

Inclusive Rural Connectivity and Development Project

ANNEXES TO THE ENVIRONMENTAL AND
SOCIAL MANAGEMENT FRAMEWORK

Volume II

ROAD DEVELOPMENT AUTHORITY MINISTRY
OF HIGHWAYS

JULY 2021

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INTRODUCTION

The following document presents Volume II of the Environmental and Social Management Framework (ESMF) of the INCLUSIVE RURAL CONNECTIVITY AND DEVELOPMENT PROJECT (IRCDP).

The document includes all Annexes presented in the ESMF of the IRCDP and should be read in conjunction with this document.

Annex 1: Negative List of Activities That can NOT be financed via the Project

It is recommended that the following types of subprojects are not financed and therefore should be considered as a "Negative List":

- The construction of new roads
- Roads or infrastructure within any designated protected areas as per the National Regulations of Sri Lanka.
- Sub-projects that involve the significant conversion or degradation of critical natural habitats such as sensitive ecosystems.
- Activities that could lead to invasion or spread of weeds and feral animals or the use of toxic chemicals, intensive use of pesticides and activities that generate large quantities of pollutants.
- Activities that could dangerously lead to the exposure of sensitive/critical/vulnerable habitats such as road corridors that open in to designated Protected Areas.
- Construction of large/new infrastructure within or directly adjacent (in buffer zones) to the following
 - Designated Protected Areas including marine protected areas.
 - Designated Sites of Cultural heritage- Sacred Cities/ UNESCO World Heritage Sites/Archeological Reservation Zones
 - Known Elephant Corridors
- Illegal Activities as defined specifically under the Forest Ordinance and Fauna and Flora Protection Ordinance.
- New construction within areas designated as sacred cities, UNESCO cultural heritage sites or designated archeological zones as per the Department of Archeology of Sri Lanka.
- Any project interventions that would be encroaching low-lying natural wetlands, marshy lands and mangroves for different land uses, reducing the water retention capacity.
- Filling of lowlands including paddy and marshes for human habitats and industries
- Any area designated as Illegal habitation in the most vulnerable immediate riverbanks belonging to Irrigation Dept.
- Procurement of Ozone Depleting Substance (ODS) refrigerants or equipment that uses ODS substances.
- Procurement of pesticides or chemical fertilizers.

Annex 2: Initial Environmental and Social Screening Checklist

Basic Project Details

1. **Name of Sub-Project:** Provide the detailed name
2. **Technical/ Design ID Number:** example road identification number used
3. **Location (District, Divisional Secretariat Division and GN Division(s)¹):**
4. **GPS Location- Please provide the GPS locations for the Starting Point and Ending Point of the Road.**

Road Marking

Lat

Long

Start Point

End Point

5. **Nature of Project** (describe briefly current status/condition of the road, road type, road management, road's connectivity, issues/problems with the road & proposed interventions):
6. **Description of Project Intervention-** briefly description the activity that will be undertaken at the project site (For example, concreting, road widening,
7. **Size/Scale:** *Indicate Number of KMs to be undertaken and extent of any other associated activities*
8. **Community response and benefits:** (describe community's initial response to the subproject and the benefits anticipated)
9. **Project Implementing Agency (and Project Partner Agencies, if relevant):**
10. **Description of Project Surroundings:**
 - Are there existing settlements in the project area? If yes, how many households/families?
 - What are the demographics of the population (e.g., ethnicity? religion)
 - What is the type of inhabitants in the area (e.g., squatters, titleholders, tenants)?
 - What are main sources of livelihoods?
 - Unemployment levels
 - Incidence of poverty
 - Are there any existing community and local organizations?
 - Are there existing social infrastructures in the area (e.g., schools, health centres, hospitals, places of worships, roads, etc)
 - Are there any ongoing development projects in the area that involves civil works?
 - Does the area have frequent visitors from outside?
 - Are there any issues or past experiences relating to gender, GBV, SEA/SH, drug abuse, community tensions, etc.

¹ Depending on the length, the road section can cut across more than one DSD/GND.

Potential Social and Land Related Impacts

Potential Impacts	Not known	Yes	No	Remarks
Land related Impacts				
Will the project include any new physical construction work?				
Does the project include upgrading or rehabilitation of existing facilities?				
Is land acquisition likely to be necessary? If yes, will it be private land, government land, or both?				
Is the ownership status and current usage of land known?				
Is the site chosen for this work free of squatter/informal settlements or other encumbrances?				
Will there be loss of crops, trees and other fixed assets through land-use related changes?				
Is the proposed sub-project likely to lead to loss of housing, auxiliary structures, other assets, resource use or incomes? (describe whether such losses are temporary/permanent)				
Are people/community members willing to voluntarily donate their land for road improvement?				
Are people/community members willing to agree to acquisition of their land for road improvement and/or other ?				
Loss of Livelihood				
Will there be any permanent or temporary or partial/full loss of incomes and livelihood? If so, for what period?				
Are non-title holders/people (squatters or encroachers) present on the site living/ or doing business who are likely to be partially or fully affected because of the civil works?				
Any estimate of the likely number of those affected by the project? If Yes, approximately how many? (segregate the numbers for permanent and temporary and partial and full)				
Any of these people poor, indigenous, from women headed households, persons with disabilities, HHs that receive social assistance (e.g., Samrudhi, public assistance, etc) or vulnerable to poverty risks? If yes, how?				
Access to Services/Safety				
Will people lose access to their homes, shops, and other private properties during the construction period?				
Will people lose access to public facilities, services or natural resources during the construction period?				
Would elements of project construction pose potential safety risks to local communities, commuters or pedestrians in the project area?				
Will any social or economic activities be affected through land-use related changes?				
Is the project area located near schools, clinics, hospitals, places of worship?				

Potential Impacts	Not known	Yes	No	Remarks
Are there any GBV prevention and response actors (NGOs, government notified shelter homes, police stations, etc.) in project area of influence?				
Is the project site in a populated area and/or with high vehicular traffic volume?				
Is there sufficient street-lighting, use of video or CCTV for monitoring public spaces in the project location?				
Labor Influx				
How many workers will be needed for the sub-project, with what skill set, and for what period?				
Will the project hire workers from the local workforce?				
Will there be workers brought in from outside the project area?				
Will the project require accommodation or service amenities to support the workforce during construction?				
Will the incoming workers be from a similar socio-economic, cultural, religious or demographic background?				
Given the characteristics of the local community, are there any adverse impacts that may be anticipated?				

Estimates of Specific Impacts

Government land required	
Private land required (sq. m)	
Total of households affected	
No. of individuals losing more than 10% of land area	
No. of houses affected	
No. of shops affected	
No. of utilities affected	
No. of workers to be brought from outside	

Identification of Environmental Impacts

SCREENING QUESTIONS	YES	NO	REMARKS
A. Project Location			
Is the Project area adjacent to or within any of the following environmentally sensitive areas?			
- Cultural heritage site			
- Protected Area			
- Wetland			
- Mangrove			
- Estuarine			
- Buffer zone of protected area			
- Special area for protecting biodiversity			
- Is the site located in a landslide prone area as per NBRO risk maps			
- Is the site located in a flood prone area as per the Disaster Management Centers floor risk maps			
- Are there sensitive receptors on the road trace- schools/ temples/hospitals			
- Indicate what these are and the distance of each from either the center line or boundary of road			

SCREENING QUESTIONS	YES	NO	REMARKS
B. Potential Environmental Impacts			
Will the Project cause...			
- The project causes encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries due to widening and other activities?			
- The clearance or removal of over 10 large trees in the right of way or during widening.- The estimated number of trees to be removed should be indicated.			
- Encroachment on precious ecology (e.g. sensitive or protected areas designated by national law or buffer zones of protected areas)?			
- Alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?			
- Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?			
- Increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing?			
- Noise and vibration due to blasting and other civil works and machine operations?			
- dislocation or involuntary resettlement of people			
- Will generate dust or other emissions that can cause cases of upper respiratory problems and stress to workers or nearby residents.			
- Hazardous driving conditions where construction interferes with pre-existing roads?			
- poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations?			
- Creation of temporary breeding habitats for mosquito vectors of disease? (lead to water stagnation and collection or unsanitary conditions)			
- Accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials and loss of life?			
- Increased noise and air pollution resulting from traffic volume?			
- Increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road?			
- Lead to Occupational Health and safety risks mostly during the construction phase			
- Lead to public nuances such as encroachments, loss of access and impact living conditions in the area			

Present a short Summary of the most prominent risks from the environmental perspective- indicate if impacts will be from design/ mostly during the construction phase or due to operations Other risks identified from google earth and data screening

Environmental

Social

Based on the findings, the consultant confirms the Overall Risk Rating of the subproject as presented in the Risk Analysis Table Below.

Risk Level	Nature of Assessments Required Post Screening
Substantial Risk	<p>A subproject will be classified as a ‘Substantial risk’ intervention if it will directly lead to the following</p> <ul style="list-style-type: none"> • Involve significant conversion or degradation of critical natural habitats such as sensitive ecosystems. • Activities that could lead to invasion or spread of weeds and feral animals or the use of toxic chemicals, intensive use of pesticides. • Activities that could dangerously lead to the exposure of sensitive/critical/vulnerable habitats • Construction of large new infrastructure within or directly adjacent (in buffer zones) to protected areas • Illegal Activities as defined specifically under the Forest Ordinance and Fauna and Flora Protection Ordinance. • Cause physical displacement and/or involve economic displacement with significant impacts on livelihoods • Impose changes in land use that restrict access to resources in legally designated parks or protected areas or other common property resources on which local people may depend for livelihood purposes <p>In addition, as per the screening the subproject may have significant environmental and social impacts that may damage the environment and affect communities. The project will require a comprehensive social impact assessment, including census survey of all affected households, followed by a detailed Resettlement Action Plan if ESS5 is triggered.</p>
Moderate Risk	<p>A subproject will be classified as ‘Moderate risk’ if</p> <ul style="list-style-type: none"> • The subproject will have a majority of reversible, small-medium scale environmental impacts, specifically limited to the civil works phase of the project that can be managed by site specific mitigation measures. • Require minor land acquisition or restrictions on land use, as a result of which there will be minor impacts on incomes or livelihoods • Subprojects requiring adoption of Abbreviated Resettlement Action Plan (ARAP), Environmental and Social Management Plans (ESMPs) and or Environmental and Social Assessment and require further screening in line with the detailed technical designs of the respective subproject.
Low Risk	<p>A subproject will be classified as ‘Low risk,’ if:</p> <ul style="list-style-type: none"> • The Subproject have low-negligible environmental and social impacts that can be managed via mitigatory codes of practice that will be defined as part of the contractual agreement/memorandums of understanding with project implementing contractors or operators.

Risk Level	Nature of Assessments Required Post Screening
	<ul style="list-style-type: none"> • The Subprojects does not require any land acquisition or lead to any impact on incomes or livelihoods • The Sub-project does not require formal environmental and social assessment, nor preparation of ESMPs and do not have identifiable negative environmental impacts; mitigation of these impacts will be done using generic CESGPs.

What Instrument should be prepared for the project as per the ESMF? Circle the Appropriate Instrument

CESGPS	ESMP	ESIA
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Annex 3: Format for Detailed Environmental and Social Screening Report

1. Project Identification

Project title	
Project Proponent	

2. Project Location

Location <i>(relative to the nearest town, highway)</i>	
Definition of Project Area <i>(The geographical extent of the project & areas affected during construction)</i>	
Adjacent land and features	

3. Project Justification

Need for the project <i>(What problem is the project going to solve)</i>	
Purpose of the project <i>(what is going to be achieved by carrying out the project)</i>	
Alternatives considered <i>(different ways to meet the project need and achieve the project purpose)</i>	

4. Project Description

Proposed start date	
Proposed completion date	
Estimated total cost	
Present land ownership	
Description of the project <i>(with supporting material such as maps, drawings etc. attached as required)</i>	
Project Management Team	<p>Agency –</p> <p>Contact person -</p> <p>Nature of consultation and input received</p>

5. Description of the existing environment

5.1 Physical features – Ecosystem components	
Topography and terrain	
Soil (<i>type and quality</i>)	
Surface water (<i>sources, distance from the site, local uses and quality</i>)	
Ground water (<i>sources, distance from the site, local uses and quality</i>)	
Flooding	
Air quality (<i>any pollution issues</i>)	
Noise level and vibration (<i>Any anticipated issues</i>)	
5.2 Ecological features – Eco-system components	
Vegetation (<i>trees, ground cover, aquatic vegetation</i>)	
Presence of wetlands	
Fish and fish habitats	
Birds (<i>waterfowl, migratory birds, others</i>)	
Presence of special habitat areas (<i>special designations and identified sensitive zones</i>)	
5.3 Human/Social features	
Project Impact Area (Settlement patterns, land ownership)	
Demographics (population distribution, ethnic groups, religion)	
Vulnerable groups living in the project area (female headed households, people with disabilities, etc)	
Right of Way (ownership, demarcation, etc)	

Economic Issues (Livelihoods, Employment Patterns, poverty levels)	
Local organizations (NGOs, CBOs, etc)	
Community infrastructure and resources	
Labor availability/participation in the project area	
Community infrastructure and resources	
5.3 Human Animal Coexistence Screening Questions in Environmental Screening Form	
The site is a known area of Elephant Habituation (verify site location with DWC if elephants are recorded from the project site historically)	
Describe the nature of the Human Elephant Conflict (HEC) Issues recorded from the site & immediate vicinity of the site.	
Will the use of the project site result in depriving elephants of habitat and if so, how many hectares?	
Will the project activities lead to the elevation of existing HEC related issues and/or lead to new HEC issues in the project area?	
Will project activities block or hinder, access to known elephant foraging grounds, water sources and/or migratory routes.	
5.4 Physical Cultural Resources (PCR)	
PCR resources in the area (<i>recorded or potential to exist</i>)	
Type of PCR	
Distance from the project site	
Ownership	
Protection status	
National/regional/local significance	
5.5 Other features	
Residential/Sensitive Areas (<i>Eg, Hospitals, Schools</i>)	
Traditional economic and cultural activities	

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6. Public Consultation

Public consulted (Please provide gender-disaggregated data for the participants)	Consultation method	Date & venue	Details/Issues raised

7. Screening for Potential Environmental Impacts

	Screening question	Yes	No	Significance of the effect (Low, moderate, high)	Remarks
1	Will construction and operation of the Project involve actions which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)				
2	Will the Project involve use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?				
3	Will the Project produce solid wastes during construction or operation?				
4	Will the Project release pollutants or any hazardous, toxic or noxious substances to air?				
5	Will the Project cause noise and vibration or release of light, heat energy or electromagnetic radiation?				
6	Will the Project lead to risks of contamination of land or water from releases of pollutants onto the ground or into surface waters, groundwater or coastal waters?				
7	Will the project cause localized flooding and poor drainage during construction Is the project area located in a flooding location?				
8	Will there be any risks and vulnerabilities to public safety due to physical hazards during construction or operation of the Project?				

9	Are there any transport routes on or around the location which are susceptible to congestion or which cause environmental problems, which could be affected by the project?				
10	Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the project?				
11	Are there any areas or features of high landscape or scenic value on or around the location which could be affected by the project?				
12	Are there any other areas on or around the location which are important or sensitive for reasons of their ecology e.g. wetlands, watercourses or other water bodies, mountains, forests which could be affected by the project?				
13	Is the location within or adjacent to the coastal zone? If so, what is the distance to the coast?				
14	Are there any areas on or around the location which are used by protected, important or sensitive species of fauna or flora e.g. for breeding, nesting, foraging, resting, migration, which could be affected by the project?				
15	Is there mangrove, coral reef, sea grass bed, turtle beach habitats etc. within close proximity?				
16	Is the project located in a previously undeveloped area where there will be loss of green-field land				
17	Will the project cause the removal of trees in the locality?				
18	Can any of the identified historic or culturally importance sites on or around the location be affected by the project?				
19	Are there existing land uses on or around the location e.g. homes, gardens, other private property, industry, commerce, recreation, public open space, community facilities, agriculture, forestry, tourism, mining or quarrying which could be affected by the project?				
20	Are there any areas on or around the location which are densely populated or built-up, which could be affected by the project?				
21	Are there any areas on or around the location which are occupied by sensitive land uses e.g.				

	hospitals, schools, places of worship, community facilities, which could be affected by the project				
22	Are there any areas on or around the location which contain important, high quality or scarce resources e.g. groundwater, surface waters, forestry, agriculture, fisheries, tourism, minerals, which could be affected by the project?				
23	Are there any areas on or around the location which are already subject to pollution or environmental damage e.g. where existing legal environmental standards are exceeded, which could be affected by the project?				
24	Will the project involve dredging, If so to what degree and where, please indicate under comments				

8. Screening form for potential social risks and impacts

Screening Questions	Yes	No	Significance of effect (Low, moderate, high)	Remarks
Land related Impacts				
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 the site chosen for this work free from encumbrances and in possession of the Ministry/ or relevant government agency?				
Is land acquisition likely to be necessary?				
Is the ownership status and current usage of land known?				
Will there be loss of crops, trees and other fixed assets through land-use related changes?				
Loss of Livelihood				
Are non-title holders/people (squatters or encroachers) present on the site living/ or doing business who are likely to be partially or fully affected because of the civil works? (Is the land free of squatter/informal settlements or other encumbrances?)				
Will there be any permanent or temporary loss of incomes and livelihood? If so, for what period?				
Any estimate of the likely number of those affected by the project? If Yes, approximately how many?				
Any of these people poor, indigenous or vulnerable to poverty risks? If yes, how?				
Access to Services				
Will people lose access to facilities, services or natural resources during the construction period?				

Screening Questions	Yes	No	Significance of effect (Low, moderate, high)	Remarks
Would elements of project construction pose potential safety risks to local communities, commuters or pedestrians in the project area?				
Will any social or economic activities be affected through land-use related changes?				
Is the project area located near schools, clinics, hospitals, places of worship?				
Are there any GBV prevention and response actors (NGOs, government notified shelter homes, police stations, etc.) in project area of influence?				
Is the project site in a populated area and/or with high vehicular traffic volume?				
Is there sufficient street-lighting, use of video or CCTV for monitoring public spaces in the project location?				
Labour Influx				
How many workers will be needed for the sub-project, with what skill set, and for what period?				
Will the project hire workers from the local workforce?				
Will there be workers brought in from outside the project area?				
Will the project require accommodation or service amenities to support the workforce during construction?				
Will the incoming workers be from a similar socio-economic, cultural, religious or demographic background?				
Given the characteristics of the local community, are there any adverse impacts that may be anticipated?				

9. Project operating requirements- Indicate based on the project interventions and site what clearances are required from which agency.

		Yes	No
1	Does the project belong to a prescribed category of the National Environmental Act		
2	Does the project need to obtain clearances from the following agencies:		
3	a. Department of Archaeology		
4	b. National Building Research Organization		
5	c. Coast Conservation Department		
6	d. Forest Department		
7	e. Department of Wildlife Conservation		
8	f. Geological survey and mines bureau for material sourcing		
9	f. Any other: If so, describe		

9. Conclusion and Screening Decision

Summary of social and environmental effects:

Assuming that all mitigation measures are implemented as proposed, the following effects can be predicted

	N/S - Effect not significant, or can be rendered insignificant with mitigation
	SP - Significant positive effect
	SN - Significant negative effect
	U - Outcome unknown or cannot be predicted, even with mitigation

10. Screening Decision Recommendation (check the ones

11. applicable):

Environmental assessment is still underway, and not final.

Recommended Instrument	Check	Associated Justification from Screening Findings
ESMP		All potentially adverse effects can be classified as general construction related impacts and are mitigatable with known technology. Public concern does not warrant further assessment. Therefore, standalone Environmental and Social Assessment (ESIA) is not required nor warranted as per National Regulations and therefore an Environmental and Social Management Plan would be sufficient to mitigate identified impacts
ESIA/IEE		Potential adverse impact is significant and/or as per the National Environmental Act due to the nature, scale or site of the intervention requires further assessment; hence, standalone Environmental and Social Assessment and Management Plans are needed before the project can proceed and/or are warranted by National Environmental Regulations.
ARAP		Minor loss of land, livelihoods, structures, etc. but does not lead to physical displacement. A social impact assessment, including a census survey of affected parties/persons to assess the extent of losses would be necessary followed by an Abbreviated Resettlement Action Plan to mitigate/compensate for the losses.
RAP		Physical displacement and/or economic displacement with significant impacts on livelihoods. Such projects will require adoption of a comprehensive resettlement planning, preparation of a detailed Resettlement Action plan to mitigate/compensate for all losses.

11. Details of Persons Responsible for the Environmental and Social Screening

Screening report completed by	Date
<i>Name/Designation/Contact information</i>	<i>Signature</i>
Screening report reviewed by (Should be an RDA Environmental and Social Specialist)	Date

<i>Name/Designation/Contact information</i>	<i>Signature</i>
Approved by (Head of RDA Social and Environmental Unit)	Date
<i>Name/Designation/Contact information</i>	<i>Signature</i>

Annex 4: 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 Terms of Reference

(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 (CCA) 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 (CCA) 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 CCA does not however specify how and when this discretion should be exercised. The Coast Conservation Department (CCD) 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.

- (1) Grant approval for the implementation of the proposed project subject to specified conditions,
- Or
- (2) 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 CCA applies in the case of those projects, which lie wholly within the Coastal Zone. This indicates that the NEA expects the Coast Conservation Dept. to consider these projects as prescribed and that an Environmental Impact Assessment is required albeit under the provisions of the CCA.

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 Environmental Impact Assessment.

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.

CCD 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.

CCD 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 Wildlife Conservation. 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 Department of Wild Life Conservation 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 statutes 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 provided it is done in consultation with each other. Only the North Western Provincial Council (NWPC) enacted legislation on environmental protection by Statute No. 12 of 1990. The National Environmental Act remains suspended and inoperative 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	PAA	2 month
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 (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.	PAA	3 months
Decision making - Based on the recommendation of the TEC, the PAA makes its 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	PAA	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 5: Basic Information Questionnaire for the CEA

APPLICATION NO	
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CENTRAL ENVIRONMENTAL AUTHORITY

BASIC INFORMATION QUESTIONNAIRE

(Essential information to determine the environmental approval requirement of projects)

- 1 Name of the Project:
- 2 Name of the Developer:
(Company/firm/individual)

Postal Address:

Phone No: *Fax No:*

Contact person
Name
Designation:
Phone No: *Fax No:*
- 3 Brief description of the project (Use a separate sheet)
Attach copy (ies) of pre-feasibility / feasibility study report (s) if available
- 4 Scale / magnitude of the project:
(eg. For a road project: Length of the trace; Tourist hotel: No. of rooms; Agriculture project:
Extent of land, solid waste management projects : capacity per/day etc.)
- 5 Main objective(s) of the project:
- 6 Investment and Funding sources:
- 7 Location of the Project
 - i Pradeshiya Sabha:
 - ii Divisional Secretariat:
 - iii District
 - iv Provincial Council

Provide a location map indicating the project site, access to the site, surrounding development and infrastructure within 500 m of the site (1:50000 scale).
- 8 Extent of the project area (in ha):
A copy of the survey plan of the site
- 9 Does the project wholly or partly fall within any of the following areas?

Area	YES	No	Unaware
100m from the boundaries of or within any area declared under the National Heritage Wilderness Act No 4 of 1988			
100m from the boundaries of or within any area declared under the Forest Ordinance (Chapter 451)			
Coastal zone as defined in the Coast Conservation Act No 57 of 1981			
Any erodible area declared under the Soil Conservation Act (Chapter 450)			
Any Flood Area declared under the Flood Protection Ordinance (Chapter 449)			
Any flood protection area declared under the Sri Lanka Land Reclamation and Development Corporation Act 15 of 1968 as amended by Act No 52 of 1982			
60 meters from the bank of a public stream as defined in the Crown Lands Ordinance (Chapter 454) and having width of more than 25 meters at any point of its course			
Any reservations beyond the full supply level of a reservoir.			
Any archaeological reserve, ancient or protected monument as defined or declared under the Antiquities Ordinance (Chapter 188).			
Any area declared under the Botanic Gardens Ordinance (Chapter 446).			
Within 100 meters from the boundaries of, or within, any area declared as a Sanctuary under the Fauna and Flora Protection Ordinance (Chapter 469)			
100 meters from the high flood level contour of or within, a public lake as defined in the Crown Lands Ordinance (Chapter 454) including those declared under section 71 of the said Ordinance			
<i>Within a distance of one mile of the boundary of a <u>National Reserve</u> declared under the Fauna and Flora Protection Ordinance</i>			

10 Present ownership of the project site:

State	Private	Other-specify

If state owned, please submit a letter of consent of the release of land from the relevant state agency

11 Present land use:

12 Present land use: (Please tick the relevant cage/s)

Land use Type	Land use Type	
Paddy	Marsh / Mangrove	
Tea	Scrub / Forest	
Rubber	Grassland / Chena	
Coconut	Built-up area	
Other Plantations / Garden	Other (pl. specify)	

13 Does the site /project require any

	Yes	No	If yes give the extent (in ha)
Reclamation of land, wetlands			
Clearing of forest			
Felling of trees			

14 Does the project envisage any resettlement

Yes	No	If yes, give the number of families to be resettled

15 Does the project envisage laying of pipelines

Yes	No	If yes, give the length of the pipeline (km)

16 Does the project involve any tunneling activities

Yes	No

17 Proposed timing and schedule including phased development:

18 Applicable laws, regulations, standards and requirements covering the proposed project:

19 Clearances / permits obtained or should be obtained from relevant state agencies and / or local authorities. (*Attach required copies of the same*)

The above information is accurate and true to the best of my knowledge. I am aware that this information will be utilized in decision-making by the relevant state authorities.

.....
Date

.....
Signature of Applicant

Annex 6: Generic Terms of Reference for Environmental and Social Screening Reports (ESSRs or separate ESRs and SSRs)

Background to the environment and social screening

While preparing any operations or projects for financing, an initial Environmental and Social Screening will be conducted to screen for social and environmental impacts and risks and accordingly plan any required mitigation measures. Accordingly, the aim of the screening process is to determine if and what environmental and social review and management is required, quickly identifying those projects where no potential issues exist, so that only those with potential environmental and social implications will be required to undergo more detailed assessments.

The Initial Environmental and Social Screening Checklist is presented in Annex 1 and the Format for Detailed Environment and Social Screening Report is presented in Annex 2.

Objective of the screening process

The screening process intends to:

- Determine potential impacts of activities and their likelihood to cause negative environmental and social impacts;
- Determine appropriate mitigation measures for activities with adverse impacts;
- Incorporate mitigation measures into project design;
- Review and approve project proposals,
- Monitor environmental and social parameters during project implementation.

Methodology

Project impacts can be analyzed using a range of methods from simple qualitative analysis to quantitative methods, such as transect walks, analysis of google maps, topographic maps and secondary data from the Department of Census and Statistics, field reconnaissance, public consultations, key informant interviews, etc. The data collection methods and analytical tools used and the depth of analysis should be commensurate with the type and significance of the impacts. The report should describe the methods chosen for data collection and analysis and the rationale for the choice of method; it should further describe the quality of available data and, where applicable, explain key data gaps and uncertainties associated with predictions. Participatory research and assessment tools should be employed wherever sensible to increase stakeholder's understanding of the project, provide opportunity for raising issues and enable participation of affected groups in the identification of mitigation measures.

Public consultations will be held as part of the environmental and social screening process. The purpose of these consultations is to allow for the identification of the main issues and how the concerns of all parties should be considered in deciding whether or not to issue a permit for the subcomponent.

Classification of projects based on screening

The environmental and social screening procedure for each of the subprojects can lead to one of the following decisions:

- Elimination of ineligible activities from the approval process (Annex 3 presents the negative list of activities that will not be supported under the project).
- Classification as 'Substantial risk' as described in Annex 2 thus requiring a detailed ESIA, ESMP and preparation of ARAP/RAP
- Classification as 'Moderate' risk as described in Annex 3 thus requiring adoption of Abbreviated Resettlement Action Plan (ARAP), Environmental and Social Management Plans

(ESMPs) and or Environmental and Social Assessment and also further screening in line with the detailed technical designs of the respective subproject.

- Classification as ‘Low-Negligible’ risks that can be managed via mitigatory codes of practice that will be defined as part of the contractual agreement/memorandums of understanding with project implementing contractors or operators.

Public Disclosure

The screening process and its findings as well as the proposed mitigation measures will be documented as part of the project/subcomponent package. Further, all relevant information on the proposed project will be disclosed to help affected communities and other stakeholders understand the risks, impacts and opportunities of the proposed project. If project stakeholders may be affected by risks or adverse impacts, they will be provided with access to information on the purpose, nature and scale of the project, the duration of proposed project activities, and any risks to and potential impacts on such stakeholders. Such disclosure will occur early in the assessment process and on an ongoing basis.

Roles and Responsibilities

Screening of activities will be carried out by the Environmental & Social Specialist of the PMU or their consultants. The screening reports will be endorsed by the Project Director of the PMU and the Director of RDA’s Social and Environmental Unit, and submitted to the World Bank.

Deliverables, Time Schedule, Staffing

All reports shall be in English language. The following shall be prepared and submitted for comments and/or approval:

- Initial Environmental and Social Screening Checklist
- Detailed Environmental and Social Screening Reports
- Recommendations for next steps based on sub-project classification

The effective date shall be the date on which the Consultancy agreement shall be signed by the Client. The Consultant shall commence the study within Seven (7) Calendar Days of the Order to Commence. The following time schedule shall be observed in carrying out the assignment for each sub-project:

- Effective date of contract: Week 1
- Data collection, field visit, public consultations and analysis: Week 2-3
- Preliminary screening report: Week 4
- Draft Report: Week 5
- Final screening checklist and screening reports: Week 6

The Consultants must as a minimum, but not limited to, provide the expertise described below, and submit a curriculum vitae for each individual:

- (i) Project Director/Team Leader
 - A minimum of a Master’s Degree in Environmental, Physical, Biological or Social Sciences from a recognized University.
 - At least 8-10 years post-qualification experience, including professional and practical experience in undertaking Environmental and Social Impact Assessment Studies in the Infrastructure sector.
 - Experience in team management
 - Good communication skills, written and verbal, including in English
- (ii) Environment Specialist

- A minimum of a bachelor's degree in Environmental Sciences/Studies from a recognized University.
 - At least 3-5 years post-qualification experience, including professional and practical experience in undertaking Environmental and Social Impact Assessment Studies in the Infrastructure sector.
 - Good analytical and communication skills (both written and verbal)
- (iii) Civil Engineer
- A minimum of Bachelor's Degree in Civil Engineering
 - Proof of basic training on ESIA/ESA will be an added advantage.
 - At least 3-5 years post-qualification experience, especially relevant professional and practical experience in design and supervision of road construction, community infrastructure or related projects.
- (iv) Social Specialist
- A minimum of a Bachelor's Degree in Sociology/Social Studies/Social Sciences from a recognized University.
 - Proof of basic training on ESIA/ESA will be an added advantage.
 - At least 3-5 years post-qualification experience, especially professional and practical experience in social studies for infrastructural projects.
 - Good analytical and communication skills (both written and verbal)

Annex 7: Generic Terms of Reference for Environmental and Social Impact Assessment (ESIA)

An environmental and social impact assessment (ESIA) report for a sub-project identified to require an ESIA as per the environmental and social screening conducted for the said project, focuses on the significant environmental and social issues of a project. The report's scope and level of detail should be commensurate with the project's potential impacts.

The report submitted to the Bank is prepared in English, and the executive summary should also be in English. In addition, a copy of the executive summary will be translated into the local languages, namely, Sinhalese and Tamil.

The ESIA report should include the following items (not necessarily in the order shown)

A. Background Information and Introduction to the Project Intervention

B. Objectives of the Environmental and Social Impact Assessment (ESIA)

- To assess the existing status of physical and human environment in the study area and to identify threats and issues which have potential to adversely impact important environmental and social features of the project influence area.
- Carry out environmental and social analysis of project area and potential activities envisaged under the project.
- Analyze various options available in the site layout for project interventions, areas of resettlement and arrangements for any ancillary facilities (burrow sites etc.) to minimize adverse impacts and enhance positive impacts, where feasible.
- Identification of the project affected families; assessment of loss of livelihood / property resources for people living within the proposed site and in its immediate vicinity through primary surveys / consultations
- Prepare a site specific environmental and social impact assessment report by documenting environmental features of the project area, socio-economic and cultural status of community in and around the probable project site. This assessment should also include considerations of safety – both for the workers in the site and related facilities, as well as of nearby residents, especially those that live close to ancillary facilities like burrow areas, for instance.
- To identify the environmental and social issues associated with implementation of the infrastructure proposed and develop environmental and social codes of practices for common activities like site preparation, construction activities, management of waste, occupational health and safety, etc. and social exclusion list that need to be followed during various stages such as planning and design finalization, construction and operation & maintenance.
- To undertake consultations with potentially affected people to understand their views, obtain their input regarding environmental and social issues, and to take these into account during the preparation of the Environmental and Social Impact Assessment (ESIA) and Environment and Social Management Plans (ESMPs).
- To prepare a detailed final ESMPs in matrix form, that will outline actions that will be required during project implementation and operation from an environmental, health and safety, as well as social perspective to mitigate envisioned impacts for inclusion in project contracts for implementation.

C. Scope of the ESIA

The Environmental and Social Impact Assessment (ESIA) study (and the report) will specifically cover the following for the interventions proposed.

1 List of Acronyms and Abbreviations

All acronyms and abbreviations used in the ESIA must be clearly and succinctly defined and described in this section. This will relieve the reader of the need to search for the first occurrence of a word and the citing of the acronym or abbreviation in the text.

2 Executive Summary

A general summary of the ESIAA shall be provided in this section. The summary shall be written using a vocabulary that can be easily understood by the public. It shall include at least the following information about the project from the ESIAA:

- Objectives and Justification
- Location
- Project Proponents
- Project Description
- Other Project Alternatives
- Regulatory and institutional review
- Environmental and Social Setting
- Evaluation of Impacts
- Mitigation and Monitoring Measures
- Environmental and Social Management Plan
- Issues raised by stakeholders and any outstanding issues

3 Project Information

3.1 Objectives of and Justification for the Proposed Project

- **Objectives:** A statement of the general and specific objectives (purpose) of the proposed project, including whether it is a new project, an expansion/upgradation of infrastructure in operation or a combination of both.
- **Justification for the Project:** Provide a justification for the proposed project (need) highlighting the benefits to surrounding communities and economic development of the region and country.
- **Project Proponents**
Names, addresses, telephone numbers, and applicable mandates of proponents, including sub-implementing agencies, project financiers.
- Names and contact information for responsible parties within the organization.

3.3 Project Team

This section shall provide information on the multidisciplinary team that prepares the ESIA. The types of professionals included in the team shall be appropriate to the type of project and the type of environment in which the project is located. The information provided for each member of the ESIA project team includes the following:

- Names, addresses of project proponent
- Names, contact information, qualifications of key personnel involved in the study; as well the respective area of contribution to the ESIA.
- List of professionals/experts participating in the ESIA, their areas of expertise, degrees, experience, professional registrations where applicable should be Annexed.

3.4 Legal and Regulatory Framework

This section of the ESIA shall define the legal framework under which the ESIA is being completed listing and summarizing requirements or alternatives used as benchmarks, and evidence of non-applicability or compliance including:

- Information that demonstrates rights and access: Government policy regarding the project, Requirements under Environmental Regulations in Sri Lanka
- Policy, legal and administrative framework with reference to the project
- Approvals needed for the project from other state agencies and any conditions laid down by Government agencies for implementation of the project
- Conformity with other development plans in the area
- Conformity to the World Bank's Environmental and Social Standards

3.5 Methodology Adopted

This Section should present a brief outline of methodologies and technologies adopted in the preparation of the ESIA report, including steps adopted for scoping, reconnaissance and field visits, data and information collection, process of conducting surveys and analysis, methodology used for deducing impacts at minimum.

4 Project Description

A full description and location of the proposed project including ancillary facilities and operations such as the camp/housing for construction and operation phases, borrow and disposal areas, sanitary services, waste disposal and transportation infrastructure, etc. as addressed through the sections below. It shall include at a minimum:

4.1 Location

The general location of the project and associated activities in terms of:

- Political-administrative location (as per administrative divisions) with accompanying location map
- Means of access into the project site
- Latitude and longitude of project area
- Maps of project area at a scale of no less than 1: 50,000
- For specific sites where, sensitive locations are identified during the ESIA process, maps will be provided at a scale of 1: 10,000.
- Project plan and location on a fold-out 11" X 17" page.
- Indicate the project areas and the direct and indirect areas of influence for the physical, biological and social-economic-cultural impacts
- All drawings should present scale and key coordinates or benchmarks as latitude/longitude

4.2 Summary of Proposed Project

Overview of all proposed project facilities and activities and their relationship.

- A detailed drawing showing access points, layout of the projects within the scheme, components including on-site access roads, existing structures, topography and natural features such as water bodies, wetlands and geologic structures: A summary table showing the type, quantity and size of each component
- **Principal project facilities:** Location and design information – primary material of construction (earth, brick, stone, etc.), layout and dimensions. Design drawings should be provided for each facility, including: Plan (overhead view), Elevations (front view), Profiles (side view) and Sections
- *If the project activities include Dredging the following information must be provided (if applicable)*
 - Legal authorization for the dredging
 - Name of water body to be dredged

- Dimensions of area to be dredged
 - Map showing extent of dredging operations
 - Longitudinal and transversal cross-sections of the area to be dredged
- Operation description
- Frequency
 - Operational hours
 - Time table for dredging
 - Equipment Roster, specifying type and quantity by: size, motor size, and fuel requirements for each type of dredging equipment
- Disposal of dredge material
 - Details of the disposal site(s) of dredged material including permits needed (or obtained) for disposal sites, land ownership
 - Timing and process of moving out the dredge material from the dredging location to disposal site.

4.3 Summary of Project Construction phase and timetable

The section should provide information as available on the plan for implementation of the project on ground, the project Engineer can provide facilitation for estimating amounts and numbers based on existing norms for similar infrastructure development projects.

- Schedule for each phase of construction for all project and ancillary facilities (including temporary structures) including, but not limited to:
 - Mobilization
 - Access construction and improvements
 - Land clearing and preparation
 - Dredging
 - Blasting
 - Erosion and sediment control
 - Excavation and subgrade preparation
 - Foundation preparation
 - Concrete work
 - Construction or installation of each project activity
 - Stabilization of disturbed areas

- A tabulated rough project implementation schedule for the entire project period should be submitted.
 - Borrow and fill material
 - Locations from which fill material will be sourced
 - Locations where fill material will be placed on-site
 - Locations where fill will be temporarily stockpiled/stored
 - Locations of and process for borrow and spoil disposal
 - Other Construction Material (Sand, Metal, Water, etc.), provide details for each type of material
 - Locations from which the respective material will be sourced
 - Locations where the material will be placed on-site
 - Locations where construction material will be temporarily stockpiled/stored
 - Locations of and process for any associated disposal

- Key areas (related to environmental sensitivity/importance) that should remain undisturbed during construction (waterways, wetlands, forested areas and other “green space,” physical cultural resources, etc.)
 - Erosion control structures such as:
 - Temporary diversions for waterways

- Erosion control barriers
- Equipment
 - Equipment Roster, specifying type and quantity by size, weight, motor size, and fuel requirements for each piece of equipment or machinery used in each activity
 - Transportation mobilization and mobilization frequency
 - Machinery and equipment mobilization routes to be used, as well as the features of the ways on which they will be transported, including a map of routes, as applicable, and mobilization.
- Labor during construction (as estimated)
 - Number and type of Employees (by local hire and non-local hire) by field of expertise
 - Days per week
 - Hours per day
 - Shifts per day
- Raw materials to be used for construction
 - Give a complete list of the raw materials and construction materials to be used, indicating the amounts per day, month, and the storage means
 - Include an inventory of chemical, toxic or hazardous substances, active elements, sites and storage means, safety aspects regarding transportation and handling and any other relevant information
- Construction camp(s) and/or arrangements for management of resident labor (if applicable)

Description of the camp(s) including but not limited to:

 - A map showing all facilities at a legible scale appropriate to the size of the project
 - Buildings by type (use) and size
 - Roads
 - Electrical transmission lines and/or substation
 - Drainage
 - Water supply and distribution
 - Distribution system
 - Use (m³/day)
 - Rights
 - Sources
- Waste handling and disposal components
 - Existing Sewers
 - Wastewater treatment facilities
 - Solid waste facilities

Decommissioning of temporary structures including planned measures for

- Closure of construction camp
 - Closure of any applicable burrow sites
 - Returning the area to pre-construction features
- Operation phase -Description of how the project would operate (as appropriate)

4.3 Alternatives Analysis

All project alternatives that are reasonable and feasible and meet the purpose and need for the proposed project shall be identified, summarized in this section, and evaluated in the ESIA as appropriate. In addition to the proposed project, such alternatives include alternative locations, alternative site configuration of elements of the project, alternative size, and alternative plans for construction, operation and decommissioning of the project including best practices that may avoid and/or reduce the adverse impacts to the physical, biological or social-economic-cultural environments. The following should be presented

- Description of various alternatives like locations or layouts or technologies studied
- Description of each alternative
- Summary of adverse impacts of each alternative
- Selection of alternative

If the project area or the buffer zone of the project area for an alternative is in an ecologically fragile area, the description of the alternative must include a clear justification for not opting for another site. Identify which alternatives will be carried through the analysis in the ESIA and the basis for that decision.

5 Environmental Setting

Based on information available from the literature, government and special studies or other sources, the ESIA shall provide information on environmental setting for the different types of physical, biological and social-economic-cultural environments for the current situation, important trends and predicted situation in the absence of the proposed project. All sources of data must be cited in the ESIA when and where they are used. Indicate the direct and indirect and cumulative impact areas of influence for physical, biological, and social-economic-cultural impacts and basis for defining area. This section shall include at a minimum, the following information:

Physical Environment

5.1 Topography

- Provide concise information on the topography and slope conditions and geomorphology
- Describe project areas susceptible to soil liquefaction; planned, areas of potential ground failure, such as subsidence, slumping, and land sliding.

5.2 Soil Resources

The ESIA shall describe baseline soil resources, and make use of maps, tables and accompanying narrative text to describe the soils at the project site and along new or reconditioned access route associated with the project and included in the ESIA.

- Underline geology - Soil types, distribution and thickness - Soil permissibility - Soil characteristics in relation to salinity, acidity iron toxicity, ground water recharge and land use capabilities - Mineral resources

5.3 Water Resources

○ Surface water

- General description of the catchment area along the river-Names and locations on maps of all permanent and intermittent streams, rivers, wetlands, lakes and reservoirs within the area of influence
- Flow: The monthly minimum, mean and maximum recorded flows in m³/s of the river and its tributaries- including the mean annual flow, average flow, annual variation of the flow in the river - minimum dry season flow, base flow
- High flood pattern of the project area including flood levels (for 10, 25, 50, 100 years return periods)
- Seasonal fluctuations in area and volume of wetlands, lakes and reservoirs
- Delineation of watersheds and water drainage pattern in influence using satellite imageries (map)
- Runoff characteristics of watersheds
- Inventories of consumptive and non-consumptive use of water

○ Groundwater

Provide a map and identify and describe aquifers and underground waters adjacent to the project, indicating the depth of the water table along with trend data:

- Water table levels (dry and rainy season)

- Flow regime
 - Flow direction
 - Influences of geologic structures (faults, contacts, bedrock fracturing, etc) and surface water bodies
 - Location and characteristics of all existing springs and wells in influence (on topographic map)
 - Flow/yield data for each spring and well (including water levels in wells)
 - Depth and construction information for each well
 - Existing uses by type and volume
 - Capacity available
 - Groundwater recharge data if available
 - **Existing water quality data**
 - Locations of all water quality monitoring stations in and around the project area (with direction and distance from the site)
 - Water quality data for each station for those parameters likely to be affected by project construction, operation or maintenance
 - Physical, chemical and biological water quality characteristics, including water temperature and dissolved oxygen concentrations
- Supplemental sampling and analysis (if existing data is not adequate to characterize water quality)***
- Summary of Surface water and groundwater standards that apply to the project during the construction phase
 - Standards for current uses (in the absence of such standards, identify a set of benchmarks used in the analysis)

5.4 Sediment Quality of Dredge Material- Site Identified for Dredging

- Where dredging is identified the consultant will be required to conduct the necessary field sampling and laboratory testing through a competent authority hired in order to perform this exercise.
- The report should be Annexed to the ESIA and a summary presented in the main body.

5.5 Air and Climate

Baseline information for air resources shall include at a minimum the following:

- Climate and meteorology of the project area (Source of data (meteorological station(s) from which climatological data have been obtained must be provided)
- Temperature variations
- Relative humidity
- Rainfall (total precipitation, rainfall intensity, and duration by month)
- Typical wind direction and speed
- Risk of high impact flooding, storms, storm surges, hurricane levels, tropical storms frequency and seasonality

5.6 Noise and Vibration

Present a description of the noise and vibration levels for sensitive receptors near where noise generating activities of the project may occur. The ESIA shall include:

- Location of where monitoring was conducted via use of a map, with sensitive receptors clearly identified
- Daytime and night time noise levels (measured in decibels)
- Inventory of existing noise sources

5.7 Aesthetic and Visual Resources

- Photos presenting baseline panoramic views of the project sites from potential viewpoints
- View sheds or other aesthetic or landscape resources that may exist along the project area
- Existing sources of light contamination

Biological Environment

The ESIA shall provide detailed information on the location and condition of ecosystems in and around the project area in the form of narrative, maps and tables, and indicate proximity to sensitive habitats such as Wildlife Reserves National Parks, Sanctuaries, Wetlands, Mangroves, Forest Reserves, Wildlife Corridors, including the following:

5.7 Aquatic and Terrestrial Vegetation/Flora

A mapping of aquatic, terrestrial and wetland habitats project area and areas affected by the project (e.g., project site and areas around, including tributaries and any ancillary infrastructure)

Species and structure (conservation status (endemic, endemic, rare, threatened, tec.) abundance, density, status, plant communities, presence of invasive species, etc.)

5.8 Aquatic and Terrestrial Wildlife/Fauna

- Fish and Aquatic Fauna
 - Identification of fish, mussel, macroinvertebrate and other aquatic species
 - Spatial and temporal distribution
 - Species life stage composition
 - Standing crop
 - Age and growth data
 - Spawning run timing
 - Extent and location of spawning, rearing, feeding habitat
 - Information on endemic, endangered, rare, migratory and commercially important flora and fauna within these habitats should be given.
- Terrestrial Fauna
 - Identify Species (including status, i.e., endemic, migratory, exotic, endangered, threatened, keystone, etc.)
 - Extent and location of breeding, rearing, feeding habitat
 - Information on endangered, rare, migratory and commercially important and fauna within these habitats should be given.
 - Identify any observed sites of breeding/ roosting areas/migratory corridors(seasonal) where applicable (It is recommended for these sites to be mapped via use of GPS)
 - Identify important areas of faunal use (roosts, clay licks, etc.), access paths to the river etc. (It is recommended for these sites to be mapped via use of GPS)

5.9 Ecosystems: Terrestrial, Wetlands, Aquatic, Marine

Much if not all that may be needed to address the environmental setting for terrestrial, wetlands, aquatic and/or marine ecosystems may have been covered in Sections 5.7 and 5.8. This section is not intended to duplicate that information; rather, it should integrate the information to ensure that the structure and function, including key ecosystem services provided, of each ecosystem is adequately presented.

5.10 Endangered or Threatened Species and Habitats

Sections 5.7 and 5.8 should identify all species in the project area. This section should highlight all endangered and threatened species and critical habitat that potentially occur near the project.

5.11 Key Protected Areas

Identify on maps the specific locations and boundaries of relevant national parks, sanctuaries, reserves, etc., as well as any areas proposed for protection. Provide a brief narrative description of each area.

Social-Economic-Cultural Environment²

5.12 Socio-Economic Conditions

² As per the requisites of the terms of the Central Environmental Authority (CEA), as mandated by the National Environmental Act (NEA) of Sri Lanka, all EAs need to include an evaluation of social impacts for project areas in addition to environmental aspects.

Identify nearby human settlements including the following information for each settlement:

- Demographic information
 - Present and projected population (size, gender and age distribution);
 - Cultural characteristics (religion, ethnic composition, languages spoken, etc.);
 - Population migration over the last few years,
 - Literacy rates and levels of education;
 - Change in population (temporary or permanent),
 - Change in character of community, change in religious, ethnic or cultural makeup of community.
- Economic activities and patterns (Employers, Employment and incomes)
- Distribution of income, goods and services;
- Skills, services and goods availability in the communities applicable to the project works

5.13 Poverty and Social Risks

- Level of poverty and vulnerability
- Social risks such as prevalence of sexual and gender-based violence (SGBV),
- High-risk behaviors among youth, child and forced labor in the construction sector,
- Community cohesiveness

5.14 Indigenous People, Ethnic/Other Minorities, Vulnerable/Disadvantaged Groups

Identify Marginalized and vulnerable groups living in settlements along the road corridor as well as project area. Social data should be disaggregated accordingly to the extent it is technically and financially feasible.

- Indigenous communities, ethnic or other minority groups or other traditional cultural groups, if any.
- HHs with members with disabilities.
- Female headed households
- Individuals LGBTQ community
- Families with chronically ill members

5.15 Infrastructure and Development Activities

For each human settlement identified in subsection 5.12, describe the infrastructure in or serving the settlement, including the following information:

- Buildings and building use (provide numbers of buildings and brief descriptions of the nature of buildings)
- Transportation infrastructure
- Roads – Location and condition of all existing roads in the project area that may be used by the project purposes, including transportation of material.
 - Condition of the roads
 - Erosion and sediment control
 - Traffic capacity, patterns and densities
- Locations of electrical and telecommunication transmission lines (if applicable)
- Water supply and water uses (including current distribution of water resources, control over allocation of resource use rights);
- Community structures
- Community organizations and social networks;
- Planned development activities;
- Recreational activities/infrastructure

5.16 Cultural, Archeological, Ceremonial and Historic and Resources

Identify all cultural, archaeological, ceremonial and historic resources within the area of influence, including the following information:

Data and maps relating to archeological, cultural, ceremonial, and historic sites in the direct vicinity of the project

- Historical, archeological and cultural resources
- Cultural sites (tangible and intangible);
- Present land use/ownership;
- Planned development activities;
- Community structure; present and projected employment by industrial category;
- Indigenous peoples, customs and aspirations;
- Community organizations

5.17 Land Use

Describe actual and potential land use showing location, size and proximity within and surrounding the project area, including land use maps, and to extent possible, integrated into one map.

- Land use (including current crops and cropping patterns; fisheries and farm outputs and inputs; transportation; land tenure and land titling, etc);
- Population centers, including information and locations of Schools, Temples, Mosques, Churches, religious centers, cemeteries and other key community infrastructure such as public buildings, Housing (including housing density), Commercial areas
- Agricultural lands
- Forested lands
- Protected areas (including but not limited to)
 - Wildlife refuges- including roosting areas
 - Wetlands and mangroves
 - Other environmentally sensitive areas if identified
- Recreation areas- boat docks, bathing and washing points
- Culturally sensitive areas
- Flood plains and other water bodies
- Coastal zones
- Other land uses as appropriate

5.18 Public Health and Safety

- Public Health and Safety
- Diseases in the project area (including the sources of data and the methodology used to collect and analyze the data)
- Presence of HIV/AIDS and other sexually transmitted diseases;
- Level of emergency services and access to clinics, doctors and hospitals
- Existing practice for assessment of occupational health

6 Assessment of Impacts

The ESIA shall provide information on potential impacts (direct, indirect and cumulative) and the magnitude and frequency of potential impacts on physical, biological, social-economic-cultural resources resulting from construction, operation and closure of the proposed project and alternatives. The assessment shall use standardized predictive methods, such as models, to determine the specific range of impacts on environmental and socio-economic resources.

The ESIA shall identify which impacts are significant and the criteria used to make this judgment. Critical data input from project description and environmental setting analysis projecting the conditions in the environmental setting in the absence of the proposed project shall be used as the baseline upon which potential impacts are forecast.

The ESIA shall also identify sources of data used in the analysis and the uncertainties associated with the outputs of each method used.

Physical Impacts

6.1 Geologic Resources and Hazards

Potential impacts to geologic resources and potential effects on project structures shall be described including but not limited to the following:

- Geologic hazards and potential effects on project structures
- Changes in topography and drainage patterns
- Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context.

6.2 Soil Resources

Potential impacts to soil resources shall be described. The analysis shall include, but not be limited to the following:

- Soil quality
- Contamination
- Potential risk of Salinization due to changes in river topography
- Erosion, slope alteration, vegetation removal and drainage patterns
- Sediment accumulation and transport
- Sediment and hazardous waste removal and disposal
- Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.3 Water Resources

Potential impacts to surface water and groundwater shall be described. The analysis shall include but not be limited to the following:

- Geomorphology
 - Location of all streams and wetlands being affected
 - Modification/diversion in the existing drainage pattern
 - Bank erosion (surface water discharges, stream crossings and dredging)
 - Potential for increased flash flooding
- Quantity
 - Impact of water use on surface water and groundwater, including specific
 - Model results
 - Water table levels
 - Well production
 - Spring and stream flows
- Quality
 - Runoff, erosion and sedimentation from project associated activities
 - Sources
 - Receiving waters
 - Concentrations
 - Physical parameters
 - Chemical parameters
 - Biological parameters
- Description of impact from wastewater discharges
- Chemical contamination from herbicides used for any vegetative maintenance during operation (fertilizers and pesticides)
- Likelihood of spills and accidents during construction (Chemical, hazardous waste and fuel spills)
- Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.4 Air and Climate

Potential impacts to air resources shall be described including but not limited to the following:

6.4.1 Impacts on ambient air quality

- Sources (e.g., windblown dust, fixed and mobile equipment)
- Concentrations
- Receptors (e.g., communities, schools, soils, water bodies, ecosystems)
- Greenhouse gas generation
- Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.5 Noise and Vibration

Potential impacts from noise shall be described including but not limited to the following:

- Potential noise levels at different representative sites in the project area and in communities near the project area
- Potential vibration due to blasting and movement of heavy equipment, and related damage to materials and structures
- Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.6 Aesthetic and Visual Resources

Potential impacts to Aesthetic Resources, including light pollution, shall be described including but not

limited to the following:

- Impacts on visual resources and landscapes
- Increases in light contamination
- Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

Biological Impacts

Potential impacts to biological resources shall be described and quantified including but not limited to the following:

6.7 Aquatic and Terrestrial Vegetation/Flora and Associated Ecosystems

Describe and quantify alterations in vegetative cover due to:

- Deforestation or wetlands destruction
- Other vegetative type conversions during land clearance
- Direct removal of trees
- Potential spread of invasive species of flora if any
- Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.8 Aquatic and Terrestrial Wildlife/Fauna and Associated Ecosystems

Describe and quantify alterations in aquatic and terrestrial wildlife populations due to:

6.8.1 Fish and Aquatic Resources

- Loss in habitat (e.g., spawning, rearing, juvenile, or adult habitats) from changes in water quality due to sedimentation and use of chemicals during construction
- Disturbance of aquatic resources during construction, operations, or maintenance activities, including equipment noise, erosion and sedimentation, vehicular movements, or blasting

6.8.2 Wildlife Resources

- Loss of habitat, migratory routes/corridors, and breeding areas due to changes in vegetative cover/wetlands loss

- Disturbance of habitat, migratory routes/corridors and breeding areas due to project construction, operation, and maintenance associated with the project (e.g., noise, vibration, illumination, vehicular movement)
- Loss, loss of access or contamination of drinking water for wildlife species
- Poisoning (e.g., direct contact with toxic waste/substances)
- Animals attracted to garbage and food waste generated at construction camps, restaurants and on-site employee housing

6.8.3 Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.9 Endangered or Threatened Species or Habitats

Describe and quantify impacts to endangered or threatened species or habitats

- Biodiversity
- Individual species (with special emphasis on endemic, rare, threatened and endangered species)
- Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.10 Protected Areas

- Any impacts to protected areas, including indirect impacts such as potential threats from resource recovery such as construction material extraction, potential encroachments etc.

6.11 Social-Economic-Cultural Environment Impacts []

The ESIA shall assess potential positive and negative impacts to social-economic-cultural resources including but not limited to the following:

6.11.1 Land and livelihoods related impacts

- Identify and map nearby human settlements in the proposed road corridor, paying special attention to communities or people potentially affected by the sub-project, including road widening, if any.
- Displacement and relocation of current settlements, residents or community [disaggregated according to temporary/permanent, full/partial]
- Displacement or disruption of people's livelihoods (e.g., fishing, hunting, grazing, farming, forestry and tourism) [disaggregated according to temporary/permanent, full/partial]

6.11.2 Land Use

- Temporary and permanent changes in land use by both area and location
- Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context
- Social infrastructure (schools, cemeteries, churches, other public buildings, communication systems and housing)
- Increased need for additional infrastructure
- Alterations to social infrastructure
- Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.11.3 Economic impacts

- Employment opportunities
 - Direct Employment at the project
 - Indirect Employment generated by project activities
 - Increased purchases from local businesses
 - Other economic activities stimulated in the community as a result of the project

- Potential impacts on level of poverty and vulnerability

6.11.4 Social impacts

- Social risks such as prevalence of sexual and gender-based violence (SGBV),
- High-risk behaviors among youth, child and forced labor in the construction sector
- Impact on community cohesiveness
- Reduction in quality of life for residents from visual and noise impacts [disaggregated according to temporary/permanent, full/partial]
- Change in crime rate (drugs, alcohol, prostitution, etc.)

6.11.5 Impacts on Indigenous People, Ethnic/Other Minorities and Vulnerable Groups

- Indigenous communities, ethnic or other minority groups or other traditional cultural groups, if any.
- HHs with members with disabilities.
- Female headed households
- Individuals LGBTQ community
- Families with chronically ill members

6.11.6 Impacts on public health

- Identification of physical risks and safety aspects
- Water-related vector diseases (malaria, dengue, etc.)
- Potential for diseases due to exposure to dust and other project related activities such as handling of explosives, solvents, petroleum products, etc.

6.11.8 Impacts on worker health and safety

- Identification of hazardous jobs and number of workers exposed with duration of exposure
- Occupational diseases due to exposure to dust and other project related activities such as handling of explosives, solvents, petroleum products, etc.
- Identification of physical risks and safety aspects, potential risks
- Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context.

6.12 Infrastructure

For each settlement potentially affected, describe the infrastructure such as access roads linking main road corridor and traffic patterns on existing roads. Public health, education infrastructure as appropriate if it is to be used or adversely affected:

6.12.1 Transportation infrastructure

This section of the ESIA addresses impacts of transportation and traffic patterns on existing roads. The impacts of new and existing roads on water quality, biological resources and land use should be addressed in those respective sections. The ESIA shall assess potential impacts to transportation systems including but not limited to the following:

Potential changes to traffic patterns, densities, and traffic safety issues in area affected by project

- A determination of vehicular traffic density in the project area (before, during, and after the proposed activities)
- Potential for traffic accidents
- Congestion
- Noise
- Potential impacts to previously inaccessible areas from improvement of roads

- Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context.
- Public finance requirements – will more infrastructure need to be built and maintained to meet the demands of increased population in the areas of public education and public service (water, sanitation, roads, emergency services, etc.)

6.13 Cultural, Archeological, Ceremonial and Historic and Resources

- Destruction during construction
- Damage and alteration
- Removal from historic location
- Introduction of visual or audible elements that diminish integrity
- Neglect that causes deterioration
- Loss of access to traditional use areas
- Damage to resources due to increased visitation promoted by the project
- Impacts to previously inaccessible resources from development/improvement of roads
- Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

6.11.7 Legacy issues related to land use, property rights etc.

The documents and reports contain useful baseline data, but there is a need to identify what additional data and any data gaps may have become available since those studies were completed and document any relevant changes to include them in this ESIA (e.g. such targeted information may include population dynamics, archeological finds, etc.). Should any additional land be required for the Project it is particularly important that this is accurately identified. In such cases, it would be essential to identify any involuntary relocation of people and any individuals who may have livelihoods affected by the Project. The numbers, locations, and socio-economic conditions of affected people, if any, should be fully documented in order to assist Sri Lankan authorities in meeting acceptable international standards for compensation, which would be equivalent to objectives of ESS5 on Involuntary Resettlement.

7 Mitigation and Monitoring Measures

This section of the ESIA must include measures designed to mitigate potential adverse impacts to physical, biological and social-economic-cultural resources from construction, operation and closure of the proposed project and alternatives. These shall include measures to avoid and prevent, and if needed, to reduce or minimize adverse impacts. The project proponent must include measures considered to be “best practices” in the design of all alternatives.

In the Environmental and Social Management Plan section, Section 8, proposed mitigation shall be described in auditable terms and at a level of detail sufficient to demonstrate its effectiveness in addressing the concern or performance criterion, including its anticipated level of effectiveness and/or measurable performance, and design specifications. The monitoring plan must include monitoring throughout the life of the project for each potential mitigation to confirm the effectiveness of the measure and support contingency plans to provide assurance that the project, at the site preparation, construction, operation, expansion, and closure stages will meet applicable environmental requirements/standards by law, World Bank Environmental and Social safeguard Policies and the World Bank Group General Environmental and Health Safety Guidelines, and fall within the limits of impacts deemed acceptable upon approval of the ESIA. Some important items to address in the mitigation plan and associated monitoring plans include, but are not limited to the following:

Physical Impacts

7.1 Geologic Resources and Hazards

- Pre-excavation, onsite geological inspection and geotechnical study protocols to determine slope stability and landslide risks (preferably from an authorized body such as the National Building Research Organization (NBRO) should be summarized, with the main report Annexed)
- Slopes built and maintained to avoid landslides and favor revegetation and soils formation
- Slope stabilization by constructing retaining walls, using vegetation, geotextile membranes, or other mechanical methods Blasting Plan, if applicable (summary of relevant measures with full document in Annex)
- Use of signage to mark areas where slopes are not stable as a preventive measure in the event of a landslide Mitigation measures unique to specific alternatives
- Safe Blasting Plan for any obstructions along the river and tributaries, if applicable (summary of relevant measures with full document in Annex)
- Plan for management of dredge material when dredging is undertaken, including required analysis of quality of dredge material, quantity and requirements for safe disposal including suggestion of disposal sites (summary of relevant measures with full document in Annex)
- Decommissioning Plan for removal of existing buildings and utilities in line with international best practice and the WB Guidelines.

7.2 Soil Resources

- Erosion and sedimentation control measures (temporary and permanent) including when each will be installed or implemented, how often it will be checked and the process for and timing of removal of temporary measures
- Spoil and disposal measures
- Best management practices to minimize soil disturbance
- Soil Rehabilitation Plan-if needed (summary of relevant measures as per the World Bank decommissioning guidelines, with full document in Annex)
- Restrictions on discharge of pollutants to soil
- Mitigation measures unique to specific alternatives

7.3 Water Resources

7.3.1 Quality

- Water Quality Management Plan (summary of relevant measures with full document in Annex)
 - Sewage and domestic wastewater
 - Nonpoint sources – runoff, erosion and sediment control prevention measures
- Spill Prevention and Containment Plan (summary of relevant measures with full document in Annex)
- Solid Waste Management Plan (summary of relevant measures with full document in Annex)
- Hazardous Waste Management Plan (summary of relevant measures with full document in Annex)
- Transport system construction and maintenance to avoid erosion and sedimentation including:
 - Elevation or rerouting
 - Design for proper run-off control and catchment
 - Provision of culverts to allow flow that might otherwise be impeded by roadways or other rights of way
 - Appropriate traffic control
- Off-road vehicle uses restrictions
- Waste minimization practices
- Dredge Material Management
 - Depending on the degree of toxicity, disposal options should be decided. In the case of a positive determination, disposal should be recommended in the form of Dredge Material Disposal Plan (DMDP).
 - Classification of the sediment according to the level of contamination detected and quantification of the dredged material would be pre-requisites to preparing this plan.

- The plan should facilitate in deducing the suitability of the sediments for different alternative disposal/use options which are also to be presented
- As Sri Lanka does not have any standards or regulations to control disposal of dredged material, international best practice guidelines such as the following guidelines developed by the United States Environmental Protection Agency (USEPA), given below, can be used as useful references.
 - Evaluation of dredged material proposed for discharge in Waters of the U. S. – Testing Manual, Feb. 1998, EPA-823-B-98-004 (can be downloaded from www.epa.gov)
 - Evaluating environmental effects of dredged material management alternatives – A technical framework, revised in May 2004, EPA842-B-92-008 (can be downloaded from www.epa.g)

7.3.2 Quantity

- Water conservation practices
- Mitigation measures unique to specific alternatives

7.4 Air and Climate

- Dust control measures
- Energy conservation measures
- Emissions control measures
 - Emissions reduction equipment
 - Maintenance and inspection of equipment and vehicles using combustion engines to reduce emissions
- Spill Prevention and Containment Plan (summary of relevant measures with full document in Annex)

7.5 Noise and Vibration

- Noise control measures
 - Noise reduction technologies (suppression equipment, sound-absorbing structures, vibration dampening devices, berms, noise barriers, etc.)
 - Rerouting of traffic and other infrastructure related activities to minimize impacts of noise and vibration
 - Time of day limitations on blasting and movement of heavy equipment when near houses not being operated during evening hours
- Safe Blasting Plan, if applicable (summary of relevant measures with full document in Annex)
- Crack Survey and documentation of structural conditions of existing buildings in project area, especially those in proximity to identified to project implementation sites, burrow sites, quarry sites.
- Mitigation measures unique to specific alternatives

7.6 Aesthetic Resources

- Relocation of project to another site
- Design recommendations of placement of project structures on sites that may impact views
- Design recommendations for permissible height and location of structures blocking view or producing light pollution
- Mitigation measures unique to specific alternatives

Biological Impacts

7.7 Aquatic and Terrestrial Vegetation/Flora and Associated Ecosystems

- Relocation of sensitive, threatened or endangered species if applicable (summary of relevant measures with inclusion in a full Flora and Fauna Relocation plan, with potential relocation sites identified and proposed mechanisms for relocation, presented in an Annex)

- Measures to compensate for loss or damage of forests, wetlands or other critical ecosystems, including establishment of any areas for offsets that may be required (All trees to be removed for any structural purposes should be counted and documented with, compensatory tree planting will need to meet the 1:2 minimum standard)
- Restoration/Rehabilitation Plan for disturbed areas (summary of relevant measures with full document in Annex)
- Control of alien invasive weeds
- Mitigation measures unique to specific alternative

7.8 Aquatic and Terrestrial Wildlife/Fauna and Associated Ecosystems

7.8.1 Fish and Aquatic Resources

- Modification recommendations to structures and locations and timing of activities to avoid critical ecosystems, migratory routes and breeding areas
- Scheduling of construction to avoid critical or important fish life history periods (e.g., spawning)
- Relocation of sensitive, threatened or endangered species if applicable (summary of relevant measures with inclusion in a full Flora and Fauna Relocation plan, with potential relocation sites identified and proposed mechanisms for relocation, presented in an Annex)
- Mitigation measures unique to specific alternatives

7.8.2 Wildlife Resources

- Modification recommendations to locations of structures and locations and timing of activities to avoid critical ecosystems, migratory routes and breeding areas
- Scheduling construction to avoid critical or important wildlife history periods (e.g., breeding, nesting, migratory seasons)
- Relocation of sensitive, threatened or endangered species if applicable (summary of relevant measures with inclusion in a full Flora and Fauna Relocation plan, with potential relocation sites identified and proposed mechanisms for relocation, presented in an Annex)
- Mitigation measures unique to specific alternatives

7.9 Socio-Economic Impacts

- In cases of loss of land, livelihoods and other such impacts, mitigation measures, plans and procedures that needs to be followed are included in Resettlement Policy Framework, prepared separately for the project.
- Stakeholder Engagement Plan to consult, receive feedback from various stakeholders and take corrective actions, if required, to address environment and social risks
- Screening for risks relating to gender-based violence (GBV), Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH), and develop a comprehensive GBV/SEA/SH Risks Management Plan, if relevant. Among others, this will at the least include training and awareness session to RDA, other government agencies, community members, local contractors, on the issue of sexual harassment and gender-based violence (GBV) - particularly on prevention and management of complaints in road development activities.

7.10 Labor, Occupational Health and Safety, Community Safety

- A separate labor management procedure (LMP) is being prepared to address labor related issues under the project
- Development of a “Code of Conduct” (with associated training program) for workers to show respect to the local populations and social rules
- Basic conditions for the establishment, management and monitoring of health and safety of labor camps and/or worker accommodations.
- Community Health and Safety Plan to protect local population from potential nuisances, safety and health problems caused by the project implementation and operation (summary of relevant

measures with full document in Annex). The Plan should recommend a Grievance Redressal Mechanism that will facilitate the handling and documentation of community grievances throughout the project life cycle.

- Development of an Occupational Health, Industrial Safety and Accidents Prevention Plan with appropriate accident prevention program, reporting and periodic review (summary of relevant measures with full document in Annex) including provision of routine training and testing, and proper safety equipment such as hearing protection, hardhats, steel-toed shoes, safety railings and fall arrestors and periodic review (summary of relevant measures with full document in Annex)

7.10 Infrastructure

7.10.1 Transportation infrastructure

This section of the ESIA should address mitigation measures for transportation and traffic patterns on existing infrastructure during project implementation.

- Traffic Management Plan for management of influx of construction related vehicular traffic on existing transportation infrastructure (summary of relevant measures with full document in Annex). The Traffic Management Plan should include, but not limited to the following information.
 - Permissible times for transport of construction material to and from project sites during the construction phase.
 - Placement of traffic signals
 - Establishing, posting and enforcing speed limits for the vehicles that transport construction material
 - Training requirements for employees, contractors and subcontractors on measures to reduce or avoid potential accidents
 - Hiring and training security personnel devoted exclusively to preventing accidents in the access road and controlling the speed of the vehicles transporting construction material.
- Mitigation of impacts of new and existing transportation infrastructure on water quality and biological resources and land use should be addressed in those respective sections.

7.10.2 Communications infrastructure

- For all common utilities identified to be affected such as: telephone cables, electric cables, electric poles, water pipelines, public water taps, etc. the ESIA should detail a course of action for relocation where required.
- Propose a mechanism for ensuring community consensus and means of ensuring minimum impact to common utilities like telephone cable, electric cables, electric poles, water taps etc.
- List requisite clearances to be obtained from the concerned authorities prior to commencement of works during implementation.

7.11 Cultural, Archeological, Ceremonial and Historic and Resources

- Recommendations for modification of structures and activity locations to avoid significant archeological,
- cultural, ceremonial and historic sites
- If avoidance is not possible, propose appropriate resource recovery operations before disturbing the sites- these include removal and relocation and management of construction activities to ensure no damage where in-situ
- Propose examples of means of clearly delineating boundaries and post signs identifying existing archeological, cultural and historic sites where they are to be protected in-situ.
- Protocols for use during construction and operation stages for identifying and responding to Chance finds (archeological, cultural, ceremonial and historic sites not identified during the preliminary surveys)
- Mitigation measures unique to specific alternatives

8 Environmental and Social Management Plan (ESMP)

The ESIA shall include an Environmental and Social Management Plan to prevent, mitigate and monitor each impact identified in the ESIA. The ESMP should be presented in Matrix form, as per the guidance provided and will describe actions to be taken in sufficient detail to provide a basis for subsequent auditing of compliance with commitments made in the ESIA process including who is responsible, how and when it will be implemented, what will be done and what results will be achieved, why it is being done, and how to know whether it is effective in addressing the underlying concerns. The Environmental and Social Management Plan shall have the following elements:

8.1 Overview of Environmental and Social Management Plan Organization and Policy

- Describe the project management and how environmental management and organization relates to overall project responsibility.
- Describe the personnel and performance accountability system for design, operation, maintenance and
- closure for implementation of mitigation and monitoring measures
- Describe the environmental policy that will govern the Project throughout its implementation, including at least the objectives, scope, commitment to continuous improvement, control and environmental monitoring and good relationship with neighboring communities, as well as the commitment to internal controls such as compliance and environmental monitoring and routine audits
- Identify the entities responsible for the implementation of mitigation measures, in each phase

8.2 Project-wide ESMP including an implementation schedule.

*This ESMP will summarize and refer to measures stipulated in all sub-plans which are part and parcel of the Environmental and Social Management Plan as identified in **Section 7**.*

*The ESMP should cover all impact areas identified in **Section 6** and present mitigation measures presented in **Section 7**.*

Project Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Institutional Responsibilities (Implementation and Supervision)	Estimated Quantities Required and Material Specifications Recommended	Cost Estimates	Comments (e.g. secondary impacts)
Detailed design and planning Phase						
Pre-Construction Phase -Site Preparation						
Construction Phase						
Operation and Maintenance Phase						

8.3 Project-Wise Monitoring Plan

The monitoring plan will correspond to the ESMP and include but not limited to the short-term and long-term monitoring of resource condition, including but not limited to:

- Slope stability
- Water Quality Monitoring Program
 - Where, how and when monitoring shall be conducted

- Parameters to be monitored
- Monitoring frequencies
- Sampling and analytical protocols to be used
- Air Quality Monitoring Program
 - Where, how and when monitoring shall be conducted
 - The Parameters to be monitored
 - The monitoring frequencies
 - The sampling and analytical protocols to be used
- Noise and Vibration
- Short-term and long-term monitoring to ensure that the mitigation measures are functioning as predicted and that rehabilitation is working

*The requisite environmental standards that are to be met should be those stipulated in the **World Bank Group General Environmental Health and Safety Guidelines**. National standards may be adopted, where they are deemed more stringent to those presented in the afore mentioned Guidelines.*

Proposed Mitigation Measure	Parameters to be monitored	Location	Measurements (Incl. methods & equipment)	Frequency of Measurement	Responsibilities (Incl. review and reporting)	Cost (equipment & Individuals)
Detailed design and planning Phase						
Pre-Construction Phase						
Construction Phase						
Operation and Maintenance Phase						

8.4 Management of Other On- or Off-Site Environmental Pollution Control and Infrastructure
This section should address management of critical elements of pollution control and infrastructure that are not otherwise included in the mitigation plan because they were considered an essential part of the proposed project.

8.5 Summary of all Training Recommendations

Institutional Strengthening Activity	Position(s)	Scheduling	Responsibility(is)	Cost Estimates	
Training Activity	Participants	Types of Training	Content (modules, Etc.)	Scheduling	Cost Estimates

8.6 Contingency Plans

Contingency plans shall be prepared and described to address: a) failure to meet specific performance criteria established by law or necessary for the project to meet its commitments in the

ESIA and b) respond to natural and other risks previously identified and mitigated in the ESIA in the event reasonable and feasible mitigation measures to address the risks are inadequate.

- Performance-related Contingency Plans, indicating the steps that will be taken should monitoring indicate that:
 - Environmental standards are not being met
 - Impacts are greater than predicted
 - mitigation measures and/or rehabilitation are not performing as predicted
- Natural Disaster Risk Response Plan (assumes that risk identification and risk reduction have been addressed in other parts of the ESIA)
- Other Risks Response Plans (assumes that risk identification and risk reduction have been addressed in other parts of the ESIA)
- Contingency plans for maintaining service or reducing downtime in the event of accidents or natural catastrophes that disrupt project operation

10 Conclusion

This section shall specify the environmental and social acceptability of the project, taking into account the impacts and measures identified during the assessment process. It shall also identify any other conditions or external requirements for ensuring the success of the project.

11 Annexes

These shall be numbered and duly referenced in the text. Typical Annexes that are required include the following

11.1 Public Consultation

- Public consultation plan
- A summary of public outreach activities including: audience, number of persons, organizations involved, concerns raised, responses to comments
- Summary of response to comments
- Actual copies of written comments

11.2 Technical Supporting Documents

- Include maps, plans, charts and figures in the sequence mentioned in the ESIA document
- Zoning maps with resources and results of impacts
- Special Studies if relevant but not readily accessible
- Detailed materials on predictive tools/models and assumptions used for the assessment but too detailed for the body of the ESIA

11.3 All supplementary plans as per Sections 6 and 7 to ESMP

11.4 References

Submit a list of all references, (books, articles, technical reports and other information sources) cited in the various chapters of the ESIA study with full biographic references, and the following conventional procedures cited in the literature: author, year, title, source, number of pages, and city of publication or issuance.

C. Approach Overall Management and Coordination

The Consultant shall report to the Project Director (PD) of the IRCDP for the execution of the scope of services and deliver the outputs under the direct supervision of the Environmental Specialist (ES) and Social Specialist of the Project. A monthly meeting and briefing shall be required between the Consultant and the relevant staff and other GOSL stakeholders.

All required reports will be submitted to the PD and other appropriate GOSL authorities through the ES. The Consultant will coordinate closely with the PD and the ES as well as with the relevant government agencies in executing all aspects of this work and in doing so, will engage in active knowledge transfer methods and procedures for the relevant activities' planning and design for key stakeholders to be agreed upon at the beginning of the contract. This function, while not necessarily involving formal training sessions, is considered an important element of the Consultant's work. In addition, the Consultant will engage in the following:

- *Documentation.* The Consultant will establish and maintain a comprehensive inventory of all relevant documents and data collected. Any confidential material provided to the consultants will be returned in an organized fashion to the Ministry at the end of the contract.
- *Personnel.* The Consultant must provide and maintain all key personnel proposed. Any changes are subject to approvals from the contracting authority.
- *Logistics.* The Consultant will be responsible for all their logistical need in-country including workspace, office support, communications and transportation. The proposed work involves significant interrelated activities and subcontracting and consistent coordination with the Ministry. As such, there will be a need for general project administration and technical coordination including:
 - Project Supervision
 - Regular Progress Meetings and Reporting
 - Contract Management
 - Subcontracting Plan and Management
 - Scheduling and Logistics
 - Report Oversight, Quality Control and Coordination

All deliverables shall be submitted in electronic form and in hardcopy (3 copies each deliverable) in English. A copy of the Executive Summary of the final ESIA will be submitted in Sinhalese and Tamil. All hardcopy documents shall be two sided printed to conserve paper. All deliverables will be considered draft upon initial receipt. Draft documents will be reviewed and accepted or comments will be provided within two weeks of receipt. The Consultant shall appropriately address concerns and provide final deliverables within two weeks of receiving comments unless a mutually-agreed upon arrangement stipulates otherwise. It is anticipated that the duration of this contract will be for 8 months.

All reports will be reviewed by the PD, ES of the IRCDP and subject to World Bank clearance.

D. Composition of the Team

The Consultant will be required to identify Key Personnel and provide sufficient qualified personnel to ensure achievement of all objectives of these tasks.

It is expected that the following categories of key professional personnel will be required:

- Senior Specialists (minimum 15 years relevant experience)
- Specialists (minimum 10-15 years relevant experience)
- Mid- Level Specialists (minimum 5-10 years relevant experience)

The following minimum Key Personnel will be required for the contract:

- 1) Team Leader preferably with at least 15 years of international experience, hold graduate level qualifications of a Master's Degree at minimum, English language capacity and broad knowledge in environmental impact assessment and mitigation, long term impact planning and carrying capacity and/or limits of acceptable change methodologies, and institutional strengthening. The Team Leader should have significant experience in undertaking environmental assessments, reporting, capacity building, and environmental advisory services.

- 2) Co- Team Leader Senior Environmental Specialist, with at least 15 years of experience, hold graduate level qualifications of a Master's Degree at minimum having English language capacity and broad knowledge in Environmental Assessment and Management.
- 3) Key Team Members- The Consultant may combine specialists so long as the required expertise capabilities can be demonstrated via the qualifications and experience of the Specialists which should span over 10 years and minimum with a Master's Degree at minimum.
 - Environmental Management Specialist
 - Geologist
 - Ecologist
 - Botanist
 - Zoologist
 - Fresh Water Fish Specialist
 - Archeologist (Physical Cultural Resource Specialist)
 - Civil Engineer
 - Water Resources Specialist
 - Hydrologist (hydrogeologist)
 - Social Specialist
 - Community Specialist
 - Land acquisition and Resettlement specialist
 - Health and Safety Specialist
 - Geographical Information System Expert

In addition, the Consultant may need to solicit additional, short term international and local assistance from senior, mid-level and junior technical professionals with the following qualities, as needed:

The Consultant may wish to propose alternative staffing configurations to ensure achievement of all objectives. The availability of each proposed staff person must be identified as well as whether they are full-time staff persons of the Consultants firm or subcontractors or consultants.

E. Contents of the Technical Proposal

To ensure that appropriate information addressing the scope of work is provided in the offer, the consultant is requested to follow the instructions below.

- **Past Performance.** The Proposal must highlight (in no more than 8 pages, excluding project summary sheets in the annex) the Consultant's experiences that relate to the work described by the terms of reference – in Sri Lanka -- specifically to the tasks requested. Prior experience of carrying out similar assignments will be essential. This section may include the past performance of proposed subcontractors. The Consultant must include reference to specific agriculture, water resource, and natural resource projects. Specifically, the Consultant must demonstrate its overall and proven track record acting as environmental and social technical consultants including policy analysis and strategic environmental assessments in the support of large regional (in country) and national infrastructure and planning projects, including the names and descriptions of the specific project that the Consultant has worked on. An overview summary table of these experiences is required with sufficient details.
- **Management and Implementation Plan.** The Consultant must submit a management and implementation plan (no more than 10 pages excluding graphics and figures). The management plan will include a description of the Consultant's proposed management structure for implementing the work under the Contract; how it plans to ensure the quality of its performance in each activity; and its capability to quickly mobilize required experts to guide and execute the various assignments in this proposal. The implementation plan will contain a description of proposed activities and products for each task demonstrating a solid technical grasp of the requirements. The Consultant must identify Key Personnel in addition to the Project Manager and must provide a summary of specific experiences and

times for performance with each task. The consultant will provide a proposed work plan showing all tasks, schedule of activities, deliverables and dates for drafts, reviews and revisions.

- Capabilities and Experience of Staff. The Consultant is expected to assemble and describe (no more than 10 pages excluding graphs and figures) a team with a mix of senior and mid-level specialists. The anticipated duration of the assignment will be approximately eight months from notice to proceed. Knowledge of World Bank Group Environmental and Social Safeguard Policies in addition to local conditions, social and cultural practices, and Sri Lanka laws and regulations will be essential to accomplish these tasks. Prior experience conducting EIAs, IEEs, EAs, ESMPs, SEAs or sector based environmental assessments, social impact assessments and impact management tools, is highly desirable.
- The proposal must present a detailed time schedule/ work plan, presenting a timeline of all activities to be undertaken for completion of the task.

F. Outputs and Deliverables

G. Payment Schedule

Annex 1: List of Guidance and Supporting Documents to be Shared with this Terms of Reference

Annex 8: Format for Environmental and Social Management and Monitoring Plan (ESMMP)

Objective and Scope of Preparation of Environmental and Social Management and Monitoring Plan (ESMMP)

In order to ensure short and long term environmental impacts that would arise due to improvement and rehabilitation work (to be described in the first section based on the sub-project/activity), an ESMP plan will need to be developed as per the scope presented below and in accordance with the ESMF of the Project. Field level verification should be conducted prior to the preparation of the ESMPs:

1. *Identification of impacts and description of mitigation measures:* Firstly, Impacts arising out of the project activities need to be clearly identified. Secondly, feasible and cost effective measures to minimize impacts to acceptable levels should be specified with reference to each impact identified. Further, it should provide details on the conditions under which the mitigation measure should be implemented (ex; routine or in the event of contingencies) The ESMP also should distinguish between type of solution proposed (structural & nonstructural) and the phase in which it should become operable (design, construction and/or operational).
2. *Enhancement plans:* Positive impacts or opportunities arising out of the project need to be identified during the preparation of the check list and Environmental Assessment process where applicable. Some of these opportunities can be further developed to draw environmental and social benefits to the local area. The ESMP should identify such opportunities and develop a plan to systematically harness any such benefit.
3. *Monitoring programme:* In order to ensure that the proposed mitigation measures have the intended results and complies with national standards and donor requirements, an environmental performance monitoring programme should be included in the ESMP. The monitoring programme should give details of the following;
 - Monitoring indicators to be measured for evaluating the performance of each mitigation measure (for example national standards, engineering structures, extent of area replanted, etc).
 - Monitoring mechanisms and methodologies
 - Monitoring frequency
 - Monitoring locations
4. *Institutional arrangements:* Institutions/parties responsible for implementing mitigation measures and for monitoring their performance should be clearly identified. Where necessary, mechanisms for institutional co-ordination should be identified as often monitoring tends to involve more than one institution.
5. *Implementing schedules:* Timing, frequency and duration of mitigation measures with links to overall implementation schedule of the project should be specified.
6. *Reporting procedures:* Feedback mechanisms to inform the relevant parties on the progress and effectiveness of the mitigation measures and monitoring itself should be specified. Guidelines on the type of information wanted and the presentation of feedback information should also be highlighted.
7. *Cost estimates and sources of funds:* Implementation of mitigation measures mentioned in the ESMP will involve an initial investment cost as well as recurrent costs. The ESMP should include costs estimates for each measure and also identify sources of funding.
8. *Contract clauses:* This is an important section of the ESMP that would ensure recommendations carried in the ESMP will be translated into action on the ground. Contract documents will need to be incorporated with clauses directly linked to the implementation of mitigation measures. Mechanisms such as linking the payment schedules to implementation of the said clauses could be explored and implemented, as appropriate.

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

Activity	Environmental Impact	Proposed Mitigatory Action	Location	Frequency of Implementation/ Application	Implementation Responsibility	Monitoring Responsibility	Monitoring Frequency	Implementation Progress
Pre-Construction Phase								
Construction Phase								
Demobilization Phase								
Operational Phase								

Important to note the following when using this template:

The ESMP 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 ESMP Presentation

The ESMP should follow the same sequence as the tasks described above including the ESMP matrix provided above.

Consultant Qualifications

The design consultant team should include an expert with at least 8 years of experience preparing environmental management and monitoring plans for infrastructure construction, improvement and

rehabilitation, costing of mitigation measures and preparing contractor clauses necessary to capture ESMP implementation needs.

Reporting and feedback schedule

All submissions related to the assignment should be submitted to Project Management Unit, as hard copies and electronically. The duration of the consultancy is x months. During the final submission of the ESMP report, if changes requested during the draft report stage have not been incorporated in a satisfactory manner to the client and the World Bank, the consultant will be required to work further on the document until it is considered satisfactory.

Annex 9: Generic Environmental and Social Management Plan (ESMP) for Rehabilitation of Small to Medium Rural/Peri Urban Roads, Community infrastructure and Related facilities

(The following Generic ESMP identifies environmental and social impacts and mitigatory measures that need to be in place during the design and rehabilitation/construction of roads, agriculture facilities, community infrastructure, etc).

Activities and Associated Impacted	Protection and preventive measures	Mitigation cost	Responsibility	
			Implementation	Monitoring
PRE-CONSTRUCTION AND SITE PREPERATION				
1. Orientation for Contractor	<p>Contractor is required to be oriented with the requirement of ESMP and ESS requirement of WB. This Project will include;</p> <ul style="list-style-type: none"> ■ Obligations under contract to submit and preparation of Contractor Environmental and Social Management Plan ■ Regulatory compliance requirements ■ Grievance redress mechanism for both social and environmental issues ■ Various plans required under C-ESMP related to Occupations Health & safety, traffic and road safety, community health and safety, hazardous and non-hazardous waste, camp site management, emergency response, blasting, borrow area, muck disposal, restoration etc. ■ Labour management procedures ■ Community health & safety aspects at workplace and ■ Reporting requirements etc. under the project. ■ Stakeholder Engagement Plan <p>Contractor shall appoint one Environmental Officer, Social-cum-Community Liaison Officer and one Health and Safety Officer, all of whom shall solely be responsible for implementation of all ESMP provisions in close coordination/consultation with Environmental and Social Specialist in PMU for IRCDP</p>	Project cost Engineering Cost	Contractor, PMU/RDARDA Environment and Social Team	
2. Finalization of the Environmental Method Statement on ESMP implementation	<ul style="list-style-type: none"> ■ The Environmental Specialist and Social Specialist of the PMU and the Contractor will carry out joint field verification to ascertain any possibilities of saving trees, environmental and community resources, if these activities are to be taken up by the construction Contractor. ■ Contractor shall prepare detailed Environmental Method Statement (EMS) clearly stating the approach, actions and manner in which the ESMP is to be 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 the Project Engineers review. 	Engineering Cost	Contractor	RDA
3. Clearance of private structures (encroachments and squatters)	<ul style="list-style-type: none"> ■ Compensation and removal of private assets within the RoW, will be carried out in accordance to resettlement policy framework applicable to IRCDP and as per the Resettlement Action Plan prepared for this specific corridor. As per the RAP, encroachers & squatters will be paid due entitlements (compensation and assistances) and shifted out of RoW. 	ARAP/RAP/ESMP budget	PMU/RDA Environment Social Team	RDA and

4. Tree Removal	<ul style="list-style-type: none"> ■ Relocation of impacted CPRs shall be carried out as per the RPF provisions. ■ The engineer shall make every effort to avoid removal and/or destruction of trees, including those of religious, cultural and aesthetic significance via change of design and alignment. ■ The technical justification for the trees that will be required to be removed will be documented accordingly. ■ The following steps are to be followed if trees are identified for removal during the rehabilitation of the road. <ul style="list-style-type: none"> ○ Identify and document 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. ○ The 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. ○ Removed trees of economic value must be handed over to the Timber Corporation. 	Engineering Cost	Engineer/RDA E and S RDA Team
5. Removal of Large Trees and Trees of Community Value and Interest	<ul style="list-style-type: none"> ■ The Project Engineer Analysis of the tree health via a certified Arborist/Botanist (typically from the Peradeniya/Haggala Botanical Gardens or a local University or Department of Forests) ■ If the Arborist/Botanist confirms extremely poor tree health and potential risks due to uprooting and recommends removal it is only then they can proceed. Depending on the specific tree somethings they may also suggest measures such as pruning of Branches etc. ■ They should via design aim to incorporate it in to the design if health is good or protect it. Cutting or removal should be the option only of there is a strong reason for removal such a dead tree that can uproot and cause damage or if there is a major hindrance to the utilization of the site that cannot be avoided via design alterations. ■ Where requirement World Bank guidance be taken on options to use such as tree base guards of support structure as best practice where the risks of uprooting and minimal and the tree can be salvaged and protected to mitigate risks. (Please use the documents attached as guidance). ■ Consultation and agreement with stakeholders and community is key before any removal and must be conducted and recorded. 	Engineering Cost	Engineer/RDA E and S RDA Team
6. Relocation of Community Utilities and Common Property	<ul style="list-style-type: none"> ■ All community utilities and properties i.e., hand pumps, religious places such as temples, compound walls for school, govt. building will be build/relocated before construction starts in budget the project road. ■ The RDA will build/relocate these common property resources and community utilities before construction of road as per provisions listed in the RPF and ESMP ■ The RDA will coordinate with respective user agencies for shifting of utilities in a timely manner avoiding disruption to construction schedule. 	ARAP/RAP/ESMP PMU/RDA Environment Social Team	RDA and RDA
7. Labor and Labor Camps	<p>Contractor to be guided by the LMP prepared for the project, which among others will involve:</p> <ul style="list-style-type: none"> ■ The contractor shall give priority to hiring labor from the surrounding areas to avoid the need for labor camps. 	Engineering Cost	Contractor RDA

8. Material Sourcing	<ul style="list-style-type: none"> ■ If labor camps are required to house migrant workers, they shall be placed well away from settlements or sensitive receptors and boundaries and buffer zones of protected/forested areas. ■ The location, layout and basic facility provision of the labor camp shall be submitted to Engineer of the relevant managing department 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 a functional and hygienic manner 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. ■ Labor camp sites after use should be cleared and the site should be reinstated to previous condition at the close of the construction work. ■ The contractor is required to ensure that sand, aggregates and other quarry material is sourced from licensed sources. ■ The contractor is required to maintain the necessary licenses and environmental clearances for all borrow and quarry material they are sourcing –including soil , fine aggregate and coarse aggregate. ■ Sourcing of any material from protected areas and/or designated natural areas, including tank beds, are strictly prohibited. ■ If the contractor uses a non-commercial borrow/quarry sites, the sites should be remediated accordingly once material sourcing has been completed. ■ The contractor should submit in writing all the relevant numbers and relevant details of all pre-requisite licenses etc. and report of their status accordingly. 	Engineering Cost	Contractor	RDA
9. Water for Construction activities	<ul style="list-style-type: none"> ■ The contractor should arrange adequate supply of water for the project purpose throughout the construction period from a source agreed upon with the engineer. ■ Water may not be obtained for project purposes, including for labor camps, from public or community water supply schemes without a prior approval from the relevant authority. ■ Extraction of water from ground water or surface water bodies without the permission from Engineer and the relevant authority ■ Permission for the extraction of water should be obtained prior to the commencement of the project, from the relevant authority. 	Engineering Cost	Contractor	RDA
10 Work Site for construction materials	<ul style="list-style-type: none"> ■ The contractor shall identify an area to store construction materials and equipment at a site which should be approved by the engineer. ■ Contractor as per prevalent rules will carry out negotiations with the landowners for obtaining their consent for temporary use of lands for construction camp/ borrow areas/Debris Disposal Area etc. ■ Storage yards cannot be located in community areas, such as playgrounds, close to water ways, cause access issues to locals or forested areas that require clearing. ■ Parking, repairing vehicles, machinery and equipment shall be done stationed only at the work site and/or in any other designated areas by the engineer. 	Engineering Cost	Contractor	RDA

- The contractor should provide instruction and advice should be given to drivers and operators (both companies owned and hired) to park vehicles and store equipment at the work site or designated areas by the engineer.

11 Information Disclosure among Stakeholders

- Discussions should be conducted with the residents who reside along the corridor of the road; Engineering Cost Contractor/ PIA RDA
 - Residents have to be briefed of the project, purpose and design and outcomes via a documented community consultation session
 - This should be done immediately once the contractor is mobilized.
 - The contractor should take note of all impacts, especially access issues and safety hazards that will be of concern to the residents and take necessary measures as stipulated in the ESMP to mitigate them.
- The contractor will maintain a log of any grievances/complains and actions taken to resolve them.
- A copy of the ESMP should be available at all times at the project supervision office on site.

CONSTRUCTION PHASE

12 Clearing of road shoulders and Removal and Disposal of construction debris and excavated materials

- During site clearance activities, removal of vegetation and debris must be carried out swiftly and in well-planned manner. Engineering Cost Contractor RDA
- The contractor shall identify the sites for disposal of material cleared.
- Plants, shrubs and other vegetation cleared should not be burned on site.
- 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 nonresidential areas located in the downwind side
 - 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.

13 Protection of topsoil

- Topsoil 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, as directed by the engineer. Engineering Cost Contractor RDA
- 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
- Removed topsoil could be used as a productive soil when replanting trees and during turfing.

14 Protection of Ground Cover and Vegetation	<ul style="list-style-type: none"> ■ Stockpiled topsoil must be returned to cover the areas 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. ■ 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. ■ 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 	Engineering Cost	Contractor	RDA
15 Transport and Storage of construction materials	<ul style="list-style-type: none"> ■ Contractor should provide necessary instructions to drivers, operators and other construction workers not to destroy ground vegetation cover unnecessarily. ■ 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 as per those specified under mitigation measures to ■ 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. 	Engineering Cost	Contractor	RDA
16 Emission of Dust	<ul style="list-style-type: none"> ■ In order to minimize the levels of airborne dust all construction material/debris should be stored as per the instructions provided above. ■ 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. 	Engineering Cost	Contractor	RDA
10 Burrowing of Earth and Management of Self Operated Burrow Sites	<ul style="list-style-type: none"> ■ Dust masks should be provided to the laborers for the use at required times. ■ In the event the contractor will use a self-operated burrow site <ul style="list-style-type: none"> ○ 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. ○ 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 ○ 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. ○ 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. ○ 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. 	Engineering Cost	Contractor	RDA

11.Quarry Operations and Management of Self Operated Quarry Sites	<ul style="list-style-type: none"> ○ Contractor shall take all steps necessary to ensure the stability of slopes including those related to temporary works and burrow pits. 	Engineering Cost	Contractor	RDA
	<ul style="list-style-type: none"> ■ In the event the contractor manages a self-owned existing quarry sites available in the project area 			
	<ul style="list-style-type: none"> ■ They should be approved by GSMB with valid EPL and Industrial Mining Licenses; 			
	<ul style="list-style-type: none"> ■ Prior approval should be obtained from GSMB, CEA and local authorities such as Pradeshiya Sabha. 			
	<ul style="list-style-type: none"> ■ 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. 			
	<ul style="list-style-type: none"> ■ Quarry sites should not be established within protected sites identified under the FFPO and FO 			
	<ul style="list-style-type: none"> ■ It is recommended not to seek material from quarries that have ongoing disputes with community. 			
	<ul style="list-style-type: none"> ■ The maintenance and rehabilitation of the access roads in the event of damage by the contractors operations shall be a responsibility of the contractor. 			
	<ul style="list-style-type: none"> ■ Copies of all relevant licenses should be maintained by the contractor for review and documentation by the engineer 			
	12.Control of Sedimentation and Soil Erosion			
<ul style="list-style-type: none"> ■ Drainage paths associated with irrigation structures should be improved / erected to drain rainwater properly. 				
<ul style="list-style-type: none"> ■ Silt traps will be constructed to avoid siltation into the water ways. where necessary along the road corridor. 				
<ul style="list-style-type: none"> ■ To avoid siltation, drainage paths should not be directed to waterways and irrigation canals and they should be separated from such water bodies 				
<ul style="list-style-type: none"> ■ In Hilly terrain and areas with slopes 				
<ul style="list-style-type: none"> ○ Embankment slopes, slopes of cuts, etc. shall not be unduly exposed to erosive forces. 				
<ul style="list-style-type: none"> ○ These exposed slopes shall be graded and covered by grass or other suitable materials per the specifications. 				
<ul style="list-style-type: none"> ○ During the rainy season open cuts/slopes should be covered with fixed polythene sheeting to avoid excessive erosion. 				
<ul style="list-style-type: none"> ■ All fills, back fills and slopes should be compacted immediately to reach the specified degree of compaction and establishment of proper mulch. 				
<ul style="list-style-type: none"> ■ 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. 				
<ul style="list-style-type: none"> ■ 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. 				
<ul style="list-style-type: none"> ○ Typical measures include the use of berms, dikes sediment basins, fiber mats, mulches, grasses, slope drains and other devices. 				
<ul style="list-style-type: none"> ○ All sedimentation and pollution control work 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. 				

17 Noise from vehicles, machinery and equipment	<ul style="list-style-type: none"> ■ Noise generating work should be limited to daytime (6:00AM to 6:00PM). No work that generates excessive noise should be carried out during night hours where in close proximity to sensitive receptors (temples, schools, hospitals) and residential areas (from 6:00PM to 6:00AM on the following day). ■ All equipment and machinery should be operated at noise levels that do not exceed the permissible level of 75 dB (during construction) for the daytime. For all construction activities undertaken during the nighttime, 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. ■ Labor gangs should be warned to work with minimum noise. Strict labor supervision should be undertaken in this respect. Number of nighttime resident laborers should be minimized. 	Engineering Cost	Contractor	RDA
18 Vehicular noise pollution at residential / sensitive receptors	<ul style="list-style-type: none"> ■ 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 places of worship and households. ■ All possible and practical measures to control noise emissions during drilling shall be employed. ■ Contractor shall submit the list of high noise/vibration generating machinery & equipment to the engineer 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. 	Engineering Cost	Contractor	RDA
19 Impacts due to Vibration	<ul style="list-style-type: none"> ■ Contractor shall take appropriate action to ensure that construction works do not result in damage to adjacent properties due to vibration. ■ 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. ■ Contractor shall carry out monitoring at the nearest vibration sensitive receptor during blasting or when other equipment causing vibrations are used. ■ The contractor shall modify the method of construction until compliance with the criteria, if vibration levels exceed the relevant vibration criteria. ■ 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. 	Engineering Cost	Contractor	RDA

20 Pollution of Soil and Water via Fuel and Lubricants	<ul style="list-style-type: none"> ■ The contractor shall ensure that all construction vehicle parking locations, fuel/lubricants storage sites, vehicle, machinery and equipment maintenance and refueling sites shall be located away from rivers, at least 200m away, 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 of 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. 	Engineering Cost	Contractor	RDA
21 Accessibility	<ul style="list-style-type: none"> ■ The Contractor will provide safe and convenient passage for vehicles, pedestrians and livestock to and from roadsides and property accesses connecting the project road, providing temporary connecting road. ■ The Contractor will also ensure that the existing accesses will not be undertaken without providing adequate provisions. 			
22 Public Safety	<ul style="list-style-type: none"> ■ After completion of the work damaged accesses will be restored by the Contractor. ■ 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. ■ The construction corridor shall be barricaded at all time in a day with adequate marking, safety tape, flags, reflectors etc. for safety of individuals using the site daily basis. (Items such as parking cones, lights, tubular markers, orange and white strips and barricades of a luminous nature for night visibility shall be procured where deemed necessary) ■ Safety signboards shall be displayed at all necessary locations. ■ The contractor shall obtain a third-party insurance to compensate any damages, injuries caused to the public or laborers during the construction period. ■ All construction vehicles shall be operated by experienced and trained operators under supervision. ■ Basic onsite safety training shall be conducted for all laborers during the ESMP 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 shall be isolated using luminous safety tape and barricading structures surrounding the whole area. ■ Trenches shall 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 shall be removed within 24 hours from the site to ensure public safety. 	Engineering Cost	Contractor	RDA
23 Workers Orientation and Sensitization Training	<ul style="list-style-type: none"> ■ All work force of the Contractor shall be subjected to an orientation program, which familiarize them with work requirements, safety practices at work, safe distances to keep from earth moving equipment, first aid facilities, emergency response, on-site sanitation facilities and practices to be adopted, rights and privileges of workforce among others. 			

24 Safety of Workers	<ul style="list-style-type: none"> ■ Orientation shall also include concern for safety of public around operational areas as well, first aid facilities, emergency care and response shall be provided to all workforce. ■ Contractor shall comply with the requirements for safety of the workers as per the ILO Convention No. 62 and Safety & Health Regulations of the Factory Ordinance of Sri Lanka and the LMP prepared under the Project, to the extent that those are applicable to their contract. ■ The contractor shall supply all necessary safety measures at site. ■ 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, earmuffs, 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. ■ National and World Bank requirements (such as providing necessary personal protective equipment, taking temperature checks etc.) for prevention of the spread of COVID-19 virus will be adhered to. 	Engineering Cost Contractor	RDA
25 Prevention of accidents	<ul style="list-style-type: none"> ■ 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. 	Engineering Cost Contractor	RDA
26 Operation of labor camps	<ul style="list-style-type: none"> ■ The Contractor shall construct and maintain all labor 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/labor 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 	Engineering Cost Contractor	RDA

<p>27 Management of the spread of Covid-19 or handling sudden Pandemic outbreaks</p>	<ul style="list-style-type: none"> ■ The contractor shall firstly follow all measures outlined for pandemic management by the Government of Sri Lanka, Ministry of Health and Local Public Health officers and adhere to all relevant guidelines applicable. ■ The contractor will ensure that there is set number of workers as per the guidance as well as in labor camps to prevent overcrowding and to allow social distancing. Where necessary in labor camps additional provisioning will be made for spacing. ■ The contractor will at all times, ensure proper handwashing and sanitation facilities are available on the site. ■ Measures should be in place to undertake daily temperature checks of workforce and enable social distancing at the work site and interactions with communities should be minimized. Daily records of these checks should be maintained by the contractors site staff. ■ If a worker is diagnosed with symptoms related to the said pandemic the contractor will immediately inform the PHI and follow instructions laid out by the national health agencies. 	Engineering Cost	Contractor	RDA
<p>28 Prevention of Vector based Diseases</p>	<ul style="list-style-type: none"> ■ Contractor shall take necessary actions to prevent breeding of mosquitoes at places of work, labor camps, plus office and store buildings. Stagnation of water in all areas including gutters, used and empty cans, containers, 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 ■ Contractor shall keep all places of work, labor camps, plus office and store buildings clean devoid of garbage to prevent breeding of rats and other vectors such as flies. 	Engineering Cost	Contractor	RDA
<p>29 Gender issues including Gender base violence</p>	<ul style="list-style-type: none"> ■ Equal opportunity shall be ensured while requirement of project staff including contractors working force. The salary/ wages and other payments due on service provided to the project should not be classified on the Gender basis. ■ Integrate GBV into existing IEC strategy/materials, GRM, safety talks, tool box meeting and regular trainings. community consultation and identification of GBV focal points within the community. ■ Training of labours on occupational health and safety issues. ■ Mapping of Service Providers for GBV prevention and Response ■ Identify Hot Spots for GBV within the project include construction work and labour camps alongside local communities, schools, vocational training centers, liquor shops and, migrant labourers residing in rented accommodations within the villages. ■ These areas need to be clearly identified and closely monitored throughout the project cycle. ■ The sanitary facilities in sites and labour camps shall be designed with consideration of suitable location, comfortability for female users and safe access. ■ Institutional arrangement should be adopted to monitor and taking action against the Sexual harassment can be happened at the site to the workers and general public. The confidential reporting mechanism for sexual harassment shall be incorporated into the Grievance readdress Mechanism of the Project. 	Engineering Cost	Contractor	RDA
<p>30 Issues due to labor influx</p>	<ul style="list-style-type: none"> ■ Overcrowded or camp-based living conditions can significantly alter existing levels of communicable diseases including respiratory problems, diarrheal and vector-borne diseases and tuberculosis, which also increases the risks of disease being introduced and spreading 	Engineering Cost	Contractor	RDA

	through host communities. Priority should be given for workers who are inhabited in area to reduce the influx of exotic population.			
	<ul style="list-style-type: none"> ■ Adequate and comfortable accommodation and hygienic service facility should be provided to Minimize the health risk of spreading disease ■ Awareness program on HIV and other venereal diseases should be conducted for all the workers engaged in construction activities ■ Avoid or reduce labour influx where possible. Explore possibility of introducing a requirement to hire local labour (at least a percentage) by the contractor. This should be done through the Community Based Organizations (CBOs) in the area that will be affected by the project interventions. ■ Contractors to implement robust measures to prevent sexual harassment, gender-based violence (GBV) ■ Training of workforce – on unacceptable conduct ■ Informing workers about national laws ■ Worker Code of Conduct as part of the employment contract ■ Introduce sanctions for non-compliance (e.g., termination) ■ Cooperation with law enforcement agencies 			
31 Traffic Management	<ul style="list-style-type: none"> ■ Contractor shall develop a traffic management plan to minimize inconvenience to road users as well as prevent road accidents and implement it. ■ Road signs and trained flagmen should be used to divert traffic as per the required traffic management measures. ■ Clear instructions should be given if detours are used. ■ Also, any pits should be enclosed to prevent pedestrians or vehicles falling into them ■ Improvement of the road surface and width will result in an increase of both the number of vehicles and the vehicle operating speeds. ■ Therefore, after the construction is completed the contractor should erect relevant road signs and road markings to guide the drivers to ensure the safety of the vehicles and pedestrians 	Engineering Cost	Contractor	RDA
32 Loss of Access due to construction	<ul style="list-style-type: none"> ■ Temporary access will be provided when permanent access is blocked for construction. ■ When construction work is in progress in one side, the other side will be opened for traffic & properly ■ At the end of each day, debris that blocked access path will be cleared away under the supervision of a supervisor. 	Engineering Cost	Contractor	RDA
33 Protection of Physical Cultural Resources (PCRs) close to the Site.	<ul style="list-style-type: none"> ■ If any physical cultural resources are identified along the project trace the contractor will ensure that protective fencing as agreed with the community and or head of the physical cultural resource (ie temple, mosque, place of worship, grave site, monument, statue, tree or any site designated of importance by the community) is established to avoid any impacts during the civil works. ■ If the site is within 5 meters of the proposed road trace the contractor shall conduct and document a crack survey of the site prior to construction to ensure that no damage is caused due to vibrations associated with the civil works and will take all requisite measures to ensure so. ■ The contractor shall not, park vehicles or store construction material in close proximity to the PCR or site labor camps in immediate vicinity of the PCR. 	Engineering Cost	Contractor	RDA

34 Loss, Damage and disruption to Flora	<ul style="list-style-type: none"> ■ Labors will be briefed to ensure that no acts of vandalism will be tolerated and will be penalized. Workers should not be allowed to trespass into such areas. ■ Unless agreed with the community the contractor shall not block access to any known places of worship or PCRs along the project trace. ■ All works shall be carried out in a manner that the destruction to the flora and their habitats is minimized. ■ 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. ■ 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. ■ Contractor shall adhere to the guidelines and recommendations made by the CEA, if any with regard to felling of trees and removal of vegetation. ■ Removed trees of significant value must be handed over to the Timber Corporation. Documentation on the process should be shared with the engineer and maintained by the contractor. ■ 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 	Engineering Cost	Contractor	RDA				
	35 Loss, Damage and disruption to Fauna				<ul style="list-style-type: none"> ■ All works shall be carried out in such a manner that the destruction or disruption to the fauna and their habitats is minimum. ■ 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. 	Engineering Cost	Contractor	RDA
					36 Prevention of the Spread of Invasive Plant Species			

37 Loss of land due to land-slides resulting from hill cutting activities	<ul style="list-style-type: none"> ■ Assessment of loss with Divisional Secretariat, and other relevant parties, if required Government budget PMU, Contractor (horticulture etc), on a case by case basis and due payment of compensation to land owner as per RPF provisions (in terms of rate determined and valuation done) 	Government budget PMU, Contractor	RDA
38 Cracks in structures or damage due to construction works	<ul style="list-style-type: none"> ■ Advance notice to community on road construction activity. The notice will be served through posters and leaflet. Estimation of loss case by case basis. ■ Crack survey or a pre-construction survey will be carried out consisting of a review of properties adjacent to the site where construction activities are about to begin. For each crack or anomaly noted, the survey will provide a photograph, the general location of the anomaly, specific location of the anomaly and the anomaly type. ■ Process to be followed for cracks and other construction-related damages shall involve: <ul style="list-style-type: none"> ○ If the structure is partially damaged and after assessment if found unviable for habitation which leads to full demolition of structure, compensation will be paid to the structure owner as per the provisions in the RPF ○ If the structure is partially damaged and viable, compensation will be paid to the affected person or the project authority will arrange and pay the agency for rectification of the structure to the satisfaction of the affected person. 	Engineering costs Contractor	RDA
39 Chance find procedures for PCRs and Archeological Property	<ul style="list-style-type: none"> ■ 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 his workmen or any other persons from removing and damaging any such article or thing. He 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. 	Engineering Cost Contractor	RDA
40 Surface Drainage and Possible Water Stagnation	<ul style="list-style-type: none"> ■ Provide storm water drain system in the premises which will discharge water to existing storm water drainage networks ■ Carry out overall storm water management in the premises during construction using temporary ditches, sandbag barriers etc. ■ Proper drainage arrangements to be made, to avoid the overflowing of existing drains due to cutting, excavation and other activities 	Engineering Cost Contractor	RDA
41 Disruption to services such as water supply, power supply	<ul style="list-style-type: none"> ■ Advance 7 days' notice through poster and leaflet to the community of disruptions and alternate arrangements. ■ Restore the services within 10 days of effect. ■ Provide alternative source of supply 	Engineering costs Contractor	RDA
42 Disruption to access from houses and shops to roads	<ul style="list-style-type: none"> ■ 7days' advance notice through poster and leaflet before start of work. ■ Provide alternative access before disruption ■ Restore permanent access as in where in basis 	Engineering costs Contractor	RDA

43 Differential impacts on vulnerable and disadvantaged population	<ul style="list-style-type: none"> ■ 7 days' advance notice through poster and leaflet before start of work. ■ Impacted disadvantaged population will be treated case by case basis by provision of temporary access and other assistance as identified 	Engineering costs	Contractor	RDA
44 Handling Social and Environmental Issues during Construction	<ul style="list-style-type: none"> ■ 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. 	Project cost	Contractor, PMU	RDA
POST CONSTRUCTION				
45 Clearing/Closure of Construction Site/Labor Camps	<ul style="list-style-type: none"> ■ Contractor to prepare site restoration plans for approval by the engineer. ■ The plan is to be implemented by the contractor prior to demobilization. This includes burrow sites and storage yards as well ■ 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. ■ All solid waste will be disposed in preapproved sites or via the local authority once the construction is complete. ■ No waste material or structured will be left behind on site once the contractor demobilizes. 	Engineering Cost	Contractor	RDA
46 Environmental Enhancement/ Landscaping	<ul style="list-style-type: none"> ■ Landscape plantation, including turfing of shoulders, 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 dam site and from other workplaces and disposed at locations designated or acceptable to the Engineer or as per the stipulated waste management criteria of this ESMP. 	Engineering Cost	Contractor	RDA
47 Road furnishing on safety.	<ul style="list-style-type: none"> ■ The contractor will ensure that all safety signage and indicative markings are installed on site as per the guidance of the design prior to demobilization. 	Engineering Cost	Contractor	RDA

Annex 10: Generic Environmental and Social Management Plan (ESMP) for Construction of Buildings as New Infrastructure and/or Rehabilitation of Existing Infrastructure

The following Generic ESMP identifies environmental impacts and mitigatory measures that need to be in place during the construction of agriculture infrastructure, storage facilities, ancillary facilities, such as office buildings, staff accommodation facilities, storage facilities and other community infrastructure. The ESMP should be used in line with site screening and assessment in the preparation of site specific ESMPs.

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	IA	
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	IA	
1.3	Design of slope protection / land-slide management structures				
	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 where needed. 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.) Application of locally regulated building codes to ensure structural integrity Certification of designing and constructing infrastructure, the applicability and appropriateness of structural criteria	Design stage	Design cost	IA	

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	1.3	Environmental and Social Management Plan (ESMP)				
		A site specific. ESMP and relevant guidelines should be included as a Special Condition in the Bid Document; and ESMP 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	IA	
2.0 Construction Phase						
	2.1	Earthwork and Soil Conservation				
	2.1.1	Site Clearance and Land Development				
		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 During removing, attention should be paid to maintain minimum disturbances to soil cover and also care should be taken not to damage adjoining trees. 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	Applicable throughout the construction areas	Engineering cost	Contractor, IA	IA
	2.1.2	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. All material that is reusable or recyclable shall be used for such purposes either by the contractor or through dealers.	Disposal sites to be identified by the contractor and approved by Engineer.	Engineering cost	Contractor	IA
	(b)	The contractor shall obtain the approval from the relevant Local Authority such as Prdeshiya Sabha, Municipal Council and other government agencies (as required) for disposal and spoil at the specified location, as directed by the Engineer Private land that will be selected for disposal should also require written consent from the land owner				
	(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				

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 ESMP 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	IA
(b)	Removed top soil could be used as a productive soil when replanting/establishing vegetation		Site(s) identified for replantation program			
(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			

Activities	Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
				Implementation	Supervision
		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	IA
(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	IA
(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. 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	All burrow sites identified and used by the contractor			
(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				

Activities	Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
				Implementation	Supervision
(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	IA
(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	Engineering cost	Contractor	IA

Activities	Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
				Implementation	Supervision
(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	vehicle servicing			IA
(c)	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.	Servicing yards to be used for 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			IA
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	IA
(b)	All disposal sites should be approved by the engineer and approved by CEA and relevant local authority.				IA
(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			
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;	All, quarry sites which will be used during	Engineering cost	Contractor	IA

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
		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. Quarry sites should not be established within protected sites identified under the FFPO and FO	construction phase.			
	(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	IA
2.2.2		Storage of fuel, oil and chemicals (avoid fumes and offensive odor)				
	(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 into the structure. A ridge should be placed around the storage facility to avoid runoff getting into the structure. Adequate ventilation should be kept to avoid accumulation of fumes and offensive odor 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.	At all material storage locations (cement, bitumen, fuel, oil and other chemicals used for construction activities)	Engineering cost	Contractor	IA
2.2.3		Transportation of material				
	(a)	The contractor should avoid over loaded trucks to transport material to construction sites. During transportation, materials should be covered with	Within the project	-	Contractor	IA

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
		<p>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 attend to repair all damaged infrastructure/ roads, if needed through relevant authorities</p>	locations and the vicinity			
	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.	Project sites and worker camps	-	Contractor	IA
	(b)	<p>Arrange adequate supply of water for the project purpose throughout the construction period. Not obtain water for project purposes, including for labor camps, from public or community water supply schemes without a prior approval from the relevant authority.</p> <p>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.</p>		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	Waterways located in the surrounding areas of road sections or the			

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
		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.	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			
	(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				
	(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 of turbidity. These shall include the measures against erosion as per ESMP 2.1.6.	All water bodies located around the project areas	Engineering cost	Contractor	IA
	(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				
	(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	All drainage paths impacted by the project activities	Engineering cost	Contractor	IA

Activities	Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
				Implementation	Supervision
	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.				
(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 produced in construction from entering directly into streams, water bodies or the irrigation systems.	At all water courses located adjacent construction sites and downstream	Engineering cost	Contractor	IA
(b)	Avoid / minimize construction works near / at such drainage locations during heavy rainy seasons	At all water courses located adjacent construction sites	-		
(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	IA

Activities	Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
				Implementation	Supervision
(b)	Vehicle, machinery and equipment maintenance and re-filling shall be done as required in ESMP 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 labor camps should be approved by engineer and comply with guidelines/ recommendations issued by the CEA/Local Authority. Construction of laborer camps shall not be located within 200m from waterways or near to a site or premises of religious, cultural or archeological importance and school.	At all labor camps	Engineering cost	Contractor	IA
(b)	Labor 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 labor 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 labor camps fully after its need is over, ESMPty 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 labor camps	-	Contractor	IA
(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 labor 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 labor camps	Engineering cost	Contractor	IA
(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					
(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.		All construction work sites	Engineering cost	Contractor	IA
(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					

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(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	IA
	(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 sand, rubble, bitumen, cement and all sub roads used for material transportation, paying special attention to sensitive locations.	Engineering cost	Contractor	IA
	(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 roadway (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 roads used by vehicles of the contractor, or any of his sub-contractor 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.				

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
	(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				
	(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	IA
	(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 labor 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	IA
	(b)	The waste disposal and sewerage treatment system for the labor 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.				
	2.5.4.	Emission from construction Vehicles, Equipment and Machinery				

Activities	Protection and preventive measures		Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
(a)	The emission standards promulgated under the National Environment Act shall be strictly adhered to.		All plants, machinery and vehicles used for construction	-	Contractor	IA
(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	IA
(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	IA
(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.			-		
(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			Engineering cost		

Activities	Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
				Implementation	Supervision
	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).	All equipment, machinery and vehicles used for construction works	-		
(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.		Engineering cost		
(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 construction sites and their vicinity	-	Contractor	IA
(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 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 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	At quarry sites and landslide mitigation sites	-	Contractor	IA

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
		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				
	(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	IA
	(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 the contractor. Planting should take place as soon as the plant removal takes place	Engineering cost		
	2.7.3	Spread of Invasive Plant Species				

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
		<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	IA
	2.7.2	Chance finds of important Flora				
	(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	IA
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	IA
	(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	Locations selected for erecting the asphalt, crusher and concrete	Engineering cost		

Activities	Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
				Implementation	Supervision
	and the fitting of proper exhaust baffles. Any solid waste should not be dumped into natural habitats.	batching plants and workshops			
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 relevant agency by the contractor. All activities that could destroy such fauna 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 fauna and/or its habitat.	All project sites	-	Contractor	IA
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	IA
(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	IA

Activities	Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
				Implementation	Supervision
(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			
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 storage and worker camps	Engineering cost	Contractor	IA
(b)	The Contractor shall comply with requirements for the safety of the workmen as per the international labor 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.				
(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 Electrocution				
(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.	Construction areas, material storage and worker camps	Engineering cost	Contractor	IA
2.10.3	Risk at Hazardous Activity				

Activities	Protection and preventive measures		Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
(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	IA
(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	IA
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	IA
(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		IA
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, labor camps, plus office and store buildings. Stagnation of water in all areas including gutters, used and ESMPty cans, containers, tires, etc. shall be prevented. Approved chemicals to destroy mosquitoes and larvae should be regularly applied.		At worker camps, stores, yards	Engineering cost	Contractor	IA

Activities		Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
					Implementation	Supervision
		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, labor 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	IA
	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.	Within construction sites, quarry, crusher, concrete batching plants, workshops and worker camps	Engineering cost	Contractor	IA
	2.11.4	Potable Water				
	(a)	In every workplace and labor camps potable 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	IA
	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	Engineering cost	Contractor	IA

Activities	Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
				Implementation	Supervision
(b)	At every workplace and labor 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 ESMPloyed, 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.	sheds at work sites			
(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.				
2.12	Protection of Archaeological, Cultural and Religious Places and Properties				
2.12.1	Prevention of damage to Cultural and Religious Places and Properties				
(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	IA
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	IA
(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		Engineering cost		

Activities	Protection and preventive measures	Locations/ Project phase	Mitigation cost	Institutional Responsibility	
				Implementation	Supervision
	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	Landscaping				
(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	IA
(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 labor 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 and Social 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 ESMP.	Relevant construction sites during the construction period	Engineering cost	Contractor	IA
(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 E&S 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 E&S 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 ESMP 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	IA
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	IA
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	IA

Annex 11: Generic Codes of Environmental and Social Good Practice (CESGPs) for Rural Road Rehabilitation Subprojects in Sri Lanka

A. Preamble

The following CESGP should be considered as part and parcel of the Contractual Documents and shall be considered alongside the Technical Specifications, Drawings and Bill of Quantities. Thereby the prescriptions detailed in the CESGP are mandatory in nature and also contractually binding. The CESGP will also be equally applicable to sub-Contractors including nominated sub-Contractors if any. The Contractor shall be responsible for the compliance with the requirements of the CESGP. With the assistance of the contractors on behalf of the Employer the Project Engineer (Referred to as Engineer) shall monitor the compliance of the CESGP by the Contractor.

The **Contractor carrying out the works** through a designated focal person as an **Environmental and Social Officer (ESO)** shall assist the **Engineer** to conduct his duties as required in the CESGP implementation by (a) maintaining up to date records on actions taken by the Contractor with regard to the implementation of CESGP recommendations (b) through timely submission of reports, information and data to the employer through the Engineer, (c) via participating in the meetings conveyed by the Engineer or any relevant line agency and (d) any other assistance requested by the Engineer. A basic Terms of Reference for the ESO to be appointed is included in **Annex 1** of this document.

B. Suggested Criteria for Costing for Implementation of Measures in CESGP

The Contractor shall include in the Bill of Quantities prepared all costs to be incurred for the implementation of measures outlined in the CESGP as specific line items.

The bidders are advised to carefully consider the CESGP requirements during the construction stage when preparing the bid and pricing the items of work. The cost of CESGP requirements during the construction stage shall be included in the Contract Price. Thus, separate payments shall not be made in respect of compliance with the CESGP. In case the Contractor or his sub-Contractor /s fails to implement the CESGP recommendations. After informing in writing to the Contractor, the Engineer shall take due actions as it is deemed necessary to ensure that the CESGP is properly implemented.

Environmental and Social Codes of Practice to be adhered to During the Implementation of the Contract

The Contractor shall, throughout the execution and completion of the Works and the remedying of any defects therein:

- I. have full regard for the safety of all persons employed by the Contractor and the Sub-Contractor(s) and keep the Site (so far as the same is under his control) in an orderly state appropriate to the avoidance of danger to such persons.
- II. take all reasonable steps to protect the work force, communities, and environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations.
- III. implement at minimum the following measures for E and S management during all phases of the Contract .
- IV. be responsible for ensuring full compliance to the processes outlined below.
- V. prepare detailed Environmental and Social Method Statement (ESMS) clearly stating the approach, actions and manner in which the ESMP is to be implemented.
 - o It is required from the Contractor to prepare the ESMS for each work site, if work shall be carried out at more than one site at once and time plan for implementation.
 - o The ESMS shall be updated every 3 months and submit for the Project Engineers review and confirmation that any amendments to the construction methodology used on sites have been reviewed and incorporate specific measures as per this code.

C. Pre-Construction Impact Mitigation Prior to and During Mobilization

Utility Relocation- If the Contractor is required to remove the Utilities as per the contract.

- The Contractor shall confirm the identify the common utilities to be affected such as: telephone cables, electric cables, electric poles, water pipelines, public water taps, etc as recommended by the Engineer.
- Affected utilities shall be relocated as instructed by the Engineer with the prior approval of the relevant utility providers at least 3 months from the start of contract starts and the Contractor should maintain written documentation of what? Original document of such clearance should be made available to the Engineer.
- The Engineer shall ensure community consensus and minimum impact to common utilities like telephones, electricity supplies and water supplies and instruct the contractor accordingly of the required steps of management.

Removal of Trees Prior to Construction³ if the Contractor is Required to remove trees as per the contract.

- The Employer, Engineer and the Contractor shall confirm the number of trees that shall be affected with girth size & species type and inform the community prior to removal of any large trees.⁴
- If any trees that are of importance to the community, such a Bo Trees, trees specially protected by the community or on private property, the Contractor shall work with the project Engineer to understand the due process to be followed and agreement made with the community. No such trees shall be removed without prior written consent from the PE and endorsed by the community.
- Trees shall be removed from the construction sites before commencement of construction with prior permission from the PE.
- All trees of commercial value shall be handed over to the Timber Corporation on removal and documented.
- 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 3.2.18.

Construction of labor camps where applicable

- The Contractor shall obtain prior written approval from the Engineer for the location, layout and facilities provided for labor camp prior to erection.
- The Contractor shall maintain necessary living accommodation and ancillary facilities in functional and hygienic manner 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 approval from the Local Public Health Officer (PHI) and such approvals should be made available for inspection by the Engineer’
- Adequate health care shall be provided for the work force including basic screening in line with national public health requirements and observation based assessment of the quality of living conditions and these documents shall be made available for the inspection by the Engineer.
- Upon completion of Works the labor camp site shall be cleared and site should be reinstated to previous condition.

³ The RDA will be responsible for ensuring 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.

⁴ The RDA and Local Authority (LA) are required ensure that it is done in a proper manner by identifying all the trees affected due to road improvements, implement changes in design and alignment and the trees to be removed (species, girth and the height) and trees to be protected prior to issuing the Bidding Document to the Bidders. Contractor shall have no authority to remove a tree without written clearance from the Engineer to the Contract. The community shall be made aware of this prior to inviting bids. All logs of commercial value shall be sold to the timber corporation and documentation maintained. If any compensatory plantation is required, that too either may be included in the contract or hand it over to Forest Department, LA and Community. The RDA will be responsible for making the arrangement and then instruct the contractor of any responsibilities there on forth.

- If facilities are rented from local communities or facilities provided by the contractor as labor accommodation, the Contractor shall ensure that no nuisances or disturbances are caused to the local communities due to labor misconduct.

Planning of temporary traffic arrangements

- Traffic control plan shall be provided by the Contractor to the Engineer for approval. Engineer shall submit the approved plan to the Employer one week prior to the closure of the road, if required.
- 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.

Material Sourcing

- The Contractor shall ensure that sand, aggregates and other quarry materials are sourced only from licensed sources and the Contractor shall provide details of the quarries including the location, owner, the quantity, copy of the license before the first progress meeting. Updates shall be provided at all the subsequent progress meetings.
- The Contractor shall source all burrow materials only from licensed sources.
- Where the Contractor shall use self-owned burrow/quarry sites the Contractor shall be a licensed holder and the original documents shall be made available for the inspection of the Engineer. The Contractor shall further follow the guidance provided in section 3.2.21.
- Sourcing of any material from any protected areas and/or designated natural areas are strictly prohibited.

The Use of Alternate Construction Material

- The Contractor in discussion with the PE if willing shall identify and propose in the bid sources and suitability of alternate materials should be identified. In case of availability of alternate materials, the PE via the agreed design shall specify the following: (i) Characteristics and availability of the material (ii) Possibility of use in the project (iii) Methods of testing, specifications, recommended usage and (iv) Mechanism for procuring and transporting to the site. The feasibility of its use shall be based on the lead from the project corridor, suitability of the material and the extent of use as endorsed by the PE and RD
- A separate BoQ should be included for alternate materials in case they are available in the proximity of the project area and the PE and RDA to include their use for a particular subproject.
- Testing shall be done as per IS specifications, in order to evaluate suitability of the alternate materials. In case test results do not match the specifications; option of blending the material with standard materials to meet the required specifications should be explored. The PIU must ensure that the use of alternate material is as per specifications. The Contractor shall approach the supplier identified based on lead and material suitability and shall sign an agreement specifying the quantity of the material to be procured.

Management of the spread of Covid-19 or handling sudden Pandemic outbreaks

- The contractor shall firstly follow all measures outlined for pandemic management by the Government of Sri Lanka, Ministry of Health and Local Public Health officers and adhere to all relevant guidelines applicable.
- The contractor will ensure that there is set number of workers as per the guidance as well as in labor camps to prevent overcrowding and to allow social distancing. Where necessary in labor camps additional provisioning will be made for spacing.
- The contractor will at all times, ensure proper handwashing and sanitation facilities are available on the site.
- Measures should be in place to undertake daily temperature checks of workforce and enable social distancing at the work site and interactions with communities should be minimized. Daily records of these checks should be maintained by the contractors site staff.

- If a worker is diagnosed with symptoms related to the said pandemic the contractor will immediately inform the PHI and follow instructions laid out by the national health agencies.

Information Disclosure among Stakeholders

- The Contractor shall take measures to make the residents who are affected physically or by noise aware of the possible impact caused by the Works carried out by providing them with information on the construction activities; muster their views for possible impact mitigation as this shall also ensure a good rapport and less complaints. This should be carried-out immediately after the mobilization at Site and in reasonable intervals if needed.
- A copy of the ESMP should be made available at both Contractor’s and the Engineer’s site office for reference.
- The Contractor with the guidance from the Engineer shall make all labor including that of sub-Contractors where applicable aware of all the agreed provisions outlined in this CESGP.

D. Site Management and Mitigation of Impacts during Construction Phase

Transportation and Storage of construction materials

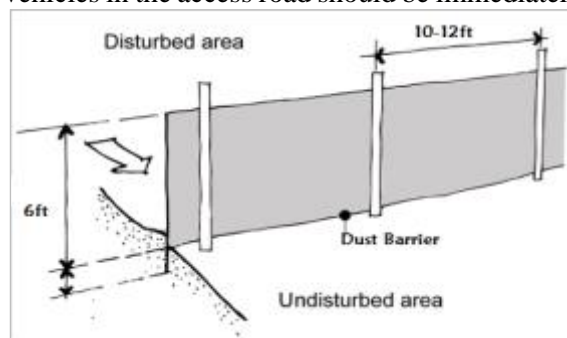
- Sites for storage of construction materials should be identified, without affecting the traffic and other common utilities that shall lead to access issues as the compound is operational.
- All material should be transported in fully covered trucks in accordance with the applicable laws and the regulations of the country. 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.

Management of Dust and Fugitive Emissions

- 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 shall 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 minimum height of barriers should be 6ft . 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 laborers for the use at required times.

Management of Noise related Nuances

- Use of access roads should be minimized during 7:00AM to 8:30AM; 1:00PM to 2:00PM and 4:30PM to 6:00PM. This shall not only reduce noise levels but also help mitigate congestion issues in the area due to the construction activities.
- 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 shall be used in construction on site and for transport.
- Noise generating work shall not be carried out during public holidays without prior clearance from the Engineer. If at all, special attention should be made if a religious places, schools during operating hours, public courts or any other affected nearby community.
- Labor gangs should be warned to work with minimum noise. Strict labor supervision should be undertaken in this respect. Number of night time resident laborers 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.
- Immobile construction equipment shall 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

- The Contractor shall submit the list of high noise/vibration generating machinery & equipment to the Engineer 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.

Management of Impacts due to Vibration

- The Contractor shall take appropriate action to ensure that construction works do not result in damage to adjacent properties due to vibration or any other means.

- 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.
- Contractor shall carry out monitoring at the nearest vibration sensitive receptor during blasting or when other equipment causing vibrations are used.
- The Contractor shall modify the method of construction until compliance with the criteria, if vibration levels exceed the relevant vibration criteria.
- 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.

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 nonresidential areas located in the downwind side
 - 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 agreed with the Engineer.

Protection of topsoil

- The topsoil 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

Control of Sedimentation and Soil Erosion

- Debris material shall be disposed in such a manner that existing drainage paths are not blocked.
- Drainage paths associated with irrigation structures should be improved / erected to drain rainwater properly.
- Silt traps shall be constructed to avoid siltation into the water ways. where necessary along the road corridor.
- To avoid siltation, drainage paths should not be directed to waterways and irrigation canals and they should be separated from such water bodies
- In Hilly terrain and areas with slopes
- 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.

- During the rainy season open cuts/slopes should be covered with fixed polythene sheeting to avoid excessive erosion.
- All fills, back fills and slopes should be compacted immediately to reach the specified degree of compaction and establishment of proper mulch.
- 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.
- 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 work and maintenance thereof are deemed, as incidental to the earthwork or other items of work and no separate payment shall be made for their implementation.
- Further Guidance on cost effective measures to follow are presented in **Annex 3**.



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) as approved by the Engineer. All spills and collected petroleum products shall be disposed off in accordance with standards set by the Central Environmental Authority of Sri Lanka/Ministry of Environment (CEA/MoE),
- Engineer shall certify that all arrangements comply with the guidelines of (CEA/MoE) or any other relevant laws.

Public and Worker Safety

- The 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 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 laborers during the construction period.
- All vehicles used in the construction process should be operated by experienced and trained operators under supervision.



- Basic onsite safety training should be conducted for all laborers during the ESMP 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 Labors

- 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 maintained 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 Labor in a Residential Area

- Strict labor supervision should be undertaken. There should be labor awareness programs to educate the laborers about their general behavior while at work as well as their own safety.

Operation of labor camps

- The Contractor shall construct and maintain all labor 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/labor 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

Management of the spread of Covid-19 or handling sudden Pandemic outbreaks

- The Contractor shall firstly follow all measures outlined for pandemic management by the Government of Sri Lanka, Ministry of Health and Local Public Health officers and adhere to all relevant guidelines applicable.
- The Contractor shall ensure that there is set number of workers as per the guidance as well as in labor camps to prevent overcrowding and to allow social distancing. Where necessary in labor camps additional provisioning shall be made for spacing.
- The Contractor shall at all times, ensure proper handwashing and sanitation facilities are available on the site.
- Measures should be in place to undertake daily temperature checks of workforce and enable social distancing at the work site and interactions with communities should be minimized.
- If a worker is diagnosed with symptoms related to the said pandemic the Contractor shall immediately inform the PHI and follow instructions laid out by the national health agencies.

Prevention of Vector based Diseases

- Contractor shall take necessary actions to prevent breeding of mosquitoes at places of work, labor camps, plus office and store buildings. Stagnation of water in all areas including gutters, used and empty cans, containers, 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
- The Contractor shall keep all places of work, labor camps, plus office and store buildings clean devoid of garbage to prevent breeding of rats and other vectors such as flies.

Handling Gender issues including Gender base violence.

- Equal opportunity shall be ensured while requirement of project staff including contractors working force. The salary/ wages and other payments due on service provided to the project should not be classified on the Gender basis.
- The sanitary facilities in sites and labor camps should be designed with consideration of suitable location, comfortability for female users and safe access.
- Institutional arrangement should be adopted to monitor and taking action against the Sexual harassment can be happened at the site to the workers and general public. The confidential reporting mechanism for sexual harassment shall be incorporated in to the Grievance readdress Mechanism of the Project.

Issues due to labor influx

- Overcrowded or camp-based living conditions can significantly alter existing levels of communicable diseases including respiratory problems, diarrheal and vector-borne diseases and tuberculosis, which also increases the risks of disease being introduced and spreading through host communities. Priority should be given for workers who are inhabited in area to reduce the influx of exotic population.
- Adequate and comfortable accommodation and hygienic service facility should be provided to Minimize the health risk of spreading disease
- Awareness program on HIV and other venereal diseases should be conducted for all the workers engaged in construction activities
- Avoid or reduce labour influx where possible. Explore possibility of introducing a requirement to hire local labour (at least a percentage) by the contractor. This should be done through the Community Based Organizations (CBOs) in the area that will be affected by the project interventions.
- Contractors to implement robust measures to prevent sexual harassment, gender-based violence (GBV)
 - Training of workforce – on unacceptable conduct
 - Informing workers about national laws
 - Worker Code of Conduct as part of the employment contract
 - Introduce sanctions for non-compliance (e.g., termination)
 - Cooperation with law enforcement agencies

Surface Drainage and Possible Water Stagnation

- Provide storm water drain system in the premises which shall 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.

Protection of Physical Cultural Resources (PCRs) close to the Site.

- If any physical cultural resources are identified along the project trace the Contractor shall ensure that protective fencing as agreed with the community and or head of the physical cultural resource (ie temple, mosque, place of worship, grave site, monument, statue, tree or any site designated of importance by the community) is established to avoid any impacts during the civil works.

- If the site is within 5 meters of the proposed road trace the Contractor shall conduct and document a crack survey of the site prior to construction to ensure that no damage is caused due to vibrations associated with the civil works and shall take all requisite measures to ensure so.
- The Contractor shall not, park vehicles or store construction material in close proximity to the PCR or site labor camps in immediate vicinity of the PCR.
- Labors shall be briefed to ensure that no acts of vandalism shall be tolerated and shall be penalized. Workers should not be allowed to trespass in to such areas.
- Unless agreed with the community the Contractor shall not block access to any known places of worship or PCRs along the project trace.

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.
- Where the design recommends tree planting should be undertaken in other areas as compensation the Contractor shall propose a suitable location in discussion with the local communities and PE and undertake the replanting activities here.
- 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 Project Engineer in charge.

Clearing/Closure of Construction Site/Labor 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 shall 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.

E. Management of Contractor Operated Quarry and Burrow Sites

Burrowing of Earth and Management of Self Operated Burrow Sites

- In the event the Contractor shall use a self-operated burrow site
- The 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.
- The 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 Fauna and Flora Protection Ordinance (FFPO) and Forest Ordinance (FO) of Sri Lanka
- Burrow areas shall not be opened without having a valid mining license from the Geological Survey and Mines Bureau (GSMB) The location, depth of excavation and the extent of the pit or open cut area shall be as approved by the engineer.
- 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.

- 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.
- Contractor shall take all steps necessary to ensure the stability of slopes including those related to temporary works and burrow pits and closure of the sites as per the Guidance provided in **Annex 2** of the CESGP.

Quarry Operations and Management of Self Operated Quarry Sites- Applicable if the contractor will use own quarry.

- In the event the Contractor manages a self-owned existing quarry sites available in the project area
- They should be approved by GSMB with valid EPL and Industrial Mining Licenses;
- 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.
- Quarry sites should not be established within protected sites identified under the FFPO and FO
- It is recommended not to seek material from quarries that have ongoing disputes with community.
- The maintenance and rehabilitation of the access roads in the event of damage by the Contractor's operations shall be a responsibility of the Contractor .
- Copies of all relevant licenses should be maintained by the Contractor for review and documentation by the engineer

F. Procedures for Dealing with Chance Finds

Flora and Chance found Fauna

- The Contractor shall 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 shall immediately upon discovery thereof acquaint the Engineer and carry out the Engineer's instructions for dealing with the same.
- The Engineer shall report to the nearby Forest Department /Department of Wild Life Conservation (range office or divisional office) and shall 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 shall take reasonable precautions to prevent his workmen or any other persons from removing and damaging any such article or thing. He shall, 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 shall seek direction from the Archaeological Department of Sri Lanka and inform the project EO to follow the Chance Find Procedures set forth.

G. Handling Social and Environmental Issues during Construction

- The Contractor shall appoint a person responsible for community liaison and to handle public complaints regarding environmental/ social related matters. All public complaints shall be entered into the Complaints Register.
- The Engineer shall promptly investigate and review environmental complaints and implement the appropriate corrective actions to arrest or mitigate the cause of the complaints.

- A register of complaints shall be maintained. Any complaint received shall be passed to the Engineer within 24 hrs upon receipt of the complaint citing the action taken/to be taken by the Environmental Officer on complaints thereof.
- A final report shall be forwarded to the Engineer within 3 Days

H. Completion of Works and Demobilization Stage

Clearing/Closure of Construction Site/Labor Camps

- Contractor to prepare site restoration plans for approval by the engineer.
- The plan is to be implemented by the Contractor prior to demobilization. This includes burrow sites and storage yards as well
- On completion of the works, all temporary structures shall 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.
- All solid waste shall be disposed in preapproved sites or via the local authority once the construction is complete.
- No waste material or structured shall be left behind on site once the Contractor demobilizes.

Environmental Enhancement/ Landscaping of Shoulders

- Landscape plantation, including turfing of shoulders, 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 dam site and from other workplaces and disposed at locations designated or acceptable to the Engineer or as per the stipulated waste management criteria of this ESMP.

Road furnishing on safety.

- The Contractor shall ensure that all safety signage and indicative markings are installed on site as per the guidance of the design prior to demobilization.

I. Monitoring and Reporting Requirements

- The Contractor representative for E and S shall maintain a report of ESMP compliance via photo documentation of implementation, issues and impacts identified during construction and report on how the Contractor has achieved implementation of E and S management as per this document.
- The written report to the PE shall be submitted via the use of photographs and written documentation as part of project progress reports on a monthly basis or as agreed with the PE.

J. Penalties for Non-Compliance

- The Engineer shall be responsible for conducting compliance monitoring of the CESGP implementation during the project period and conducting site visits and liaising with the Contractor to ensure compliance on site.
- On observations of serious impacts (these include but are not limited any fatalities, cases of sexual violence and gender based violence associated with contract workers, chemical spills, gross misconduct or lapses on multiple areas as per this code of conduct etc.), as determined by the project Engineer and confirmed by the RDA's Environmental and Social Unit, noncompliance issues immediate rectification should be made, these include impacts such as spills and accidents that cause serious risks to the community, injuries and/or death to any persons, structural damage to any properties or vehicles due to accidents and Contractor negligence.
- On minor noncompliance and consecutive incidents, the Engineer shall provide in writing warning and recommendations for rectification measures of the noncompliance issues to the Contractor.

- The 3rd letter of warning shall be the final written warning and if from 1 weeks of receipt of the written communication from the employer the Contractor has not undertaken any rectification measures the employer shall withhold all payments due until the issue is rectified and documented and confirmed in writing.
- All final payments shall be subject to a final evaluation and closure report of the CESGP implementation which shall be prepared by the Engineer prior to the Contractor s complete demobilization from the Site.
- Any requirement under the contract should be fulfilled by the Contractor. If not, that may be corrected through other means at the Contractor's cost or take measures to terminate the Contract shall be taken by the Employer.

Annexes

Annex 1: Terms of Reference for Recruitment of Contractor Environmental and Social Officer

The Contractor through an appointment of dedicated / qualified environmental and social officer shall be responsible in implementation of CESGP requirements by

- a) Maintaining up-to-date records on actions taken by the Contractor with regards to implementation of CESGP recommendations.
- b) Timely (weekly) submission of reports, information and data on compliance to the Project Engineer /Implementation Agency and or where applicable to the Environmental Specialist of the Implementing Agency through Supervision consultant (SC).
- c) Participating in the meetings conveyed by the Project Engineer and
- d) Any other assistance requested by the Project Engineer in terms of handling compliance issues on site with regard to E and S issues identified.

The Environmental and Social Officer shall be the primary focal point of contact for the assistance with all environmental and social issues during the pre-construction and construction phases and shall ensure all site management activities are completed in accordance with the CESGP at the point of demobilization. He/ She shall be responsible for ensuring the implementation of the CESGP and as the appointed officer should be available on the site fulltime basis during the project period and ensure the Environmental and Social Method Statement

The Environmental and Social Specialist/Officer shall promptly investigate and review environmental related complaints and implement the appropriate corrective actions to arrest or mitigate the cause of the complaints or impacts identified as specified in the CESGP and where applicable seek guidance from the Project Engineer. A register of all complaints is to be passed to the Project Engineer within 24 hrs they are received, with the action taken by the E&S Officer on complains thereof. In addition, E&S Officer required to perform following tasks as well;

1. Prepare a monthly CESGP implementation checklist report, including photo documentation of implementation and submit it to the Project Engineer.
2. Participation for the periodic Grievance Redress Committee Meetings at Village Level, Implementation Agency Level and PMU Level as applicable and requested by the Project Engineer.
3. Ensure the implementation of the CESMP by all Contractor workers on site and report any issues to the PE.

Qualifications required

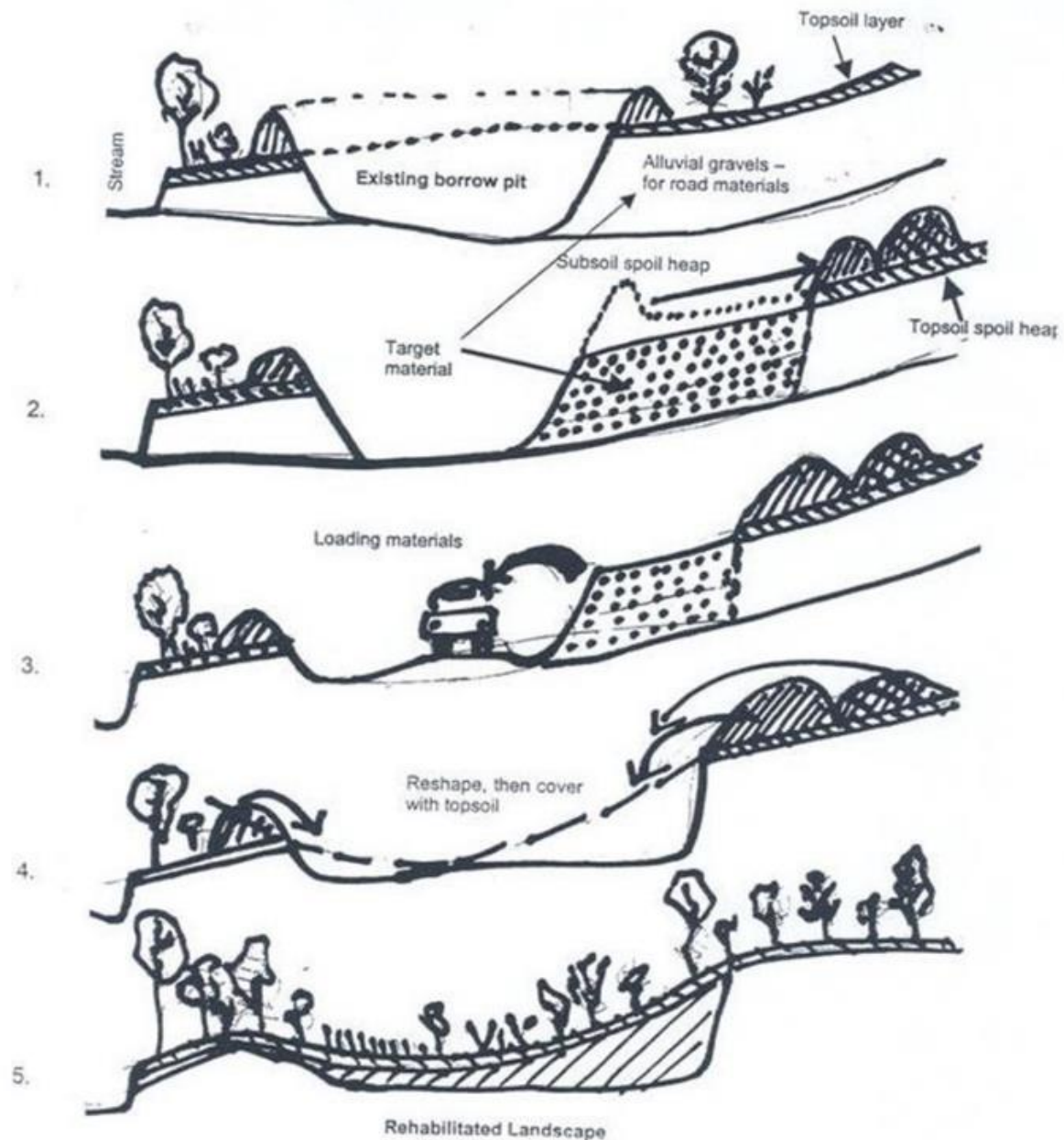
Environmental and Social Officer preferably possessing a bachelor's degree with minimum of 2 years experiences in the relevant field or minimum of eight (4) years of experiences in the similar capacity. Preferably, experience in specific project related works is required.

It is essential to have both Sinhala & English language ability (speaking) and Computer Knowledge of MS Office.

Annexes to Support Code of Conduct

Annex 1: Recommended for the Rehabilitation of Burrow Pits if Contractor Uses Own 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 shall 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 re-vegetation.
- 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 2: Detailed Method for Control of Erosion Contract During Construction Phase

Prescribed Method of Erosion Control Matting

Description

- The design specifications as well as locations should be finalized during the Project Preparation Phase. During the execution period in post-construction stage, PIU must ensure that all the guidelines are to be followed as per specifications during the site preparation and installation of erosion control matting. Following are the steps need to be followed for the placing erosion control matting:

Site Preparation

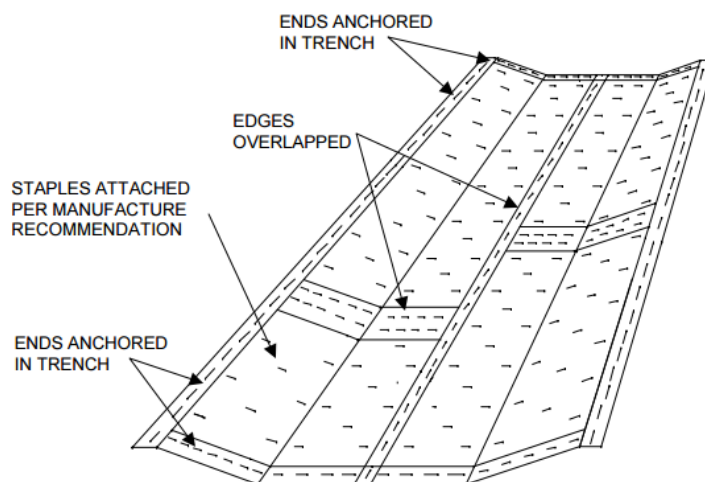
- The areas should be fertilized and seeded.
- A smooth surface free of depressions that allows water to collect or flow under matting is required.
- The soil should be left with loose surface after seeding.
- The material should be steel wire formed into “U” shape and should be 15 cm to 25 cm long.

Installation

- Filter fabric made of biodegradable material (eg. Choir Matting/ Jute) should be placed horizontally on the slope less than 2:1

Prior to netting, a 10 cm anchor trench should be dug at the top and toe of the slope with the top trench placed

- 30 cm back from the crown, or a berm over which the fabric can be carried.
- For horizontal application, work must proceed from the bottom towards the top of the slope with a 10 cm overlap.
- Cutting material should be folded less than 7.5 cm to 10 cm at the end, stapled and covered.
- Staples should be placed at a spacing of 22.5 cm to 30 cm apart in the trenches along the horizontal lap joints.



List of Common Placement/Installation Mistakes to Avoid

- Ensure the ends are properly secured.
- Install a sufficient number of staples to hold the blanket in place.
- Overlap the blanket to ensure water that flows on top of the blanket and is unable to flow under the blanket.

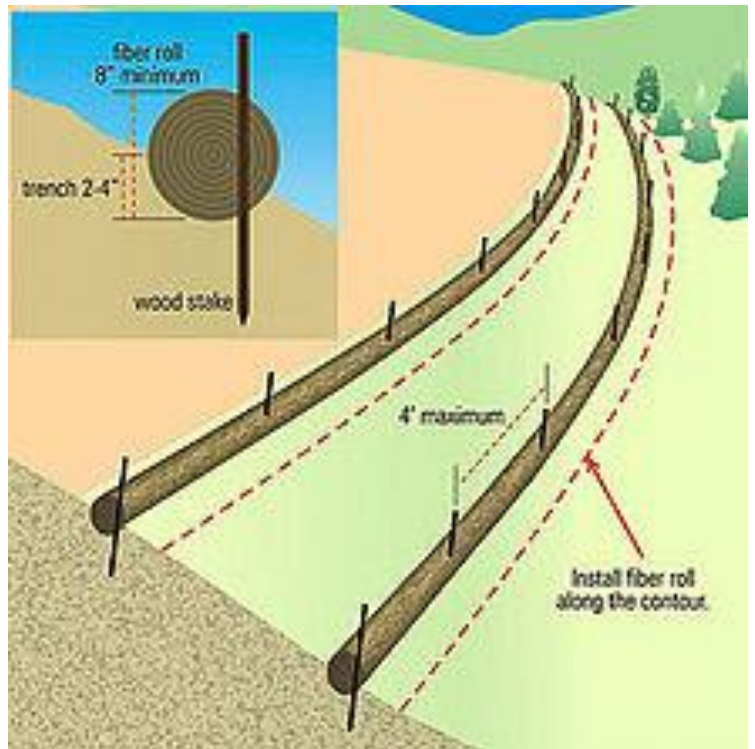
Detailed Specification for Brush Barriers

Description

- A brush barrier is a temporary barrier used to control sediment transport by using the residue materials available from clearing and grubbing.

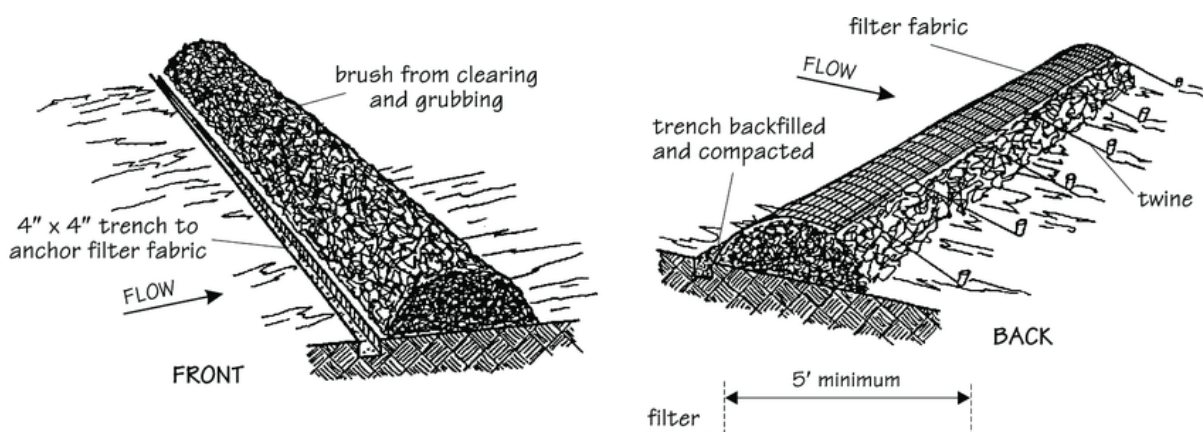
Design and Construction Criteria

- Brush should be cut and windrowed approximately 3 m from the toe of the slope. The brush barrier should be packed densely and should be a minimum of 1.2 m high before compressing.
- This may be accomplished during clearing and grubbing by having equipment push the brush, tree trimmings, shrubs, stones, root mats, and other materials into a mounded row on the contour. Logs placed within the barrier, parallel to the toe, can help reduce failures.
- A brush barrier may be compressed by running a bulldozer along the top of the windrow. The compressed barrier should be 0.9 m to 1.5 m high and 1.5 m to 3.0 m wide. The top of the barrier should be at least 1.5 m below the finished roadway.
- A brush barrier may be left in place after construction unless it is in an aesthetically sensitive area or it is indicated otherwise on plans.



Maintenance

- Inspect a brush barrier after each rainfall and make necessary repairs. Sediment deposits should be removed when they reach approximately half the barrier's height.



Annex 12: Minimal Provisions to be Included in Contract Documents

Unless the WBGs Standard Bidding Documents, that already contain ESHS provisions are used at the minimum the following provisions shall be included in all contract documents for any physical works that include construction and/or rehabilitation.

Implementation of environmental and social impacts mitigation measures and monitoring

General Conditions

The Contractor shall provide adequate measures to avoid, reduce or off-set any environmental and/or social impacts during the construction period due construction activities or any other related activities. The Contractor shall implement the Environment and Social Management Plan (ESMP) attached with the Bidding Documents. The remedial actions shall comply and be acceptable to Engineer and other project monitoring agencies.

The Contractor shall be responsible to ensure all construction material are sourced from approved sites or licensed commercial vendors. All key environmental parameters such as vibration and noise shall not exceed the limitation imposed by the Environmental Protection agency.

1. Applicable Laws, Regulations and Policies covering the proposed project

Following national laws and regulations will be applicable for this project.

- Environment Protection and Preservation Act (Law No. 4/93)
- Regulation on Environmental Liabilities (Regulation No. 2011/R-9)
- Environmental Impact Assessment Regulation, 2007
- By law, Cutting Down, Uprooting, Digging Out and Export of Trees and Palms from one island to another (Regulation No. 493)
- Regulation on Sand and Aggregate Mining
- Regulation on Coral Mining (1990)
- Building Act and Building Code
- Land Use Planning and Management and Traditional Rights to Land

In addition to national laws and regulations, the project should comply with World Bank Operational Policies.

2. Controlling environmental impacts

The Contractor shall be responsible to maintain and monitor the impacts to the environment to ensure the construction and related works are harmless to the environment. In order maintain the activities in accordance with ESMP, the Contractor shall be asked to quote the required rate in the Bill of Quantity.

The Contractor shall submit methodology and frequency of remedial activities for the approval of Engineer, as per the construction plan addressing the following, but not limited to:

- (a) Identification of construction material extracting sites and disposal sites and related approvals from authorities and/or time-based plan to obtain the approvals;
- (b) Measures to avoid and/or control the occurrence of environmental impacts;
- (c) Measures to provide positive environmental offsets to unavoidable environmental impacts;
- (d) Measures to implement environmental enhancements;
- (e) Site specific environmental management techniques and processes for all construction activities which are important for the quality of the environment in respect to permanent and/or temporary works including specific measures on safety;

- (f) Locational details of important elements such as temporary dust and noise barriers, portable amnesties, truck, plant and material storage, access locations, provision of site hoarding, etc.; and
- (g) Identification of the role, responsibility, authority, accountability and reporting of personnel relevant to compliance with the ESMP

If the Contractor fails to adhere to the ESMP to a level acceptable to the Engineer or other monitoring the Engineer shall be temporarily suspend the work until such time proper mitigation measures are implemented.

If any of the defects are not remedied by the Contractor within the time given by the Engineer, the Engineer shall consider the contractor's work is non-compliance towards environmental safeguards and necessary remedial action shall be undertaken by the Engineer through a third party. Further the cost of the third party and 12% (twelve percent) for supervision charges shall be deducted from the Contractors Interim Payment that has non-compliance towards environmental safeguards. Any additional cost or time incurred due to above shall be at contractors' expense and shall not be subjected to extension of time or claim.

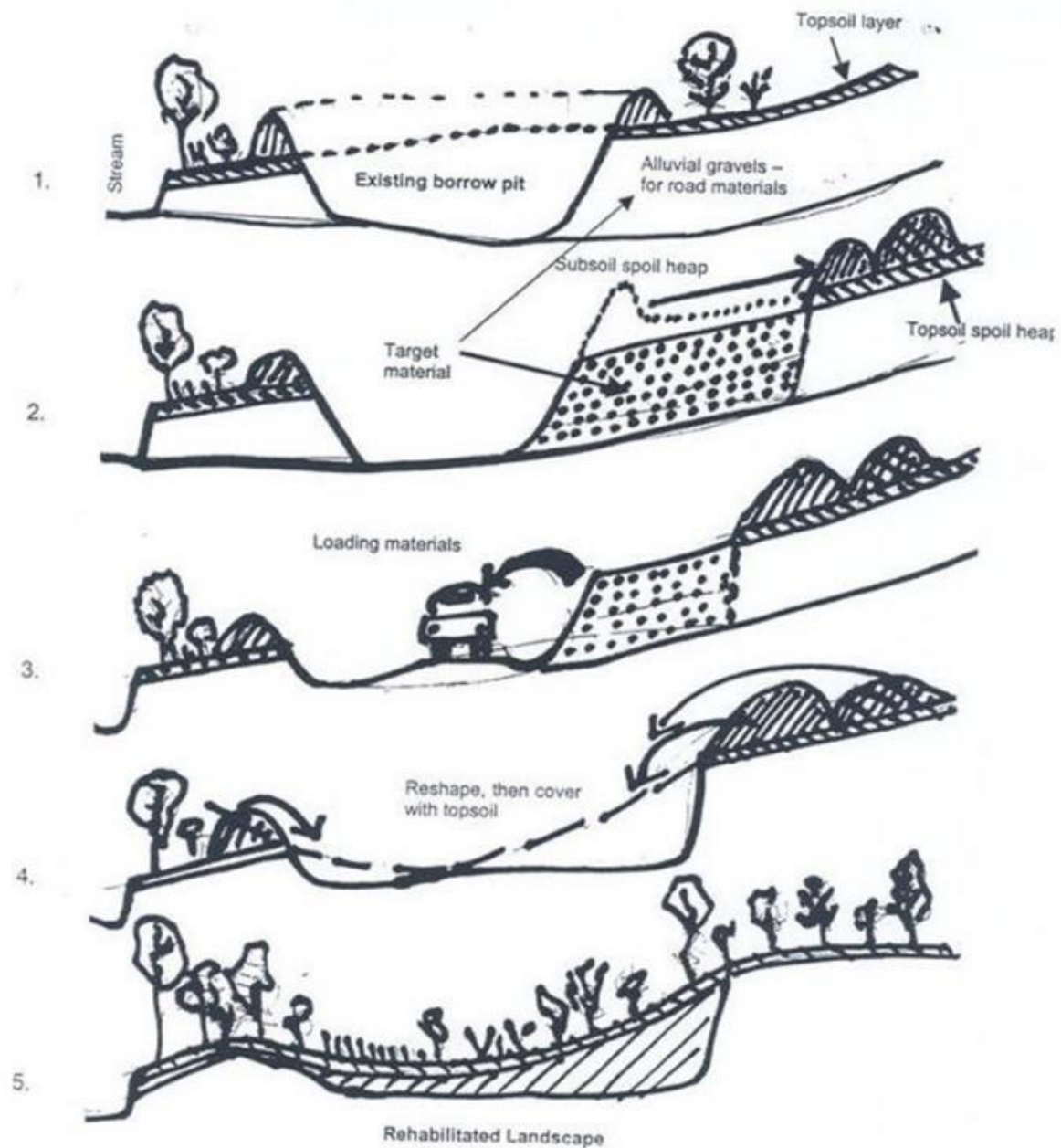
The contractor shall be responsible for cleaning up and disposing of all waste materials and rehabilitating (landscaping) all construction sites and work areas so that these can be returned as close as possible to their previous use. This includes the stabilization and landscaping of all of the construction sites. Any borrow pits that were operated by the contractor are to be reshaped and closed. Any contaminated soil must be removed from fuel and oil storage areas. All construction debris is to be removed. Payment will be withheld from the contractor until all of the sites are satisfactorily cleaned, all spoils removed and the sites satisfactorily rehabilitated. The final payment will be released only after confirmation by the Environmental and Social Specialist that the above mentioned tasks have been completed satisfactorily by the Contractor

Measurement and Payment

The measurement will be based on weekly assessment of all activities given as per the construction plan and related ESMP, including a system for evaluation and the forfeiture of the prescribed Performance Security for E&S issues.

Annex 13: Guidelines for the Rehabilitation of Burrow Pits

Illustration on the Burrow Pit Rehabilitation



Mitigation 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 re-vegetation.
- 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 14: Environmental Guidelines for Decommissioning and Demolition of Existing Buildings- Including the Management of Asbestos During Rehabilitation Works

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 ESMP 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 Neighboring Buildings** ○ A crack survey of neighboring 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 and Social Management Plan (ESMP).
- 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
 - No debris shall be burned on the site.

Good Practice Note: Asbestos: Occupational and Community Health Issues

1. SUMMARY

The purpose of this Good Practice Note is to increase the awareness of the health risks related to occupational asbestos exposure, provide a list of resources on international good practices available to minimize these risks, and present an overview of some of the available product alternatives on the market. The need to address asbestos-containing materials (ACM) as a hazard is no longer under debate but a widely accepted fact.

Practices regarding asbestos that are normally considered acceptable by the World Bank Group (WBG) in projects supported through its lending or other instruments are addressed in the WBG's General Environmental, Health and Safety (EHS) Guidelines.⁵ This Good Practice Note provides background and context for the guidance in the WBG EHS Guidelines.

Good practice is to minimize the health risks associated with ACM by avoiding their use in new construction and renovation, and, if installed asbestos-containing materials are encountered, by using internationally recognized standards and best practices (such as those presented in Appendix 3) to mitigate their impact. In all cases, the Bank expects borrowers and other clients of World Bank funding to use alternative materials wherever feasible.

ACM should be avoided in new construction, including construction for disaster relief. In reconstruction, demolition, and removal of damaged infrastructure, asbestos hazards should be identified and a risk management plan adopted that includes disposal techniques and end-of-life sites.

2. ASBESTOS AND HEALTH RISKS

2.1. What is Asbestos, and Why are We Concerned with its Use?

Asbestos is a group of naturally occurring fibrous silicate minerals. It was once used widely in the production of many industrial and household products because of its useful properties, including fire retardation, electrical and thermal insulation, chemical and thermal stability, and high tensile strength. Today, however, asbestos is recognized as a cause of various diseases and cancers and is considered a health hazard if inhaled.⁶ The ILO estimates that over the last several decades 100,000 deaths globally have been due to asbestos exposure,⁷ and the WHO states that each year 90,000 people globally die because of occupational asbestos exposure.⁸

⁵

[http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/gui_EHSGuidelines2007_GeneralEHS/\\$FILE/Final++General+EHS+Guidelines.pdf](http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/gui_EHSGuidelines2007_GeneralEHS/$FILE/Final++General+EHS+Guidelines.pdf) (pp. 71, 91, 94).

⁶ http://www.who.int/occupational_health/publications/draft.WHO.policy.paper.on.asbestos.related.diseases.pdf. See also Stayner L., et al., —Exposure-Response Analysis of Risk of Respiratory Disease Associated with Occupational Exposure to Chrysotile Asbestos. *Occupational Environmental Medicine*. 54: 646-652 (1997).

⁷ http://www.ilo.org/wow/Articles/lang--en/WCMS_081341

⁸ http://www.who.int/occupational_health/publications/asbestosrelateddiseases.pdf

Over 90% of asbestos⁹ fiber produced today is chrysotile, which is used in asbestos-cement (AC) construction materials: A-C flat and corrugated sheet, A-C pipe, and A-C water storage tanks. Other products still being manufactured with asbestos content include vehicle brake and clutch pads, roofing, and gaskets. Though today asbestos is hardly used in construction materials other than asbestos-containing products, it is still found in older buildings in the form of friable surfacing materials, thermal system insulation, non-friable flooring materials, and other applications. The maintenance and removal of these materials warrant special attention.

Because the health risks associated with exposure to asbestos are now widely recognized, global health and worker organizations, research institutes, and some governments have enacted bans on the commercial use of asbestos (see Box 1), and they urge the enforcement of national standards to protect the health of workers, their families, and communities exposed to asbestos through an International Convention.¹⁰¹¹

• **BOX 1. BANS ON THE USE OF ASBESTOS AND ASBESTOS PRODUCTS**

- A global ban on commercial use of asbestos has been urged by the Building and Wood Workers Federation (IFBWW), the International Metalworker’s Federation, the International Trade Union Confederation, the government of France, and the distinguished scientific group Collegium
- Ramazzini. All member states of the European Union and over 40 countries worldwide (see Appendix 1) have banned all forms of asbestos, including chrysotile.⁷ In June 2006, the General Conference of the ILO adopted a resolution to —promote the elimination of all forms of asbestos and asbestos-containing materials.
- Landrigan PJ, Soffritti M. —Collegium Ramazzini Call for an International Ban on Asbestos. *Am. J. Ind. Med.* 47: 471-474 (2005).
- The International Ban Asbestos Secretariat keeps track of national asbestos bans.
 - http://www.ibas.btinternet.co.uk/Frames/f_ika_alpha_asb_ban_280704.htm
- General Conference of the International Labor Organization, —Resolution Concerning Asbestos, *Provisional Record*, International Labor Conference, Ninety-fifth Session, Geneva, 2006, Item 299, pp. 20/47-48.
- World Health Organization: http://www.who.int/occupational_health/publications/asbestosrelateddiseases.pdf

2.2. Health Concerns Linked to Asbestos-Containing Products

Health hazards from breathing asbestos dust include asbestosis, a lung scarring disease, and various forms of cancer (including lung cancer and mesothelioma of the pleura and peritoneum).¹² These diseases usually arise decades after the onset of asbestos exposure. Mesothelioma, a signal tumor for asbestos exposure, occurs among workers’ family members from dust on the workers’ clothes and among neighbors of asbestos air pollution point sources.⁹ Some experimental animal studies show that high inhalation exposures to all forms of asbestos for only hours can cause cancer.¹⁰ Very high levels of airborne asbestos have been recorded where power tools are used to cut A-C products and grind brake shoes. For chrysotile asbestos, the most common variety, there is no threshold (non-zero) of exposure that has been shown to be free from carcinogenic risks. Construction materials are of particular concern, because of the large number of workers in

⁹ Asbestos defined in Castleman, B. *Asbestos: Medical and Legal Aspects* 5th Ed. New York: Aspen, 2005, 894 pp.

¹⁰ ILO Asbestos Convention No. 162, (see <http://www.ilo.org/ilolex> or http://www.itcilo.it/actrav/osh_es/m%F3dulos/legis/c162.htm)

¹¹ http://www.who.int/occupational_health/publications/asbestosrelateddiseases.pdf. Directive 2003/18/EC of the European Council and Parliament amending Council Directive 83/477/EEC, and Directive 99/77/EEC

¹² http://www.euro.who.int/document/aicq/6_2_asbestos.pdf

construction trades, the difficulty of instituting control measures, and the continuing threat posed by in-place materials that eventually require alterations, repair, and disposal.¹¹ Renovations and repairs in buildings containing A-C materials can also endanger building occupants. In addition to the problems from products made with commercial asbestos, asbestos also occurs as a contaminant in some deposits of stone, talc, vermiculite, iron ore, and other minerals. This can create health hazards for workers and residents at the site of excavation and in some cases in the manufacture and use of consumer products the materials are used to make. While asbestos is a known carcinogen when inhaled, it is not known to be carcinogenic when ingested, as through drinking water,¹² although pipe standards have been issued for A-C pipes conducting —aggressivell water.¹³

From the industrial hygiene viewpoint, asbestos creates a chain of exposure from the time it is mined until it returns to the earth at a landfill or unauthorized disposal site. At each link in the chain, occupational and community exposures coexist. Workers in the mines are exposed to the fibers while extracting the ore; their families breathe fibers brought home on work clothes; workers in the mills and factories process the fiber and manufacture products with it; and their families are also secondarily exposed. Communities around the mines, mills, and factories are contaminated with their wastes; children play on tailings piles and in contaminated schoolyards; transportation of fiber and products contaminates roads and rights-of-way.¹⁴ Tradesmen who install, repair, and remove ACM are exposed in the course of their work, as are bystanders, in the absence of proper controls. Disposal of asbestos wastes from any step in this sequence not only exposes the workers handling the wastes but also local residents when fibers become airborne because of insufficient covering and erosion control. Finally, in the absence of measures to remove ACM from the waste stream and dispose of them properly, the cycle is often repeated when discarded material is scavenged and reused.¹⁵

⁹ —Asbestos. | *World Health Organization IARC Monographs on the Evaluation of Carcinogenic Risks to Humans/ Overall Evaluations of Carcinogenicity: An Updating of IARC Monographs 1 to 42*, Suppl. 7. Lyon: International Agency for Research on Cancer, 1987, pp. 106-116.

¹⁰ Wagner JC, Berry G, Skidmore JW, Timbrell V. —The Effects of the Inhalation of Asbestos in Rats. | *Br. J. Cancer* 29: 252-269 (1974).

¹¹ International Program on Chemical Safety, —Conclusions and Recommendations for Protection of Human Health, | *Chrysotile Asbestos*, Environmental Health Criteria 203. Geneva: World Health Organization, 1998, p. 144.

¹² http://whqlibdoc.who.int/hq/2000/a68673_guidelines_3.pdf

¹³ http://whqlibdoc.who.int/hq/2000/a68673_tech_aspects_4.pdf

¹⁴ Jones, Robert —Living in the Shadow of the Asbestos Hills (The Need for Risk Based Cleanup Strategies for Environmental Asbestos Contamination in South Africa). | Environmental Exposure, Crisis Preparedness and Risk Communication, Global Asbestos Congress, Tokyo, Japan, November 19 - 21, 2004. http://park3.wakwak.com/~gac2004/en/index_abstract_e.html. See also Oberta, AF —Case Study: An Asbestos Cement Plant in Israel -- Contamination, Clean-up and Dismantling. | Hellenic Asbestos Conference, Athens, Greece, October 29 - 31, 2002. http://www.ibas.btinternet.co.uk/Frames/f_lka_hellen_asb_conf_rep.htm

¹⁵ Boer, A.M., L.A. Daal, J.L.A. de Groot, J.G. Cuperus —The Combination of the Mechanical Separator and the Extraction Cleaner Can Process the Complete Asbestos-containing Waste-stream and Make it Suitable for Reuse. |

2.3. Increasing Use of Asbestos Fiber

There is evidence that, after a decline in the 1990s, the use of asbestos fiber is increasing globally. A recent study¹⁶ shows that a 59% increase in metric tons was consumed in 12 countries from 2000 to 2004.

3. INTERNATIONAL CONVENTION AND STANDARDS FOR WORKING WITH ASBESTOS

3.1. International Convention

The International Labor Organization (ILO) established an Asbestos Convention (C162) in 1986 to promote national laws and regulations for the —prevention and control of, and protection of workers against, health hazards due to occupational exposure to asbestos.¹⁷ The convention outlines aspects of best practice: Scope and Definitions, General Principles, Protective and Preventive Measures, Surveillance of the Working Environment, and Workers' Health. As of March 4, 2008, 31 countries had ratified the Convention;¹⁸ 17 of them have banned asbestos.

Some of the ILO asbestos convention requirements:

- work clothing to be provided by employers;
- double changing rooms and wash facilities to prevent dust from going home on street clothes;
- training of workers about the health hazards to themselves and their families;
- periodic medical examinations of workers,
- periodic air monitoring of the work environment, with records retained for 30 years;
- development of a work plan prior to demolition work, to protect workers and provide for proper waste disposal; and
- protection from —retaliatory and disciplinary measures for workers who remove themselves from work that they are justified in believing presents a serious danger to health.

Standard considerations for working with and procuring ACM are common to most projects. An overview of some basic ones is provided in Appendix 5.

3.2. International Standards and National Regulations

Standards and regulations for work involving ACM have been published by nongovernmental organizations and government agencies. Appendix 3 lists of some resources, including international organizations (e.g., WHO, ISO, ASTM) and national governments (e.g., UK, US, Canada, South Africa). The resources range from manuals to individual standards and cover a variety of work guidelines, including surveys, identification, inspection, maintenance, renovation, repair, removal, and disposal. Some of the key issues discussed in these standards and regulations are as follows:

European Conference on Asbestos Risks and Management, Rome, Italy, December 4 -6, 2006.

<http://venus.unive.it/fall/menu/Boer.pdf> ¹⁶ R.

Virta, US Geological Survey, 2007.

¹⁷ www.ilo.org/ilolex

¹⁸ <http://www.ilo.org/ilolex/english/convdisp1.htm>

- **The scale of occupational hazards.** The health risk is not simply a function of the properties of the ACM, but also reflects the type of work being done and the controls used. Although AC products, for example, may seem to intrinsically present less of a risk than fire-proofing, air monitoring has shown that cutting dry A-C sheet with a power saw can release far greater amounts of airborne fibers than scraping wet, saturated fireproofing off a beam. The relationship between the nature of A-C products, the work being done and the controls used to control the release of fibers and debris is important (as discussed in ASTM E2394 and HSG189/2¹³).
- **Controlling exposure to airborne fibers.** Because asbestos fibers are primarily an inhalation hazard, the basic purpose of the regulations and standards is to control the concentration of asbestos fibers in the air inhaled by workers or others. Concentration limits have been set by regulations in numerous countries for workers whose duties involve contact with ACM; however, they do not purport to totally eliminate the risk of asbestos disease, but only to reduce it. Exposure limits for individuals other than workers, including occupants of buildings and facilities and the community, are lower than those for workers in deference to the very young and old as well as the physically compromised.
- **Measuring exposure to airborne fibers.** Compliance with exposure limits is demonstrated by air sampling in workers' breathing zone or in the space occupied by the affected individuals, with analysis of the sample by optical or electron microscopy, as explained in Appendix 3. Abatement protocols determine whether a building can be reoccupied after asbestos abatement.
- **Proper disposal.** Proper disposal of ACM is important not only to protect the community and environment but also to prevent scavenging and reuse of removed material. ACM should be transported in leak-tight containers to a secure landfill operated in a manner that precludes air and water contamination that could result from ruptured containers. Similar requirements apply to remediation of sites such as mines, mills, and factories where asbestos fiber was processed and products manufactured. (See EPA NESHAP regulations, Appendix 3.)
- **Transboundary movement of waste.** Waste asbestos (dust and fibers) is considered a hazardous waste under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. The Basel Convention imposes use of a prior informed consent procedure for movement of such wastes across international borders. Shipments made without consent are illegal. Parties have to ensure that hazardous waste is disposed of in an environmentally sound manner. Strong controls have to be applied from the moment the material is generated, to its storage, transport, treatment, reuse, recycling, recovery, and final disposal.¹⁴
- **Identifying asbestos products.** A-C products include flat panels, corrugated panels used for roofing, water storage tanks, and pressure, water, and sewer pipes. In some countries asbestos may still be used in making wallboard, heat-resistant gloves and clothes for industrial use, and

¹³ See Appendix 3.

¹⁴ See Basel Convention Secretariat <http://www.basel.int/>

brake and clutch friction elements and gaskets used in vehicles.¹⁵¹⁶ Thermal insulation containing asbestos and sprayed asbestos for insulation and acoustic damping were widely used through the 1970s and should be looked for in any project involving boilers and insulated pipes. Insulation dating from before 1980 should be presumed to contain asbestos unless analyzed and found not to. The microscopic methodology for analyzing bulk samples for the presence of asbestos is widely available in industrialized countries and is not expensive; it is less available in developing countries. In a developing country samples may have to be mailed out for testing; alternatively, training may be available for a laboratory in the country.

- **Training.** It is impossible to overemphasize the importance of training for working with ACM in any capacity—whether it involves inspections, maintenance, removal, or laboratory analysis. The duration of the training and the course content depend on the type of work the individual will be doing. Quality control and proficiency testing for laboratories and individual analysts are also important.

4. ALTERNATIVES TO ASBESTOS-CONTAINING MATERIALS

4.1. Growing Marketplace

Safer substitutes for asbestos products of all kinds are increasingly available (see Appendix 4). These include fiber-cement products using combinations of local vegetable fibers and synthetic fibers, as well as other products that serve the same purposes.²² The WHO is actively involved in evaluating alternatives.¹⁷

4.2. Cost and Performance Issues

Fiber-cement roof panels using polyvinyl alcohol (PVA) or polypropylene combined with cellulose now cost 10-15% more to manufacture than A-C sheets. Polypropylene-cellulose cement roofing, a new product, is made at a cost of about 12 percent more than A-C roofing and has superior impact resistance. The non-asbestos fiber-cement panels are lighter, less brittle, and have improved nailability over A-C. The increase in the overall cost of building construction that such products represent is to some degree offset by the obviation of special hygiene measures in installation/maintenance/renovation, the lack of a continuing hazard to building workers and occupants, and reduced costs of waste removal and disposal. Micro concrete tiles are cheaper than A-C to produce, and can be made in a basic workshop near the building site with locally available small contractors and materials, lowering transport costs. Compared with A-C pipes, iron pipes can be transported and installed with less difficulty and breakage, take greater compression loading, and last longer.

5. WORLD BANK GROUP APPROACH TO ASBESTOS HEALTH RISK

¹⁵ In 2004, Russia, China, India, Kazakhstan, Thailand, and Ukraine together accounted for about three-quarters of world asbestos consumption. Other major consumers of asbestos are Iran, Brazil, Vietnam, and Indonesia.

¹⁶ . The U.K. Health and Safety Executive commissioned a report that concluded that the main replacement fibrous materials for asbestos in fiber-cement products and brakes are less hazardous than chrysotile asbestos. See Harrison PTC, *et al.* —Comparative Hazards of Chrysotile Asbestos and Its Substitutes: A European Perspective. *J. Environ. Health Persp.* 107: 607-611 (1999). <http://www.ehponline.org/members/1999/107p607-611harrison/harrisonfull.html>

¹⁷ <http://www.who.int/ipcs/assessment/asbestos/en/>

The WBG EHS Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice.¹⁸ When one or more members of the WBG are involved in a project, the EHS Guidelines are applied as required by their respective policies and standards.

The WBG's EHS Guidelines¹⁹ specify that the use of ACM should be avoided in new buildings and construction or as a new material in remodeling or renovation activities. Existing facilities with ACM should develop an asbestos management plan that clearly identifies the locations where the ACM is present, its condition (e.g., whether it is in friable form or has the potential to release fibers), procedures for monitoring its condition, procedures to access the locations where ACM is present to avoid damage, and training of staff who can potentially come into contact with the material to avoid damage and prevent exposure. The plan should be made available to all persons involved in operations and maintenance activities. Repair or removal and disposal of existing ACM in buildings should be performed only by specially trained personnel²⁰ following host country requirements or, if the country does not have its own requirements, internationally recognized procedures.²¹ Decommissioning sites may also pose a risk of exposure to asbestos that should be prevented by using specially trained personnel to identify and carefully remove asbestos insulation and structural building elements before dismantling or demolition.²²

APPENDIX 1. COUNTRIES THAT HAVE BANNED THE USE OF ASBESTOS

1. Argentina
2. Australia
3. Austria
4. Belgium 5. Bulgaria
5. Chile
6. Cyprus
7. Czech Republic
8. Denmark
9. Egypt
10. Estonia
11. Finland
12. France
13. Gabon
14. Germany
15. Greece

¹⁸ Defined as the exercise of professional skill, diligence, prudence, and foresight that would be reasonably expected from skilled and experienced professionals engaged in the same type of undertaking under the same or similar circumstances globally. The circumstances that skilled and experienced professionals may find when evaluating the range of pollution prevention and control techniques available to a project may include, but are not limited to, varying levels of environmental degradation and environmental assimilative capacity as well as varying levels of financial and technical feasibility.

¹⁹
[http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/gui_EHSGuidelines2007_GeneralEHS/\\$FILE/Final++General+EHS+Guidelines.pdf](http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/gui_EHSGuidelines2007_GeneralEHS/$FILE/Final++General+EHS+Guidelines.pdf) (pp. 71, 91, 94)

²⁰ Training of specialized personnel and the maintenance and removal methods applied should be equivalent to those required under applicable regulations in the United States and Europe (examples of North American training standards are available at: <http://www.osha.gov/SLTC/asbestos/training.html>)

²¹ Examples include the ASTM International E1368 - Standard Practice for Visual Inspection of Asbestos Abatement Projects; E2356 - Standard Practice for Comprehensive Building Asbestos Surveys; and E2394 - Standard Practice for Maintenance, Renovation and Repair of Installed Asbestos Cement Products.

²²
[http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/gui_EHSGuidelines2007_GeneralEHS/\\$FILE/Final++General+EHS+Guidelines.pdf](http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/gui_EHSGuidelines2007_GeneralEHS/$FILE/Final++General+EHS+Guidelines.pdf) (pp. 71, 91, 94)

16. Honduras
17. Hungary
18. Iceland
19. Ireland
20. Italy
21. Japan
22. Jordan
23. Kuwait
24. Latvia
25. Lithuania
26. Luxembourg
27. Malta
28. Netherlands
29. Norway
30. Poland
31. Portugal
32. Republic of Korea
33. Romania
34. Saudi Arabia
35. Seychelles
36. Slovakia
37. Slovenia
38. South Africa
39. Sri Lanka
40. Spain
41. Sweden
42. Switzerland
43. United Kingdom
44. Uruguay

APPENDIX 2. WORLD BANK GROUP ASBESTOS REFERENCES

• <i>Policy guidance</i>	• <i>References</i>
<ul style="list-style-type: none"> • ACM should be avoided in new buildings or as new material in remodeling or renovation • Existing buildings: ACM Survey and management plan needed • Disposal of ACM shall be carried out by specially trained individuals only following host country requirements, or in their absence, internationally recognized procedures 	<ul style="list-style-type: none"> • <i>Guidance: General Environment Health and Safety Guidelines April 2007, p 34 and 71.</i>
<ul style="list-style-type: none"> • Some examples of project requirements: • □ risk assessment to determine extent of problem; surveys to abate asbestos exposure; management plan; removal by trained personnel; prohibition of ACM; procedures for handling, removal, transport, and disposal of asbestos. 	<ul style="list-style-type: none"> • Ukraine -Equal Access to Quality Education (Project ID PO77738) • KH- Health Sector Support (Project ID: P070542) • ID- Health Workforce and Services (Project. ID: P073772) • Changchun, China -TBK • Shili Auto Parts Co., (IFC, 2005)

APPENDIX 3. LIST OF RESOURCES FOR ASBESTOS STANDARDS AND REGULATIONS

NOTE: this listing is not meant to be all-inclusive, but is a sample of available information.

<ul style="list-style-type: none"> • INTERNATIONAL STANDARDS
<ul style="list-style-type: none"> • WHO Policy and Guidelines (www.who.org) ▪ www.searo.who.int/LinkFiles/Publications_and_Documents_prevention_guidelines.pdf(p. 70) ▪ www.searo.who.int/en/Section23/Section1108/Section1835/Section1864_8658.htm
<ul style="list-style-type: none"> • International Organization for Standardization (ISO) (www.iso.org) ▪ ISO 10312 (1995): Ambient air -- Determination of asbestos fibres -- Direct transfer transmission electron microscopy method. [Method similar to ASTM D6281] ▪ ISO 13794 (1999): Ambient air – Determination of asbestos fibres – Indirect-transfer transmission electron microscopy method. ▪ ISO/FDIS 16000-7: Indoor air – Part 7: Sampling strategy for determination of airborne asbestos fibre concentrations. ▪ ISO 8672: Air quality -- Determination of the number concentration of airborne inorganic fibres by phase contrast optical microscopy -- Membrane filter method (1993) [Method similar to AIA RTM1]
<ul style="list-style-type: none"> • Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal • § Basel Convention Secretariat (www.basel.int)

<ul style="list-style-type: none"> • International Labour Organization (www.ilo.org) § Chemical Safety Card, ICSC 0014: <ul style="list-style-type: none"> • www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/_icsc00/icsc0014.htm
<ul style="list-style-type: none"> • European Union • europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=32003L0018&model=guichett • § Directive 2003/18/EC amending Council Directive 83/477/EEC on the Protection of Workers from the Risks Related to Exposure to Asbestos at Work. (March 2003). Provides regulations including: worker protection, training and medical surveillance; inspections for asbestoscontaining materials; notification of asbestos work; air sampling; exposure limits of 0,1 fibres per cm³ (8-hr TWA) measured by Phase Contrast Microscopy.
<ul style="list-style-type: none"> • NATIONAL STANDARDS
<ul style="list-style-type: none"> • ASTM International (www.astm.org) <ul style="list-style-type: none"> ▪ Manual on Asbestos Control: Surveys, Removal and Management – Second Edition (March 2005). Author: Andrew F. Oberata, MPH, CIH. Discusses in detail how E2356, E2394 and E1368 are used to support an asbestos management program. ▪ E2356 Standard Practice for Comprehensive Building Asbestos Surveys. July, 2004. Covers baseline surveys for management of ACM and includes assessment protocols to make and prioritize removal vs. maintenance decisions. ASTM E2356 provides information for longterm management of ACM in a Baseline Survey and for preparation of the plans and specifications for a removal project. It contains detailed procedures and equipment (mostly ordinary hardware items) needed to take bulk samples of common types of suspect ACM. Once materials have been identified as asbestos-containing, an assessment is made as to which can be left in place. Quantitative assessment of the Current Condition and Potential for

<ul style="list-style-type: none"> • Disturbance of all friable and non-friable materials allows removal priorities to be tabulated and graphically displayed. Budgetary estimates for removal can be established on the basis of the quantitative assessments. ▪ E2394 Standard Practice for Maintenance, Renovation and Repair of Installed Asbestos Cement Products (October 2004). Describes materials, hazardous operations, necessary precautions and infrastructure requirements with detailed procedures in appendices. <u>Not</u> intended for installation of asbestos-cement products in new construction or renovation. ▪ E1368 Standard Practice for Visual Inspection of Asbestos Abatement Projects (May 2005). Provides an approach to managing a removal project to enhance prospects of passing final inspections and clearance air sampling. Describes preparation, removal and inspection procedures and criteria. ▪ E2308 Standard Guide on Limited Asbestos Screens of Buildings (2005). Provides the minimum amount of information needed to facilitate a real estate transaction. ▪ D6281 Standard Test Method for Airborne Asbestos Concentration in Ambient and Indoor Atmospheres as Determined by Transmission Electron Microscopy Direct Transfer (TEM). A method for distinguishing asbestos from non-asbestos fibers on an air sample filter and identifying and quantifying smaller and thinner fibers than Phase Contrast Microscopy ▪ D7201: Practice for Sampling and Counting Airborne Fibers, Including Asbestos Fibers, in the Workplace, by Phase Contrast Microscopy (with an Option of Transmission Electron Microscopy) ▪ Combines methodology of NIOSH 7400 and 7402
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<ul style="list-style-type: none"> • Australia • (www.ascc.gov.au/ascc/AboutUs/Publications/NationalStandards/ListofNationalCodesofPractice.htm) <ul style="list-style-type: none"> • Safe Removal of Asbestos 2nd edition [NOHSC: 2002 (2005)] • Code of Practice for the Management and Control of Asbestos in the Workplace [NOHSC: 2018 (2005)]
<ul style="list-style-type: none"> • U. K. Health and Safety Executive (http://www.hse.gov.uk/asbestos/index.htm) <ul style="list-style-type: none"> ▪ Asbestos Regulations (http://www.opsi.gov.uk/si/si2006/20062739.htm) ▪ Asbestos Essentials (http://www.hse.gov.uk/asbestos/essentials/index.htm). Includes sections on manager Tasks and methods and equipment. Publications include: <ul style="list-style-type: none"> ▪ Working with Asbestos in Buildings INDG289 08/01 C600. An overview (16 pages) of asbestos hazards and precautions ▪ MDHS100 Surveying, sampling and assessment of asbestos containing materials (2001). Contains many illustrations and examples of asbestos-containing products as well as sampling and analytical methods. MDHS100 is comparable in thoroughness to ASTM in its discussion of bulk sampling techniques and equipment, organizing a survey and assessment of ACM using a numerical algorithm based on the product type, extent of damage, surface treatment and type of asbestos fiber. The document contains numerous photographs of typical ACM found in buildings. ▪ HSG189/2 Working with asbestos cement (1999). Describes asbestos-cement products and methods of repairing and removing them, including fiber concentrations for controlled and uncontrolled operations. ▪ The Control of Asbestos at Work Regulations (2002). Requirements for the protection of

<ul style="list-style-type: none"> • people being exposed to asbestos, including the requirement for those with responsibility for the maintenance and/or repair of non-domestic premises, to identify and manage any risk from asbestos within their premises
<ul style="list-style-type: none"> • National Institute of Building Sciences (http://www.nibs.org/pubsasb.html) <ul style="list-style-type: none"> ▪ Guidance Manual: Asbestos O&M Work Practices, Second Edition (1996). Contains procedures for small-scale work on friable and non-friable ACM including asbestos-cement products. ▪ Asbestos Abatement and Management in Buildings: Model Guide Specification. Third Edition (1996). Contains information on project design and surveillance as well as applicable US regulations, plus removal contractor requirements for abatement work in specification format.
<ul style="list-style-type: none"> • Austrian Standards Institute (http://www.on-norm.at/index_e.html) • ONORM M 9406, Handling of products containing weakly bound asbestos, 01 08 2001. Contains a protocol and algorithm for assessing the condition and potential fiber release from friable asbestos-containing materials.

- International Chrysotile Association (www.chrysotile.com). [*Please note this organization represents asbestos industries and businesses*]
 - Recommended Technical Method No. 1 (RTM1), Reference Method for the determination of Airborne Asbestos Fibre Concentrations at workplaces by light microscopy (Membrane Filter Method). Method using Phase Contrast Microscopy for counting fibers on an air sampling filter that does not distinguish asbestos from other fibers
 - Recommended Technical Method No. 2 (RTM2) Method for the determination of Airborne Asbestos Fibres and Other Inorganic Fibres by Scanning Electron Microscopy. Method that identifies smaller fibers than Phase Contrast Microscopy and can distinguish types of asbestos fibers.
- U.S. National Institute for Occupational Safety and Health (www.cdc.gov/niosh/topics/asbestos)
 - Occupational Safety and Health Guidelines for Asbestos (www.cdc.gov/niosh/pdfs/0041.pdf)
 - Recommendations for Preventing Occupational Exposure (www.cdc.gov/niosh/topics/asbestos/#prevention)
 - Method 7400, Asbestos and other fibers by PCM (1994). Phase Contrast Microscopy method similar to AIA RTM1 that counts all fibers greater than 5µm long with a 3:1 aspect ratio
 - Method 7402 Asbestos by TEM (1994). Method using Transmission Electron Microscopy that identifies and counts asbestos fibers greater than 5µm long and greater than 0.25µm in diameter with a 3:1 aspect ratio
- U.S. Environmental Protection Agency (www.epa.gov/asbestos)
 - Resources include managing asbestos-containing materials in buildings, schools, and the automotive industry. Includes procedures for inspection, analysis of bulk samples, assessment of friable ACM, response actions (removal, encapsulation, enclosure), Operations and Maintenance, and clearance air sampling.
 - National Emission Standards for Hazardous Air Pollutants: Subpart M - Asbestos. 40 CFR Part 61. (1990). Regulations include: definitions of friable and non-friable asbestos-containing materials; notification requirements for renovation and demolition of buildings and facilities containing ACM; work practices to prevent visible emissions; disposal of ACM and waste material in approved landfills; and operation and closure of landfills.
 - 20T-2003 Managing Asbestos in Place: A Building Owner's Guide to Operations and Maintenance Programs for Asbestos-Containing Materials —Green bookI (1990)
- Guidance document covering: organizing an Operations and Maintenance (O&M) program including training O&M workers; recognizing types of O&M; work practices and precautions for O&M work.
- EPA-600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials (1993) Polarized Light Microscopy, Gravimetry, X-ray diffraction and Transmission Electron Microscopy methods of identifying and quantifying asbestos fibers in bulk building materials. The identification of materials as containing asbestos is done by analysis of bulk samples, usually with Polarized Light Microscopy. The analytical procedures described and the equipment to perform the analyses is similar to that found in academic or commercial geology laboratories, but specialized training to identify and quantify asbestos fibers in bulk building materials is needed as well as quality control and proficiency testing programs.
- Polarized Light Microscopy, Gravimetry, X-ray diffraction and Transmission Electron Microscopy methods of identifying and quantifying asbestos fibers in bulk building materials

<ul style="list-style-type: none"> • U. S. Occupational Safety and Health Administration (Department of Labor) • (www.osha.gov/SLTC/asbestos/) / (www.osha.gov/SLTC/asbestos/standards.html) <ul style="list-style-type: none"> ▪ Occupational Exposure to Asbestos (Construction Industry Standard) 29CFR1926.1101. (1994). Regulations for: Permissible Exposure Limits of 0.1 f/cc over a full shift (8 hr timeweighted average) and short-term exposure limit of 1.0 f/ml for 30 minutes; employee exposure monitoring for compliance with the PELs; work practices for friable and non-friable ACM; respiratory protection; worker decontamination and hygiene facilities; notification of employees and other employers of employees; medical surveillance; record-keeping and training. ▪ OSHA Method ID 160 Asbestos in Air (1994). Phase Contrast Microscopy method similar to NIOSH 7400
<ul style="list-style-type: none"> • Ontario Ministry of Labour (Canada) • (www.e-laws.gov.on.ca/DBLaws/Source/Regs/English/2005/R05278_e.htm) • § Ontario regulation 278/05 Designated Substance — asbestos on construction projects and in buildings and repair operations (2005). Regulations covering: respiratory protection and work procedures; inspections for asbestos; management of friable and non-friable asbestos; advance written notice; asbestos bulk sampling and analysis; glove bag requirements and procedures; negative air enclosures; and clearance air testing requirements (0.01 f/cc by Phase Contrast Microscopy).
<ul style="list-style-type: none"> • WorkSafe British Columbia (Canada) • (www2.worksafebc.com/publications/OHSRegulation/Part6.asp) • § Part 6 Substance Specific Requirements: Asbestos. Regulations covering: identification of asbestos-containing materials; substitution with non-asbestos materials; worker training; exposure monitoring; containment and ventilation of work areas; work practices; decontamination; respirators and protective clothing.
<ul style="list-style-type: none"> • Republic of South Africa, Department of Labour (www.acts.co.za/ohs/index.htm - type <u>asbestos</u> in search box) • § Occupational Health and Safety Act, 1993; Asbestos Regulations, 2001. Regulations covering: <ul style="list-style-type: none"> • notification; assessment and control of exposure; Occupational Exposure Limit of 0.2 f/cc - 4 hr TWA measured by Phase Contrast Microscopy; training; air monitoring; medical surveillance; non-employee exposure; respirators, personal protective equipment and facilities; asbestos building materials including asbestos cement sheeting and related products; disposal.

APPENDIX 4. SOME ALTERNATIVES TO ASBESTOS-CONTAINING PRODUCTS

<i>Asbestos product</i>	<i>Substitute products</i>
<ul style="list-style-type: none"> • Asbestos-cement corrugated roofing 	<ul style="list-style-type: none"> • Fiber-cement roofing using synthetic fibers (polyvinyl alcohol, polypropylene) and vegetable/cellulose fibers (softwood kraft pulp, bamboo, sisal, coir, rattan shavings and tobacco stalks, etc.); with optional silica fume, fly ash, or rice husk ash. • Microconcrete (Parry) tiles; galvanized metal sheets; clay tiles; vegetable fibers in asphalt; slate; coated metal tiles (Harveytile); aluminum roof tiles (Dekra Tile); extruded uPVC roofing sheets; recycled polypropylene and high-density polyethylene and crushed stone (Worldroof); plastic coated aluminum; plastic coated galvanized steel.

<ul style="list-style-type: none"> • Asbestos-cement flat sheet (ceilings, facades, partitions) 	<ul style="list-style-type: none"> • Fiber-cement using vegetable/cellulose fibers (see above), wastepaper, optionally synthetic fibers; gypsum ceiling boards (BHP Gypsum); polystyrene ceilings, cornices, and partitions; façade applications in polystyrene structural walls (coated with plaster); aluminum cladding (Alucabond); brick; galvanized frame with plaster-board or calcium silicate board facing; softwood frame with plasterboard or calcium silicate board facing.
<ul style="list-style-type: none"> • Asbestos-cement pipe 	<ul style="list-style-type: none"> • <i>High pressure:</i> Cast iron and ductile iron pipe; high-density polyethylene pipe; polyvinyl chloride pipe; steel-reinforced concrete pipe (large sizes); glass-reinforced polyester pipe. • <i>Low pressure:</i> Cellulose-cement pipe; cellulose/PVA fiber-cement pipe; clay pipe; glass-reinforced polyester pipe; steel-reinforced concrete pipe (large diameter drainage).
<ul style="list-style-type: none"> • Asbestos-cement water storage tanks 	<ul style="list-style-type: none"> • Cellulose-cement; polyethylene; fiberglass; steel; galvanized iron; PVAcellulose fiber-cement
<ul style="list-style-type: none"> • Asbestos-cement rainwater gutters; open drains (mining industry) 	<ul style="list-style-type: none"> • Galvanized iron; aluminum; hand-molded cellulose-cement; PVC

APPENDIX 5. CONSIDERATIONS FOR WORKING WITH ASBESTOS MATERIALS IN EXISTING STRUCTURES

A. Evaluation of alternatives

1. Determine whether the project could include the installation, replacement, maintenance, or demolition of any of the following: Roofing, siding, ducts or wallboard
 - Thermal insulation on pipes, boilers, and ducts
 - Plaster or fireproofing
 - Resilient flooring materials
 - Other potentially asbestos-containing materials
2. If the use of asbestos-containing materials (ACM) has been anticipated for new construction or renovation, provide information about alternative non-asbestos materials and their availability. For new construction, determine the expected difference for the entire project—on initial and operating costs, employment, quality, expected service life, and other factors—using alternatives to ACM (including consideration of the need for imported raw materials).
3. In many cases, it can be presumed that ACM are part of the existing infrastructure that must be disturbed. If there is a need to analyze samples of existing material to see if it contains asbestos, provide information on how and where can that be arranged.
4. Once the presence of ACM in the existing infrastructure has been presumed or confirmed and their disturbance is shown to be unavoidable, incorporate the following requirements in tenders for construction work in compliance with applicable laws and regulations.

B. Understanding the regulatory framework

1. Review the host country laws and regulations and the international obligations it may have entered into (e.g., ILO, Basel conventions) for controlling worker and environmental exposure to asbestos in construction work and waste disposal where ACM are present. Determine how the qualifications of contractors and workers who maintain and remove ACM are established, measured, and enforced.
2. Determine whether licensing and permitting of the work by authorities is required.
3. Review how removed ACM are to be disposed of to minimize the potential for pollution, scavenging, and reuse.
4. Incorporate in tenders involving the removal, repair, and disposal of ACM the requirements set out in Section C below.

C. Considerations and possible operational requirements related to works involving asbestos

1. Contractor qualification

- Require that contractors demonstrate that they have experience and capability to observe international good practice standards with asbestos, including training of workers and supervisors, possession of (or means of access to) adequate equipment and supplies for the scope of envisioned works, and a record of compliance with regulations on previous work.

2. Related to the technical requirements for the works

- Require that the removal, repair, and disposal of ACM be carried out in a way that minimizes worker and community asbestos exposure, and require the selected contractor to develop and submit a plan, subject to the engineer's acceptance, before doing so.
- Describe the work in detail in plans and specifications prepared for the specific site and project, including but not limited to the following:
 - Containment of interior areas where removal will occur in a negative pressure enclosure;
 - Protection of walls, floors, and other surfaces with plastic sheeting;
 - Construction of decontamination facilities for workers and equipment;
 - Removing the ACM using wet methods, and promptly placing the material in impermeable containers;
 - Final clean-up with special vacuums and dismantling of the enclosure and decontamination facilities;
 - Disposal of the removed ACM and contaminated materials in an approved landfill;²³
 - Inspection and air monitoring as the work progresses, as well as final air sampling for clearance, by an entity independent of the contractor removing the ACM.
- Other requirements for specific types of ACM, configurations and characteristics of buildings or facilities, and other factors affecting the work must be enumerated in the plans and

²³ Alternative guidance for circumstances where approved landfills are not available for disposal of hazardous substances, such as asbestos, guidance is provided in the EHS General Guideline, reference above as well as in the Guideline on Waste Management Facilities. [http://www.ifc.org/ifcext/sustainability.nsf/AttachmentsByTitle/gui_EHSGuidelines2007_WasteManagement/\\$FILE/Final+-+Waste+Management+Facilities.pdf](http://www.ifc.org/ifcext/sustainability.nsf/AttachmentsByTitle/gui_EHSGuidelines2007_WasteManagement/$FILE/Final+-+Waste+Management+Facilities.pdf)

specifications, and applicable regulations and consensus standards must be specifically enumerated.

3. Related to the contract clauses²⁴

- Require that the selected contractor provide adequate protection to its personnel handling asbestos, including respirators and disposable clothing.
- Require that the selected contractor notifies the relevant authorities of the removal and disposal according to applicable regulations as indicated in the technical requirements and cooperates fully with representatives of the relevant agency during all inspections and inquiries.

4. Related to training and capacity building

- Determine whether specialist industrial hygiene expertise should be hired to assure that local contractors learn about and apply proper protective measures in work with ACM in existing structures.

Originator: World Bank, Operations Policy and Country Services

²⁴ Standard contract clauses for asbestos work exist but are too extensive for this short note. To view an example, the U.S. National Institute of Building Sciences —Asbestos Abatement and Management in Buildings: Model Guide Specification¹ has a complete set – in copyright form – and the clauses and instructions for using them fill a two-inch binder.

Annex 16: 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.

ESIA/ESMP 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 ESMP 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 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

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 nighttime (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 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 is not only a legal requirement, it is an effective way to ensure that workers are committed to health and safety procedures and improvements. Employees should be consulted on health and safety measures and before the introduction of new technology or products.

Annex 17: Occupational Health and Safety Plan for rural road rehabilitation and construction works associated with building/rehabilitating community/agrologistical infrastructure. ²⁵

While road rehabilitation work and medium scale building construction/rehabilitation work is usually minor work that involves moderate level civil works safety issues and accidents are commonly reported from such work sites, workers not properly prepared or trained to workers with hazards such as use of machinery and vehicles, traffic safety, working in outdoor conditions often place them selves at risk if not properly appraised of the required working conditions and safety measures.

In order to prioritize worker Health and Safety appropriate safety procedures and training in place before the start of each job and to create a workplace where anyone can raise a workplace safety issue or speak up if they have a safety concern.

The following steps should be practiced ensuring adequate safety at minimum.

- All Environmental and Social Management Plans (ESMPs), Codes of Environmental and Social Good Practice (CESGPs) and other E&S instruments must always clearly define the recommended measures for Occupational Health and Safety at the work sites.
- Ensure only fully licensed machine operators who have been trained on the use of construction machinery and vehicles are selected for this purposed.
- Participate in the risk assessment of possible hazards at the start of each sub-project via the E&S screening that is undertaken.
- For any high-risk activities identified (e.g. working on or near exposed live parts) use a *Safe Work Method Statements and Worker Code of Conducts* that has been developed in consultation with the workers and is easily understood and followed and translated into Local Languages.
- Safety briefing should be conducted on a daily basis prior to works commencing as well as monthly refreshers on handling emergencies and natural disaster situations.
- The work site office/worker accommodation should always display in local languages, procedures for handling emergency, local emergency contact phone numbers and protocols at all times.

Qualifications and Licensing

Workers should only carry out tasks that they are qualified and competent to undertake, specifically for Vehicle and Machinery operation during the construction process.

Where building decommissioning or removal of utilities such as electric wires etc. are undertaken as project interventions, they should be undertaken by an appropriately licensed and competent person.

Utilization of Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) provides additional protection to workers exposed to workplace hazards in conjunction with other facility controls and safety systems. PPE is considered to be a last resort that is above and beyond the other facility controls and provides the worker with an extra level of personal protection.

Recommended measures for use of PPE in the workplace include the following:

- Active use of PPE if alternative technologies, work plans or procedures cannot eliminate, or sufficiently reduce, a hazard or exposure
- Identification and provision of appropriate PPE that offers adequate protection to the worker, co-workers, and occasional visitors, without incurring unnecessary inconvenience to the individual
- Proper maintenance of PPE, including cleaning when dirty and replacement when damaged or worn out.
- Proper use of PPE should be part of the recurrent training programs for employees
- Selection of PPE should be based on the hazard and risk ranking described earlier in this section, and selected according to criteria on performance and testing established by recognized organizations

Summary of Recommended Personal Protective Equipment According to Hazard		
Objective	Workplace Hazards	Suggested PPE

²⁵ The OHS plan and guidance note has been developed in line with the World Bank Group General ESHS guidelines and ILO guidelines relevant to Sri Lanka

Eye and face protection	Flying particles, molten metal, liquid chemicals, gases or vapors, light radiation.	Safety Glasses with side-shields, protective shades, etc.
Head protection	Falling objects, inadequate height clearance, and overhead power cords	Plastic Helmets with top and side impact protection.
Hearing protection	Noise, ultra-sound	Hearing protectors (ear plugs or earmuffs).
Foot protection	Falling or rolling objects, pointed objects. Corrosive or hot liquids	Safety shoes and boots for protection against moving & falling objects, liquids and chemicals.
Hand protection	Hazardous materials, cuts or lacerations, vibrations, extreme temperatures.	Gloves made of rubber or synthetic materials (Neoprene), leather, steel, insulating materials, etc
Respiratory protection	Dust, fogs, fumes, mists, gases, smokes, vapors, pathogens and air borne viruses	Facemasks with appropriate filters for dust removal and air purification (chemicals, mists, vapors and gases). Single or multi-gas personal monitors, if available.
	Oxygen deficiency	Portable or supplied air (fixed lines). On-site rescue equipment.
Body/leg protection	Extreme temperatures, hazardous materials, biological agents, cutting and laceration	Insulating clothing, body suits, aprons etc. of appropriate materials.

Guidance Matrix for controlling high-risk and potential physical hazards at Work Sites

Hazard	Pathway of harm	Impact	Control recommendations
Working at heights	<ul style="list-style-type: none"> Falling from roof top Falling from ladder Falling through ceiling space 	<ul style="list-style-type: none"> Trauma Broken bones Death 	<ul style="list-style-type: none"> Eliminate: Install ground mounted solar systems
			<ul style="list-style-type: none"> Engineer: Install scaffolding around roof top with stair access. Roofer's kit, guard rails.
			<ul style="list-style-type: none"> PPE: Use fall restraint techniques
Working in ceiling spaces	<ul style="list-style-type: none"> Contact with energized conductors Exposure to poor air quality such as fiberglass, coal dust, lead dust and other harmful substances Exposure to loose-fill asbestos Exposure to extreme heat Falling, trips Vermin, snakes, spiders and insects 	<ul style="list-style-type: none"> Electric shocks, electrocution Respiratory disease Cancer Mesothelioma, asbestosis Exhaustion, fatigue, heat stress Trauma, broken bones Stings, bites and disease Death Skin irritation, rash, increased mucus production and watery eyes 	<ul style="list-style-type: none"> Eliminate: Install ground mounted solar systems avoiding the need to work in a ceiling space
			<ul style="list-style-type: none"> Isolate: Turn off all electricity to the property at the main switchboard and take steps to prevent the electricity from being turned back on while work is in progress*
			<ul style="list-style-type: none"> PPE: Wearing appropriate, well maintained and correctly-fitted personal protective equipment when working in dusty ceiling spaces, including: <ul style="list-style-type: none"> a respirator a head covering and goggles, to avoid eye irritation long-sleeved, loose-fitting clothing and gloves
Working with and installing	<ul style="list-style-type: none"> Contact with energized conductors Accidental short 	<ul style="list-style-type: none"> Electric Shocks, electrocution Arc flash, burns 	<ul style="list-style-type: none"> Isolate: Lockout Tagout. Test for deenergized (DEAD) Do not work energized

Hazard	Pathway of harm	Impact	Control recommendations
electrical equipment	<ul style="list-style-type: none"> circuit 	<ul style="list-style-type: none"> Death 	<ul style="list-style-type: none"> Admin: Current LVR/CPR training PPE: Wear arc rated neck to wrist to ankle clothing with a minimum ATPV of 4cal^{m2}. Wear protective glasses and gloves
Working outdoors	<ul style="list-style-type: none"> Exposure to the sun 	<ul style="list-style-type: none"> Sun burn, skin cancer Exhaustion, fatigue, heat stress 	<ul style="list-style-type: none"> Eliminate: Reorganizing work schedules where possible so that outdoor tasks are done before 10 am and after 3 pm
			<ul style="list-style-type: none"> Substitute: Rotating tasks that involve direct sun exposure Increasing amount of shade available – use gazebos
			<ul style="list-style-type: none"> PPE: Slip on clothing, slop on SPF 30+ sunscreen, slap on a hat, slide on sunglasses. Drink plenty of water- drinking water supply should be present on site
Injury or death can occur from being trapped, entangled, or stuck	<ul style="list-style-type: none"> By operation of machinery parts due to unexpected starting of equipment or Via unobvious movement during operations. 	<ul style="list-style-type: none"> Trauma Broken bones Death 	<ul style="list-style-type: none"> Designing machines to eliminate trap hazards and ensuring that extremities are kept out of harm’s way under normal operating conditions. Examples of proper design considerations include two-hand operated machines to prevent amputations or the availability of emergency stops dedicated to the machine and placed in strategic locations. Where a machine or equipment has an exposed moving part or exposed pinch point that may endanger the safety of any worker, the machine or equipment should be equipped with, and protected by, a guard or other device that prevents access to the moving part or pinch point. Guards should be designed and installed in conformance with appropriate machine safety standards Turning off, disconnecting, isolating, and de-energizing (Locked Out and Tagged Out) machinery with exposed or guarded moving parts, or in which energy can be stored (e.g. compressed air, electrical components) during servicing or maintenance, in conformance with a standard such those issues by National Agencies such as ICTA. Designing and installing equipment, where feasible, to enable routine service, such as lubrication, without removal of the guarding devices or mechanisms
Work involves, or is likely to involve, disturbing asbestos	<ul style="list-style-type: none"> Inhalation of asbestos fibers 	<ul style="list-style-type: none"> Mesothelioma, asbestosis or cancer 	<ul style="list-style-type: none"> Eliminate: Do not proceed with job until asbestos-containing material removed by license contractors
			<ul style="list-style-type: none"> Substitute: Replace asbestos switchboard with new upgraded switchboard. Follow safe working procedures
Continuous exposure to Noise above permissible levels	<ul style="list-style-type: none"> Via the operation of vehicles and machinery. Exposure to machinery operating continuously 	<ul style="list-style-type: none"> Temporary loss of hearing Permanent loss of hearing Damage to ear drum Dizziness and headaches 	<ul style="list-style-type: none"> No employee should be exposed to a noise level greater than 85 dB(A) for a duration of more than 8 hours per day without hearing protection. In addition, no unprotected ear should be exposed to a peak sound pressure level (instantaneous) of more than 140 dB(C).

Hazard	Pathway of harm	Impact	Control recommendations
			<ul style="list-style-type: none"> • The use of hearing protection should be enforced actively when the equivalent sound level over 8 hours reaches 85 dB(A), the peak sound levels reach 140 dB(C), or the average maximum sound level reaches 110dB(A). Hearing protective devices provided should be capable of reducing sound levels at the ear to at least 85 dB(A). • Although hearing protection is preferred for any period of noise exposure in excess of 85 dB(A), an equivalent level of protection can be obtained, but less easily managed, by limiting the duration of noise exposure. For every 3 dB(A) increase in sound levels, the ‘allowed’ exposure period or duration should be reduced by 50 percent.⁶⁵ • Prior to the issuance of hearing protective devices as the final control mechanism, use of acoustic insulating materials, isolation of the noise source, and other engineering controls should be investigated and implemented, where feasible • · Periodic medical hearing checks should be performed on workers exposed to high noise levels
Eye Hazards	<ul style="list-style-type: none"> • Solid particles from a wide variety of industrial operations. • A liquid chemical spray may strike a worker in the eye causing an • Discharge of solid fragments, liquid, or gaseous emissions can reasonably be predicted (e.g. discharge of sparks from a metal cutting station, pressure relief valve discharge) 	<ul style="list-style-type: none"> • Temporary blurring of vision • Eye injury • Permanent blindness. 	<ul style="list-style-type: none"> • Use of machine guards or splash shields and/or face and eye protection devices, such as safety glasses with side shields, goggles, and/or a full-face shield. • Specific Safe Operating Procedures (SOPs) may be required for use of sanding and grinding tools and/or when working around liquid chemicals. • Frequent checks of these types of equipment prior to use to ensure mechanical integrity is also good practice. • Machine and equipment guarding should conform to standards published by organizations such as ICTA national guidelines and ISO • Moving areas where the discharge of solid fragments, liquid, or gaseous emissions can reasonably be predicted (e.g. discharge of sparks from a metal cutting station, pressure relief valve discharge) away from places expected to be occupied or transited by workers or visitors. Where machine or work fragments could present a hazard to transient workers or passers-by, extra area guarding or proximity restricting systems should be implemented, or PPE required for transients and visitors. • Provisions should be made for persons who have to wear prescription glasses either through the use over glasses or prescription hardened glasses.
Welding / Hot Work	<ul style="list-style-type: none"> • Welding works creates an extremely bright and intense light that may seriously injure a worker’s eyesight. • Welding also produces noxious fumes 	<ul style="list-style-type: none"> • Impacts on eyesight • Permanent blindness • prolonged exposure can cause serious chronic diseases. 	<ul style="list-style-type: none"> • Provision of proper eye protection such as welder goggles and/or a full-face eye shield for all personnel involved in, or assisting, welding operations. Additional methods may include the use of welding barrier screens around the specific work station (a solid piece of light metal, canvas, or

Hazard	Pathway of harm	Impact	Control recommendations
			<p>plywood designed to block welding light from others).</p> <ul style="list-style-type: none"> • Devices to extract and remove noxious fumes at the source may also be required. • Special hot work and fire prevention precautions and Standard Operating Procedures (SOPs) should be implemented if welding or hot cutting is undertaken outside established welding workstations, including 'Hot Work • Permits, stand-by fire extinguishers, stand-by fire watch, and maintaining the fire watch for up to one hour after welding or hot cutting has terminated. • Special procedures are required for hot work on tanks or vessels that have contained flammable materials.
<p>Industrial Vehicle Driving and Site Traffic</p>	<ul style="list-style-type: none"> • Poorly trained or inexperienced industrial vehicle drivers have increased risk of accident with other vehicles, pedestrians, and equipment. • Industrial vehicles and delivery vehicles, as well as private vehicles on-site, also represent potential collision scenarios. • Movement of regular traffic along road corridors can also lead to potential collision scenarios. 	<ul style="list-style-type: none"> • Trauma and Injury • Broken bones • Death 	<ul style="list-style-type: none"> • Training and licensing industrial vehicle operators in the safe operation of specialized vehicles such as forklifts, including safe loading/unloading, load limits • Ensuring drivers undergo medical surveillance • Ensuring moving equipment with restricted rear visibility is outfitted with audible back-up alarms • Establishing rights-of-way, site speed limits, vehicle inspection requirements, operating rules and procedures (e.g. prohibiting operation of forklifts with forks in down position), and control of traffic patterns or direction • Restricting the circulation of delivery and private vehicles to defined routes and areas, giving preference to 'one-way' circulation, where appropriate
<p>Climate and Working Environment Temperature</p>	<ul style="list-style-type: none"> • Exposure to extreme hot tropical working conditions in indoor or outdoor environments • Exposure to heavy rain and wind incidents during outdoor work. • Use of personal protective equipment (PPE) to protect against other occupational hazards can accentuate and aggravate heat-related illnesses, especially in hot climates. 	<ul style="list-style-type: none"> • Temperature stress. • Temperature stress related injury such as skin burns, rashes etc • Headaches • Dehydration • Death 	<ul style="list-style-type: none"> • Monitoring weather forecasts for outdoor work to provide advance warning of extreme weather and scheduling work accordingly • Adjustment of work and rest periods according to temperature stress management procedures. depending on the temperature and workloads • Providing temporary shelters to protect against the elements during working activities or for use as rest areas • Use of protective clothing • Providing easy access to adequate hydration such as drinking water or electrolyte drinks and avoiding consumption of alcoholic beverages. • Workers who are noted to have consumed alcoholic beverages or show signs of heat stress should not be allowed to continue work and medical assistance should be provided.
<p>Ergonomics, Repetitive Motion, Manual Handling of heavy objects.</p>	<ul style="list-style-type: none"> • During the operation of machinery • While conducting work tasks 	<ul style="list-style-type: none"> • Injuries due to ergonomic factors, such as repetitive motion, 	<ul style="list-style-type: none"> • Use of mechanical assists to eliminate or reduce exertions required to lift materials, hold tools and work objects, and requiring multi-person lifts if weights exceed thresholds

Hazard	Pathway of harm	Impact	Control recommendations
		overexertion, and manual handling, take prolonged and repeated exposures to develop, and typically require periods of weeks to months for recovery.	<ul style="list-style-type: none"> • Selecting and designing tools that reduce force requirements and holding times, and improve postures • Providing user adjustable workstations • Incorporating rest and stretch breaks into work processes, and conducting job rotation • Implementing quality control and maintenance programs that reduce unnecessary forces and exertions • Taking into consideration additional special conditions such as left-handed persons
Illumination and Lighting in Work Areas	<ul style="list-style-type: none"> • If work at night times or evening time is permitted adequate lightening is required to carry out tasks. • Indoor work or work in small spaces. 	<ul style="list-style-type: none"> • Working in low light conditions can cause injuries and accidents due to lack of proper illumination and visibility. • Can cause eye strain and or loss of temporary vision. 	<ul style="list-style-type: none"> • Ensure adequate illumination of work sites, especially if work in evening or night is undertaken and for indoor working spaces adequate light should be provided. • Use of energy efficient light sources with minimum heat emission • Undertaking measures to eliminate glare / reflections and flickering of lights • Taking precautions to minimize and control optical radiation including direct sunlight. Exposure to high intensity UV and IR radiation and high intensity visible light should also be controlled • Controlling laser hazards in accordance with equipment specifications, certifications, and recognized safety standards. The lowest feasible class Laser should be applied to minimize risks.
First hazards and risks	<ul style="list-style-type: none"> • Due to electrical shortages in wires. • From burning of waste or other activities. • Via welding activities • Via faults in machinery etc. 	<ul style="list-style-type: none"> • Burn injuries and trauma. • Inhalation of smoke and associated health impacts • Death 	<ul style="list-style-type: none"> • Ensure fire fighting equipment such as extinguishers and adequate access to water are present at the work site. • Fire drills and fire evacuation procedures should be discussed, and all workers should be briefed accordingly. • The numbers and contact procedures for local fire departments and hospitals as well as ambulance services should be provided on site in local languages and reiterated at safety briefings.

Safety inspection, testing and calibration of Machinery

Safety inspections, regular testing and calibration of machinery used in the construction process should be conducted on a regular and routine basis. This should include regular inspection and testing of all safety features and hazard control measures focusing on engineering and personal protective features, work procedures, places of work, installations, equipment, and tools used. The

inspection should verify that issued PPE continues to provide adequate protection and is being worn as required. All instruments installed or used for monitoring and recording of working environment parameters should be regularly tested and calibrated, and the respective records maintained.

Surveillance of the working environment

Employers should document compliance using an appropriate combination of matrixes. These are often defined in the ESMPs/CESGPs of projects. The project implementing agencies/clients will be responsible for monitor contractors work in the work environment. In addition, the World Bank will also conduct due monitoring during supervision visits.

Surveillance of workers health

When extraordinary protective measures are required (for example, against biological agents in the case of Pandemic situations such as Covid-19, and/or hazardous compounds), workers should be provided appropriate and relevant health surveillance prior to first exposure, and at regular intervals thereafter. The surveillance should, if deemed necessary, be continued after termination of the employment. These services should be conducted in collaboration with local Public Health Inspectors (PHIs) designated to the project area. Workers below the age of 18 as per National Regulations may not be permitted to work on project sites. Workers with documented poor health conditions should be screened and allowed to work only with a note of confirmation from a certified medical practitioner

Worker Training on OHS

Training activities for employees and visitors should be adequately monitored and documented (curriculum, duration, and participants). Emergency exercises, including fire drills, should be documented adequately. Service providers and contractors should be contractually required to submit to the employer adequate training documentation before start of their assignment.

Accidents and Diseases monitoring

The employer should establish procedures and systems for reporting and recording: a) Occupational accidents and diseases and b) Dangerous occurrences and incidents. These systems should enable workers to report immediately to their immediate supervisor any situation they believe presents a serious danger to life or health. The systems and the employer should further enable and

encourage workers to report to management all:

- Occupational injuries and near misses
- Suspected cases of occupational disease
- Dangerous occurrences and incidents

All reported occupational accidents, occupational diseases, dangerous occurrences, and incidents together with near misses should be investigated with the assistance of a person knowledgeable/competent in occupational safety.\

The investigation should ensure and document the following areas:

1. Establish what happened
2. Determine the cause of what happened
3. Identify measures necessary to prevent a recurrence

Occupational accidents and diseases should be classified, and distinction is made between fatal and non-fatal injuries. The two main categories are divided into three sub-categories according to time of death or duration of the incapacity to work. The total work hours during the specified reporting period should be reported to the appropriate regulatory agency.

The following reporting criteria will be used at minimum.

Occupational Accident Reporting	
Fatalities	Non-Fatal Injuries
Immediately to the Employer and by the Employer to the World Bank. Copies of all police reports, medical reports and death certificates establishing cause of death and associated aspects and details should be submitted within a period of 5 days from reporting.	Recorded as reported on a weekly basis as per routine reporting to the employer by the contractor. Via agreed reporting mechanisms for the project by the Employer to the World Bank.

Annex 18: Guidelines for the relocation of living and non-living articles of conservation value

GUIDELINES FOR THE RELOCATION OF LIVING AND NON-LIVING ARTICLES OF CONSERVATION VALUE

Process to be followed for the Relocation of Fauna and Flora

1. If the ESIA/Environmental Screening Report recommends the relocation of any faunal or floral species of importance the following steps should be conducted.
2. The project shall make every effort to avoid removal and/or destruction of any property of cultural and aesthetic significance.
3. Consultations should be conducted prior to development of the plan with all relevant entities, including local authorities, religious leaders, the Department of Wildlife Conservation and Forest Department and the Ministry of Mahaweli Development and Environment, conservation stakeholders such as NGOs working in the sector, and local communities will be consulted during this process.
4. A site-specific fauna and flora protection plan should be developed and cleared by the World Bank, prior to commencement of any work.
 - 4.1. The plan should include a list of species identified, methodologies to be used for capture and relocation, an assessment of the suitability of the identified relocation site or sites, a reporting plan and a plan for long term monitoring.
5. The clearing of vegetation should be preceded by translocations of any vulnerable species to locations elsewhere as recommended.
6. The contractor cannot be mobilized on site prior to the completion of program, unless agreed in the plan.
7. An experience subject specific expert entity with prior experience of conducting such a program should be hired for this task as necessary.
8. Relocation should be conducted in line with the IUCN Guidelines for Reintroductions and Other Conservation Translocations²⁶

Process to be followed for the Relocation of Tangible Physical Cultural Resources

1. If the ESIA recommends the relocation of any property of physical cultural resource (PCR) of archeological/cultural importance following steps should be conducted.
2. The project shall make every effort to avoid removal and/or destruction of any property of cultural significance.
3. A site-specific PCR Relocation and protection plan should be developed and cleared by the World Bank, prior to commencement of any work.
4. Consultations should be conducted prior to development of the plan with all relevant entities, including local authorities, religious leaders, the Department of Archeology, Ministry of Cultural Affairs and the local community.
 - 4.1. The plan should include a list of species identified, methodologies to be used for the relocation, an assessment of the suitability of the identified relocation site or sites, a reporting plan and a plan for long term management and conservation of the property.

²⁶ IUCN-Guidelines for Reintroductions and Other Conservation Translocations-2013-
<https://portals.iucn.org/library/sites/library/files/documents/2013-009.pdf>

- 4.2. The relocation plan must indicate the proposed new location for which the PCR will be moved, why relocation is required, any risks to the structure, and what the new use of land is proposed for the original site of the historic building. The engaged appropriately qualified persons before relocation, will record the Heritage value, history and location using photography, physical measurement and other means considered appropriate;
- 4.3. The PCR should be relocated without disassembly unless this is physically impossible;
- 4.4. The appropriately qualified person will document a procedure for the relocation process that will not damage the building; and
- 4.5. An additional third party, such as the department of Archeology or any other appropriately qualified persons will be recruited to supervise the relocation.
5. The contractor cannot be mobilized on site prior to the completion of program, unless agreed in the plan.
6. The clearing of vegetation should be proceeded by the relocation activities.
7. An experienced sub specific expert entity with prior experience of conducting such a program should be hired for this task as necessary.
8. Relocation should be conducted in line with the Guidelines of the International Council on Monuments and Sites and with guidance and collaboration from the Department of Archeology of Sri Lanka.

Annex 19: Guidance Note on Identifying Human Elephant Conflict Issues and Recommended Actions

Background²⁷

The Human Elephant Conflict (HEC) is a noteworthy issue in the context of Sri Lanka's development. Sri Lanka has the highest density of elephants among the Asian elephant range states. Estimates of the number of elephants in Sri Lanka vary from about 3,000 to 6,000. However, protected areas (PAs) under the Department of Wildlife Conservation (DWC) are insufficient in size and quality to sustain the country's elephant population. Over two-thirds of the wild elephant population can be found outside PA system. This is because the elephant is an edge species that prefers open forest habitat to dense primary forests. PAs, on the other hand, are generally primary or mature forests and provide only sub-optimal habitat for elephants. As a result, it is estimated that 70% elephant range lies outside the DWC PA network. This landscape is shared by humans and elephants, causing conflicts with farmers, including deaths of humans and elephants, and crop and property damage. Around 70 humans and over 250 elephants are killed annually. Crop and property damage is approximately US\$10 million annually. With accelerating development and fragmentation of habitats, innovative landscape management approaches are needed to address the HEC. Such approaches would balance competing objectives of creating new opportunities for rural poverty reduction and employment and sustaining Sri Lanka's unique elephant population over much of the Dry Zone.

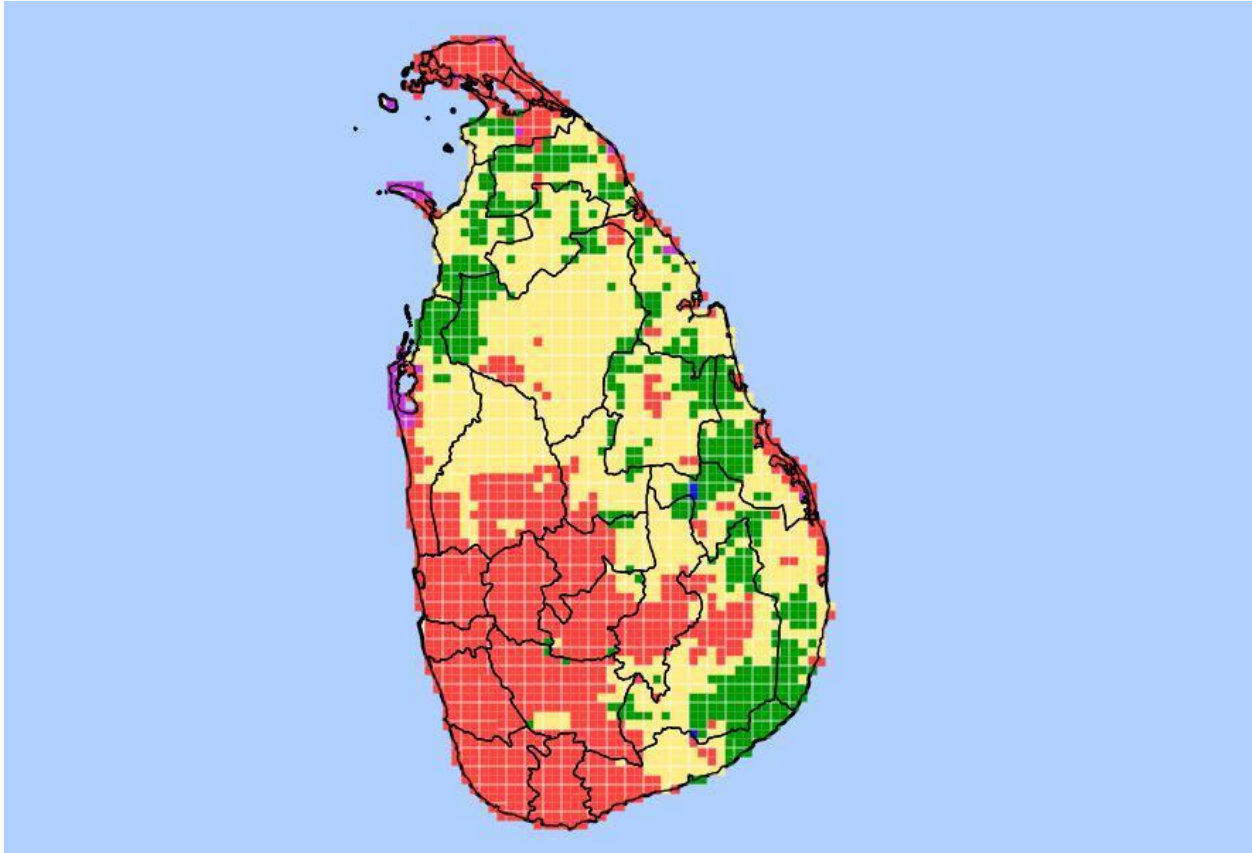
Current Situation and Trends²⁸

Elephant habitats are declining, predominantly due to development across the Island, and the frequency and severity of the HEC is increasing, calling for alternative approaches to the HEC management. Studies undertaken in Sri Lanka have shown that translocation and confinement to DWC PAs are not a viable management strategy and jeopardize the survival of Sri Lanka's elephants, both within and outside PAs and with no long-term benefit for reducing the HEC. This is largely because restricting elephants to the DWC PAs reduce their current habitat to about 30 percent of what they use at present. Most national parks are already at or even beyond carrying capacity and hold the maximum number of elephants they can support. Additionally, national parks are generally primary or mature forests providing only sub-optimal habitats for edge species, such as elephants. Over two thirds of elephants in Sri Lanka have home ranges that go beyond areas controlled by the DWC.

Figure-1 presents a map on elephant distribution in Sri Lanka that has been prepared by the Center for Conservation Research (CCR) Sri Lanka, in 2017, and presents an understanding of patterns of elephant distribution within Sri Lanka. Each square depicted is a 25 km² grid, where areas marked in RED indicate areas where there is human presence, but no elephants, GREEN indicated areas where there is elephant presence but no humans (these are DWC PAs) and YELLOW indicates areas where both humans and elephants are both present. The data has been collected via extensive surveys conducted by CCR.

²⁷ Source: Ecosystem and Conservation Management Project-2016

²⁸ Source: Dr Sumith Pilapitiya and Center for Conservation Research (CCR)



(Source: Center for Conservation Research Sri Lanka)

Figure-1: Elephant Distribution Patterns in Sri Lanka

The translocation of individual crop raiding and other problem elephants have shown that the translocated elephants either try to return to their home range or indulge in problem activities in new locations close to release areas. Often translocated elephants create greater problems to communities after their release in new sites, resulting in translocation of the problem as well. Research has shown that elephant drives that are conducted mainly in response to political and social pressures have failed to eliminate crop raiding elephants from the drive areas. While herds tend to be driven, the crop raiding males often remain behind. Communities have confirmed that the remaining males become more aggressive and develop into a bigger threat to people proceeding such drives. Construction of electric fences along the administrative boundaries of the DWC PAs has failed to yield the expected outcome of the HEC mitigation since the DWC PAs are often surrounded by forest reserves. This results in fence breaking by elephants and ultimately elevated HEC issues.

Human Elephant Coexistence (HECOEX) Strategies

The failure of the approach of confining elephants to protected areas, led to a 'National Policy for the Conservation and Management of Wild Elephants in Sri Lanka' being formulated and approved by the Cabinet of Ministers in 2006. The policy specified that elephants should be managed in situ, both in and outside protected areas, and that their management outside protected areas should be

based on a human-elephant co-existence model through creating awareness among stakeholders and community-based electric fencing.

The availability of recent telemetry data on elephant movements provides the GoSL with the opportunity to pioneer new science and observation-based adaptive management approaches which can be replicated across the elephant ranges in Sri Lanka and if successful, in the other Asian elephant range states. Successful pilot projects of HECOEX have been implemented by NGOs, which are ready to be adopted in the government's program. The concept used in these pilot projects are to aid communities to build permanent protective fences around villages (village fences) and seasonal fences around their paddy lands (paddy-field fences). Communities have taken the leadership in implementing these models with part contribution of initial costs and full responsibility for construction and maintenance of the fences. The successful HECOEX pilot projects of innovative approaches over a representative area in the South-Eastern and North-Western regions have been completed based on research, observational data, and field trials¹. These experiences have contributed to the preparation the of the National Human Elephant Conflict Mitigation Plan prepared by DWC in 2016.

The people of Sri Lanka have had a benevolent attitude towards elephants throughout history, due to their religious and cultural traditions. Attitudinal surveys conducted among HEC affected populations in southern Sri Lanka confirm the benevolent attitude towards elephants, with the community requesting that measures be taken to reduce (not eliminate) elephant destruction rather than remove elephants from their areas. Such benevolence by the HEC affected communities provides a sound foundation for up-scaling and developing HECOEX models. HECOEX models will be pioneered in Managed Elephant Ranges (MERs) where elephant depredation of human settlements and paddy cultivation will be prevented by electric fencing, while elephants will be allowed to range freely in other forms of compatible land use. The sub-component will also provide incentives for regulating and managing the seasonal agricultural practices in MERs to minimize conflict and optimize habitat quality.

Actions to Be Taken During Project Preparation.

When project sites for new infrastructure and rehabilitation of existing infrastructure will be undertaken, first check whether the project site is within an area with elephant presence. The elephant distribution map in Figure 1 could be used as a guide. If there is elephant presence in the area of the project site, the following steps are to be followed.

1. The Project Negative List:

As stipulated in the projects overarching safeguards instrument, the Environmental Assessment and Management Framework (ESMF), the following activities in relation to HEC are not permitted.

- Construction of large/new infrastructure within or directly adjacent (in buffer zones) to the following
 - Designated Protected Areas including marine protected areas.
 - Known Elephant Corridors
 - Areas of existing severe HEC

2. Environmental Screening:

- The environmental screening to be conducted for each subproject contains specific screening questions to identify if the project site is susceptible to HEC and what current conditions prevail.
- It will also help identify if the project activity will in any way lead to the elevation of HEC related issues.
- These questions are to be duly completed using data from field visits and discussions with the local DWC offices, local authorities and communities.

Human Animal Coexistence Screening Questions in Environmental Screening Form
The site is a known area of Elephant Habituation (verify site location with DWC if elephants are recorded from the project site historically)
Describe the nature of the Human Elephant Conflict (HEC) Issues recorded from the site & immediate vicinity of the site.
Will the use of the project site result in depriving elephants of habitat and if so, how many hectares?
Will the project activities lead to the elevation of existing HEC related issues and/or lead to new HEC issues in the project area?
Will project activities block or hinder, access to known elephant foraging grounds, water sources and/or migratory routes.
Does the site require specific Human Elephant Coexistence mitigation measures, alternate access for elephants, underpasses and/or overpasses for elephant movement, elephant fencing, warning signs etc.

- If via the screening, it is identified that the project activities will lead to negative impacts on local elephant populations and specific measures are required for HEC management the steps identified under point 3 must be taken.

3. Management of HEC Impacts

45. Environmental and Social Impact Assessments

- If the project requires an Environmental and Social Impact Assessment (ESIA), which will be the case for all new infrastructure development projects to be financed, the ESIA Terms of Reference will include in its scope of work specific measures to identify in detail issues related to HEC.
- The ESIA team will need to include a subject expert well versed on Elephants, Wild life Management and/or Human Animal Conflict Management.
- The ESIA will need to present specific designs of mitigatory measures within the context of the proposed project on managing HEC related impacts from project design to implementation and present it in the form of a **Human Elephant Conflict Management Plan (HECMP)** which will supplement the project Environmental and Social Management Plan (ESMP).
- The ESIA should be shared with the DWC, as the main government agency concerned, and their concurrence on the proposed ESIA recommendations should be collected either via a discussion between the project implementing agency and the DWC, documented via minutes or via written agreement. This document should be annexed to the final HECMP.

- All design recommendations proposed in the HECMP should be incorporated into the overall project design. This includes HEC related infrastructure such as alternate access for elephants, underpasses and/or overpasses for elephant movement, elephant fencing for the project site and its area of impact, warning signs etc.

46. Stand Alone Human Elephant Conflict Management Plans

- For projects that do not require ESIA, if the screening form identifies specific HEC related issues, the project should prepare a project specific HEC Management Plan to supplement the project's Environmental and Social Management Plan. The HEC Management Plan should be prepared by a subject expert well versed on Elephants, Wildlife Management and/or Human Animal Conflict Management.
- The HEC Management Plan should be shared with the DWC, as the main government agency concerned, and their concurrence on the proposed ESIA recommendations should be collected either via a discussion between the project implementing agency and the DWC, documented via minutes or via written agreement. This document should be annexed to the final HECMP.

All documents mentioned above are subject to World Bank clearance and disclosure requirements stipulated in the project Environmental Safeguards Instrument.

Annex 20: Special Monitoring Checklist for Ensuring Safe Conditions for Workers and Public.

Date inspection conducted:	Location:
Name(s) of those participating in this inspection:	
INDICATE EITHERS:	
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: _____				

Annex 21: Generic Monitoring Plan for Environmental Parameters for Construction Phase of Subprojects

Phase	What parameter is to be monitored? (Action Steps Should be consistent with the respective ESMPs)	Where is the parameter to be monitored?	How is the parameter to be monitored? / type of monitoring equipment	When is the parameter to be monitored? (frequency of measurement or continuous)	Why is the parameter to be monitored? (optional)	Cost		Institutional Responsibility	Monitoring oversight
						Install	Operate		
Construction Material Sourcing									
a) Stone, sand, gravel and clay borrow pit	a) possession of official approval or valid operating license	a) stone, gravel and clay borrow pit	a) Inspection	a) before work begins		a) NA	a) NA	a) Contractor	Construction Supervising Engineer and Environmental Officer
Transport of Construction Material									
a) Crushed stone	a) truck load covered or wetted	a) Main and local road; job site	a) Inspection	a) unannounced inspections during work	a)-c) safety requirements and enable as	a) NA	a) minimal	a) Contractor	Construction Supervising Engineer and Environmental Officer
b) Sand, gravel, clay	b) truck load covered or wetted	b) Main and local road; job site	b) Inspection	b) unannounced inspections during work	little disruption to traffic as it is possible	b) NA	b) minimal	b) Contractor	Construction Supervising Engineer and Environmental Officer
c) Traffic management	c) routes selected; following a traffic management plan	c) Main and local road; job site	c) Inspection	c) unannounced inspections during work		c) NA	c) minimal	c) Contractor	Construction Supervising Engineer and Environmental Officer
During Construction Phase									
a) Noise	a) Overall level of noise that is transmitted in the immediate environment	a) job site; nearest homes	a) sound monitoring smart phone application/ sound monitoring device	a) At the beginning of works, on complain	a) assure compliance of performance with environment,	a) NA	a) NA	a) Contractor	Environmental Officer

Phase	What parameter is to be monitored? (Action Steps Should be consistent with the respective ESMPs)	Where is the parameter to be monitored?	How is the parameter to be monitored? / type of monitoring equipment	When is the parameter to be monitored? (frequency of measurement or continuous)	Why is the parameter to be monitored? (optional)	Cost		Institutional Responsibility	Monitoring oversight
						Install	Operate		
<i>b) Emissions, Particulate matter and Dust</i>	b) air pollution (flying particles, pollutants in the air and oxides of C, S, N, ozone and similar.)	b) at and near job site	b) laboratory with necessary equipment of the licensed organization (NBRO)	b) during material delivery and construction; on complain	health and safety requirements and enable as little disruption to traffic as it is possible	b) NA	b) NA	b) Contractor	Environmental Officer
<i>c) Vibrations</i>	c) limited time of activities	c) job site	c) observation, /Vibration metering device	c) unannounced inspections during work and on complain		c) NA	c) NA	c) Contractor	Environmental Officer
<i>d) Traffic disruption during construction activity</i>	d) existence of traffic management plan; traffic patterns	d) main and local road; job site	d) traffic police	d) unannounced inspections during work and on complain		d) NA	d) NA	d) Contractor	Construction Supervising Engineer and Environmental Officer
<i>a) Reduced access due to project activities</i>	a) Provided alternative access	c) Job site	b) Observation	a) During construction		a) NA	a) minimal	a) Contractor	Construction Supervising Engineer and Environmental Officer
<i>b) Vehicle and pedestrian safety</i>	b) Visibility and appropriateness	d) At and near job site	c) Observation	b) During construction		b) NA	b) minimal	b) Contractor	Construction Supervising Engineer and Environmental Officer

Phase	What parameter is to be monitored? (Action Steps Should be consistent with the respective ESMPs)	Where is the parameter to be monitored?	How is the parameter to be monitored? / type of monitoring equipment	When is the parameter to be monitored? (frequency of measurement or continuous)	Why is the parameter to be monitored? (optional)	Cost		Institutional Responsibility	Monitoring oversight
						Install	Operate		
<i>c) Water and soil pollution from improper material storage, management and usage building and auxiliary materials</i>	c) water and soil quality (suspended solids, oils, organic solids, heavy metals, pH value, conductivity, constant physical and chemical parameters)	e) runoff from site, material storage areas; wash down areas of equipment	d) observation; laboratory with necessary equipment of the licensed organization	a) Twice depending on the construction lifetime b) On complain or in case of accident situation		c) NA	c) NA	c) Contractor	Environmental Inspector
<i>a) Potential contamination of soil and water from improper maintenance and fuelling of equipment</i>	a) Water and soil quality (suspended solids, oils, fuel, lubricants, organic compounds, heavy metals, pH value, conductivity); procedures of work	h) Job site; equipment maintenance facilities	b) Observation; laboratory with necessary equipment of the licensed organization	a) Twice depending on the construction lifetime b) On complain or in case of accident situation		a) NA	a) NA	a) Contractor	Environmental Inspector

Phase	What parameter is to be monitored? (Action Steps Should be consistent with the respective ESMPs)	Where is the parameter to be monitored?	How is the parameter to be monitored? / type of monitoring equipment	When is the parameter to be monitored? (frequency of measurement or continuous)	Why is the parameter to be monitored? (optional)	Cost		Institutional Responsibility	Monitoring oversight
						Install	Operate		
<i>h) Labour Health and Safety</i>	i) protective equipment (glasses, masks, helmets, boots, etc); ii) Condition of worker camps	i) Job site/Worker camps	b) Observation	a) Unannounced inspections during work		a) NA	a) minimal	a) Contractor	PHI, Construction Supervising Engineer and Environmental Officer

Annex 22: Terms of Reference for Recruitment of Contractor Environmental and Social Officer

To be Included in bidding documents with respective ESMP.

The contractor through an appointment of dedicated / qualified environmental and social (E&S) officer shall be responsible in implementation of ESMP requirement by

- e) Maintaining up-to-date records on actions taken by the contractor with regards to implementation of ESMP recommendations.
- f) Timely (weekly) submission of reports, information and data to the Project Management Unit (PMU) /Implementation Agency Environmental Specialist, through Supervision consultant (SC).
- g) Participating in the meetings conveyed by the Engineer and
- h) Any other assistance requested by the Engineer.

The E&S 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, E&S Officer should prepare an Environmental and Social Action Plan in line with Environment and Social Management Plan and submit to the Engineer along with construction method statements.

The E&S 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 Environmental and Social Management Framework of IRCDP. A register of all complaints is to be passed to the Engineer within 24 hrs they are received, with the action taken by the E&S Officer on complains thereof. In addition, E&S Officer required to perform following tasks as well;

- 4. Participation for the periodic Grievance Redress Committee Meetings at Village Level, Implementation Agency Level and PMU Level
- 5. Coordinate and liaise with Implementing Agency and PMU
- 6. Support and coordinate with PMU Environmental and Social team in carrying out the monitoring assessments such as baseline surveys, progress review, mid-term review, etc
- 7. Take actions to mainstream project activities during the period
- 8. Identify the potential environment and social safeguards issues in accordance provided ESIA/ ESMP/ ESMEF/

Qualifications required

E&S Officer preferably possessing a Bachelor Degree with minimum of 3 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 23: Outline Terms of Reference for the Project Level Environmental and Social Audit

1. Introduction to the project

To be filled

2. The Need for Environmental and Social Assessment

All sub-projects financed under the project are required to comply with World Bank ESF 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 (ESMF) 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 ESMF, 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 Environmental Information Questionnaire (BEIQ). Upon reviewing the BEIQ, 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 ASMP. The consultant will review the application of the ESMF to the IRCDP. In particular, the consultant will review a sample of (i) the screening forms prepared by each PMU (ii) standalone environmental 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 ESMF, the applicable ESF framework of the WB, NEA and the approval procedure of the CEA.

4. Tasks of the Consultant

- Obtain the required information from the sub-project proponent, PMUs, on the sub-project under implementation as well as under preparation under the IRCDP. This may include, but not be limited to, relevant plans, drawings, screening reports, social analysis, standalone ESIA/ESMP (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 ESMF.
- 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 E&S documents incorporating the necessary mitigation 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 ESMF), 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 24: Environmental and Social Safeguards Preparatory Tasks Tracking Sheet

<u>ENVIRONMENT SAFEGUARDS PREPRATORY TASKS FOR SUB-PROJECTS STATUS TRACKING SHEET</u>																
#	IMPLEMENTATION SCHEDULE (PACKAGE #)	Name and Description of Sub-project	E&S Instrument (Indicate via use of tick mark)			CLEARANCES RECEIVED (CEA /MC/NBRO/CCD/ Other)		Date received by WB	Date Clearance/conditional clearance provided by WB	Tentative Date for Tender Commencement	Date safeguards instrument sent to procurement team.	ESHS Clauses in Contract (Indicate via use of tick mark)			Status as at (Date sheet is updated)	Status Related Comments
			Environmental & Social Screening Report	ESIA	ESMP							Safeguards Document Included in Tender	ESHS Clauses in Contract	BOQ Includes adequate costing for ESMP implementation		
						INST	DATE									
Phase I																
Component 1																
Comp 1.1																
Comp 1.2																
Comp 1.3																
Component 2																
Comp 2.1																
Phase 2																

Annex 25: Generic Session Plan for Project Implementation Agency Staff Training on ESMF and Environmental and Social Instrument Implementation, Monitoring

Topic: Environmental and Social Stewardship via ESF Implementation within the NAME of PROJECT

Objective: To introduce the project staff to the World Bank's ESF and Environmental and Social Management procedures set forth in the Environmental Management Framework 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 and Social Specialists, Environmental and Social Officers, Procurement Specialists based in PMU, Project IAs

Training Material: A Cloud Drive link with the Soft Copies of all Relevant Training Material (Session Presentations, ESMF, Guiding Documents (Screening Formats, Copies of example ESMPs, project safeguards instruments, etc.), and other resource material.

No	Subject	Purpose	Time	Session Structure	Materials	Aids	Potential Resource Person
1.1	Introduction to ESF Requirements and procedure within the project	To introduce the WB ESF and ESSs, the activities set forth in the ESMF and procedures of implementation, monitoring and reporting within the project	1.5hr	Brain storming, Lecture	Copy of the ESF, ESMF Guideline, copies of Screening Formats,	Laptop Multimedia Projector File with Training Material for whole day	
1.2	Identification of Environmental impacts and deducing mitigation 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 ESMP 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	Laptop, Multimedia projector, Flip charts & Pens	

No	Subject	Purpose	Time	Session Structure	Materials	Aids	Potential Resource Person
					administrative structure.		
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 ESMP	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 ESMPs, 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 mitigation mechanisms for these if they can be mitigated
- Identify who will be responsible for the E&S 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 26: Example of Disclosure Advertisement for ESF Instruments

Date

NAME OF MINISTRY/IMPLEMENTING AGENCY

NOTICE OF DISCLOSURE FOR PUBLIC COMMENTS OF THE

NAME OF INSTRUMENT

FOR THE PROJECT NAME

The above-mentioned **Name of Instrument** has been prepared by the **Name of Ministry/Implementing Agency** for the World Bank Funded **Name of 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**

Secretary,

Name of Ministry/ Implementing Agency

Address

(INCLUDE ANY OTHER FEEDBACK INFO LIKE TELEPHONE NUMBERS AND EMAILS)

Annex 27: Consultation Notes on ESMF Consultations

National level stakeholder consultation

Venue/Date	Issues Raised by Participants	By Whom	Responses by the Project Team
27.04.2021	Have received information about the IRCDP. There are roads owned by Provincial Road Development Authority in frontrunner list and these roads needs to be developed. Development of rural roads was ignored in the past. People like to donate lands for the road development as road is important to them. Therefore, its good if the road can be widened. The development of drain system along the roads is also important when developing the roads. If not, the storm water flows on the roads and road get damaged. And, passing bays needs to be incorporated, otherwise, as two vehicles cannot pass from each other. Rathnapura district is a land slide prone area and this needs to be considered. Doing the development without creating environmental issues. Is important.	Deputy Director, Local Governments, Provincial Council, Sabaragamuwa.	The concerns on landslides, drain system along the road and incorporation of passing bays will be considered by the project.
27.04.2021	It is good to develop these provincial roads. And, its good if the total length of roads can be developed. The bends of these roads needs to be improved and its good, if the road widening is possible. When Road Development Authority develop provincial roads, it is easy for the council as then, council can consider the development of roads under local authorities.	Director, Roads, Provincial Council, Sabaragamuwa.	Improvements of bends will be considered by the project for future improvements.
27.04.2021	Have not received information on IRCDP. There are no roads owned by Balangoda Urban Council, included in the frontrunner list. The Rathnapura district is land slide prone area and this needs to be considered when developing these roads.	Chairman, Balangoda Urban Council	The concern on landslides will be considered by the project.
27.04.2021	Have received information on selected frontrunner roads. These roads need to be developed as the roads are located in remote areas. Embilipitiya is an agricultural area and roads and water are essential for agricultural development. The road development will facilitate people to transport their agricultural produces to the	Chairman, Embilipitiya Pradeshiya Sabah	People and political authority will be informed about proposed development prior to starting of Civil Works.

Venue/Date	Issues Raised by Participants	By Whom	Responses by the Project Team
	markets with less travel time. There are no environmental issues in this area. It's important to inform people and political authority in the area about proposed development prior to starting of civil works.		
27.04.2021	Passaramulla – Denagama – Nelliwala (SR1) road is located in this PS. This road is essential to be developed as it connects with Balangoda – Hatton road and Colombo – Badulla road. There are tea and vegetable cultivations and road development will facilitate the transport of these agricultural produces. The Udugama school will be upgraded to a national school soon, and this is the only road to reach the school. Further, this is the main road for people living in around 20 GN divisions. There are no environmental issues in this road. It is good if the road can be widened. The people and the political authority in the area about proposed development prior to starting of civil works.	Chairman, Imbulpe Pradeshiya Sabah	People and political authority will be informed about proposed development prior to starting of Civil Works.
27.04.2021	It is good to develop rural roads. Within this PS, a PRDA road is selected for the development in frontrunner list. There are estate population living in this area. These roads are footpaths earlier and now the roads have been widened. The land donation is acceptable, and people will donate lands if required, for the development. There will be no environmental issues. Inform all people along with this PS, about the development prior to starting of civil works.	Chairman, Imbulpe Pradeshiya Sabah	People will be informed about proposed development prior to starting of Civil Works.

Stakeholder consultation conducted in each subproject

Venue	Date	Details of Stakeholder		Key concerns raised/Suggestions Provided
		Type of Stakeholder	Number of Participants (M/F)	
SR 01: Passaramulla – Denagama – Nelliwala Road	11.03.2021	Grama Niladari - Medagedaragoda	Male	<ul style="list-style-type: none"> It is important to develop this road. People along the road engage in farming and work as laborers. There is a health center and people come to this place from surrounding villages.
	11.03.2021	Grama Niladari - Amuwathugoda	Male	<ul style="list-style-type: none"> There is no proper drain system along the road and therefore, the storm water flows on the road. Thus, road is damaged. People engage in paddy, tea and vegetable cultivation. It is good to develop this road.
	11.03.2021	Road User	Male	<ul style="list-style-type: none"> The bus traverses only up to Nelliwala. From that location, it's difficult even to go by foot as the road is severely damaged. Although this road is a PRDA road, the road is not maintained for a long period.
	11.03.2021	Commercial Owner	Female	<ul style="list-style-type: none"> There's lack of public transport as the road is damaged. Although, the road does not get inundated, the storm water flows along the road and road get damaged.
	11.03.2021	Resident	Male	<ul style="list-style-type: none"> It is good to develop this road as it is difficult to use this road during rainy season as there is no drainage system along the road. The road is slippery and dangerous during rainy season.
SR 02: Welekumbura – Seethagala – Udakanda – Deiyangewatta – Kowlketiya Road	11.03.2021	Commercial Owner	Male	<ul style="list-style-type: none"> Main livelihood of the area is tea cultivation. About 40 -50 lorries transport tea leaves on this road daily. This road is in damaged condition and therefore, it should be improved.
	12.03.2021	Grama Niladhari Welekumbura	Male	<ul style="list-style-type: none"> Majority of people living in this area are Sinhala - Buddhists. Most of the lands are Private lands. But there are some lands under Buddhist Temporalities Ordinance.
	11.03.2021	Grama Niladari - Kinchigune	Male	<ul style="list-style-type: none"> This road provide access to Agriculture Department of Sabaragamuwa University and to Samanalawewa reservoir. Many people visit the reservoir. The people living along the road engage in farming.

Venue	Date	Details of Stakeholder		Key concerns raised/Suggestions Provided
		Type of Stakeholder	Number of Participants (M/F)	
SR 03: Pambahinna – Kinchigune Road	11.03.2021	Commercial Owner	Male	<ul style="list-style-type: none"> • There around 50 houses along this road and there is a training center of Ceylon Electricity Board. • There are private and government lands along the road.
SR 04: Wikiliya Pansala Road	11.03.2021	Social Service Officer, Balangoda Divisional Secretariat	Male	<ul style="list-style-type: none"> • The road needs to be developed. • The villagers will support the project. • People in the area engage in agricultural activities. • There are poor people in the project area.
	11.03.2021	Resident	Male	<ul style="list-style-type: none"> • There are around 30 families along the road and majority are Sinhalese.
SR 05: Kumaragama Randola Road	11.03.2021	Grama Niladari - Thalagama	Male	<ul style="list-style-type: none"> • All three ethnicities, Sinhalese, Tamil and Muslim live along this road. • This road is very unsafe to use during rainy days as its slippery. • People along the road engage in wage labor and agriculture.
	11.03.2021	Resident	Male	<ul style="list-style-type: none"> • The storm water flows along the road and road gets damage. • The drainage needs to be improved along the road. • Many people use this road and its good to develop the road.
	11.03.2021	Road User	Male	<ul style="list-style-type: none"> • Its difficult to use this road as it is damaged. • There are many road users, and it is good to develop the road.
SR 06: Berenduwa – Banagoda – Kemanawatta – Batewela Road	12.03.2021	Grama Niladhari - Heen Berenduwa	Male	<ul style="list-style-type: none"> • There are agriculture lands. Ex: Tea, Rubber, Cinnamon • Land ownership is Government and Private. • People in the area work in agriculture lands. • People in the area are Sinhala Buddhists.
	11.03.2021	Counsellor, Rathnapura Divisional Secretariat Division	Male	<ul style="list-style-type: none"> • There are no NGOs working on GBV in the project area. • This area is an agricultural area. • These rural roads need to be developed and people will welcome the project.
	11.03.2021	Technical Officer, RDA	Male	<ul style="list-style-type: none"> • The road development is needed as road is not developed for a long time.
	11.03.2021	Road User	Female	<ul style="list-style-type: none"> • The road is damaged, and we like the development. • Majority of people in the area are Sinhalese.

Venue	Date	Details of Stakeholder		Key concerns raised/Suggestions Provided
		Type of Stakeholder	Number of Participants (M/F)	
SR 07: Dambuluwana Galathura Road	11.03.2021	Commercial Owner	Male	<ul style="list-style-type: none"> The road gets inundated at several locations and water level goes to 1 1/2 feet high at settlements of estate laborers in mid of the road section The culverts need to be repaired and replaced at the end of the road.
	11.03.2021	Resident	Female	<ul style="list-style-type: none"> Both men and women in the area work as estate laborers. The estate workers in this area live here for long time.
	12.03.2021	Grama Niladari - Galathura	Male	<ul style="list-style-type: none"> There are tea and rubber lands in the project area and people work in these lands. There are community-based organizations such as Framers organizations.
	12.03.2021	Grama Niladari - Kahawatta	Female	<ul style="list-style-type: none"> There are paddy and tea cultivations in the project area. Only Sinhala people live in this GN Division.
SR 08: Devipahala Deraniyagala	11.03.2021	Resident	Male	<ul style="list-style-type: none"> Road is damaged and need to be developed. This road is an access road to Bopath Ella waterfall
	11.03.2021	Rod user	Male	<ul style="list-style-type: none"> Main livelihood of the area is agriculture. This road has a public transport service.
	11.03.2021	Small shop owner	Male	<ul style="list-style-type: none"> The road development is good. Get an income from selling tea to people who visit waterfall. This is our only income and I also sell betel and king coconut.
	12.03.2021	Women Development Officer, Kuruvita DS Division	Female	<ul style="list-style-type: none"> Many women in project area do not work. So, we encourage to do self-employments. The road development is good.
	11.03.2021	Grama Niladari, Devipahala	Male	<ul style="list-style-type: none"> This road is used by local and foreign tourists to go to Bopath Ella. This road development will facilitate tourists and residents in the area.
	11.03.2021	Grama Niladari - Ekneligoda	Female	<ul style="list-style-type: none"> There are tea and rubber cultivations. People engage in day today labour activities in these cultivations. Majority of population is Sinhalese.
	11.03.2021	Squatter	Female	<ul style="list-style-type: none"> The main income is tea plucking. Also do this small shop when not going for tea plucking.

Venue	Date	Details of Stakeholder		Key concerns raised/Suggestions Provided
		Type of Stakeholder	Number of Participants (M/F)	
SR 09: Erathna Thundola Road				<ul style="list-style-type: none"> Derive an income selling king coconut in the shop.
	11.03.2021	Motor Mechanic	Male	<ul style="list-style-type: none"> This road is damaged and its difficult for vehicle users. Around 500m section of the road was in a dilapidated condition and villagers informed the authorities to construct at least that section.
	11.03.2011	Road User	Female	<ul style="list-style-type: none"> People in the area work in the garment factory. The vehicles that transport garment workers do not come to this area as road is damaged. People must walk to the main road because of that. The lorries that transport tea also use this road.
SR 10: Guruluwana Eknaligoda	12.03.2011	Grama Niladari-Ketawala	Male	<ul style="list-style-type: none"> There are tea cultivations and there are other cultivations such as rubber, cinnamon and paddy. The development is good.
	12.03.2011	Grama Niladari-Gilimale North	Male	<ul style="list-style-type: none"> Although there are big trees in this area, it is not a protected area. Those are private lands and some people own 5-8 acres.
	11.03.2011	Road user	Male	<ul style="list-style-type: none"> Tea cultivation is the main agriculture activity. This road is used for tea transportation and its good to develop the road.
	11.03.2011	Resident	Female	<ul style="list-style-type: none"> All people living in this area are title holders. Also sell jaggery to people who visit Adam's peak.
SR 11: Illukwatta Rathganga road	12.03.2021	Grama Niladari - Gileemale	Male	<ul style="list-style-type: none"> Many pilgrims who visit Adam's peak visit Rathgama temple and they use this road. Majority of people are Sinhalese, and the main livelihoods are tea cultivation and gem mining. There are farmer's organizations operating in Medagama area.
	11.03.2021	Road user	Male	<ul style="list-style-type: none"> The road development is good as the road is damaged. This road is used to access Athuraliya, Rathgama and Malkella villages.
	11.03.2021	Road user	Male	<ul style="list-style-type: none"> The road gets inundated during heavy rains. Many people use this road and its good to develop the road.
	12.03.2021	Grama Niladari - Dehenakanda	Male	<ul style="list-style-type: none"> The lands along the road are under 99-year lease estate lands.

Venue	Date	Details of Stakeholder		Key concerns raised/Suggestions Provided
		Type of Stakeholder	Number of Participants (M/F)	
SR 12: Dehenakanda Road				<ul style="list-style-type: none"> Majority of people are Indian Tamil, and they work in estates as laborers. There are farmer organizations operating in the area.
	11.03.2021	Shop Owner	Female	<ul style="list-style-type: none"> There are five buses working in this road. People use this road to go to Bambarakanda and Dehenakanda areas. There are tea factories and waterfalls in the area. Therefore, people visit the area for trading and recreational activities.
	11.03.2021	Estate laborer	Female	<ul style="list-style-type: none"> Work in the tea estate and work for 8 hours. Paid daily for our work.
	11.03.2021	Shop Owner	Male	<ul style="list-style-type: none"> Many people work in tea estates. Have deeds for our lands. Its good to develop the road.
SR 13: Iddamalgoda – Sotherland via Moragala	12.03.2021	Grama Niladari - Bulugahapitiya	Male	<ul style="list-style-type: none"> People live in this GN division are Tamil. People engage in wage labor and self-employments.
	12.03.2021	Grama Niladari - Ganegoda	Male	<ul style="list-style-type: none"> Majority people in this GN division are Sinhalese. People also work in garment factories and government institutions.
	11.03.2021	Road user	Male	<ul style="list-style-type: none"> This road needs to be developed. The road was not developed for a long time and now its in dilapidated condition.
SR 15: Paper Mill road from Kubugoda Ara junction to Thalawa Road	11.03.2021	Grma Niladari, Thorakolayaya	Male	<ul style="list-style-type: none"> It is important to develop this road as the surface is damaged and the road provides a link to Embilipitiya Middeniya Road (B-486). There are Banana cultivations and home gardens. The road is used for transportation of these agricultural produces to the market.
	11.03.2021	Grama Niladari, Hingura	Female	<ul style="list-style-type: none"> Road surface is damaged, so road needs to be developed. Almost all population living along the project area is Sinhalese and their religion is Buddhism. Agriculture is the main livelihood in the project area. Some people are engaging in public and private sector employments.
	12.03.2021	Grama Niladari, Modarawana	Female	<ul style="list-style-type: none"> This road development is very good. When developing the road

Venue	Date	Details of Stakeholder		Key concerns raised/Suggestions Provided
		Type of Stakeholder	Number of Participants (M/F)	
SR 16: Kumbugoda Ara Udagama Road				<p>side drains and culverts need to be improved.</p> <ul style="list-style-type: none"> Majority of the people in the village is Sinhalese and their religion is Buddhism. Agriculture is the main livelihood activity of the people. Banana is the main agricultural crop and paddy is also there. Some people are engaging in public and private sector employments as well.
	11.03.2021	Businessman	Male	<ul style="list-style-type: none"> This road provides access to Embilipitiya - Middeniya Road (B 486). Therefore, it is important to develop this road. Embilipitiya New Town is the nearest town. In order to fulfill various needs such as education, employment, medical treatments and other administrative matters, people in this area often go to Embilipitiya New Town via this road. Traders come to this area to buy agricultural produce such as banana and paddy.
	11.03.2021	Businessman	Male	<ul style="list-style-type: none"> This road provides access to Embilipitiya - Middeniya Road (B 486) and Udagama area. At present this road is in damaged condition, so road development is very good.
	11.03.2021	Resident	Female	<ul style="list-style-type: none"> This road development is very good. There are houses and some shops either side of the road. During the construction period these people will be affected by dust. Agriculture is the main livelihood activity of the people.
	11.03.2021	Visitor	Male	<ul style="list-style-type: none"> The existing road surface is damaged. People transport their agricultural products to market by truck, lorry and tractors. Existing drains are insufficient, so drains need to be improved and new drains need to be constructed where necessary.
	11.03.2021	Grama Niladari, Hingurana	Male	<ul style="list-style-type: none"> The existing road surface is damaged, so this road development is very good. Majority of the people living along the road is Sinhalese. Buddhism is the religion of this population.

Venue	Date	Details of Stakeholder		Key concerns raised/Suggestions Provided
		Type of Stakeholder	Number of Participants (M/F)	
SR 17 (a): Hingura Ara Old Road SR 17 (b): Road to Hingura Ara Village				<ul style="list-style-type: none"> Chena cultivation is the dominant agricultural practice in the area. Some people are engaging in public and private sector employments and self-employments.
	11.03.2021	Road User	Male	<ul style="list-style-type: none"> Embilipitiya Ceramic factory and nail factory are located along the road. Traders frequently visit these factories for trading activities. During the construction period access to houses and commercial institutes located on either side of the road will be affected. The transportation will be improved after road development.
	11.03.2021	Resident	Female	<ul style="list-style-type: none"> This road is very important road, because this road provides accesses for Pelmadulla - Embilipitiya Nonagama Road (A018) Road development will be more advantageous for school children and other road users. Majority of the people living along the road are Sinhalese.
SR 18: Road from Hingura Ara to Ketagal Ara	11.03.2021	Framer	Male	<ul style="list-style-type: none"> Majority of the people are living along the road are Sinhalese. Buddhism is the religion of this population. Banana is the dominant agriculture cultivation in the area. Paddy and coconut are the other agricultural crops. Visitors come to this area for trading activities of agricultural produces. Teachers from nearby village come to Katagala Ara school.
	11.03.2021	Businessman	Male	<ul style="list-style-type: none"> We need a good road. This road is in a dilapidated condition, so this road development is very good. Vehicles get damaged due to road condition. During the road construction period dust, noise, and vibration issues will be there.
	12.03.2021	Grama Niladari, Kalagedi Ara	Female	<ul style="list-style-type: none"> Majority of the people living along the road are Sinhalese. Buddhism is the religion of this population. Chena cultivation is a main agricultural practice in the area. There are home gardens with coconut, pepper and banana cultivations. There is a Rural Development Society in the area.

Venue	Date	Details of Stakeholder		Key concerns raised/Suggestions Provided
		Type of Stakeholder	Number of Participants (M/F)	
SR 19: Kalagedi Ara Nuge Cross road	11.03.2021	Resident	Female	<ul style="list-style-type: none"> This road Development is very good. Daily number of vehicles are traversing along this road. Chena cultivation is practiced well. Along this road people transport their agro products to market by truck, lorry and tractors. Roadside drains need to be provided where necessary and properly maintained.
	11.03.2021	Businessman	Male	<ul style="list-style-type: none"> We need a good road. This road is in dilapidated condition, so this road development is very good. During the construction period dust will be the major impact. Traders come to this village to buy agricultural produce.
SR 20: Chandrika wewa outer Circular Road	11.03.2021	Squatter	Female	<ul style="list-style-type: none"> Has a fruit and lottery stall. Earn Rs. 1500 – 200 daily income from the shop. This area is popular among local tourists for recreational activities.
	11.03.2021	Fish seller	Male	<ul style="list-style-type: none"> Doing this business for two years and have a monthly income of Rs. 25,000/=. There is a Fisheries society operating in the area. Daily many people visit Chandrika wewa (lake).
	11.03.2021	Small shop owner	Male	<ul style="list-style-type: none"> Selling fruits at this place. It's my own house and land behind the shop and I can shift back during construction. Majority of people living along the road are Sinhalese and Buddhists.
SR 21: 100 Mile post Bosirigama thalagahawela via Galwanguwa Road	11.03.2021	Resident	Male	<ul style="list-style-type: none"> Almost all population living along the project area is Sinhalese and their religion is Buddhism. During the construction period dust will be the major impact. Outside people come to this area to buy agricultural produce such as banana, pepper and manioc. In addition, people come to these villages to buy bricks Streetlamps need to be installed where necessary.
	11.03.2021	Resident	Male	<ul style="list-style-type: none"> It is important to develop this road as the surface is damaged and the road provides a link to Pelmadulla – Embilipitiya – Nonagama (A018) Road

Venue	Date	Details of Stakeholder		Key concerns raised/Suggestions Provided
		Type of Stakeholder	Number of Participants (M/F)	
				<ul style="list-style-type: none"> • There are cultivations such as banana, pepper, manioc and vegetables in the area. • Farmers in the area use this road to transport their agricultural produce to market. • School children and public and private sector workers also use this road to go to schools and their working places.
SR 22: 13 Bunt Road from 99 junction	11.03.2021	Farmer	Male	<ul style="list-style-type: none"> • This road development is very good. • Daily, a number of vehicles traverse in this road. • There is no public transport service in this road. • There are banana, pepper, manioc and vegetable cultivations in the project area. Farmers in the area use this road to transport their agricultural production to market. • There are farmer organizations operating in the area.
	11.03.2021	Resident	Female	<ul style="list-style-type: none"> • The existing road surface is damaged. • Roadside drains need to be provided where necessary and should be properly maintained. • Some people have title deeds and some people have permits for their lands. • Outside people come to the project to buy agricultural produce such as banana, pepper and manioc.
SR 23: Udawalawa to Kolabage Ara via Adaluwa Road	11.03.2021	Shop Owner	Female	<ul style="list-style-type: none"> • We need a good road. This road is in dilapidated condition, so this road development is very good. • Almost all population living in this area is Sinhalese and their religion is Buddhism. • Traders come to the project are to buy agricultural produce. • There is no public transport service operating in this road.
	11.03.2021	Resident	Male	<ul style="list-style-type: none"> • Agriculture is the main livelihood in the project area. Banana, pepper and manioc are the main agricultural crops. In addition, fruit crops such as mango, vegetables like brinjal, bitter gourd, radish, cereal like mung, bean cowpea are also grown well.

Venue	Date	Details of Stakeholder		Key concerns raised/Suggestions Provided
		Type of Stakeholder	Number of Participants (M/F)	
				<ul style="list-style-type: none"> • During the road construction period dust, noise, and vibration issues will increase. • There are farmer organizations operating in the area.
SR 24: Kolabage Ara to Bibilegama Yaya Road	11.03.2021	Resident	Male	<ul style="list-style-type: none"> • It is important to develop this road as the surface is damaged and the road provides a link to Pelmadulla – Embilipitiya – Nonagama (A018) Road. • Agriculture is the main livelihood in the area. Banana and manioc are the main agricultural crops. • Farmers in the area use this road to transport their agricultural production to market. School children and public and private sector workers also use this road to go to schools and their working places.
	11.03.2021	Farmer	Male	<ul style="list-style-type: none"> • The existing road surface is damaged. • Roadside drains need to be provided where necessary and it should be properly maintained. • When developing this road access need to be provided for houses and commercial institutes located on either side of the road. • Traders come to the project are to buy agricultural produce.
SR 25: 2 nd Mile post to Guru Ara Galwanguwa Road	11.03.2021	Road User	Male	<ul style="list-style-type: none"> • it is important to develop this road as the surface is damaged and the road provides a link to Pelmadulla – Embilipitiya – Nonagama (A018) Road. • School children and other road users will be benefited by this project. • Agriculture is the main livelihood in the project area. Banana and pepper are the main agricultural crops.
	11.03.2021	Farmer	Male	<ul style="list-style-type: none"> • Agriculture is main economic activity in the area. • Traders come to the project are to buy agricultural produce. In addition, people come to these villages to buy bricks. • There are farmer organizations operating in the area.
	11.03.2021	Resident	Male	<ul style="list-style-type: none"> • This road is very important road, because this road provides accesses to Pelmadulla – Embilipitiya – Nonagama (A018) Road.

Venue	Date	Details of Stakeholder		Key concerns raised/Suggestions Provided
		Type of Stakeholder	Number of Participants (M/F)	
				<ul style="list-style-type: none"> • Due to the existing dilapidated road condition road users face transport difficulties. • There are several bricks manufacturing sites in this area. • Some people are engaging in public and private sector employments
SR26: Balagara junction to Kachchigala Ara Lake Road	12.03.2021	Grama Niladari, Thunkama	Male	<ul style="list-style-type: none"> • Majority of people living along the road are Sinhalese. Buddhism is the religion of this population. • One public transport, a bus is operating in this road. • Kachchigala Primary School is located in the project area. Teachers come to this school from the outside areas.
	11.03.2021	Shop Owner	Female	<ul style="list-style-type: none"> • Agriculture is the main livelihood activity in the area. • At the moment, only one bus operating in the road. After developing of this road this public bus service will increase. • School going children, farmers, office workers, and business community in the area are the main road users of this road.
	11.03.2021	Businessman	Male	<ul style="list-style-type: none"> • The existing road surface is damaged, so this road development is very good. • Agriculture is main economic activity in the area. • After the road development land values increases, travel time will decrease, vehicle maintenance cost will be reduced.

Annex 28: Resource List and Guidance Documents for Response and Management of COVID-19 with Projects

The Ministry of Health and Indigenous Medical Services: Guidelines have been provided to be followed at workplaces and other public and private entities to prevent/control the spread of possible COVID-19 infection. Further, it provides additional precautions to be adhered to considering the different categories of workplaces and settings.

(<https://www.hpb.health.gov.lk/en/covid-19>)

Construction Industry Development Authority Guidelines: CIDA established under the Construction Industry Development Act No.33 of 2014 with the view to be used as a mandatory Health & safety Guidelines at the construction sites operating in Sri Lanka during the critical observation period of Coronavirus COVID 19 epidemic, as a precautionary measure, in preventing the spreading of the virus.

(<http://www.cida.gov.lk/newsevents/COVID%20Guidelines.Version.29thApril.2020.pdf>)

WHO Guidance

Advice for the public

- WHO advice for the public, including on social distancing, respiratory hygiene, selfquarantine, and seeking medical advice, can be consulted on this WHO website:

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>

Technical guidance

- [Infection prevention and control during health care when novel coronavirus \(nCoV\) infection is suspected](#), issued on March 19, 2020
- [Recommendations to Member States to Improve Hygiene Practices](#), issued on April 1, 2020
- [Severe Acute Respiratory Infections Treatment Center](#), issued on March 28, 2020
- [Infection prevention and control at health care facilities \(with a focus on settings with limited resources\)](#), issued in 2018
- [Laboratory biosafety guidance related to coronavirus disease 2019 \(COVID-19\)](#), issued on March 18, 2020
- [Laboratory Biosafety Manual, 3rd edition](#), issued in 2014
- [Laboratory testing for COVID-19, including specimen collection and shipment](#), issued on March 19, 2020
- [Prioritized Laboratory Testing Strategy According to 4Cs Transmission Scenarios](#), issued on March 21, 2020
- [Infection Prevention and Control for the safe management of a dead body in the context of COVID-19](#), issued on March 24, 2020
- [Key considerations for repatriation and quarantine of travelers in relation to the outbreak COVID-19](#), issued on February 11, 2020
- [Preparedness, prevention and control of COVID-19 for refugees and migrants in noncamp settings](#), issued on April 17, 2020
- [Coronavirus disease \(COVID-19\) outbreak: rights, roles and responsibilities of health workers, including key considerations for occupational safety and health](#), issued on March 18, 2020
- [Oxygen sources and distribution for COVID-19 treatment centers](#), issued on April 4, 2020
- [Risk Communication and Community Engagement \(RCCE\) Action Plan Guidance COVID-19 Preparedness and Response](#), issued on March 16, 2020
- [Considerations for quarantine of individuals in the context of containment for coronavirus disease \(COVID-19\)](#), issued on March 19, 2020
- [Operational considerations for case management of COVID-19 in health facility and community](#), issued on March 19, 2020

- [Rational use of personal protective equipment for coronavirus disease 2019 \(COVID-19\)](#), issued on February 27, 2020
- [Getting your workplace ready for COVID-19](#), issued on March 19, 2020
- [Water, sanitation, hygiene and waste management for COVID-19](#), issued on March 19, 2020
- [Safe management of wastes from health-care activities](#), issued in 2014
- [Advice on the use of masks in the community, during home care and in healthcare settings in the context of the novel coronavirus \(COVID-19\) outbreak](#), issued on March 19, 2020
- [Disability Considerations during the COVID-19 outbreak](#), issued on March 26, 2020

WORLD BANK GROUP GUIDANCE

- [Technical Note: Public Consultations and Stakeholder Engagement in WB-supported operations when there are constraints on conducting public meetings](#), issued on March 20, 2020
- [Technical Note: Use of Military Forces to Assist in COVID-19 Operations](#), issued on March 25, 2020
- [ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects](#), issued on April 7, 2020
- [Technical Note on SEA/H for HNP COVID Response Operations](#), issued in March 2020
- [Interim Advice for IFC Clients on Preventing and Managing Health Risks of COVID-19 in the Workplace](#), issued on April 6, 2020
- [Interim Advice for IFC Clients on Supporting Workers in the Context of COVID-19](#), issued on April 6, 2020
- [IFC Tip Sheet for Company Leadership on Crisis Response: Facing the COVID-19 Pandemic](#), issued on April 6, 2020
- [WBG EHS Guidelines for Healthcare Facilities](#), issued on April 30, 2020

ILO GUIDANCE

- [ILO Standards and COVID-19 FAQ](#), issued on March 23, 2020 (provides a compilation of answers to most frequently asked questions related to international labor standards and COVID-19)

MFI GUIDANCE

- [ADB Managing Infectious Medical Waste during the COVID-19 Pandemic](#)
- [IDB Invest Guidance for Infrastructure Projects on COVID-19: A Rapid Risk Profile and Decision Framework](#)
- [KfW DEG COVID-19 Guidance for Employers](#), issued on March 31, 2020
- [CDC Group COVID-19 Guidance for Employers](#), issued on March 23, 2020