activities undertaken during the night time, it is necessary to maintain the noise level at below 50 dB as per the Central Environmental Authority (CEA) noise control regulations

All equipment should be in good serviced condition. Regular maintenance of all construction vehicles and machinery to meet noise control regulations stipulated by the CEA in 1996 (Gazette Extra Ordinary, No 924/12) must be conducted for vehicles/machinery that will be used in construction on site and for transport.

Ideally noise generating work should not be carried out during public holidays and religious days. Special care should be taken as there is a temple nearby.

Labour gangs should be warned to work with minimum noise. Strict labour supervision should be undertaken in this respect. Number of night time resident labourers should be minimized. Temporary sound barriers also should be erected around buildings or premises as appropriate to shield residents if there are complaints from them.

Vehicular noise pollution at residential / sensitive receptors

Idling of temporary trucks or other equipment should not be permitted during periods of loading / unloading or when they are not in active use. The practice must be ensured especially near residential / commercial / sensitive areas.

Stationary construction equipment will be kept at least 500m away from sensitive receptors, where possible. These include hospitals, schools, places of worship and households.

All possible and practical measures to control noise emissions during drilling shall be employed.

Noise from vehicles, machinery and equipment

Contractor shall submit the list of high noise/vibration generating machinery & equipment to the PIA for approval.

Servicing of all construction vehicles and machinery must be done regularly and during routine servicing operations, the effectiveness of exhaust silencers will be checked and if found defective will be replaced.

Maintenance of vehicles, equipment and machinery shall be regular and up to the satisfaction of the Engineer to keep noise levels at the minimum.

Removal and Disposal of construction debris and excavated materials

During site clearance activities, demolition and debris removal must be carried out swiftly and in well-planned manner. Possibly debris removal can be carried out during non-peak hours to avoid traffic at the site.

The contractor shall identify the sites for debris disposal and should be finalized prior to start of the earthworks; Spoil and other disposal materials should only be dumped at sites for which prior approval from relevant authorities such as the LA have been obtained. Taking into account the following:

The dumping does not impact natural drainage courses

No endangered / rare flora is impacted by such dumping

Should be located in non-residential areas located in the downwind side of Located at least 100m from the designated forest land.

Avoid disposal on productive land.

should be located with the consensus of the local community, in consultation with the engineer and shall be approved by the highways department

Minimize the construction debris by balancing the cut and fill requirements.

The contractor should avoid any spillage of spoil when transporting such materials to the approved material dumping sites.

Protection of top soil

The top soil to be protected and compacted after completion of pipe laying activities.

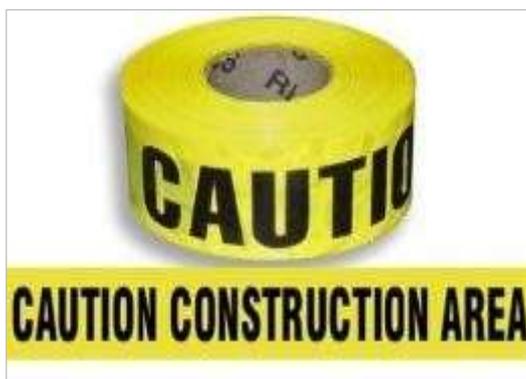
The contractor should attempt to reuse the cut material from earthworks for project activities where possible

Pollution from Fuel and Lubricants

- The contractor shall ensure that all construction vehicle parking location, fuel/lubricants storage sites, vehicle, machinery and equipment maintenance and refueling sites shall be located away from rivers and irrigation canal/ponds.
- Contractor shall ensure that all vehicle/machinery and equipment operation, maintenance and refueling will be carried out in such a fashion that spillage of fuels and lubricants does not contaminate the ground.
- Contractor shall arrange for collection, storing and disposal of oily wastes to the pre-identified disposal sites (list to be submitted to Engineer) and approved by the Engineer. All spills and collected petroleum products will be disposed off in accordance with standards set by the CEA/MoE.
- Engineer will certify that all arrangements comply with the guidelines of CEA/MoE or any other relevant laws.

Public and Worker Safety

- The construction site should be barricaded at all time in a day with adequate marking, safety tape, flags, reflectors etc. for safety of individuals using the compound on a daily basis. (Items such as parking cones, lights, tubular markers, orange and white strips and barricades of a luminous nature for night visibility)
- The construction site should be clearly demarcated by the above means and restriction of access to public to the site will help the safety of public.
- Safety signboards should be displayed at all necessary locations.



- The contractor should obtain a third party insurance to compensate any damages, injuries caused to the public or labourers during the construction period.
- All construction vehicles should be operated by experienced and trained operators under supervision.
- Basic onsite safety training should be conducted for all labourers during the EMP training prior to the start of the construction activities.

- All digging and installation work should be completed in one go, if this task is not accomplished the area should be isolated using luminous safety tape and barricading structures surrounding the whole area.
- Trenches should be progressively rehabilitated once work is completed.
- Material loading and unloading should be done in an area, well away from traffic and barricaded
- Construction wastes should be removed within 24 hours from the site to ensure public safety.

Safety Gear for Labourers

- Protective footwear and protective goggles should be provided to all workers employed on mixing of materials like cement, concrete etc.
- Welder's protective eye-shields shall be provided to workers who are engaged in welding works.
- Earplugs shall be provided to workers exposed to loud noise, and workers working in crushing, compaction, or concrete mixing operation.
- The contractor shall supply all necessary safety appliances such as safety goggles, helmets, safety belts, ear plugs, mask etc. to workers and staffs.
- In addition, the contractor shall maintain in stock at the site office, gloves, ear muffs, goggles, dust masks, safety harness and any other equipment considered necessary.
- A safety inspection checklist should be prepared taking into consideration what the workers are supposed to be wearing and monitored on a monthly basis and recorded.



Prevention of accidents

- Prevention of accidents involving human beings, animals or vehicles falling or accidents due to open trenches/manholes during construction period. This needs to be ensured with proper barricading, signage boards and lighting etc.
- A readily available first aid unit including an adequate supply of sterilized dressing materials and appliances should be available at the site office at all times
- Availability of suitable transport at all times to take injured or sick person(s) to the nearest hospital should also be insured.
- Names and contact information for emergency services such as Ambulance services, hospitals, police and the fire brigade should be prepared as a sign board and displayed at the work site.



Presence of Outside Labour in a Residential Area

- Strict labour supervision should be undertaken. There should be labour awareness programs to educate the labourers about their general behavior while at work as well as their own safety including education on sexual harassment, reporting mechanisms and disciplinary procedures where there has been any violation of these policies.

Operation of labour camps

- The Contractor shall construct and maintain all labour accommodation in such a fashion that uncontaminated water is available for drinking, cooking and washing.
- Supply of sufficient quantity of potable water (as per IS) in every workplace/labour camp site at suitable and easily accessible places and regular maintenance of such facilities.
- The sewage system for the camp are designed, built and operated in such a fashion that no health hazards occurs and no pollution to the air, ground water or adjacent water courses take place. Ensure adequate water supply is to be provided in all toilets and urinals.
- The contractor shall provide garbage bins in the camps and ensure that these are regularly emptied and disposed of in a hygienic manner

Surface Drainage and Possible Water Stagnation

- Provide storm water drain system in the premises which will discharge water to the improved roadside storm water drain.
- Carry out overall storm water management in the premises during construction using temporary ditches, sand bag barriers etc.
- Temporary flooding due to excavation.
- Proper drainage arrangements to be made, to avoid the overflowing of existing drains due to excavation during the laying of pipes, cutting activities.

Tree Protection during Construction Phase

- Giving due protection to the trees that fall in the shoulders /corridor of impact shall be the prime focus during Construction/post construction
- Masonry tree guards, Low level RCC tree guards, Circular Iron Tree Guard with Bars, use of plate compactors near trees may also be considered where necessary

Tree Re-Planting

- Re-plantation of at least twice (1:2) the number of trees cut should be carried out along the project road. Since the major portion of the project road may pass through open lands, planting of trees along the entire stretch of the road is recommended as an enhancement measure.
- Growth and survival of trees planted shall be ensured and monitoring done at least for a period of 3 years. Survival status shall be reported on monthly basis to Engineer in charge.

Clearing/Closure of Construction Site/Labour Camps

- Contractor to prepare site restoration plans for approval by the engineer. The plan is to be implemented by the contractor prior to demobilization.
- On completion of the works, all temporary structures will be cleared away, all rubbish cleared, excreta or other disposal pits or trenches filled in and effectively sealed off and

the site left clean and tidy, at the contractor's expenses, to the entire satisfaction of the engineer.

Procedures for Dealing with Chance Finds

Flora and Chance found Fauna

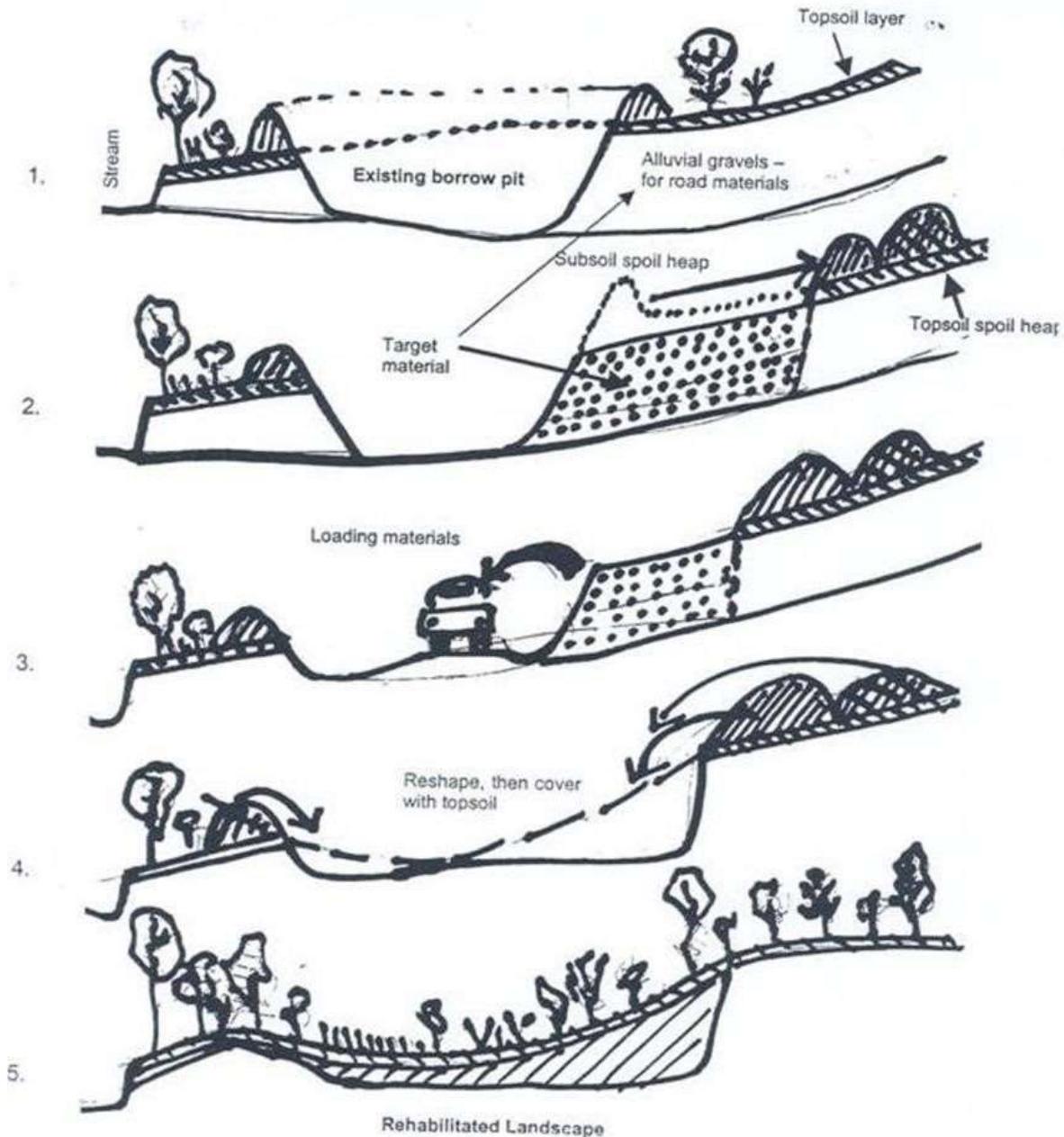
- The contractor will take reasonable precaution to prevent workmen or any other persons from removing and damaging any flora (plant/vegetation) and fauna (animal) including fishing in any water body and hunting of any animal.
- If any wild animal is found near the construction site at any point of time, the contractor will immediately upon discovery thereof acquaint the Engineer and carry out the Engineer's instructions for dealing with the same.
- The Engineer will report to the nearby Forest Department /Department of Wild Life Conservation (range office or divisional office) and will take appropriate steps/ measures, if required in consultation with the forest officials.

Chance Found Archaeological Property

- All fossils, coins, articles of value of antiquity, structures and other remains or things of geological or archaeological interest discovered on the site shall be the property of the Government and shall be dealt with as per provisions of the relevant legislation.
- The contractor will take reasonable precautions to prevent their labourers or any other persons from removing and damaging any such article or thing. The contractor will, immediately upon discovery thereof and before removal acquaint the Engineer of such discovery and carry out the instructions for dealing with the same, waiting which all work shall be stopped.
- The Engineer will seek direction from the Archaeological Department of Sri Lanka and inform the project EO to follow the Chance Find Procedures set forth.

ANNEX 7: GUIDELINES FOR THE REHABILITATION OF BURROW PITS

Illustration on the Burrow Pit Rehabilitation



Mitigatory Measures to be Implemented

The following conditions must follow by the contractor during the construction period in burrowing earth:

- The sides of the pits should be sloped with a minimum angle of 1:3, to enable the escape of animals that may accidentally fall into the pits.
- The burrow pits should be restored by filling them or when it is not practical to rehabilitate them as small tanks/water holes enabling wild animals to use as a water source
- The earth burrowing activity at the identified site should be carried out only during the given time period of from 6.00 am to 6.00 pm
- Burrowing earth, transportation and unloading should be carried out under the inspection of Assistant Director (Mahaweli/Irrigation) or an officer appointed by him
- A 15-cm topsoil will be stripped off from the borrow pit and this will be stored in stockpiles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2 (Vertical: Horizontal).
- Suitable drainage ditches or conduits shall be constructed or installed to avoid conditions where small pools of water that are, or are likely to become noxious, or foul, collect or remain on the burrow area. Surface drainage must be designed to minimize erosion during runoff and major rainfall events.
- Burrow Pit shall be backfilled with clean or inert fill. There shall be no material of deleterious nature (i.e. any material that would be classed as hazardous or waste). Please refer to the diagram above for the Illustration on burrow pit rehabilitation.
- Non-usable material including overburden, screenings and rocks, should be placed in the pit bottom and covered with Topsoil stripped from the surface so as to facilitate water seepage, planting grass and tree planting to be carried out using the Native trees.
- Once the site is reclaimed, any fences where they exist shall be removed to permit revegetation.
- Access and haul roads to the pit must be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
- Above conditions should be included in the contract document and must monitor whether they are followed.
- Precautions must be taken to minimize spreading of the listed invasive species.
 - Destroy the listed invasive plants as much as possible prior to burrowing material.
 - Surface soil of the burrow site should be separated and stored to prevent transporting seeds of the invasive plants to the tank. This surface soil can use when restoring the burrow pit.
 - When restoring the invasive plants if any germinated in soil should be removed and burn.
 - Wash down of all vehicles that use to transport burrow materials before leaving the site

ANNEX 8: ENVIRONMENTAL GUIDELINES FOR DECOMMISSIONING AND DEMOLITION OF EXISTING BUILDINGS

Potential Environmental Impacts

The hazards and environmental impacts associated with demolition works are mainly a function of:

- The location of the demolition work, i.e. whether demolition is near to main road or whether demolition is far away from development and movement
- The type of building being demolished i.e. concrete, iron sheets, etc
- The method of demolition i.e. manually using hand tools; mechanically using heavy machinery including electric grinders, pneumatic compressors, excavator on trucks and lorries; or by induced collapse demolition using explosives
- The scale of the project i.e. the area of building being demolished and amount of solid wastes, dust and traffic being generated
- The duration of the demolition work

Potential environmental impacts in connection with demolition works are: -

- Noise and vibration
- Dust
- Traffic implications
- Generation of demolition wastes including doors, windows, wood and metal frames; concrete rubbles and blocks, corrugated iron sheets, asbestos cement sheets, etc.
- Visual and aesthetic impacts

Procedures for Management of Potential Environmental Impacts

- The following guidelines will be followed for any decommissioning of the existing buildings and demolition. While the EMP covers measure to manage construction waste, dust and noise in general. It is essential to ensure that the process and demolition waste is handled specifically as outlined below.
- As a requisite, a demolition plan will be prepared and approved by the project engineer of the proponent. The demolition work will be conducted post conducting the following activities.

Crack Survey of Neighbouring Buildings

- A crack survey of neighbouring buildings should be conducted for all buildings directly adjacent to the construction site.
- The current condition of these buildings need to be photo documented and filed prior to the decommissioning commencing to ensure that no damages are caused to the structures due to vehicle movements and demolition works.
- A crack survey report will be prepared and submitted to the Engineer prior to commencement of decommissioning on the ground.

Management of Utilities

Termination of Utilities Prior to actual demolition, the Authorized Person shall liaise with all available utility companies so as: (A) to keep records of available utilities leading into the premises; and (B) to cause all utilities to be terminated.

- Effects of Demolition on Utilities

The demolition plan shall ensure that during the course of demolition, no existing utilities in the vicinity of the demolition sites are affected by the demolition operation.

- Common Utilities

- ✦ The common utilities encountered in building demolition generally include the following: (A) Electricity; (B) Water; (C) Gas; (D) Telecommunication; (E) Drainage; (F) Overhead and Underground Cables; (G) Railway Tunnel and its accessories, such as vent shafts; (H) Sewage Tunnel and its accessories; and (I) Disused Tunnel.
- ✦ All utility companies and relevant agencies should be consulted prior to demolition of the structure.

- **Management of Asbestos Cement (ACM) Based Material-Avoiding Exposure Risk** ○ An inspection of building materials for the presence of asbestos and lead hazards must be conducted prior to initiating demolition projects.

- Removal of ACM roof sheeting requires trained and qualified personnel as damage to/or broken ACM during removal will have an exposure risk to demolition workers.
- Thus it is essential that workers have the necessary personal protective equipment, most importantly masks, safety boots, full suiting to cover body and hard hats. It is also recommended that High efficiency particulate air (HEPA) filters vacuum cleaners would be requiring to vacuum up any debris. These activities must be supervised by the engineer.
- ACM Material should be removed prior to demolition of the structure, and transported immediately in a contained manner to an approved disposal site by the engineer. As there are no sites to accept hazardous waste material this will pose a challenge, it should be explored how best the material can be managed via CEA guidance on best practice.
- No ACM material can be stockpiled off site. This should be fully prohibited.

- **Management of Environmental Impacts During Demolition Process.**

- The demolition works shall not cause any nuisance by way of noise, dust and vibration to the surrounding environment, by following the requirements as per the project Environmental Management Plan (EMP).
- Particular attention should be paid to ensure the following
 - ✦ The site of works shall be fenced and screened to protect site from strong winds and to contain dust.
 - ✦ The noise level during demolition works shall be within the permissible limits as per the Central Environmental Authority (CEA) guidelines on noise.
 - ✦ All hazardous wastes, including asbestos shall be disposed of as per the provisions laid out by the CEA
 - ✦ The following measures shall be taken so as to abate the visual impacts during demolition works:
 - Visual screening / fencing of works
 - Proper location of equipment and machinery on site
 - No encroachment of demolition wastes on pavements and roads

- ✦ Demolition works within residential areas shall be carried out during normal working hours (8:00 – 17:00) only.
- ✦ The demolition wastes may be used as filler material as appropriate and approved by the engineer. Any excess wastes shall be disposed of to an authorized site as recommended by the local authority
- ✦ No debris shall be burned on the site.

ANNEX 9: GUIDELINES FOR HEALTH AND SAFETY OF WORKERS, COMMUNITIES AND VISITORS

Health and safety of workers and the public should be designed into constructions, before and during and after the building phase. It is cheaper and easier to control risks in construction to workers as well as the public before work starts on site by proper planning, training, site induction, worker consultation and incorporating strict safety procedures in construction plans. The proposed project interventions will mostly involve small to medium scale construction sites. As such, extreme dangers posed by working in environments such as great heights, deep water and involving dangerous chemicals and radioactive material will not be present. Potential dangers associated with ESCAMP sites will include falling from moderate heights, vehicle accidents, falling into trenches, drowning, breathing dust and other air pollutants, back aches caused by handling heavy material, wildlife attacks, etc. and can be mitigated with following safety guidelines.

EA/EMP for each site should mandatorily include a risk assessment as to what are the hazards involved in the work site, who might be harmed and how seriously, how likely this harm might happen and what actions are required to eliminate or reduce the risk and incorporate such measures in the EMP and clearly set out in the tender documents. All sub-projects must observe health and safety regulations, hence during implementation it is important to check if these control measures are put in place and are meeting the legal requirement.

Further guidance can be found in the World Bank Group General EHS Guidelines. The following measures have been developed to fit the country context based on the General EHS Guidelines.

Training

- Ensure constructors carry out suitable training programs on occupational health and safety for workers prior to commencement of construction, especially with regard to working in wild territory.
- Ensure contractors carry out suitable training programme on gender sensitisation and sexual harassment in the work place.
- Ensure only experienced and well trained workers are used for the handling of machinery, equipment and material processing plants
- Ensure all persons, including managers, are trained and able to carry out their work without risk to the safety or health of themselves, other workers or the public
- Ensure contractors carry out suitable training programs on non-discrimination of workers based on ethnic or place of origin, religion, gender, caste, sexual orientation, nationality, political opinion or any of such grounds.
- Ensure that adequate reporting mechanism and disciplinary procedures are in place and are communicated and easily accessed by all workers and managers in respect of all policies applicable to workers and employers.

Personal Protective Equipment

- Ensure appropriate safety equipment, tools and protective clothing are provided to workers and that safe working methods are applied. A safety inspection checklist should be prepared taking into consideration what the workers are supposed to be wearing and monitored.
- Any person who works or operates in an area where there is a risk of flying objects, such as splinters, should wear safety goggles at all time. These should be securely fitted to the face.

Welders should protect the entire face from hot sparks and bright rays by using a welding mask.

- Any person exposed to high levels of dust or hazardous gases (when working in tunnels) should wear respiratory protection in the form of disposal masks or respiratory masks which fit more snugly around the nose and mouth.
- Any person working in an area where there is the risk of being struck on the head by a falling or flying object should wear a hard hat at all times. These should be well maintained in order to be fully effective, and any helmets or hard hats that are damaged or cracked should immediately be replaced.
- All workers will be required to wear shoes or strong boots to prevent sharp objects from penetrating or crushing the foot. Those working in muddy conditions and in canals with polluted water should avoid hand/foot contact with water and should never wear slippers.
- Road workers should wear reflective vests to avoid being hit by moving vehicular traffic.

Site Delineation and Warning Signs

- Ensure delineation devices such as cones, lights, tubular markers, orange and white strips and barricades are erected to inform about work zones.
- Ensure all digging and installing work items that are not accomplished are isolated and warned of by signposts and flash lamps in night time (for those sites outside PAs).
- Ensure dangerous warning signs are raised to inform public of particular dangers and to keep the public away from such hazards, such as warning for bathing when working on river sites and irrigation works.
- Ensure rehabilitation of trenches progressively once work is completed.
- The safety inspection checklist must look to see that the delineation devices are used, whether they are appropriately positioned, if they are easily identifiable and whether they are reflective.

Equipment safety

- Work zone workers use tools, equipment and machinery that could be dangerous if used incorrectly or if the equipment malfunctions. Inspections must be carried out to test the equipment before it is used, so that worker safety can be secured. Inspections should look for evidence of wear and tear, frays, missing parts and mechanical or electrical problems.

Material management

- Ensure easily flammable materials are not be stored in construction site and that they are transported out of project site

Emergency Procedures

- Ensure an emergency aid service is in place in the work zone.
- Ensure all site staff is properly briefed as to what to do in the event of an emergency, such as who to notify and where to assemble for a head count. This information must be conveyed to employees by the site manager on the first occasion a worker visits the site.

Construction camps

- Ensure installation of adequate construction camps and sanitation facilities for construction workers to control of transmission of infectious diseases.

- Ensure that adequate warning is provided on issues of poaching and wildlife attacks

Information management

- Develop and establish contractor's own procedure for receiving, documenting and addressing complaints that is easily accessible, culturally appropriate and understandable to affected communities.
- Provide advance notice to local communities by way of information boards about the schedule of construction activities.

Worker consultation

- Consulting the workforce on health and safety measures (including protection from sexual harassment and gender sensitisation policies) is not only a legal requirement, it is an effective way to ensure that workers are committed to such procedures and improvements. Employees should be consulted on these measures and before the introduction of new policies technology or products.
- Any consultation with the workforce shall only be for the purpose of advancing the health and safety of all workers and protection of workers from discriminatory practices.

ANNEX 10: CHANCE FIND PROCEDURE FOR PHYSICAL CULTURAL RESOURCES

Contracts for civil works involving earth moving and excavation activities, especially in areas known to be sites of old civilizations and now returned to forest, should normally incorporate procedures for dealing with situations in which buried PCRs are unexpectedly exposed.

Recognition of unknown PCRs – This is the most difficult aspect to cover, especially if the contractor is not full-time accompanied by a specialist. **Upon discovery of such material** during project implementation work, the following should be carried out;

- Immediately stop construction activities.
- With the approval of the resident engineer delineate the discovered site area.
- Secure the site to prevent any damage or loss of removable objects. In case of removable antiquities or sensitive remains, a night guard should be present until the responsible authority takes over.
- Through the Resident Engineer, notify the responsible authorities, the Department of Archaeology and local authorities within 24 hours.
- Submit a brief chance find report, within a specified time period, with date and time of discovery, location of discovery, description of finding, estimated weight and dimension of PCR and temporary protection implemented.
- Responsible authorities would be in charge of protecting and preserving the site before deciding on the proper procedures to be carried out.
- An evaluation of the finding will be performed by the Department of Archaeology who may decide to either remove the PCR deemed to be of significance, further excavate within a specified distance of the discovery point and conserve on-site, and/or extend/reduce the areas demarcated by the contractor etc. This should ideally take place within about 7 days.
- Construction work could resume only when permission is given from the Department of Archaeology after the decision concerning the safeguard of the heritage is fully executed.

ANNEX 11: MONITORING CHECKLIST FOR ENSURING SAFE CONDITIONS FOR WORKERS AND PUBLIC

Date inspection conducted:	Location:
Name(s) of those participating in this inspection:	
INDICATE EITHER:	
A = Acceptable/Yes; U = Unacceptable/No; N/A = Not Applicable	

No.	Safety Title	A	U	N/A	Action Taken
1	PERSONAL PROTECTIVE EQUIPMENT:				
	Foot protection worn as required?				
	Hand protection used/worn as required?				
	Safety glasses and/or goggles available + being used?				
	Hearing protection worn where required?				
	Hard hats worn when falling object hazard is present?				
	Dust masks used when needed?				
	Traffic vests being worn where needed?				
2	EMERGENCY ITEMS:				
	Emergency phone numbers posted and known by all?				
	Emergency eyewash and/or shower units accessible?				
	First aid kit available at work site?				
3	ELECTRICAL SAFETY ISSUES: if required				
4	CONSTRUCTION SAFETY & HEALTH ISSUES:				
	100% fall protection in place above 6-5... feet in height?				
	Excavation? Protection from cave-ins for >5 feet deep				
	Hand tools are kept in safe				
	Employees instructed in proper use of all power tools? If available				
	Employees below protected from falling objects?				

	Proper access provided for workers and surrounding community?				
	<i>Trenches Excavation and Shoring:</i>				
	Materials are stored at least two feet from trench?				
	Proper number of workers for each operation?				
5	Job Information/Administrative:				
	First aid kit stocked?				
	First aid kit available?				
	Work areas properly demarcated				
	Work areas properly barricaded?				
6	Housekeeping:				
	Work area neat?				
	Protected from projecting nail points (removed/bent over)?				
	Waste containers provided?				
	Waste containers used?				
7	General:				
	Toilet facilities available?				
	Toilet facilities maintained?				
	Drinking water available?				
	Visitor hard hats available?				
	Visitor hard hats used?				
	Record Maintained at Site level:				
	Unsafe Acts or Practices Observed:				
	Comments:				
	Signature: _____			Date: _____	

Contractor's Name : Monitoring Date :

Monitor's Name & :

Designation :

	Responsibility measures (from theEMP)	Compliance Yes / No	Reason for noncompliance	Follow up actions	
Pre-Construction Phase					
Construction Phase					
Operational Phase					

Photo-documentation of Issue Identified Above

Issue # (from description above)	Date of photograph	Photograph depicting issue

ANNEX 12: TERMS OF REFERENCE FOR RECRUITMENT OF CONTRACTOR ENVIRONMENTAL OFFICER

To be Included in bidding documents with respective ESMP.

The contractor through an appointment of dedicated / qualified environmental safeguard officer shall be responsible in implementation of EMP requirement by

- a) Maintaining up-to-date records on actions taken by the contractor with regards to implementation of EMP recommendations.
- b) Timely (weekly) submission of reports, information and data to the PMU's Environmental and Social Specialists, through Supervision consultant.
- c) Participating in the meetings conveyed by the Engineer and
- d) Any other assistance requested by the Engineer.

The Environmental Officer will be the primary focal point of contact for the assistance with all environmental and social issues during the pre-construction and construction phases. He/ She shall be responsible for ensuring the implementation of Environment and Social Management Plan. The appointed officer should be available on the site fulltime basis during the project period. In addition, Environmental Officer should prepare an Environmental Action Plan in line with Environment Management Plan and submit to the Engineer along with construction method statements.

The Environmental Safeguard Officer will promptly investigate and review environmental related complaints and implement the appropriate corrective actions to arrest or mitigate the cause of the complaints as specified in the EAMF. A register of all complaints is to be passed to the Engineer within 24 hrs they are received, with the action taken by the Safeguard Officer on complains thereof. In addition, Safeguard Officer required to perform following tasks as well;

1. Participation for the periodic Grievance Redress Committee Meetings at all levels
2. Coordinate and liaise with PMU, Provincial Councils and other relevant stakeholders
3. Support and coordinate with PMU Environmental and Social Safeguard team in carrying out the monitoring assessments such as baseline surveys, progress review, mid-term review, etc
4. Take actions to mainstream project activities during the period
5. Identify the potential environment and social safeguards issues in accordance provided EA/ EMP/ ESMF/

Qualifications required

Environmental Safeguard Officer preferably possessing a Master's Degree with minimum of 5 years experiences in the relevant field or minimum of eight (8) years of experiences in the similar capacity. Preferably, experience in specific project related works is required. It is essential to have both Sinhala & English language ability (speaking) and Computer Knowledge of MS Office.

ANNEX 13: TERMS OF REFERENCE FOR THE PROJECT LEVEL ENVIRONMENTAL AUDIT

1. Introduction to the project

To be filled

2. The Need for Environmental Assessment

All sub-projects financed under the Emergency Solid Waste Management Project (ESMP) are required to comply with World Bank Operational and Safeguard Policies triggered, in addition to conformity with the environmental legislation of GOSL. Thus all sub-projects are required to conform to:

- a) the Environmental Management Framework (EMF) adopted by GOSL and accepted by the World Bank, and
- b) the terms of the Central Environmental Authority (CEA) as mandated by the National Environmental Act (NEA) of Sri Lanka, **where it is applicable**.

According to the EAMF, each sub-projects needs to be subjected to an environmental screening using the recommended template. Based on the screening information and concerns of the public the need to pursue further stand-alone assessments and if so the type of assessment is determined. All screening forms are filled by environmental officers supporting the Project implementation agencies and reviewed and cleared by the respective Project Management Units (PMU). For a sample proposals/ sub-projects with impacts are deemed as significant a prior review of the screening is carried out by the World Bank. When standalone assessments and management plans are considered necessary, the project proponent is responsible for carrying them out while the PMU reviews and clears them.

According to CEA procedures, all sub-project requiring NEA approval need to fill in a Basic Information Questionnaire (BIQ). Upon reviewing the BIQ, the CEA will determine whether no further environmental analysis is required or whether the proponent is required to prepare an Initial Environmental Examination (IEE) or an Environmental Impact Assessment (EIA).

3. Objectives

The primary objective of this assignment is for the Consultant to carry out an environmental audit for project. The consultant will review the application of the EAMF to the project. In particular, the consultant will review a sample of (i) the screening forms (ii) standalone environmental and social assessments/management plans (iii) application of the NEA and its clearance procedures followed by the project, as the case be, and based on site visits ensure conformity with conditions, guidelines and comments stipulated in these and other related documents. The Consultant is expected to be familiar with the EAMF, the applicable safeguard policies of the World Bank, NEA and the approval procedure of the CEA.

4. Tasks of the Consultant

- Obtain the required information from the PMU on the subproject under implementation. This may include, but not be limited to, relevant plans, drawings, screening reports, social analysis, standalone EA/EMP (if it has been necessary), comments of the World Bank.
- Review the above documents, discuss with the sub-project proponent as well as the surrounding community and visit the location and environs of the sub-project.
- Check for conformity of the sub-project in relation to the guidelines, conditions and comments stipulated in the item above.
- Examine monitoring reports and whether standards, procedures and controls are in place to respond to safeguards requirements stipulated in EMF.
- Examine significant new risks and propose remedial actions
- Highlight any deviations from the guidelines, conditions and comments stipulated in the aforesaid documents and assist the sub-project proponent to improve the safeguard documents incorporating the necessary mitigatory measures.
- Document any adverse environmental impacts that were not anticipated in the screening and follow up assessments that may have occurred during project construction and implementation.
- Examine procedures of corrective action if monitoring parameters are out of monitoring limits and if such incidents are actually reported, investigated and followed up

Document and submit the environmental audit report which should include (i) an Executive Summary, (ii) Overall audit opinion on the level of compliance, (iii) for each sub-project reviewed (a) a description of the sub-project, (b) the list of documents reviewed and persons interviewed, (c) observations made at the site, (d) conformity and/or deviations to guidelines (CEA and EAMF), clearance conditions (World Bank and GOSL) and plans, (e) status of progress reporting and actions taken to address issues (f) actions need to be taken to respond to negative deviations, (g) new risks and recommendations to address the risks (mitigation actions), (h) any other relevant information to support the findings.

5. Application Procedure

Qualified consultants may apply for the assignment listed above. Applications should be submitted using the format below:

Title of assignment

- Name and address of the consultant/firm
- Name, designation and telephone number of contact person
- Brief consultant/company profile
- Key staff members of the firm (giving priority to assignment-specific staff; for each staff member provide name, position in the team, number of years in the firm, relevant qualifications and assignment-specific experience and proficiency in languages – read, write and speak)
- Relevant experience of the consultant/firm (Details of assignment-specific tasks undertaken during the past 10 years with client references)

Expressions of interest should focus on aspects relevant to the particular assignment, and reach the PMU by [Date].

ANNEX 14: GENERIC SESSION PLAN FOR STAFF TRAINING ON ESMF AND SAFEGUARD INSTRUMENT IMPLEMENTATION, MONITORING AND REPORTING.

Topic: Environmental Stewardship via Safeguards

Objective: To introduce the project staff to the Environmental Management procedures set forth in the EAMF of the project, assist them in implementing environmental safeguards within the project and understand their function, roles and responsibilities in implementation, monitoring and reporting, while gaining an overall **Duration:** 1 Day

Target Group: Project Mangers, Technical Specialists, Environmental Specialists, Environmental Officers, Procurement Specialists based in PMU, Project IAs

Training Material: A CD with the Soft Copies of all Relevant Training Material (Session Presentations, EMF, Guiding Documents (Screening Formats, Copies of example EMPs, project safeguards instruments, etc.), and other resource material.

No	Subject	Purpose	Time	Session Structure	Materials	Aids	Potential Resource Person
1.1	Introduction to Safeguard Requirements and procedure within the project	to introduce the WB safeguard policies, the activities set forth in the ESMF and procedures of implementation, monitoring and reporting within the project	1.5hr	Brain storming, Lecture	EAMF Guideline, copies of Screening Formats,	Laptop Multimedia Projector File with Training Material for whole day	

No	Subject	Purpose	Time	Session Structure	Materials	Aids	Potential Resource Person
1.2	Identification of Environmental impacts and deducing Mitigatory Methods	To facilitate understanding on what environmental impacts can arise from project interventions and understand the nature of technical mitigation measures that can assist in curtailing these	1 hr	Brain storming, Lecture, Group work	A Copy of a well completed Screening Form and EMP as an example. Copies of Specifications for subprojects	Laptop, Multimedia projector, Flip charts & Pens	
1.3	Specific roles and Responsibilities in implementation and monitoring	To assist the members present to understand the roles and responsibilities of their designation. What is expected from them and how they can do the work assigned in the best manner.	1hr	Lecture, Discussion	A Sheet describing the roles and responsibilities of each individual of project administrative structure.	Laptop, Multimedia projector, Flip charts & Pens	
1.4	Group Activity (Details Below)	to assess the understanding post the session	2hr	Group Activity followed by a discussion	Copy of the Case study, A Blank screening form and EMP	Flip charts & Pens	

Group Activity for the End of Session- 1hr (30 minutes for Group Activity and 30 Minutes for Presentation and Discussion

Present the groups with copies of an example of a project specific subproject or project related scenario. Once the team has reviewing the case study and the copies of the Screening Form and EMPs, they should discuss and note down and present on the following areas. The Design of the intervention should be presented well with details of the surrounding area and the rational etc.

- Conduct a Screening of the Subproject with the Screening Form as an aid and deduce what sort of clearances is required and what sort of environmental assessments will be required. Based on this indicate where the project should proceed as is environmentally cleared.
- Identify the Environmental Impacts of the project and their severity based on its scope and design, and propose mitigatory mechanisms for these if they can be mitigated
- Identify who will be responsible for the safeguard activities from within the project administrative structure
- The points formulated during the discussion should then be presented group wise and discussed with the team. The Trainer should provide technical assistance to the teams where required to direct the discussion accordingly and share experiences from within the program.

ANNEX 15: EXAMPLE OF DISCLOSURE ADVERTISEMENT FOR SAFEGUARDS INSTRUMENT

Date

NAME OF MINISTRY/IMPLEMENTING AGENCY

NOTICE OF DISCLOSURE FOR PUBLIC COMMENTS OF THE
NAME OF INSTRUMENT
FOR THE EMERGENCY, SOLID WASTE MANAGEMENT
PROJECT

The above-mentioned **Name of Instrument** has been prepared by the **Name of Ministry/Implementing Agency** for the World Bank Funded _____ Project. The document will be available for inspection by the public at the following locations between **XX am** and **XX pm** for a period of 30 days from the date of the advertisement (except Weekends & Public Holidays).

Locations: **(PLEASE LIST RELEVANT LOCATIONS BELOW)**

1. Example: Pradeshiya Sabha, Kegalle
2. Website: www.disclosureadvert.com
3. -
4. -
5. -

Any member of the public may within 30 days from the date of this advertisement submit their comments in writing on the above document to the Secretary, the Ministry/Implementing Agency

ANNEX 16: DRAFT TEMPLATE FOR LEGAL CONTRACT FOR VOLUNTARY LAND DONATIONS

The following agreement has been made on.....day ofbetween Mr/Ms
.....aged Resident of
.....GN.....District.....the
grandson/daughter of and son/daughter of

1. That the land with certificate no.....is a part ofis surrounded from
eastern side bywestern side by on northern side, by
..... and southern side by

2. That the owner holds the transferable right of (unit of land) of
land/structure/asset

3. That the owner testifies that the land/structure is free of squatters of encroachers and not subject to
any other claims.

4. That the owner hereby voluntarily grants to the.....this asset for the
construction and development ofin.....GN/Location,
..... supported by the Provincial Roads Development
Project for the benefit of the community.

5. That the owner will not claim any compensation against the grant of this asset nor obstruct the
construction process on the land in case of which he/she would be subject to sanctions according to law
and regulations.

6. That the PMU/MPCLG agrees to accept this grant of asset for the purposes mentioned and the
voluntary nature of the transfer of the asset.

That the agency (name of subproject executing agency)/.....shall
construct and develop infrastructures under the project and take all possible precautions to avoid
damage to adjacent land/structure/other assets.

7. That the provisions of this agreement will come into force from the date of signing of this deed.

Signature of the Owner

Signature of Grama Niladhari

Signature of the Chairperson, Local Authority

Witness:1

Witness: 2.....

ANNEX 17: SAMPLE GBV ACTION PLAN FOR ‘MODERATE’ RISK PROJECTS

When	Action to Address GBV Risks	Responsibility	Ongoing Risk Management
Identification/Appraisal	Sensitize the IA as to the importance of addressing GBV on the project, and the mechanisms that will be implemented.	<ul style="list-style-type: none"> Task Team. 	<ul style="list-style-type: none"> Task team to monitor and provide additional guidance as necessary.
	The project’s social assessment to include assessment of the underlying GBV risks and social situation, using the GBV risk assessment tool to provide guidance and keeping to safety and ethical considerations related to GBV data collection. No prevalence data or baseline data should be collected as part of risk assessments.	<ul style="list-style-type: none"> IA for social assessment and ESMP. Contractor for C-ESMP. Task Team for GBV Risk Assessment Tool. 	<ul style="list-style-type: none"> Ongoing review during implementation support missions. Update project ESMP and Contractor’s ESMP (C-ESMP) if risk situation changes.
	Map out GBV prevention and response actors in project adjoining communities. This should incorporate an assessment of the capabilities of the service providers to provide quality survivor centered services including GBV case management, acting as a victim advocate, providing referral services to link to other services not provided by the organization itself.	<ul style="list-style-type: none"> IA 	<ul style="list-style-type: none"> Update mapping as appropriate
	Have GBV risks adequately reflected in all safeguards instruments (i.e., Project ESMP, C-ESMP)—particularly as part of the assessment in the ESA. Include the GBV mapping in these instruments.	<ul style="list-style-type: none"> IA for social assessment and ESMP. Contractor for C-ESMP. 	<ul style="list-style-type: none"> Ongoing review during implementation support missions. Update project ESMP and Contractor’s ESMP (C-ESMP) if risk situation changes.
	Develop a GBV Action plan including the Accountability and Response Framework as part of the ESMP. The contractor/consultant’s response to these requirements will be required to be reflected in their C-ESMP.	<ul style="list-style-type: none"> IA 	<ul style="list-style-type: none"> Ongoing review during implementation
	Review the IA’s capacity to prevent and respond to GBV as part of Safeguard Preparation .	<ul style="list-style-type: none"> Task Team 	<ul style="list-style-type: none"> Ongoing review during implementation support missions. Update project ESMP if risk situation changes.

When	Action to Address GBV Risks	Responsibility	Ongoing Risk Management
	<p>As part of the project’s stakeholder consultations, those affected by the project should be properly informed of GBV risks and project activities to get their feedback on project design and safeguard issues. Consultations need to engage with a variety of stakeholders (political, cultural or religious leaders, health teams, local councils, social workers, women’s organizations and groups working with children) and should occur at the start and continuously throughout the implementation of the project.</p>	<ul style="list-style-type: none"> • IA. 	<ul style="list-style-type: none"> • Monitoring of implementation of Stakeholder Engagement Plan. • Ongoing consultations, particularly when C-ESMP is updated.
	<p><i>The Stakeholder Engagement Plan of the project, which will be implemented over the life of the project to keep the local communities and other stakeholders informed about the project’s activities, to specifically address GBV related issues.</i></p>	<ul style="list-style-type: none"> • IA. 	<ul style="list-style-type: none"> • <i>Monitoring of implementation of Stakeholder Engagement Plan.</i> • <i>Ongoing consultations, particularly when C-ESMP is updated.</i>
	<p>Make certain the availability of an effective grievance redress mechanism (GRM) with multiple channels to initiate a complaint. It should have specific procedures for GBV including confidential reporting with safe and ethical documenting of GBV cases. Parallel GRM outside of the project GRM may be warranted for substantial to high risk situations.</p>	<p>IA, but discussed and agreed upon with the Task Team.</p>	<p>Ongoing monitoring and reporting on GRM to verify it is working as intended.</p>
	<p><i>Ensure IA has a GBV specialist to support project implementation.</i></p>	<p>IA.</p>	<p><i>Ongoing reporting.</i></p>
	<p><i>For supervision have a social /environmental specialist in the supervision consultant’s team with GBV specific skills to supervise issues related to GBV (e.g., supervise signing of Codes of Conduct (CoCs), verify working GRM for GBV is in place, refer cases where needed) and work with GBV Services Providers as entry points into service provision to raise awareness of the GRM.</i></p>	<p>IA.</p>	<p><i>Ongoing reporting.</i></p>
	<p>Projects which do not use loan/credit/grant proceeds to hire GBV service providers at the start of project implementation encourage Borrowers include an escalation clause in the Environmental & Social Commitment Plan (ESCP) should GBV risks become apparent over the course of the project implementation.</p>	<p>Task Team.</p>	<p>Task Team.</p>

When	Action to Address GBV Risks	Responsibility	Ongoing Risk Management
Procurement	Clearly define the GBV requirements and expectations in the bid documents .	IA.	Review by Task Team.
	Based on the project's needs, the Bank's Standard Procurement Documents (SPDs), and the IA's policies and goals, define the requirements to be included in the bidding documents for a CoC which addresses GBV .	IA.	Review by Task Team.
	<i>For National Competitive Bidding (NCB) procurement, consider integrating the ICB SPD requirements for addressing GBV risks.</i>	IA.	<i>IA with review by Task Team.</i>
	The procurement documents should set out clearly how adequate GBV costs will be paid for in the contract. This could be, for example, by including: (i) line items in bill of quantities for clearly defined GBV activities (such as preparation of relevant plans) or (ii) specified provisional sums for activities that cannot be defined in advance (such as for implementation of relevant plan/s, engaging GBV service providers, if necessary)	IA.	Review by Task Team.
	Clearly explain and define the requirements of the bidders CoC to bidders before submission of the bids.	IA.	Review by Task Team.
	Evaluate the contractor's GBV response proposal in the C-ESMP and confirm prior to finalizing the contract the contractor's ability to meet the project's GBV requirements	IA.	Review by Task Team.
Implementation	Review C-ESMP to verify that appropriate mitigation actions are included.	• IA.	• Review by IA. • Review by Task Team.
	Review that the GRM receives and processes complaints to ensure that the protocols are being followed in a timely manner, referring complaints to an established mechanism to review and address GBV complaints.	• Task Team. • IA	• Ongoing reporting. • Monitoring of complaints and their resolution.

When	Action to Address GBV Risks	Responsibility	Ongoing Risk Management
	<p>Codes of Conduct signed and understood</p> <ul style="list-style-type: none"> • Ensure requirements in CoCs are clearly understood by those signing. • Have CoCs signed by all those with a physical presence at the project site. • Train project-related staff on the behavior obligations under the CoCs. • Disseminate CoCs (including visual illustrations) and discuss with employees and surrounding communities. 	Contractor, Consultant, IA.	<ul style="list-style-type: none"> • Review of GBV risks during project supervision (e.g., Mid-term Review) to assess any changes in risk. • Supervision consultant reporting that CoCs are signed and that workers have been trained and understand their obligations.⁷ • Monitoring of GRM for GBV complaints. • Discussion at public consultations.
	Have project workers and local community undergo training on SEA and SH.	• IA, Contractors, Consultants	• Ongoing reporting.
	Undertake regular M&E of progress on GBV activities, including reassessment of risks as appropriate.	• IA, Contractors, Consultants.	<ul style="list-style-type: none"> • Monitoring of GRM. • Ongoing reporting.
	<p>Implement appropriate project-level activities to reduce GBV risks prior to civil works commencing such as:</p> <ul style="list-style-type: none"> • Have separate, safe and easily accessible facilities for women and men working on the site. Locker rooms and/or latrines should be located in separate areas, well-lit and include the ability to be locked from the inside. • Visibly display signs around the project site (if applicable) that signal to workers and the community that the project site is an area where GBV is prohibited. • As appropriate, public spaces around the project grounds should be well-lit. 	<p>Contractor/ Supervision Consultant</p> <ul style="list-style-type: none"> • Task Team. 	<ul style="list-style-type: none"> • Ongoing reporting. • Reviews during implementation support missions.

⁷ Civil works supervision consultant’s monthly reports should confirm all persons with physical presence at the project site have signed a CoC and been trained.

ANNEX 18: STAKEHOLDER CONSULTATIONS

Date of Consultation: **06th June 2019**

Venue: **Auditorium, Western Province Road Development Authority**

Total number of attendees: **26**

List of participants:

Participants:

TCAMP

1. Eng. W.A.R. Pramila - Project Director
2. Mr. Herath Kularathana - Deputy Project Director
3. Eng. Indu Manamperi - Senior Engineer
4. Mr. S.U.K.Devapriya - M and E Specialist

WORLD BANK REPRESENTATIVE.

5. Mr. Shanek Fernando - Social Development Specialist

ENVIRONMENTAL EXPERT.

6. Mr. Thilak Hewawasam - Former Chairman, Environmental Authority and Environmental and Social Safeguard Consultant.

PROVINCIAL ROAD DEVELOPMENT AUTHORITIES

7. Eng. D.A.K.Perera - DGM
8. Eng. L.L.D.P.Liyanarachchi - DGM
9. Eng. Gamini Senerath - Chief Engineer, Special Project
10. Eng.Mrs. K.W.Wijegunawardana - Planning Engineer
11. Mrs. H.D.G.Malsha - Engineer
12. Eng. S.N.Jayasingha - Executive Engineer, NWP
13. Eng. R.M.N.Tennakoon - Chief Engineer, WP

14. Mr. Anura Senerath - Engineering Assistant
15. Mr. Chaminda Koongahage - Technical Assistant
16. Mr. Jayaneththi - Executive Engineer
17. Mrs. Nimali Priyanka - Quantity Surveyor

ROAD DEVELOPMENT AUTHORITY.

18. Mr. H.M.N.M.Wijesingha - Environmental Hydrologist, RDA

LAND COMMISSIONER GENERAL DEPARTMENT.

19. Mrs. Kalani Dhanasekara - Assistant Commissioner

GRAMA NILADHARI.

20. Mr. R.B.S.C. Karunarathana - Divisional Secretariat, Horana
21. Mr. R. Amaranayaka - Divisional Secretariat, Horana

MEMBERS OF CIVIL SOCIETIES.

22. Mr. N.Ahangama - Katutura
23. Mr. L Karunarathana - Colombo

The Project Director welcomed the gathering and a self-introduction of participants was carried out. A project representative then presented the main aspects of the ESMF and opened the floor for discussion.

Background of the project –

The Project Director mentioned that the TCAMP has been restructured and the associated land acquisition and resettlement as originally envisaged has changed significantly. The project will now finance the rehabilitation and improvements of provincial roads in all nine province of the country. The components will be implemented in two main phases.

While phase one cover 302.7 km of roads at an estimate cost of LKR 7,692.30 million covering the road sections spread across all nine provinces of the country, the phase two covers the remaining roads in all nine provinces.

The contracts will incorporate interventions such as road upgrading, rehabilitation, drainage structure, sidewalks and physical design feature to enhance efficiency of road transport. It was clearly mentioned

that there will be no widening of any road under this project, and hence, land acquisition will be minimal, if any.

Implementation arrangements –

- PMU: The PMU will manage project funds, carry out FM and procurement, sign contracts, and make payments for all activities financed under the project.
- PIU: PIUs will be established at each Provincial Council to carry out implementation activities of the project, in coordination with the PMU.

Project Implementation Consultant (PICs) in each province will supervise the construction works and recommend the payments.

The issues raised, and the response provided are as follows:

	Issues raised	By whom	Response provided (i.e., how the project will address the issue raised)
01	There were many good points discussed today as a framework for ensuring Environmental and Social management. How will you ensure this knowledge and framework gets implemented at ground level	PRDA Engineers, Civil society	9 officers will be appointed as Social and Environmental Safeguard Officers under the project implementation consultant in all 9 provinces, for ensuring the proper delivery of the mitigation of arising issues and problems in implementing the project.
02	Where can we find the Environmental Social management framework and the Contractors plan?	Civil society	The ESMF has been made available on the web site and the document of the ESMP has been printed and made available in all relevant DS offices for the public to read and understand
03	Temporary displacement of mobile vendors and other vulnerable encroachers. We need to ensure that their livelihood is not affected, and when relocating need to take this into account. There needs to be a plan around this, and the affected party consent should be obtained.	PRDA Engineers	The project will ensure that their livelihood is not affected by helping them to temporarily relocate during the construction phase and they may return to their original place subsequently; Cut-off dates will be established to determine the eligibility for compensation to the project affected persons and their assets as per the entitlement matrix in the ESMF. These are the dates on which census of the affected persons and their

	Issues raised	By whom	Response provided (i.e., how the project will address the issue raised)
			assets will be taken. Any claim for compensation by affected people after the cut-off date will be ineligible for compensation.
04	What action will be taken where physical assets of the affected (walls, gardens, gates, etc.) located in the ROW come in the project's area of construction,	PRDA Engineers	This will not be a major issue as there is no road widening. However, even in the rare case of such a situation, the facility will be re-built. The timing of rebuilding is the most important to give civil society confidence that action is taken.
05	The ESMP has described a grievance redress mechanism with how to record the grievance and how to prioritize and implement the actions required for the grievances based on some principles; namely simplicity, accessibility, transparency, timeliness, fairness, confidentiality. How will this be done?	PRDA Engineers, Civil society	There will be a complaint box at every ARE office as well as the engineer's office. These offices will also collate verbal complaints and get them in writing. A register will be maintained for this purpose. At every monthly meeting, the engineer will share a summary of all complaints received, how many were successfully resolved, how many are still pending, and what support needed. To make this more efficient we plan to launch a MIS system and a website for the convenience of the public.
06	When the rural roads have been rehabilitated, it improves the use of more vehicles on those roads thus raising the issue of the level of safety. This is because of more and more vehicles coming in, more vehicle purchases and the improved vehicle speed. To minimize the issues related to the safety, community awareness on road safety need to be implemented as has been highlighted and appreciated by the project.	Senior Project Engineer	Awareness programs, sign boards giving commuters and road users adequate warnings of potential dangers, will be addressed by the project. Crossings and other markings will also be fixed at important locations to enhance road safety.

	Issues raised	By whom	Response provided (i.e., how the project will address the issue raised)
07	Sometimes there can be family relocations to avoid the risk of any environmental impact (e.g. landslip during construction).	Civil society	In such situations, which is not likely to be very minimal and isolated, the contractor and engineer will ensure temporary housing for the family. This will be included in the ESMP. Payments will be made for the temporary housing through the ESHS payments as mentioned in the ESMF
08	The replanting of trees as environmental compensation needs to be considered. The project also needs to think twice when removing trees and consult the communities whenever possible. If possible, the project should try to change the road design to prevent removal of trees especially the trees with cultural importance.	RDA engineer, PD	There will be minimum tree cutting in this project as there is no road widening. However, in case a tree needs to be cut, replanting will be done with immediate effect by the contractor. In case there are special trees such as those with religious significance or heritage trees (e.g. Ambagas handiya), the project will review the possibility of diverting the road in consultation with the relevant stakeholders.
09	There can be some crack appearing in houses along the road due to various reasons (e.g. heavy vehicles causing vibrations) and these have to be identified and measured in order to consider for rectification.	Engineer Kalutara	A crack survey will be carried out prior to the start of the civil works. In cases where additional cracks are observed, the affected persons and if relevant, the community members need to inform the consultant, and the consultant will send a team along with the community members and gramaseveka to photograph the cracks and document and take necessary corrective action.
10	There have been instances in the past where a land owner will donate a piece of his land as a charity to the society. But they will later claim compensation for the same land.	Engineer planning WP	In such instances where the project is required to voluntary acquire land, there will be an MoU signed between the project and the donor, as outlined in the ESMF.
11	The environmental and safeguard plan should be area specific as has been		Capacity building sessions will be carried out not only for the project staff, but also

	Issues raised	By whom	Response provided (i.e., how the project will address the issue raised)
	highlighted by PRDP and it has been mentioned that the action has already been taken in this regard. However, do all officers, engineering sites, etc have the relevant knowledge to implement this plan?		for the contractors and for the community leaders to minimize the possible social and environment negative effects. This will help to minimize the number of complaints as well.
12	Having the drain along the road for longer distance create problems as it carries heavy quantity of rain water which can damage some properties. Therefore, shorter distance drains are preferred which can divert less volume of water thus minimizing the damages to the green and agriculture.	Civil society	To avoid this, when the project carries out the transact walk with the civil society representatives, community members and the consultant, the project will keep this in mind and make note of such places.
13	How to prevent the spread of dengue is a big risk for the project. This is due to water collection in open drains / burrow sites. Also, it will be important to ensure regular watering of roads to prevent dust	PD/Civil Society	Prior to making the payment, road inspection will be carried out on a weekly basis with the contractor. If not, the payment will not take place
14	Know the criteria for selection of roads for rehabilitation – justify to donor and public	PD/ Civil Society	Awareness campaigns to educate civil society and community members will be carried out. Even though the road at a glance looks good, the road design in many instances is not sufficient to bear the current traffic load and hence may require rehabilitation. Beneath the current surface, there are failures which is why certain roads have been nominated for this this project.
15	Obtain police records of accidents – to identify black spots, and this should be criteria for road selection. Also, what are the features of the project to mitigate road accidents	PD	The project will put sign boards to warn motorist of the risky, accident prone areas

	Issues raised	By whom	Response provided (i.e., how the project will address the issue raised)
16	How will the project minimize the increase in accidents – both people and animals? It is also suggested that the project monitor social impacts after project	TCAMP senior project engineer	Awareness campaigns during the constructions and immediately after the constructions to avoid human related accidents as well to warn motorists of the risk of animal crossings, will be carried out by the project
17	Use of roads by heavy vehicles / trucks after road improvement – the road surface has been designed for this purpose, however, the project does not cover the rehabilitation of existing culverts and bridges.	Planning engineer PRDA	The project and the PRDA will study the RDA act and other legal documents to be applied in such situations, and have sign boards with weight limits/ restrictions on the type of heavy vehicle usage of the rehabilitated roads.
18	Material extraction should have legal permits and disposal sites should be safely managed	Civil society	The contractor will be required to propose the extraction and disposal sites at the very beginning. The contractor will also be required to get a clearance from the engineer who will ensure that the legal and safety aspects and procedures have been followed by the contractor prior to commencing the works. The engineer will also inspect the sites and legal documents and give a no-objection before commencing the works.
19	Will there be contractor maintenance mechanisms?	PRDA engineer NWP	The issue of maintenance will be not be addressed through this project. However, all provincial road agencies have agreed to maintain their respective roads after this rehabilitation
20	Increased number of marriages – due to labour influx following road construction	PD	The contractor staff will be advised on the need to maintain labour discipline and to be aware of any negative incidents relating to the conduct of the workers. These issues have been mentioned in the ESMF and the contractors will be required to prepare labor management plans

	Issues raised	By whom	Response provided (i.e., how the project will address the issue raised)
21	Schools in the rural area closed down – students now go to schools in the town due to improved road access to towns	PD	The project will inform the relevant stakeholders of this issue. On a positive side, parents and students are happy to gain access to better school facilities in the town thanks to the improved road condition
22	Labours should to be screened and registered with police due to current security situation	PD/ DGM - PRDA	At first site meeting, this issue will be taken and the contractor will be advised to submit a comprehensive report including all the details of the laborers' including a photograph of each person. This report then will be shared with the gramaseveka of the area

Next stakeholder meeting will be carried out on 17th June 2019 at Hotel Hilton in Colombo.