GOVERNMENT OF ANDHRA PRADESH
PANCHAYAT RAJ ENGINEERING DEPARTMENT

Andhra Pradesh Rural Roads Connectivity Project

The Asian Infrastructure Investment Bank assisted

Environmental & Social Assessment and Preparation of Environmental & Social Management Planning Framework

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Abbreviations

AAQM	:	Ambient Air Quality Monitoring
AIIB	:	Asian Infrastructure Investment Bank
APRRP	:	AP Rural Road Connectivity Project
BT	:	Black Top
CPF	:	Community Participation Framework
CPCB	:	Central Pollution Control Board
CRZ	:	Coastal Regulatory Zone
DFO	:	District Forest Officer
ECoP	:	Environmental Code of Practice
EIA	:	Environmental Impact Assessment
EMF	:	Environmental Management Framework
EMP	:	Environmental Management Plan
ESIA	:	Environmental and Social Impact Assessment
ESMP	:	Environmental and Social Management Plan
ESMF	:	Environmental and Social Management Framework
GoI	:	Government of India
SPCB	:	State Pollution Control Board
GRC	:	Grievance Redress Committee
IMD	:	Indian Meteorological Department
MDR	:	Major District Road
MGNREGA Act	:	Mahatma Gandhi National Rural Employment Guarantee
MoEF&CC	:	Ministry of Environment Forest and Climate Change
LA	:	Land Acquisition
NOC	:	No Objection Certificate
NPF	:	Notified Protected Forest
ODR	:	Other District Road
OM	:	Operational Manual
PMGSY	:	Pradhan Mantri Gram Sadak Yojana
PMC	:	Project Monitoring Consultant
PMU	:	Project Management Unit
PRED	:	Panchayati Raj Engineering Department
RCC	:	Reinforced Cement Concrete
SEIAA	:	State Environment Impact Assessment Authority
SEAC	:	State Expert Appraisal Committee
SMF	:	Social Management Framework
ST	:	Schedule Tribe
VR	:	Village Road

1 Introduction

1.1 Background

Roads form an important component of physical infrastructure to promote development and growth. An efficient transportation system is the lifeline of the economy. The status of roads therefore constitutes a significant index of the economic well-being of the society. The road density (paved + unpaved) in Andhra Pradesh (AP) is 0.77 Km per square Kilometer against the all India average of 1.43 Km per one Square. While the foregoing figures show that the density and coverage of road network is marginally lower than the national average. Andhra Pradesh has about 238,000 km of roads out of which only 65% were paved as per the Basic Road Statistics 2011. The road network is broadly divided into three categories as

(i) Primary Roads - comprising National Highways,
(ii) Secondary Roads comprising State Highways and Major District Roads, and
(iii) Rural Roads comprising Other District Roads and Village Roads.

The rural road network constitutes around 60% of the total road network. Under Prime Minister Grameen Sadak Yojana (PMGSY), the target was to construct around 14,564 km of rural roads, connecting about 1,309 habitations with populations above 500 people in the plains, and above 250 people in hilly and tribal areas. As of March 2017, around 90% of PMGSY targets had been achieved in AP, with only a few targeted habitations remaining to be connected. The PMGSY, however, does not provide coverage for all the rural habitations in AP. Out of the 47,745 habitations in A.P, around 10,605 habitations will remain unconnected after the completion of PMGSY program.

The Government of AP (GoAP) has decided to launch the AP Rural Roads Connectivity Project (APRRP) as a supplement to the PMGSY to connect those habitations not covered under PMGSY. This project is estimated to provide connectivity to around 3,300 habitations with population of more than 250 people, benefitting around 2 million people. This project is implemented by Panchayat Raj Engineering Department (PRED)

1.2 Need for ESMPF

The APRRP is envisaged to result in several positive outcomes to the rural population of AP; particularly to those villages which will be connected to the main roads. Some of these positive impacts are;

- Improved public safety and security
- Reduced sufferings during monsoons and adverse climatic conditions
- Better infrastructure and connectivity
- Improved access to services

- Productive use of time
- Improvements in income patterns
- Health and Environmental improvements
- Opportunities for social interaction
- Improved community participation and sense of ownership

Besides these positive outcomes of the project, some negative impacts such as impacts on topography, loss of trees, land/ livelihood loss, etc. and temporary inconvenience to local communities may be experienced. The likely positive impacts and negative impacts are presented in detail in the subsequent chapters. These impacts are mostly temporary in nature, short term in duration and fully mitigable. If the impacts are significant in any sub-project, then a detailed Environmental and Social Assessment will be carried out, and an EMP and SMP/ RAP will be prepared as per the guidelines presented in this ESMPF. For all the other sub-projects, this ESMPF provides guidance to manage and mitigate the impacts.

1.3 AIIB Policy

The APRRP has been assigned Category "B" in accordance with the Bank's Environmental and Social Policy (ESP) and Environmental and Social Standards (ESS). The anticipated environmental and social risks and impacts of the project are limited, temporary in nature and reversible. As required by the Bank's ESP for Category 'B' projects, an Environmental and Social Management Planning Framework (ESMPF), which provides guidance on procedures and use of Environmental and Social Management Plans (ESMPs), is developed.

- **ESS 1 (Environmental and Social Assessment and Management)** is applicable for assessment of environmental and social impacts of project activities.
- **ESS 2 (Involuntary Resettlement)** is not applicable, since it is anticipated that there will be no land acquisition and no displacement of people.
- **ESS 3 (Indigenous Peoples)** is applicable since some of the roads will be constructed in districts where Scheduled Tribes are living. A Tribal Population Planning Framework (TPPF) is prepared to address special approaches to project planning and management in areas inhabited by the Scheduled Tribes.

1.4 Purpose of ESMPF

The aim of this ESMPF is to guide the Panchayat Raj Engineering Department, in planning and execution of environmental and social safeguards measures against the potential and actual negative environmental and social impacts during project implementation and assist in managing and mitigating the negative impacts arising during planning, implementation and maintenance.

The ESMPF includes the guideline for implementing environmental and social safeguards measures and a generic EMP and SMP. The Framework provides guidance for conducting an Environmental Impact Assessment (EIA) and Social Impact Assessment (SIA), preparation of Environmental Management Plan (EMP) and Social Management Plan (SMP), where required.

Components of the ESMP (EMP & SMP) will be applied during project implementation to comply with the legal and policy requirements of the GoAP, AIIB Policy and Government of India (GoI).

This ESMPF shall be applicable to all and each sub-project components. The proposed road upgradation work would be concentrated along the existing alignments; there are some roads which pass through or would be adjacent to the environmentally sensitive areas. This ESMPF shall assist PRED, in identification, assessment and management of environmental and social concerns at all stages of the project.

1.5 Structure of the Document

Table 1-1: Structure of the Report

Chapter No.	Title	Coverage
1.	Introduction	Chapter provides details about ▪ Project background, ▪ Brief description and objectives of the project ▪ AIIB Policy ▪ Need and purpose of the ESMPF
2.	Project Description	This chapter details ▪ Description of proposed project ▪ Project components ▪ Environmental and Social Management ▪ Implementation of ESMPF
3.	Legal, Policy and Regulatory Framework	This chapter details ▪ Relevant environmental laws, policies and regulations of GoI and GoAP applicable for APRRP ▪ Applicable AIIB's ESF which need to be adopted during the project planning and implementation. ▪ Statutory Compliances required during implementation of project activities
4.	Description of Socio-economic & Environment Background	The chapter details out the environmental and socio-economic baseline information
5.	Baseline Survey	This chapter details primary survey results conducted for sample sub-project roads
6.	Environmental and Social Impacts	The chapter highlights ▪ Potential Adverse Environmental Impacts ▪ Potential Adverse Social Impacts and different scenarios for acquiring land

Chapter No.	Title	Coverage
7.	Environment and Social Management Planning Framework	This chapter details various stages of ▪ Environmental and Social Screening ▪ Environmental Impacts and Mitigation ▪ Social Impacts and Mitigation ▪ Environmental Code of Practices (ECoP)
8.	Grievance Redressal Mechanism	This chapter details the grievance redressal mechanism adopted for the project and for project beneficiaries and project affected people.
9.	Monitoring and Evaluation	To achieve objectives of this ESMPF and to ensure the safeguards are implemented in a proper manner a detailed supervision, monitoring and evaluation of the impact of the project on the environment and social aspects are detailed in this chapter
10.	Institutional Arrangement	This chapter specify the institutional arrangement proposed for implementing the ESMPF under this project.
11.	Training and Capacity Building	This chapter describes building and strengthen the capability of APRRP staff, participating departments, and other partners in sub-project implementation.
12.	Gender and Vulnerable Action Plan	This chapter provides guidelines is to mitigate any potentially adverse gender-specific impacts of the Project and to enhance the design of the Project to promote equality of opportunity and women's socioeconomic empowerment, particularly with respect to provision of services and employment.
13.	Citizen's Engagement Strategy	This chapter details the strategy to engage citizens in design, planning, implementation and monitoring the project implementation
14.	Public Consultation and Disclosure	This chapter details the list of stakeholder and their importance and various level of disclosure of ESMPF and all Safeguards related documents and mitigation plans
15.	ESMPF Budget	This chapter list the tentative administrative budget for ESMPF and does not include cost of mitigating environmental and social impacts of the respective sub-projects' budgets

2 Project Description

2.1 Andhra Pradesh Rural Roads Connectivity Project

The Andhra Pradesh Rural Roads Connectivity Project (APRRP) has been launched by the Government of Andhra Pradesh (GoAP) to provide "all weather" road connectivity to unconnected habitations with population of 250 or more. The Panchayat Raj Engineering Department (PRED) of GoAP will implement this project. The APRRP will take up 2440 road works to connect about 3,274 habitations to the main roads and is likely to benefit around 2.6 million people. The project will finance activities including building new roads, cross-drainage structures, bridges and resurfacing/rehabilitation of existing roads. The length of the rural roads to be constructed will vary between less than 1 .0 Km to 15 Km with a total length of 4826 Kms.

GoAP has partnered with the Asian Infrastructure Investment Bank to take up the APRRP in all 13 districts of AP. The Project cost is estimated to be USD 650 million. The financing sources are as follows

Agency	Amount (million USD)
AIIB Loan	455
GoAP	195
Total	**650**

The project will be implemented by Panchayat Raj Engineering Department (PRED), GoAP. Proposed project implementation period is June 2018 – May 2022.

2.1.1 Proposed Roads under project

A total of 2440 rural road works are proposed under APRRP. The following table details district wise proposed roads length and number of packages.

Table 2-1: District wise Proposed number of roads

Sl.No	District	No. of Packages	No. of Works	Length in Km	DPR Cost Rs.in Crores
1	Srikakulam	4	315	493	360
2	Vizianagaram	4	156	304	247
3	Visakhapatnam	3	73	205	150
4	East Godavari	3	109	239	204
5	West Godavari	3	57	134	120
6	Krishna	2	58	124	132
7	Guntur	2	71	169	168
8	Prakasam	4	203	405	264

9	SPSR Nellore	3	196	410	316
10	Chittoor	8	585	1029	661
11	YSR Kadapa	3	144	165	160
12	Kurnool	5	139	330	296
13	Anantapuram	6	334	819	498
	Grand Total	**50**	**2440**	**4826**	**3576**

Source: PRED

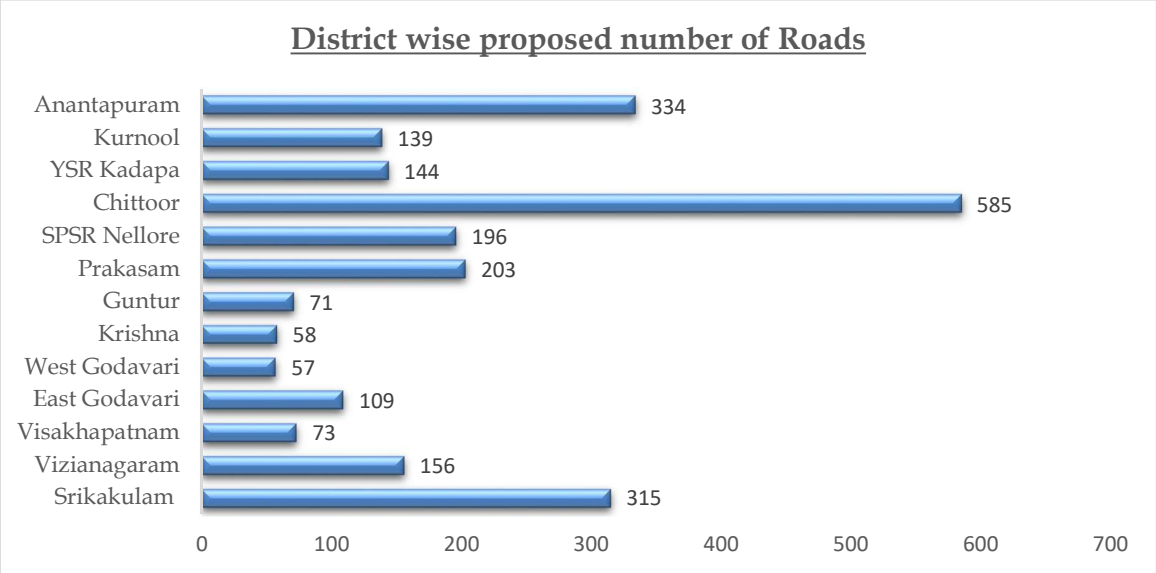

Figure 1: District wise proposed number of roads

2.2 Project Components

The project consists of the following components:

Component 1: New Constructions

- Construction of about 2,360 km of bitumen paved roads in the locations with soft soil;
- Construction of about 2,465 km of cement concrete paved roads, in the locations with hard soil; and
- Construction of about 18 Major brides, 16 Minor bridges, 61 small bridges and 61 causeways and hydraulic structures (culverts) to increase connectivity of the roads during the monsoon season.

Component 2: Technical Assistance consisting of

- Engagement of a Project Management Consultant (PMC) company (and individual consultants, as needed) to assist in managing the Project, including

planning, implementation supervision, monitoring and reporting progress of the project to PRED and to the Bank;

- Development of a digitized map of AP rural roads network and connection to a geographic information system (GIS) for real-time communication, which will be used to provide real time updates of the works progress during construction and post contract phase; and
- Institutional development and capacity building of PRED through trainings, workshops and study tours in overseas locations in the areas of transport planning and management, contract law and contract models, economic analysis and environmental engineering.

2.3 Execution of ESMPF

The ESMPF is an overarching tool developed at the macro level to provide guidance for construction of rural road connectivity sub-projects at the village level. The ESMPF will provide environmental and social safeguards tools that will;

- help to assess environmental and social impacts in a comprehensive manner;
- identify appropriate mitigation measures to address the impacts;
- locations specific guidance to address the environmental and social dynamics; and,
- Environmental Code of Practice (ECoP) for complying with environmental and social safeguards during planning and construction activities.

The tools have been prepared in line with the environmental and social rules and regulations adopted by the GoI, GoAP and the AIIB's Environmental and Social Framework (ESF). It also provides a generic ESMP based on rapid assessment of environmental and social conditions on a sample basis. This will help in the management of environmental and social impacts programs in a comprehensive, systematic and planned manner with regular monitoring, and documentation and reporting.

This ESMPF is a live and dynamic document, and needs to be updated and revised as necessary to incorporate the changes based on the prevailing laws, as well as revisions that might arise during APRRP. The ESMPF shall be reviewed by the staff annually and updated as required. Versioning of the document and preparation of update/ change datasheet shall be helpful in order to understand the revisions on chronological basis. The recommended approach for the end users of the ESMPF is as follows:

- Assess impacts and determine mitigation measures based on the guidance provided in the ESMPF.
- Follow the Environmental Code of Practices for complying with Environmental and Social Safeguards during implementation.

- Follow safety plans during construction for safety of labour and others.
- Provide proposer facilities to labour at construction sites and labour camps.
- Treat any social impacts arising out of land securing or livelihood loss as per the provisions of the Resettlement Policy Framework.
- Treat Scheduled Tribes as per the provisions of the Tribal Population Planning Framework.
- Ensure effective community participation during project planning and implementation through the prescribed community engagement process.
- Ensure speedy and effective redressal of grievances using the grievance redressal mechanism proposed.

3 Legal, Policy and Regulatory Framework

3.1 Introduction

This chapter deals with the laws, regulations and policies, of Government of India, Government of Andhra Pradesh and the AIIB, related to environment and social issues. Only the laws, regulations and policies relevant to the project are discussed here. This sections needs to be updated as when new laws, regulations and policies are made and enforced or the existing ones are revised.

3.2 Environmental Laws, Policies and Regulations

The following table presents the various acts and policies of GOI and GoAP, their purpose and the applicability.

Table 3-1: Environmental Laws and their Applicability

Policy/Act/Rule	Purpose	Responsible Institution	Applicability (Yes/No)
Environment (Protection) Act, 1986	To protect and improve the overall environment. Under this Act, GoI is empowered to take measures necessary to ▪ Protect and improve the quality of the environment by setting standards for emissions and discharges; ▪ Regulating the location of industries; ▪ Management of hazardous wastes, and ▪ Protection of public health and welfare. ▪ Protection of environment in the country. ▪ It includes the power to direct the closure, prohibition or regulation of any industry, operation or process by the government	MoEF	Yes
Notification on Environment Impact Assessment of Development projects (and amendments) (referred to as the Notification on Environmental Clearance), 2006, 2009 and 2011	To provide environmental clearance to new development activities following environmental impact assessment. ▪ All projects listed under Schedule-I of the Notification require environmental clearance from the MoEF.	MoEF	No
Wildlife Protection Act, 1972 The Wildlife (Protection) Act Amendment, 1991	This Act provides for ▪ Protection to listed species of Flora and Fauna in the declared network of ecologically important protected areas such as wild life sanctuaries and national parks. ▪ Establishment of national Parks and Sanctuaries to protect and conserve the flora and fauna of the state.	MoEF	Yes

Policy/Act/Rule	Purpose	Responsible Institution	Applicability (Yes/No)
Coastal Regulation Zone (CRZ), 2011 Notification	To provide for protection of the fragile coastal belt, through development controls and regulations	SCZMA	Yes
National Forest Policy, 1988	▪ Protect and enhance the yields of non-timber forest products in order to generate employment and income for forest and village communities	Forest Department, GoAP MoEF	Yes
Forest (Conservation) Act, 1980	To protect and manage forests, to check deforestation by restricting conversion of forest areas into non-forest areas ▪ This Act restricts the powers of the state in respect of de-reservation of forests and use of forest land for non-forest purposes. ▪ All diversions of forestlands to any non-forest purpose, even if the area is privately owned, require approval of GoI. ▪ Leases of forest land to any organization or individual require approval of GoI. ▪ Proposals for diversion of forest land for construction of dwelling houses are not to be entertained.	Forest department, GoAP MoEF	Yes
Joint Forest Management, 1993	▪ Induces people participation in forest management and sharing mechanism ▪ Distribute the benefits of interventions carried out on common property resources, government lands, wastelands, etc. These benefits are categorized into ecological benefits and economic benefits. ▪ If land under JFM/ Van Samrakshana Samithis (Panchayats) are transferred for project purposes, then such beneficiaries could be affected.	Forest department, GoAP MoEF	Relevant if livelihood activities are taken up under resettlement and rehabilitation in villages near forests.
The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006	To recognize and vest the forest rights and occupation of forest land to forest dwelling Scheduled Tribes and other traditional forest dwellers.	Forest Department, GoAP Tribal Development Department, GoAP	Yes
Biological Diversity Act, 2000	The Biological Diversity Act, which came into force in February 2003, aims to ▪ Promote conservation, sustainable use and equitable sharing of benefits of India's biodiversity resources. ▪ Establishment of a National Biodiversity Authority at national level, State Biodiversity Boards at state level and Biodiversity Management Committees at the level of Panchayats and Municipalities	MoEF	Yes
Water (Prevention and Control of Pollution)	This Act; ▪ Prohibits the discharge of pollutants into water bodies beyond a given standard.	SPCB CPCB	Yes, as per the EPA, 1986

Policy/Act/Rule	Purpose	Responsible Institution	Applicability (Yes/No)
Act (and subsequent amendments), 1974	▪ Lays down penalties for non-compliance. ▪ Includes the maintenance or restoring the wholesomeness of the water.		
Air (Prevention and Control of Pollution) Act (and subsequent amendments), 1981	To provide for the ▪ Prevention, control and abatement of air pollution, ▪ Establishment of Boards to carry out these functions under the act.	SPCB CPCB	Yes, as per the EPA, 1986
Noise Pollution (Regulation and Control) rules 2001	Provides for noise pollution regulation and controls	SPCB CPCB	Yes, as per the EPA, 1986
Central Motor Vehicle Act, 1988 Central Motor Vehicle Rules, 1989	To control vehicular air and noise pollution. To regulate development of the transport sector, check and control vehicular air and noise pollution.	Transportation Department, GoAP	Yes, for all the vehicles used for construction purposes and other project purposes.
The Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010	▪ The Ancient Monuments and Archaeological sites should be protected from any developmental activity. ▪ The area within the radius of 100 m and 300 m from the protected property are designated as protected area and controlled area respectively. ▪ No development activity (including building, mining, excavating, blasting etc.,) is permitted in the protected area ▪ Developmental activities likely to damage the protected property are not permitted in the controlled area without prior permission.	Department of Archaeology, GoAP Archaeological Survey of India. National Monuments authority	Yes, If there are ASI identified sites/ chance finds along the APRRP roads

3.3 Social Legal Framework

This deals with various policies, acts, rules and regulations promulgated by the central government related to social issues and relevant to present project.

Applicable Acts and Policies relevant in the context of the project have been reviewed and their relevance to the project is outlined in Table 2-2. PRED, GoAP will ensure that project activities implemented are consistent with the following regulatory/legal framework.

Table 3-2: National and AIIB Policies: Relevance and Applicability for APRRP

S. No.	Acts and Policies	Relevance to this project	Applicability
1	Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (Amendment) Act, 2013	The Act establishes law on land acquisition, as well as the rehabilitation and resettlement of those directly and indirectly affected by the land acquisition.	Applicable to all sub-project roads.

S. No.	Acts and Policies	Relevance to this project	Applicability
2	The Fifth Schedule under Article 244(1) of Constitution	The article defines Scheduled Areas as, such areas as the President may by order declare to be Scheduled Areas after consultation with the Governor of that State. The criteria for declaring any area as a -Scheduled Area under the Fifth Schedule are; ▪ preponderance of tribal population, ▪ compactness and reasonable size of the area, ▪ a viable administrative entity such as a district or mandal, and ▪ Economic backwardness of the area as compared to the neighboring areas.	Applicable to all sub projects located in Fifth Scheduled Areas.
3	Provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996	The Gram Sabha or the Panchayats at the appropriate level shall be consulted before making the acquisition of land in the Scheduled Areas for development projects and before re-settling or rehabilitating persons affected by such projects in the Scheduled Areas.	Applicable to sub-project roads located in Fifth Schedule Areas
4	The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006	This law provides for recognition of forest rights to Scheduled Tribes in occupation of the forest land prior to 13.12.2005 and to other traditional forest dwellers who are in occupation of the forest land for at least 3 generations i.e. 75 years, up to maximum of 4 hectares. These rights are heritable but not alienable or transferable.	Applicable to sub-project roads located in Fifth Schedule Areas and recognized forest areas
5	AIIB Environmental and Social Management Framework	The ESF of AIIB aims at facilitating achievement of development outcomes. The ESF articulates Environmental Social Standards for ▪ Environmental and Social Impact Assessment, ▪ Involuntary Resettlement, and ▪ Indigenous Peoples	Applicable to sub-project roads. ESS-3: Indigenous Peoples applicable only for sub-projects roads located in Fifth Schedule Areas.
7	The Right to Information Act, 2005	The Act provides for ▪ Setting out the practical regime of right to information for citizens ▪ Ensuring access to information to citizens under the control of public authorities, ▪ Promoting transparency and accountability in the working of every public authority.	Applicable to all sub-project roads

3.4 AIIB Safeguards Policy

In addition to the national and state policies, acts and rules, the AIIB policy on environmental and social safeguards need to be adhered for all the APRRP activities. AIIB recognizes that environmental and social sustainability is a fundamental aspect of achieving development outcomes consistent with its mandate to support infrastructure development and interconnectivity. The Environmental and Social Framework of AIIB (2016), includes an Environmental and Social Policy and Environmental and Social Standards. The

Environmental and Social Policy specifies that AIIB conduct environmental and social due diligence as an integral element of its appraisal of the project, and in a manner that is:

- Appropriate to the nature and scale of the Project; and
- Proportional to the level of the Project's potential environmental and social risks and impacts

Following

Table 3-3 depicts the outcome of the comparison between the AIIB safeguard policy and the Ministry of Environment, Forests and Climate Change's (MoEF&CC) EIA notification adopted by the GoI and GoAP.

Table 3-3: Comparison of EIA notification and AIIB Policy

S. No.	Project Stage	AIIB ESF 2016	EIA notification adopted by the GoI and GoAP	Comments
1	Project Screening and Categorization	Analyze potential impacts of the project for ▪ Screening of each proposed project at the concept stage ▪ Projects categorized as A, B, C and FI.	As per the EIA notification dated 14th September 2016, ▪ project screening has to be conducted ▪ Categorize the project as Category 'A' and Category 'B' ▪ Category B is further categorized as B1 and B2	Under the EIA notification, the rural roads are not categorized either as 'A' or 'B' type projects and hence it has been exempted from Environmental Clearance by GoI.
2	Conduct Environmental and Social Assessment	▪ Client to undertake an Environmental and Social Assessment of potential physical, biological, socio-economic and cultural risks and impacts. ▪ The type of instrument and level of detail is determined on the basis of project screening and environmental and social categorization. ▪ Client to prepare Environmental and Social Management Plan (ESMP) as appropriate	▪ Environmental and Social Impact Assessment is to be conducted for both Category 'A' and Category 'B1' projects. ▪ The assessment shall quantify the anticipated impacts on physical, biological and social environment.	▪ The rural roads are exempted from the Environmental Clearance and hence the proposed APRRP does not require Environmental Impact Assessment to be conducted. ▪ However, as per the provisions made under the ESMPF, the APRRP is categorized as category 'B' project. ▪ All sub-projects need to be screened and requirement of ESIA determined in planning stage itself.
3	Assessment of Alternatives	▪ Assessment of alternatives under ESS 1: Environmental and Social Assessment and Management. ▪ Examination to avoid or minimize environmental and social impacts.	In general the ToR for conducting ESIA suggested by the EAC for Category 'A' projects and State level EAC for Category 'B1' mandates the Assessment of Alternatives to avoid/	Assessment of alternatives is not envisaged in the upgradation of the rural road projects, where the upgradation/ improvements are proposed within the

S. No.	Project Stage	AIIB ESF 2016	EIA notification adopted by the GoI and GoAP	Comments
			minimize the anticipated Environmental and Social Impacts	available RoW with minor realignment options.
4	Prepare Environmental and Social Management Plan (ESMP)	▪ Development and implementation of an Environmental and Social Management Plan (ESMP)	▪ The EIA manual for Category 'A' and Category 'B' projects calls for preparation of the EMP's for the anticipated impacts. ▪ The EMP's shall include the monitoring plan with budgetary provisions	The APRRP will have a ESMP with budget provisions for effective implementation of the identified mitigation measures.
5	Public Consultation and Use of Project- Level Grievance Redress Mechanisms	▪ Client conducts meaningful consultation with project affected people to facilitate their informed participation in the consultations. ▪ Client continues consultation with stakeholders throughout the project implementation as appropriate. ▪ Client to establish a project-level Grievance Redress Mechanism.	▪ Public consultation is mandatory for Category 'A' and 'B1' projects. But it has been exempted for category 'B2' projects.	▪ Public Consultation is a mandatory requirement for all projects. ▪ The provision for GRC is not mentioned in the EIA notification. ▪ For the APRRP, the PRED will have a GRC to redress the grievances.
6	Information Disclosure	▪ Public disclosure of environmental and social documents, including ESIA, ESMPF, ESMP, RAP, etc. on AIIB website as per policy provisions. ▪ Regular disclosure of updated environmental and social information in the project.	▪ The Executive Summary of the EIA has to be disclosed in the website (In MOEF&CC website for Category 'A' projects and State Pollution Control Board Website for Category 'B1' projects).	Both AIIB and PRED will disclose the Project Information including all safeguard documents.

3.5 Other Legislation Applicable for APRRP

Environmental issues during road construction stage generally involve equity, safety and public health issues. The PRED require complying with laws of the land, which include inter alia, the following:

Table 3-4: Other Relevant Legislations and their Provisions

Act	Provisions
Workmen's Compensation Act, 1923	The Act provides for compensation in case of injury by accident arising out of and during the course of employment.

Act	Provisions
Minimum Wages Act, 1948	The Contractor is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act.
Payment of Wages Act, 1936	It lays down as to by what date the wages are to be paid, when it will' be paid and what deductions can be made from the wages of the workers.
Equal Remuneration Act, 1979	The Act provides for payment of equal wages for work of equal nature to Male and Female workers and not for making discrimination against Female employees.
Child Labour (Prohibition and Regulation), 1986	The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of child labour is prohibited in Building and Construction Industry.
Inter-State Migrant Workmen's (Regulation of Employment and Conditions of Service) Act, 1979	The inter-state migrant workers, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, travelling expenses from home to the establishment and back, etc.
The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act and the Cess Act, 1996	All the establishments who carry on any building or other construction work and employs 10 or more workers are covered under this Act; the employer of the establishment is required to provide safety measures at the building or construction work and other welfare measures, such as canteens, first-aid facilities, ambulance, housing accommodation for Workers near the workplace, etc.
The Factories Act, 1948	The Act lays down the procedure for approval of plans before setting up a factory, health and safety provisions, welfare provisions, working hours and rendering information regarding accidents or dangerous occurrences to designated authorities.
Hazardous Wastes (Management and Handling) Rules, 1989	Occupiers generating hazardous wastes given in the list shall take all practical steps to ensure that such wastes are properly handled, i.e. collection, reception, treatment, storage, and disposed of without any adverse effects to human health and environment (Rule 4 Such occupier shall apply for authorization in prescribed format to the State Pollution Control Board).
Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996	The Rules provide for mandatory preparation of On-Site Emergency Plans by the industry and Off-Site Plans by the district collector and the constitution of four tier crisis groups at the center, district, and local levels for the management of chemical disasters.

3.6 Statutory Clearances

It is expected that certain permissions, clearances and authorizations need to be obtained from competent authorities during the design, planning and implementation of the sub-projects. This will depend mainly on the area, type, size and scope of the sub-project. This requirement is summarized below:

Table 3-5: List of Statutory Clearances and Authorization Requirement

S. No.	Clearance/ Authorization	Relevant Act	Competent Authority	Responsibility
1	Environment Clearance/ NOC (For sub-projects which requires such clearance in hilly terrain	EIA Notification, 2006 (including amendments) issued under Environment Protection Act, 1986;	State Pollution Control Board; MoEF, Govt. of India,	PMU/ Line Department

S. No.	Clearance/ Authorization	Relevant Act	Competent Authority	Responsibility
	(above 1000 AMSL) and in ecologically sensitive areas, if their location requires)	F. No.11-48/2002-FC, MoEF, dated 14th September 2004 F. No. 6-10/2011 WL, MoEF, dated December 2012	National Board of Wildlife	
2	Forest clearance	Forest Conservation Act, 1980	State Forest Department, MoEF, Govt. of India	PMU/ Line Department
3	Tree Cutting Permission	Forest Conservation Act, 1980	State Forest Department MoEF, Govt. of India	PMU/ Line Department
4	Hot mix plants, Wet Mix Macadam plants, Crushers, Batching Plants, Installation of Generators, etc.	Air (Prevention and Control of Pollution) Act, 1981 and Noise Pollution (Regulation and Control) Rules, 2000	State Pollution Control Board	Concerned Contractor
5	Storage, handling, transport and disposal of hazardous materials	Hazardous Waste (Management and Handling) Rules, 1989 and Manufacturing, Storage and Import of Hazardous Chemicals Rules, 1989	State Pollution Control Board	Concerned Contractor
6	Location/ layout of workers camp, equipment and storage yards	Environment Protection Act, 1986 and Manufacturing, Storage and Import of Hazardous Chemicals Rules, 1989	State Pollution Control Board	Concerned Contractor
7	Discharges from Labor Camp	Water (Prevention and Control of Pollution) Act, 1974	State Pollution Control Board	Concerned Contractor
8	Permission for sand mining from river bed	Environment Protection Act, 1986	Mines and Geology Department, GoAP	Concerned Contractor
9	Permission for working in protected areas	The Indian Wildlife Protection Act, 1972, amended 1993 The Wildlife (Protection) Amendment Act 2002	Chief Wildlife Warden, GoAP	PMU/ Line Department
10	Permission for working in protected areas	The Ancients monuments and Archeological Sites and Remains Act 1958 and Rules 1959	Secretary, Culture Department, GoAP	PMU/ Line Department
11	Pollution Under Control Certificate for vehicles	Central Motor Vehicle Act 1988	Transport Department, GoAP	Concerned Contractor/ Transport Department
12	Employing Labour/ Workers	The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act 1996	Labour Department, GoAP	Concerned Contractor/ Labour Department

4 Description of Socio-economic & Environment Background

4.1 Demographic Profile of Andhra Pradesh

With a geographical area of 1,62,970 sq km, Andhra Pradesh ranks as the 8th largest State in the country. Situated in a tropical region, the state has the 2nd longest coastline in the country with a length of 974 km. Andhra Pradesh is the tenth largest state in the Country, in terms of population. As per 2011 Census, the State accounts for 4.10% of the total population of the country. The density of population for Andhra Pradesh is 304 persons per square kilometer, as against 382 persons per square kilometer at all India level in 2011.

The sex ratio in the state is 997 in 2011 and is higher than all India figure of 943 in 2011. The literacy rate of the State is 67.35 percent in 2011. The literacy rate of the State is lower than the all India literacy rate at 72.98% percent. Female literacy rate is 59.96 percent in 2011. Urbanization has been regarded as an important component for growth realization. The percentage of urban population to the total population in the State is 29.47 percent in 2011.

Table 4-1: General Profile of AP

S. No.	Item	Unit	2011
1.	**Population**		
a.	Total	Lakhs	495.77
b.	Male	Lakhs	248.30
c.	Female	Lakhs	247.47
d.	Rural	Lakhs	349.67
e.	Urban	Lakhs	146.10
2.	**Urban Population as a percentage of Total Population**	**Percentage**	**29.58**
3.	**Sex Ratio**	**Females per 1,000 males**	**996**
4.	**Density of Population**	**Persons per sq.km**	**304**
5.	**Growth Rate over the previous Census**	**Percentage**	**9.21**
6.	**No. of Households**		
a.	Total	Lakhs	127.19
b.	Rural	Lakhs	90.65
c.	Urban	Lakhs	36.54
7.	**Household Size**		
a.	Total	No	4
b.	Rural	No	4
c.	Urban	No	4
8.	**Child Population (0-6) years**		
a.	Total	Lakhs	52.22
b.	Rural	Lakhs	26.86
c.	Urban	Lakhs	25.36
9.	**Vulnerable Category**		
a.	Scheduled Caste Population		8.44
b.	Scheduled Caste Population as a percentage of Total Population	Percentage	17.10%

S. No.	Item	Unit	2011
c.	Scheduled Tribes Population	Lakhs	26.31
d.	Scheduled Tribes Population as a percentage of Total Population	Percentage	5.33%

4.2 Geographical Background

Andhra Pradesh is 8th largest state in the country covering an area of 1,62,975 Sq. km which is 4.96% of area of the country. Anantapuram is the largest district with 19,100 Sq. km, followed by Kurnool and Prakasam districts (17.7 and 17.6 Thousand Sq. km respectively). Srikakulam is the smallest district with just 5,800 Sq. km. followed by Vizianagaram (6,500 Sq Km.).

For administrative purpose Andhra Pradesh is divided into 13 districts with 670 Mandals and 49 Revenue divisions. There are total 12,918 Gram Panchayats, 17,363 villages and 195 towns. The capital of Andhra Pradesh is Amaravati.

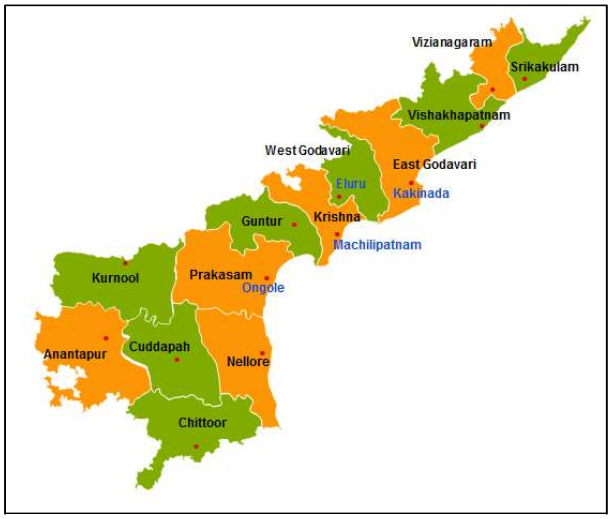

Figure 2: Districts of AP

The state is located between 12°41' and 19.07°N latitude and 77° and 84°40'E longitude. It has a coastline of 974 km with jurisdiction over nearly 15,000 sq. km territorial waters, the second longest coastline among the states of India after Gujarat. It is bordered by Telangana in the north-west, Odisha in the north-east, Karnataka in the west, Tamil Nadu in the south and the water body of Bay of Bengal in the east. A small enclave of 30 sq. km of Yanam, a district of Puducherry, lies south of Kakinada in the Godavari delta on the east side of the state.

The state of Andhra Pradesh has a series of mountain ranges including Eastern Ghats, the Nallamalais, Yerramalais and the Seshachalam range of hills.

The climate is hot and humid with a normal rainfall of 966 mm but actual rainfall during the years 2015-16 and 2016-17 is 606, 913 respectively in Andhra Pradesh. Krishna, Godavari and Penna are the major river systems with their respective tributaries contributing to the river line habitats in the state. The Bay of Bengal runs along the eastern coast stretching over 974 kilometers.

4.3 Environmental Baseline

4.3.1 Agro Climatic Zones

The cropped area in Andhra Pradesh is divided into seven zones based on the agro-climatic conditions. The classification mainly concentrates on the range of rainfall received, type and topography of the soils.

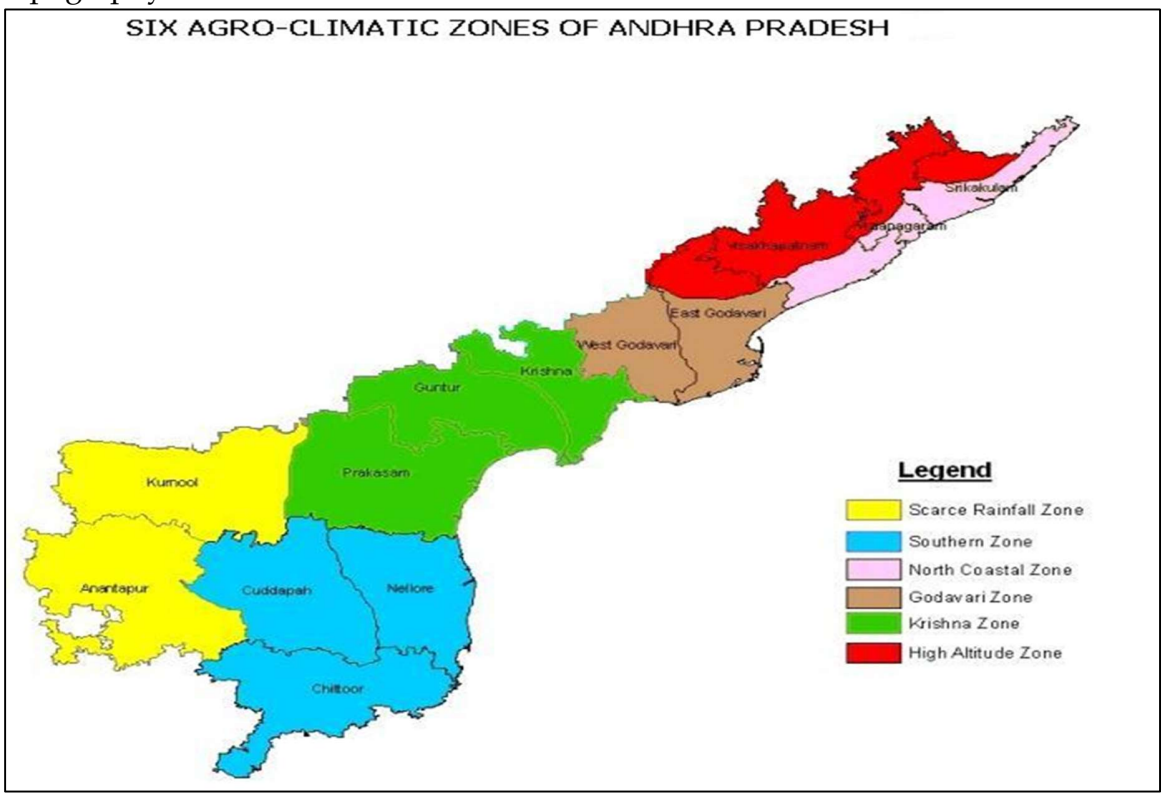

Figure 3: Agro-Climatic Zones of AP

4.3.1.1 North Coastal Zone

This zone covers Srikakulam, Vizianagaram, Visakhapatnam and uplands of East Godavari districts. This zone receives a rainfall of 1000 - 1100 mm mainly from south west monsoon. Soil type is red soils with clay base, pockets of acidic soils, laterite soils and soils with PH 4 -5. Main crops grown in this zone are paddy, groundnut, jowar, bajra, mesta, jute, sun hemp, sesame, black gram and horticultural crops.

4.3.1.2 Godavari Zone

This zone covers East Godavari part and West Godavari. Rainfall of this zone is 800 – 1100 mm. Soil type is deltaic alluvium, red soils with clay, red loams, coastal sands and saline

soils. The important crops grown are paddy, groundnut, jowar, bajra, tobacco, cotton, chillies, sugarcane and horticultural crops.

4.3.1.3 Krishna Zone

This zone covers Krishna, Guntur, and contiguous areas of Prakasam. Rainfall of this zone is 800 - 1100 mm. Soil type is deltaic alluvium, red soils with clay, red loams, coastal sands and saline soils. The important crops grown are paddy, groundnut, jowar, bajra, tobacco, cotton, chillies, sugarcane and horticultural crops.

4.3.1.4 Southern Zone

The districts in this zone are Nellore, Chittoor, southern parts of Prakasam and Cuddapah and eastern parts of Anantapur. Rainfall received is about 700 - 1100 mm. Soil type is red loamy soils, shallow to moderately deep. Important crops grown are paddy, groundnut, cotton, sugarcane, millets and horticultural crops.

4.3.1.5 Scarce rainfall zone

The districts covered under this zone are Kurnool, Anantapur, Prakasam (western parts) and Cuddapah (northern part). Receives a rainfall of 500 – 750 mm. Soil type is red earths with loamy soils (Chalkas), red sandy soils and black cotton soils in pockets. The important crops grown are cotton, korra, sorghum, millets, groundnut, pulses and paddy.

4.3.1.6 High altitude and Tribal areas

This zone covers northern borders of Srikakulam, Vizianagaram and Visakhapatnam and East Godavari. This zone receives a rainfall of more than 1400 mm. The important crops grown are horticultural crops, millets, pulses, chillies, turmeric and pepper.

Table 4-2: Agro-Climatic Zones of AP

S. No.	Name of the Zone	Districts	Geographical area (lakh ha)	No. of mandals	No. of Agril. Res. Stn.
1	North Coastal Zone	Srikakulam, Vizianagaram, Visakhapatnam	18.5	88	5
2	Godavari Zone	East Godavari, West Godavari	17.5	96	6
3	Krishna Zone	Krishna, Guntur, Prakasam	37.70	161	12
4	Southern Zone	Chittoor, Kadapa, Nellore	41.70	161	8
5	Scarce Rainfall zone	Kurnool, Anantapur	36.2	117	5
6	High Altitude & Tribal Areas Zone	High Altitude & Tribal Areas of Srikakulam, Visakhapatnam, East Godavari	18.0	40	3
Total			**169.6**	**663**	**39**

4.3.2 Geographical Zone

Andhra Pradesh has been divided into three major geographic zones, i.e., a) Deccan Plateau, b) Eastern Ghats and c) Coastal Plains

4.3.2.1 Deccan Plateau

The Deccan Plateau is characterized with open thorny scrub jungle dominated by the Acacia, Albizia, Hardwickia and allied species. It is interspersed with huge rocky outcrops and grasslands locally called as the kanchas. This area supports a variety of a rich avifauna and endangered herbivores like blackbuck, chinkara, chowsinga, etc. Due to extensive hunting, the Asiatic cheetah that once thrived here has become extinct. The Southern Deccan Plateau in Andhra Pradesh locally known as Plateau covers Chittoor, Ananthapuram, Kurnool districts. The plateau has two erosional surfaces with altitudes of 150-600 meters and 300-900 meters above Mean Sea Level (MSL).

4.3.2.2 Eastern Ghats

The Eastern Ghats in Andhra Pradesh representing hill ranges extend from Chittoor district in the south to Srikakulam district in the north cover about 33 percent area of the state. There are series of broken hill ranges, hills and ridges largely covered by forests and uncultivable rocky wastes. The Eastern Ghats have 3 elevation surfaces, viz., 600-900 meters, 900-1200 meters and 1200 - 1600 meters above MSL. The hill ranges are highest in the north, in the interior of Chintapalli and Paderu of Visakhapatnam district (highest peak 1680 meters). Eastern Ghats is a home to a few of the rarest plants in the world like Tree ferns, *Cycas beddomeli* and Red sanders, etc.

4.3.2.3 Coastal Plains

Coastal plains including the wetlands and the Bay of Bengal in the east stretch about 974 km and cover about 13 percent area of the state. The east coast plain has been divided into six landforms; they are marine, inland plains, Krishna delta, Godavari delta, laterite and sandstone (Rajahmundry). The mangroves of the Godavari and Krishna are extending over an area of 333 sq.kms constitute one of the most fragile ecosystems. About 90 percent of the total catch of fish, crustaceous and molluscas are obtained from these coastal areas. Wetlands are the most productive life supporting systems in the world that render immense socio-economical, ecological and bio-aesthetic value to mankind. They are mostly useful for the survival of natural biodiversity and playing an important role in improvement of water quality, removal of sediment load, production of oxygen, control of floods, recharge of aquifers and treatment of pollution abatement.

4.3.3 Rainfall

The normal annual rainfall is 952 mm. Season-wise normal rainfall is 555 mm, 285 mm, 9.8 mm and 96.3 mm in monsoon (June-Sept), post-monsoon (Oct-Dec), winter (Jan-Feb) and summer (March-May) respectively. 58% of annual rainfall occur in south-west monsoon, 30% in north-east and 12% in non-monsoon seasons. Annual normal rainfall ranges from 574 mm in Anantapur district to 1166 mm in Srikakulam district.

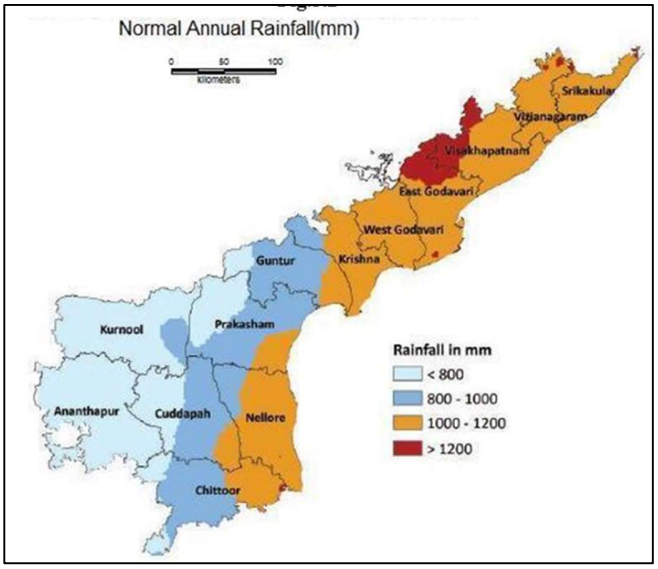

Figure 4: Normal Annual Rainfall of AP

4.3.4 Land Use

Of the total geographical area of the state of 162.97 lakh hectares, 38.09% is under net area sown (62.08 lakh hectares), 22.63 % under forest (36.88 lakh hectares), 8.65% under current fallow lands (14.10 lakh hectares), 12.47% under land put non-agricultural uses (20.32 lakh hectares), 8.27% under barren and uncultivable land (13.47 lakh hectares), 7.63% (12.43 lakh hectares) is under other fallow, cultivable waste lands like permanent pastures and other grazing lands and the remaining land under miscellaneous tree crops and groves are counted for 2.26% (3.69 lakh hectares).

4.3.5 Drainage

The State is drained by 40 major and minor rivers. The important rivers are Godavari, Krishna, Pennar, Palar, Vamsadhara, and Nagavalli. Godavari and Krishna rivers and their tributaries drain the northern and central part and Pennar River drains the southern part of the state before confluence in Bay of Bengal.
There are 3 major basins and 11 medium river basins in the state. The major river basins are Godavari, Krishna and Pennar and medium basins are Vamsadhara, Nagavalli, Sarada, Yeleru, Gundlakamma, Palleru, Kurieru, Swarnamukhi and inter stream areas between Krishna and Godavari basins.

The drainage pattern is generally dendritic with wide valleys in western peneplain. The drainage in eastern ghat is coarse and dendritic with steep and narrow valleys. Youthful streams and valleys mark the eastern coastal tract intersected by innumerable feeder and

distributary canal system. The mature river courses of Godavari, Krishna and Pennar meanders through the vast areas covered by deltas as well as coastal plains. Most of the smaller streams feed innumerable tanks.

The Tungabhadra, Vedavati, Handri and Paleru rivers drain the northen part of the state. River Penna flows across southern part of the state with its tributaries Chitravati, Papaghni and Cheyyeru (Bahuda) and drains major part of Rayalaseema region and Nellore district of coastal region.

The drainage basins are characterized by undulating topography comprising a series of ridges and valleys intersperse by hill ranges. The deltas of rivers are very extensive and characterized by considerable thickness of alluvial material.

Vamsadhara and Nagavalli rivers with their distributaries drain the northeastern part of the state in Srikakulam district. Visakhapatnam district is mostly drained by local rivulets like Sarada. River Eleru drains East Godavari district while Yerrakalave, Tammileru drain West Godavari district. Nellore district is drained by Pennar, Swarnamukhi and Arani rivers.

4.3.6 Soils

A wide variety of soils occur in the state such as Red soil, Lateritic soil, Black cotton soil, Deltaic alluvium soil, Coastal soil and Saline soil. Red clayey soil occur predominantly in Srikakulam, Visakhapatnam, East Godavari and West Godavari districts in coastal region. Black cotton soil commonly occur in Krishna and Guntur districts. Red earths with loamy soil and red sandy loamy soil and lateritic soil occur in Prakasam and Nellore districts. Black cotton soil is predominant in parts of Kadapa, Kurnool and Anantapur districts in Rayalaseema region, red loamy soil occur in parts of Chittoor and Kadapa districts. Red earths are predominant in Anantapur district.

4.3.7 Agriculture

Andhra Pradesh economy is mainly based on agriculture and livestock. 60% of population is engaged in agriculture and related activities. Rice is the major food crop and staple food of the state. It is an exporter of many agricultural products and is also known as "Rice Bowl of India". The total area under food grains cultivation is estimated at 41.34 lakh hectares in 2016-17.

The state has three Agricultural Economic Zones; a) in Chittoor district for mango pulp and vegetables, b) Krishna district for mangoes, c) Guntur district for chilies. Besides rice, jowar, bajra, maize, minor millet, coarse grain, many varieties of pulses, oil seeds, sugarcane,

cotton, chili pepper, mango, nuts and tobacco are grown. Crops used for vegetable oil production such as sunflower and peanuts are popular. There are many multi-state irrigation projects under development, including Godavari River Basin Irrigation Projects and Nagarjuna Sagar Dam.

Livestock and poultry is also another profitable business, which involves rearing cattle in enclosed areas for commercial purposes. The state is also a largest producer of eggs in the country and hence, it is nicknamed as "Egg Bowl of Asia".

Fisheries contribute 10% of total fish and over 70% of the shrimp production of India. The geographical location of the state allows marine fishing as well as inland fish production. The most exported marine exports include Vannamei shrimp.

4.3.8 Forests

Andhra Pradesh ranks 9th in India having forest cover area of 36,909.38 Sq. Km. which amounts to 23.04%. Out of 36,909.38 Sq. Km of forest area,

Very Dense Forest	650.76 Sq. Km
Moderate Dense Forest	11,798.58 Sq. Km
Open Forest	10,961.70 Sq. Km
Scrub Forest	9,310.37 Sq. Km
Non-Forest	3,815.84 Sq. Km
Water Bodies	372.13 Sq. Km

State has 13 wildlife Sanctuaries and 3 National Parks covering an area on 8,139.89 Sq. Km which is 22.53% of the State's Forest area and 4.448% of the State's Geographical area.

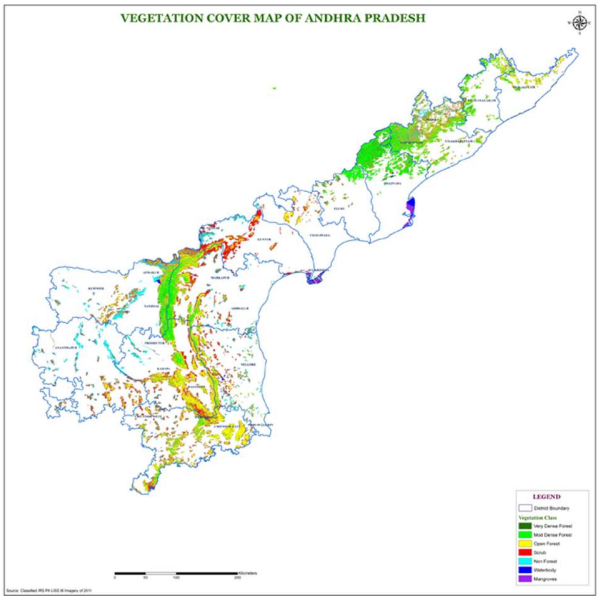

Figure 5: Vegetative Cover of AP

There are 1 Tiger Reserve, I Elephant Reserve (Koundinya Sanctuary and Rayala Elephant Reserve), 1 Biosphere Reserve (Seshachalam) 3 National Parks and 13 Wildlife Sanctuaries in the State. The State has 2 Zoological Parks, 2 Deer Parks under Government control, 2 Deer Parks under Private Control and 2 Animal Rescue Centers for Ex-Situ conservation - one in Sri Venkateswara Zoo Park, Tirupati and one in Indira Gandhi Zoo Park, Visakhapatnam, with the assistance of Zoo Authority of India.

5 Baseline Survey (Primary Survey)

5.1.1 Introduction

The objective of this primary survey is to a) understand transportation related issues and the perceptions of the beneficiary communities, b) assess to impacts of the proposed roads on the beneficiary population, c) factor these issues and impacts into the design, implementation and maintenance of the project roads and d) thus enhance the sustainability of these roads. To this end a quantitative and qualitative research among the beneficiary communities was conducted on sample basis. For quantitative research, a household questionnaire was developed, tested and administered to the sampled beneficiary community households to collect the information on relevant aspects. Also qualitative research through Focus Group Discussions (FGDs) with beneficiaries including women was conducted to assess the impacts and capture their aspirations regarding better connectivity with improved roads and services.

The household survey and FGDs were conducted during mid-April to May 2018. The data collected was entered and processed in a customized database after scrutiny. The data was coded for qualitative information as well and processed in the database. The entered raw data is cleaned and data analysis was done using a statistical package (SPSS). The findings of the primary survey data is presented in following sections.

5.1.2 Sample Selection

Sample Households were selected using a multi-stage stratified random sampling covering 7 districts, 25 Mandals, 28 Panchayats and 33 villages in Andhra Pradesh. Sample selection was done in consultation with the PRED. 1712 households were surveyed during the study. Details of sampling in each district is presented in ***Table*** 5-1**.**

Table 5-1: HH Surveyed in each District

District	Mandal	PANCHAYAT	VILLAGE	HH Surveyed
Kadapa	2	3	4	153
Chittoor	4	4	6	313
Prakasam	4	4	4	306
Ananthapuram	4	4	4	300
Vishakhapatnam	4	6	7	275
Srikakulam	5	5	5	163
East Godavari	2	2	3	202
Grand Total	**25**	**28**	**33**	**1712**

5.2 General Profile of Households

5.2.1 Distribution by Religion

The study villages had Hindu majority and 97.7% of the Household surveyed were Hindus. Religion wise distribution of Households is presented in ***Table 5-2.*** Muslims and Christians are 1.1% and 1.2%, respectively, of the total households surveyed. This shows that there are minorities present in the remote rural areas, though by small numbers.

Table 5-2: Religion wise Distribution of Households

District	Hindu		Muslim		Christian		Grand Total
	Freq	%	freq	%	Freq	%	
Kadapa	152	99.3	1	0.7	0	0	153
Chittoor	313	100	0	0	0	0	313
Prakasam	304	99.3	1	0.3	1	0.3	306
Ananthapuram	295	98.3	5	1.7	0	0	300
Vishakhapatnam	273	99.3	1	0.4	1	0.4	275
Srikakulam	156	95.7	0	0	7	4.3	163
East Godavari	180	89.1	11	5.4	11	5.4	202
Grand Total	**1673**	**97.7**	**19**	**1.1**	**21**	**1.2**	**1712**

5.2.2 Distribution by Social Category (Caste)

Caste wise distribution of the sampled households based on caste reveals that the Backward Class people formed the majority and constitute 39% of the surveyed Households. Srikakulam, East Godavari and Vishakhapatnam had highest proportion of Backward Class households with 59%, 47% and 42% respectively. Scheduled Tribe and Scheduled Caste HH constituted 13% and 12% of the total households surveyed respectively. Prakasam, Srikakulam and Chittoor are the top three districts with 27%, 18% and 17% SC households respectively. In Vishakhapatnam and Chittoor had 33% and 22% ST households respectively. General Category formed 33% of the total households surveyed. Kadapa, Ananthpuram and Prakasam had 62%, 45% and 42% general category households respectively. The district wise distribution of households surveyed by caste is provided in details in

Table 5-3

Table 5-3: Social Category (Caste) wise Distribution of Households

District	BC		General		SC		ST		Others		Grand Total
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	

Kadapa	40	26	95	62	0	0	0	0	18	12	153
Chittoor	113	36	78	25	53	17	69	22	0	0	313
Prakasam	95	31	129	42	83	27	3	1	0	0	306
Ananthapuram	120	40	135	45	15	5	27	9	0	0	300
Vishakhapatnam	116	42	63	23	3	1	91	33	0	0	275
Srikakulam	96	59	10	6	29	18	15	9	13	8	163
East Godavari	95	47	63	31	14	7	10	5	16	8	202
Grand Total	**668**	**39**	**565**	**33**	**205**	**12**	**223**	**13**	**51**	**3**	**1712**

5.3 Family Details of Surveyed HH

5.3.1 Household size

Among the households surveyed, 52% of household members were males and 48% were females. Among the sampled districts, East Godavari with 49.2% and Vishakhapatnam with 49.1% females had the highest percentage of females. The family size of the total households surveyed was found to be 3.6. The state average household size 4 (for rural areas 3.8) which is slightly more than the sample household average. This could be an indication that larger families shift to urban areas for livelihoods or for other reasons. The average sex ratio of the surveyed population is 907. Details of the district wise distribution of Male and Female population along with Household size is presented in

Table 5-4.

Table 5-4: Average Household Size

District	M	F	Grand Total	HH	Avg. HH Size
Kadapa	317	252	569	152	3.74
Chittoor	633	529	1162	312	3.72
Prakasam	519	487	1006	307	3.28
Ananthapuram	506	470	976	305	3.20
Vishakhapatnam	530	512	1042	270	3.86
Srikakulam	316	286	602	164	3.67
East Godavari	385	373	758	202	3.75
Grand Total	**3206**	**2909**	**6115**	**1712**	**3.57**

5.3.2 Literacy

Literacy rate of the surveyed household is 56%. Male literacy rate is 60%, while the female literacy rate is 51%. The state literacy rate is 67.25%, whereas the rural literacy rate of AP as per census 2011 is 62.37%. The survey results is slightly lower than the state rural literacy rate. This indicates the villages are located in the interior and availability and accessibility to education and transport facilities is not adequate.

Table 5-5: Literacy Rates among Household Members

District	Illiterate		Literates		Members	Total HH
	Freq	%	Freq	%	Freq	Freq
Kadapa	262	46	307	54	569	152
Chittoor	488	42	674	58	1162	312
Prakasam	423	42	583	58	1006	307
Ananthapuram	449	46	527	54	976	305
Vishakhapatnam	521	50	521	50	1042	270
Srikakulam	199	33	397	66	602	164
East Godavari	356	47	402	53	758	202
Grand Total	**2697**	**44**	**3412**	**56**	**6115**	**1712**

Literacy levels among surveyed households indicate that 44% of the household members are illiterate. Among the literates, 28% have literacy levels up to secondary school, only 13% have studied up to high school, about 9% of the members has education level up to intermediate, 6% have education up to graduation and only 1% have professional education. Literacy Levels among household members in different districts is presented in ***Table 5-6***.

Table 5-6: Literacy Levels among Household Members

District	Illiterate		Upto Secondary		High School		Intermediate		Graduate & above		Professional		Grand Total
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	
Kadapa	262	46	119	21	51	9	85	15	40	7	6	1	569
Chittoor	488	42	383	33	105	9	93	8	70	**6**	12	1	1162
Prakasam	423	42	402	40	70	7	50	5	50	**5**	0	0	1006
Ananthapuram	449	46	234	24	127	13	78	8	78	**8**	10	1	976
Vishakhapatnam	521	50	177	17	146	14	115	11	83	**8**	3	0.3	1042
Srikakulam	199	33	205	34	108	18	60	10	27	**4.5**	0	0	602
East Godavari	356	47	190	25	159	21	45	6	23	**3.1**	0	0	758
Grand Total	**2697**	**44**	**1711**	**28**	**767**	**13**	**527**	**9**	**369**	**6**	**28**	**1**	**6115**

5.3.3 Primary Occupation

District	Working		Not working		Grand
	Freq	%	Freq	%	Total
Kadapa	256	45	313	55	569
Chittoor	535	46	627	54	1162
Prakasam	352	35	654	65	1006
Ananthapuram	468	48	508	52	976
Vishakhapatnam	427	41	615	59	1042
Srikakulam	289	48	313	52	602
East Godavari	326	43	432	57	758
Grand Total	**2653**	**43.4**	**3462**	**56.6**	**6115**

Surveyed data shows that 43.4% of the surveyed household members are involved in economic activities. The primary occupation of these working household members indicates that 33.9% are farmers or are engaged in agricultural activities while 45.5% are engaged as agricultural laborers. The state's census data shows that 16.07% are cultivators whereas the 44.58% are agricultural laborers. The household members involved in agriculture have land and do cultivation/ cash crops /horticulture. As a larger portion of the sampled population are either Agriculturist/ Tillers or Agricultural Labouers. This shows a greater need for reaching the agricultural produce to the market and marketing of the produce at the right time. Among those working 7.1% are skilled labor and 4.1% are unskilled labor. Among those working about 1.2% are in government service and 4.7% are in private service. Primary occupation of the household members is presented in ***Table 5-7.***

Table 5-7: Primary Occupation of HH Members

District	Farmer/Agriculture		Ag Labour		Skilled Labour		Unskilled Labour		Govt. Service		Pvt service		Others		Grand Total
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	
Kadapa	98	38.6	106	41.7	12	4.7	10	3.9	4	1.6	11	4.3	13	5	254
Chittoor	133	24.7	324	60.2	29	5.4	8	1.5	6	1.1	30	5.6	8	2	538
Prakasam	92	25.8	195	54.6	43	12	5	1.4	3	0.8	16	4.5	3	1	357
Ananthapuram	117	25.4	257	55.7	27	5.9	5	1.1	8	1.7	31	6.7	16	3	461
Vishakapatnam	268	62.9	67	15.7	43	10.1	19	4.5	3	0.7	12	2.8	14	3	426
Srikakulam	90	30.9	142	48.8	9	3.1	4	1.4	8	2.7	9	3.1	29	10	291
East Godavari	104	31.4	119	36	27	8.2	59	17.8	1	0.3	15	4.5	6	2	326

Grand Total	**902**	**33.9**	**1210**	**45.5**	**190**	**7.1**	**110**	**4.1**	**33**	**1.2**	**124**	**4.7**	**89**	**3**	**2653**

5.4 Housing Details

5.4.1 Ownership

Among the surveyed households, 93% have confirmed that they live in their own houses and about 5% are residing in rented houses. Details of ownership of houses are presented in

Table 5-8

Table 5-8: Ownership of House

District	Own		Rented		Others		Grand Total
	Freq	%	Freq	%	Freq	%	
Kadapa	148	97	2	1	2	1	153
Chittoor	300	96	6	2	6	2	313
Prakasam	288	94	18	6	0	0	306
Ananthapuram	294	98	6	2	1	0	300
Vishakhapatnam	242	88	22	8	11	4	275
Srikakulam	155	95	7	4	2	1	163
East Godavari	164	81	26	13	10	5	202
Grand Total	**1592**	**93**	**86**	**5**	**34**	**2**	**1712**

5.4.2 Type of Structure

Out of the surveyed households, 10% live in kachcha houses or huts, 20% households are living in the houses provided under IAY, 17.9% live in houses with asbestos/ tiled roof and 51.6% were pucca houses with concrete roofs. Details of type of house structure is provided in

Table 5-9

Table 5-9: Type of Structure

District	Hut		IAY		Asbestos/Tiled roof		Concrete roof		Grand Total
	Freq	%	Freq	%	Freq	%	Freq	%	Freq
Kadapa	2	1.4	37	25	37	21.6	77	52	153
Chittoor	17	5.5	113	36.8	23	5.5	160	52.1	313

Prakasam	10	3.3	45	14.7	33	10.8	218	71.2	306
Ananthapuram	17	5.1	21	6.1	40	13.9	222	75	300
Vishakhapatnam	61	23.4	79	30.3	29	14.9	106	31.4	275
Srikakulam	21	12.1	23	6.1	45	28.8	74	53	163
East Godavari	50	26.9	26	14	99	50	27	9.1	202
Grand Total	**178**	**10.4**	**344**	**20.1**	**306**	**17.9**	**884**	**51.6**	**1712**

5.4.3 Electric Connection

Among the surveyed households, 91% of the houses have electricity connection while 9% did not have the electric connection within the premises. Details of houses with electricity connection is provided in ***Table 5-10***

Table 5-10: Electricity Connection in House

District	Yes		No		Grand Total
	Freq	%	Freq	%	
Kadapa	150	98	2	1	153
Chittoor	307	98	6	2	313
Prakasam	303	99	1	0.3	306
Ananthapuram	288	96	12	4	300
Vishakhapatnam	223	81	50	18	275
Srikakulam	134	82	29	18	163
East Godavari	152	75	48	24	202
Grand Total	**1558**	**91**	**154**	**9**	**1712**

5.4.4 Drinking Water Connection

Among the surveyed households, 20% have connection to piped water supply while 66% use community sources like stand posts or hand pumps for drinking water. About 15% households depended on other sources like open well, river, stream etc. for drinking water. District wise distribution of households based on different sources of drinking water is provided in

Table 5-11

Table 5-11: Drinking Water Source of Household

District	Piped Water Supply	Stand Post	Hand Pump	Others	Grand Total

	Freq	%	Freq	%	Freq	%	Freq	%	
Kadapa	80	52	57	37	12	8	6	4	153
Chittoor	9	3	138	44	163	52	3	1	313
Prakasam	0	0	3	1	156	51	150	49	306
Ananthapuram	9	3	222	74	57	19	12	4	300
Vishakhapatnam	77	28	102	37	83	30	14	5	275
Srikakulam	78	48	10	6	36	22	39	24	163
East Godavari	83	41	46	23	30	15	40	20	202
Grand Total	**342**	**20**	**582**	**34**	**531**	**31**	**257**	**15**	**1712**

5.4.5 Sanitation

Among the surveyed households, 83% have toilets within the premises of their houses. About 1% of the respondents confirmed to be using community toilets while members of 15% households still defecate in open/fields. Details of the HH with toilets is presented in ***Table 5-12***

Table 5-12: Toilets in the Household

District	Individual HH latrine		Community Toilet		Open/Fields		Grand Total
	Freq	%	Freq	%	Freq	%	
Kadapa	145	95	2	1	3	2	153
Chittoor	290	91	0	0	22	7	313
Prakasam	282	92	0	0	24	7	306
Ananthapuram	273	91	0	0	27	8	300
Vishakhapatnam	191	53	11	4	73	39	275
Srikakulam	116	71	1	0.5	46	17	163
East Godavari	137	66	1	0.5	64	30	202
Grand Total	**1434**	**83**	**15**	**1**	**259**	**15**	**1712**

Out of the households having latrines, 90% of the respondents confirmed that the members of the households regularly use the toilets while 7% stated that the toilets are used irregularly and only by some members of the households. 3% respondents confirmed that the toilets in the household are not used at all. Details of the Households based on the regularity of usage of toilets within the premises is presented in

Table 5-13

Table 5-13: Toilet Used by Family Members

District	Used by All Regularly		Used by Some Irregularly		Not Used		Grand Total
	Freq	%	Freq	%	Freq	%	
Kadapa	114	78	31	21	0	0	145
Chittoor	264	91	23	8	3	1	290
Prakasam	278	99	1	0.4	3	1	282
Ananthapuram	240	88	26	10	7	2.4	273
Vishakhapatnam	173	90	6	1	12	8	191
Srikakulam	102	89	2	2	12	10	116
East Godavari	119	89	10	6	8	5	137
Grand Total	**1290**	**90**	**99**	**7**	**45**	3	**1434**

5.4.6 Cooking Fuel Used by Households

Firewood and LPG are the most preferred options used as cooking fuel among surveyed households. These households use multiple types of fuel for cooking. Among the surveyed households, 78% use LPG, 73% use firewood, coal is used by 8%, biogas is used by 3% and electric stove is used by 4%. Distribution of households based on type of cooking fuel is presented in table below:

Table 5-14: Households based on Type of Fuel Used for Cooking

District	Firewood		Coal		Biogas		LPG		Electric Stove	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Kadapa	116	76	5	3	3	2	141	92	8	5
Chittoor	219	70	3	1	6	2	244	78	9	3
Prakasam	303	99	1	0.3	3	1	288	94	6	2
Ananthapuram	228	76	1	0.3	0	0	279	93	6	2
Vishakhapatnam	223	81	52	19	19	7	179	65	25	9
Srikakulam	49	30	20	12	10	6	98	60	16	10
East Godavari	101	50	48	24	20	10	109	54	4	2
Grand Total	1250	**73**	137	**8**	51	**3**	1335	**78**	68	**4**
										N=1712

5.4.7 Health Related

When enquired about where the household members go for medical treatment when sick, 90% indicate that they seek medical treatment outside the village and about 6% replied that

they get treated at PHC/Clinic within village. About 4% said that they will not undergo any treatment and use household remedies.

Table 5-15: Preferred Health Care Center when Sick

District	PHC/Clinic in Village		Outside Village		No treatment		Grand Total
	Freq	%	Freq	%	Freq	%	
Kadapa	2	1.3	148	98.7	0	0.0	153
Chittoor	3	.6	309	99.4	0	0.0	313
Prakasam	4	1.3	302	98.4	1	.3	306
Ananthapuram	3	1.0	296	99.0	0	0.0	300
Vishakhapatnam	13	5.8	240	82.5	22	11.6	275
Srikakulam	31	12.9	112	79.1	20	8.0	163
East Godavari	39	24.3	151	62.9	16	12.9	202
Grand Total	**95**	**5.8**	**1558**	**90.0**	**59**	**4.2**	**1712**

Among the respondents who goes for medical treatment outside the village, 38% had to travel more than 10Km, 23% has to travel between 7 and 10 Km, 17% has to travel between 5 and 7 Km and 22% have to travel less than 5 Km. The average distance of travel to reach hospital from the village is about 8.24Km.

Table 5-16: Distance Travelled to reach Medical Facilities

District	Less than 5 Km		5 - 7 Km		7 - 10 Km		More than 10 Km		Grand Total
	Freq	%	Freq	%	Freq	%	Freq	%	
Kadapa	0	0	68	45.9	43	29.1	37	25	148
Chittoor	139	45	8	2.6	162	52.4	0	0	309
Prakasam	74	24.5	2	0.7	0	0	226	74.8	302
Ananthapuram	3	1	72	24.3	72	24.3	149	50.3	296
Vishakhapatnam	65	27.1	71	29.6	36	15	68	28.3	240
Srikakulam	28	25	36	32.1	47	42	1	0.9	112
East Godavari	31	20.5	11	7.3	0	0	109	72.2	151
Grand Total	**340**	**21.8**	**268**	**17.2**	**360**	**23.1**	**590**	**37.9**	**1558**

About 67% of the surveyed households prefer hospitals in district headquarters in case of serious cases or emergency, while 33% of the surveyed households prefer the hospitals in nearest town during emergencies.

Table 5-17: Preferred Health Care Center during Emergencies

District	Hospital in nearby Town		Hospital in District		Grand Total
	Freq	%	Freq	%	

Kadapa	21	14.2	127	85.8	148
Chittoor	113	36.6	196	63.4	309
Prakasam	2	0.7	300	99.3	302
Ananthapuram	74	25	222	75	296
Vishakhapatnam	173	72.1	67	27.9	240
Srikakulam	19	17	93	83	112
East Godavari	108	71.5	43	28.5	151
Grand Total	**510**	**32.7**	**1048**	**67.3**	**1558**

About 69.5% of the surveyed households prefer private service operators to transport the patients to nearest hospital while 26% use their own transport. Government service is preferred by 2.5% of the households surveyed. 2% of the respondents confirmed that they had used tractors to transport the patients to the hospital in case of emergencies. Details of mode of transport used in case of emergency to carry the patient to the health care center is presented in

Table 5-18

Table 5-18: Mode of Transport used in case of Emergency

District	Own Transport		Pvt Service		Govt Service		Others		Grand Total
	Freq	%	Freq	%	Freq	%	Freq	%	
Kadapa	0	0.0	142	95.9	5	3.4	1	.7	148
Chittoor	1	.3	307	99.4	0	0.0	1	.3	309
Prakasam	0	0.0	300	99.3	2	.7	0	0.0	302
Ananthapuram	0	0.0	296	100.0	0	0.0	0	0.0	296
Vishakhapatnam	205	85.4	23	9.6	11	4.6	1	.4	240
Srikakulam	107	95.5	4	3.6	1	.9	0	0.0	112
East Godavari	91	60.3	10	6.6	20	13.2	30	19.9	151
Grand Total	**404**	**25.9**	**1082**	**69.5**	**39**	**2.5**	**33**	**2.1**	**1558**

5.5 Economic Status

5.5.1 Assets Owned

About 88% of the surveyed households responded that they are using cell phones for communication. Two-wheeler are found to be most preferred means of transport and is being owned by about 50% of the surveyed households followed by cycles owned by 11% of the surveyed households. TV is owned by 69% of the surveyed households and refrigerator by 20% households. Details of different assets owned by surveyed households in different districts is presented in ***Table 5-19***

Table 5-19: Assets Owned by Households

District	Cycle	Two Wheeler	Three Wheeler	Four Wheeler	Tractor	Tiller	TV	Refrigerator	Cell phone	Grand Total
Kadapa	17(11%)	73(48%)	5(3%)	3(2%)	8(5%)	0	133(87%)	87(57%)	133(87%)	153
Chittoor	38(12%)	150(48%)	3(1%)	6(2%)	6(2%)	3(1%)	257(82%)	69(22%)	288(92%)	313
Prakasam	18(6%)	184(60%)	6(2%)	18(1%)	18(6%)	3(1%)	303(99%)	70(23%)	294(96%)	306
Ananthapuram	9(3%)	132(44%)	9(3%)	3(2%)	3(1%)	0	273(91%)	36(12%)	285(95%)	300
Vishakhapatnam	44(16%)	124(45%)	19(7%)	3(2%)	3(1%)	3(1%)	154(56%)	36(13%)	204(74%)	275
Srikakulam	11(7%)	67(41%)	15(9%)	0	3(2%)	0	10(6%)	2(1%)	137(84%)	163
East Godavari	48(24%)	117(58%)	8(4%)	1(0.5%)	1(0.5%)	0	10(29%)	38(19%)	158(78%)	202
Grand Total	**182**	**849**	**64**	**24**	**43**	**8**	**1188**	**336**	**1500**	**1712**
% of Total	**11%**	**50%**	**4%**	**1%**	**3%**	**0.50%**	**69%**	**20%**	**88%**	**100%**

5.5.2 Monthly Household Expenditure

Average monthly expenditure of the surveyed household is presented in ***Table 5-20***. From the table it is evident that 12% of the households spend below Rs 2500/- while 35% of the households have expenditure in the range of Rs 2500-5000/-. About 50% of the surveyed households spend between Rs 5000 – 7500/-.

Table 5-20: Average Monthly Household Expenditure

District	Below Rs 2500		2500 – 5000		5000 – 7500		Above 7500		Grand Total
	Freq	%	Freq	%	Freq	%	Freq	%	
Kadapa	11	7	46	30	93	61	0	0	150
Chittoor	47	15	75	24	185	59	0	0	310
Prakasam	6	2	28	9	266	87	0	0	303
Ananthapuram	39	13	108	36	147	49	3	1	294
Vishakhapatnam	17	6	154	56	99	36	3	1	272
Srikakulam	10	6	73	45	60	37	2	1	145
East Godavari	77	38	115	57	8	4	0	0	200
Grand Total	**205**	**12**	**599**	**35**	**856**	**50**	**7**	**0.4**	**1678**

5.5.3 Average Monthly Household Income

About 69% of the surveyed households have their monthly income in the range of Rs 5000-7500/- while 4% households have their income above Rs. 7500/- and 26% households have

monthly income below Rs 5000/-. This shows that the surveyed households are mostly from BPL Category. These details are given in the below ***Table 5-21.***

Table 5-21: Average Monthly Household Income

District	Below Rs 2500		2500 – 5000		5000 – 7500		Above 7500		Grand Total
	Freq	%	Freq	%	Freq	%	Freq	%	
Kadapa	3	2	11	7	136	89	2	1	150
Chittoor	6	2	41	13	260	83	0	0	310
Prakasam	6	2	31	10	266	87	0	0	303
Ananthapuram	12	4	48	16	234	78	1	0.3	294
Vishakhapatnam	22	8	66	24	184	67	3	1	272
Srikakulam	15	9	31	19	54	33	55	34	153
East Godavari	77	38	77	38	46	23	0	0	200
Grand Total	**137**	**8**	**308**	**18**	**1181**	**69**	**68**	**4**	**1678**

5.6 Economic Related Activities

About 30% of the households have reported that their family members are engaged in some sort of economic activity. This involved movement of goods from village to nearby markets or nearest village or town or to the district headquarters. District wise distribution of surveyed households engaged in economic activities which requires movement of goods to other places is presented in ***Table 5-22.***

Table 5-22: Family Member Engaged in Economic Activities

District	Engaged in Economic Acuities		Not Engaged in Economic Activities		Grand Total
	Freq	%	Freq	%	
Kadapa	**75**	**50.7**	**73**	**49.3**	**148**
Chittoor	**103**	**33.1**	**208**	**66.9**	**311**
Prakasam	**26**	**8.5**	**279**	**91.5**	**305**
Ananthapuram	**22**	**7.4**	**275**	**92.6**	**297**
Vishakhapatnam	**168**	**62.7**	**100**	**37.3**	**268**
Srikakulam	**99**	**64.3**	**55**	**35.7**	**154**
East Godavari	**17**	**8.5**	**183**	**91.5**	**200**
Grand Total	**510**	**30.2**	**1177**	**69.8**	**1687**

Out of the total of 510 household engaged in economic activities 95% households were engaged in marketing or vending of perishable goods, which require timely movement of

goods to the market. District wise distribution of households engaged in vending of perishable goods is presented in

Table 5-23

Table 5-23: Family Members Engaged in Vending Perishable Goods

District	Yes		No		Grand Total
	Freq	%	Freq	%	
Kadapa	73	97.3	2	2.7	75
Chittoor	102	99.0	1	1.0	103
Prakasam	25	96.2	1	3.8	26
Ananthapuram	22	100.0	0	0.0	22
Vishakhapatnam	155	92.3	13	7.7	168
Srikakulam	93	93.9	6	6.1	99
East Godavari	16	94.1	1	5.9	17
Grand Total	**486**	**95.3**	**24**	**4.7**	**510**

Out of households who are engaged in vending perishable goods, 30% of the households reported selling vegetables in markets in other towns/ villages while about 5% reported selling fruits particularly mangoes, about 3% of the households reported selling sugarcane and groundnuts. While the remaining 61% vend seasonally available commodities in other towns/ villages. Details of different products/ commodities transported for vending are presented in

Table 5-24

Table 5-24: Perishable goods marketed by Family Members

District	Vegetables		Flowers		Fruits		Cash Crop		Livestock Products		Others		Grand Total
	Ferq	%	Ferq	%	Ferq	%	Ferq	%	Ferq	%	Ferq	%	
Kadapa	32	42	0	0	14	18	0	0	0	0	30	40	75
Chittoor	72	70	2	2	12	12	14	14	1	1	1	1	103
Prakasam	17	64	0	0	0	0	0	0	0	0	9	36	26
Ananthapuram	19	86	0	0	1	5	0	0	2	9	0	0	22
Vishakhapatnam	10	6	0	0	0	0	0	0	0	0	158	94	168
Srikakulam	1	1	0	0	0	0	0	0	0	0	98	99	99
East Godavari	0	0	0	0	0	0	0	0	0	0	17	100	17
Grand Total	**150**	**29.5**	**2**	**0.4**	**27**	**5.3**	**14**	**2.8**	**3**	**0.6**	**313**	**61.4**	**510**

5.6.1 Transportation of Goods to Market

Generally private service providers are used by about 55% of the surveyed households and about 42.7% households use their own transport for transporting the goods to the nearest markets while only about 1% of the households use government operators. District wise details of preferred mode of transport of perishable goods are presented in

Table 5-25.

Table 5-25: Mode of Transport Used for Transporting Goods to Markets for Vending

District	Own Transport		Pvt. Service		Govt. Service		Others		Grand Total
	Freq	%	Freq	%	Freq	%	Freq	%	
Kadapa	11	15.1	62	84.9	0	0	0	0	75
Chittoor	9	5.9	94	94.1	0	0	0	0	103
Prakasam	12	32	14	68	0	0	0	0	26
Ananthapuram	0	0	22	100	0	0	0	0	22
Vishakhapatnam	95	54.2	69	43.2	3	1.9	1	0.6	168
Srikakulam	81	83.9	18	16.1	0	0	0	0	99
East Godavari	10	56.3	3	18.8	3	18.8	1	6.3	17
Grand Total	**218**	**42.7**	**282**	**55.2**	**6**	**1.2**	**2**	**0.4**	510

Among those who use private services to transport the goods, about 55% of the households spend below Rs 500, about 15% households spend between Rs 500 and Rs 1000/- while 31% households spend more than Rs 1000/- for transporting the perishable goods to the markets for vending. About one third of the households using private transport did not spend any extra money for transporting goods on a regular basis; due to size and/or weight. District wise details of the amount spent on transportation of goods are presented in

Table 5-26.

Table 5-26: Average Amount Spent in Transportation

District	Below Rs. 500		Rs. 501-1000		Above Rs. 1001		Grand Total
	Freq	%	Freq	%	Freq	%	
Kadapa	48	78	13	20.3	1	1.7	62
Chittoor	12	12.8	13	14.1	69	73.1	94
Prakasam	14	100	0	0	0	0	14
Ananthapuram	22	100	0	0	0	0	22
Vishakhapatnam	0	0	0	0	0	0	73

Srikakulam	0	0	0	0	0	0	18
East Godavari	0	0	7	100	0	0	7
Grand Total	**158**	**54.5**	**42**	**14.5**	**90**	**31**	**290**

5.6.2 Issues Related to Transportation

About 510 households among those using transport for vending of perishable goods, 12% are able to reach their destination in time while 87.9% reported delays in reaching the market place in time. Details of households whether they were able to reach market place in time using the preferred mode of transport is presented in

Table 5-27.

Table 5-27: Whether Able to Reach the Market in Time

District	Yes		No		Grand Total
	Freq	%	Freq	%	
Kadapa	7	8.1	68	91.9	75
Chittoor	6	7.3	97	92.7	103
Prakasam	0	0	26	100	26
Ananthapuram	1	4.5	21	95.5	22
Vishakhapatnam	25	14.9	143	85.1	168
Srikakulam	15	40	84	60	99
East Godavari	7	33.3	10	66.7	17
Total	61	12.0	449	88.0	510

About 76% of the respondents cited that poor transport facilities in their village as the reason for not reaching the destination in time was the reason for delay, while 23% had to stay back in the market as the transportation was not available back to the village from market in the evening time. The details of issues reported are presented in ***Table 5-28.***

Table 5-28: Issues Related to Transportation

District	Not able to reach in time due to poor transport		Sometimes need to stay back in market due no transport to village		Grand Total
	Freq	%	Freq	%	
Kadapa	75	100	0	0.0	75
Chittoor	103	100	0	0.0	103
Prakasam	26	100	0	0.0	26
Ananthapuram	22	100	0	0.0	22

Vishakhapatnam	53	35.1	111	64.9	164
Srikakulam	99	100	0	0.0	99
East Godavari	17	33.3	4	66.7	21
Grand Total	**395**	**77.5**	**115**	**22.5**	**510**

5.7 Women Related

5.7.1 Women in Education

When asked about the any female member of the HH discontinued the education, 31% of the total respondents stated that female members of the household had to quit education as a result of difficulties faced in accessing the educational facility.

Table 5-29: Female member of family discontinued the education

District	Yes		No		Grand Total
	Freq	%	Freq	%	
Kadapa	16	10.9	137	89.1	153
Chittoor	16	5.2	297	94.8	313
Prakasam	3	1	303	99	306
Ananthapuram	16	5.4	284	94.6	300
Vishakhapatnam	180	67.9	95	32.1	275
Srikakulam	125	82.2	38	17.8	163
East Godavari	161	81.3	41	18.7	202
Grand Total	**517**	**30.1**	**1195**	**69.8**	**1712**

Out of a total of 517 households had female members who had to quit education, 50% stated that they had to quit studies as there were no facilities available in the village. 43% stated that they had to go to other village and therefore were not able to continue beyond a certain level, while 7% stated other reasons like safety issues for quitting studies. Details of households from where female members had to quit studies and reasons thereof are presented in *Table 5-30*.

Table 5-30: Households with Female Members Discontinuing Studies and Reasons

District	No Education facility at village		Donot want to go to other village/town		Others		Grand Total
	Freq	%	Freq	%	Freq	%	
Kadapa	0	0.0	15	93.8	1	6.3	16
Chittoor	4	25.0	10	62.5	2	12.5	16
Prakasam	0	0.0	3	100.0	0	0.0	3

Ananthapuram	0	0.0	16	100.0	0	0.0	16
Vishakhapatnam	81	45.0	82	45.6	17	9.4	180
Srikakulam	68	54.4	48	38.4	9	7.2	125
East Godavari	104	64.6	49	30.4	8	5.0	161
Grand Total	**257**	**50.1**	**223**	**42.8**	**37**	**7.1**	**517**

Out of 223 households who reported that women had to go to other village/town continue studies and hence discontinued, 53% stated that the main reason for discontinuing studies was non-availability of transport facilities to the destination from their village, 31.8% stated that poor accessibility was the reason for women quitting studies and 13.5% cited security as the main reason for giving up studies. District wise reasons for quitting studies by female members of the household are presented in ***Table 5-31.***

Table 5-31: Reasons for Discontinuation in Studies by Female Members Going to Other Villages

District	Poor accessibility from the village		Security issue along the path		No transport facility		Grand Total
	Freq	%	Freq	%	Freq	%	
Kadapa	15	100.0	0	0.0	0	0.0	15
Chittoor	8	80.0	0	0.0	2	20.0	10
Prakasam	3	100.0	0	0.0	0	0.0	3
Ananthapuram	3	18.8	13	81.3	0	0.0	16
Vishakhapatnam	15	18.3	9	11.0	58	70.7	82
Srikakulam	18	37.5	4	8.3	26	54.2	48
East Godavari	9	18.4	4	8.2	36	73.5	49
Grand Total	**71**	**31.8**	**30**	**13.5**	**122**	**54.7**	**223**

5.7.2 Women in Economic Activities

When asked about any female member of the family involved in vending of perishable goods, out of 1712 surveyed households, 41% has said they are engaged in the vending the perishable goods.

Table 5-32 Female Family Member involved in Vending Perishable Goods

District	Yes		Grand Total
	Freq	%	
Kadapa	54	47.0	153
Chittoor	96	39.0	313
Prakasam	0	0.0	306
Ananthapuram	74	26.4	300

Vishakhapatnam	181	92.3	275
Srikakulam	119	96.0	163
East Godavari	174	96.7	202
Grand Total	**698**	**40.77**	**1712**

Among the households whose women members are involved in vending perishable goods, 41.7% of the households reported that the female members use their own transport for commuting as well as transporting of goods, 54% used private services and only 3% used government services. Details of household where female members are engaged in vending of perishable goods and their mode of transport is presented in

Table 5-33**.**

Table 5-33: Female Members Engaged in Marketing Perishable Goods and Mode of Transport

District	Own Transport		Pvt Service		Govt. Service		Others		Grand Total
	Freq	%	Freq	%	Freq	%	Freq	%	
Kadapa	0	0.0	23	100.0	0	0.0	0	0.0	23
Chittoor	0	0.0	20	100.0	0	0.0	0	0.0	20
Ananthapuram	0	0.0	6	100.0	0	0.0	0	0.0	6
Vishakhapatnam	84	46.7	90	50.0	4	2.2	2	1.1	180
Srikakulam	58	49.2	58	49.2	2	1.7	0	0.0	118
East Godavari	75	43.1	85	48.9	10	5.7	4	2.3	174
Grand Total	**217**	**41.7**	**282**	**54.1**	**16**	**3.1**	**6**	**1.2**	**521**

Out of households whose women members are involved in vending perishable goods and use private mode of transport, 74.3% reported that they were not able to reach in time due to poor transport, 19.7% of the households reported that the female members were not able to reach their destination in time due to no accessibility from village. The details of problems faced by female members in accessing the market are presented in ***Table 5-34.***

Table 5-34: Problems Faced by Female Members in Marketing of Perishable Goods

District	No accessibility from village		Not able to reach the market in time due to poor transport		Sometimes need to stay back in place/market due to no transport		Security issues at night		Others		Grand Total
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	
Kadapa	0	0	23	100	0	0	0	0	0	0	23
Chittoor	8	37.5	10	56.3	2	6.3	0	0	0	0	20
Ananthapuram	0	0	6	100	0	0	0	0	0	0	6
Vishakhapatnam	21	22	70	74.7	2	2.2	3	1.1	0	0	96

Srikakulam	17	24.5	42	73.6	1	1.9	0	0	0	0	60
East Godavari	14	12	75	78.3	4	3.6	2	2.4	4	3.6	99
Grand Total	**60**	**19.7**	**226**	**74.3**	**9**	**2.9**	**5**	**1.6**	**4**	**1.3**	**304**

5.8 Access to Basic Facilities

5.8.1 Access to Educational Facilities

When asked about the availability of different education facilities like Primary School is available in the village for 78% of the surveyed villages. For 99% survey villages for High School people have to travel outside the village in nearby town/city. Similarly 99% village, people need to travel to nearby town/city for college. The details of households with different level of accessibility to various educational facilities are provided in ***Table 5-35.***

Table 5-35: Access to Educational Facilities

District	Primary School				High School				College				Grand Total
	In the village		Outside the village		In the village		Outside the village		In the village		Outside the village		
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq
Kadapa	70	46	83	54	0	0	153	100	0	0	153	100	153
Chittoor	313	100	0	0	0	0	313	100	0	0	313	100	313
Prakasam	233	76	73	24	0	0	306	100	0	0	306	100	306
Ananthapuram	300	100	0	0	0	0	300	100	0	0	300	100	300
Vishakhapatnam	201	73	74	27	0	0	275	100	0	0	275	100	275
Srikakulam	109	67	54	33	33	20	130	80	28	17	137	84	163
East Godavari	101	50	101	50	0	0	202	100	0	0	202	100	202
Grand Total	**1335**	**78**	**377**	**22**	**34**	**2**	**1695**	**99**	**34**	**2**	**1678**	**98**	**1712**

5.8.2 Accessibility to Health Facilities

With regard to the availability of different health facilities in these villages, 93% of the surveyed households had access to the PHC outside the village like nearby village/town, 7% households stated that the PHC facilities were available within their village. To avail hospital facilities 94% of the household had to visit the nearby town or district headquarters only. Details of HH with different level of access to health facilities are presented in

Table 5-36***.***

Table 5-36: Access to Health Facilities

District	PHC				HOSPITAL				Grand Total
	In the village		Outside the village		In the village		Outside the village		
	Freq	%	Freq	%	Freq	%	Freq	%	
Kadapa	0	0	153	100	0	0	153	100	153
Chittoor	0	0	313	100	0	0	313	100	313
Prakasam	0	0	306	100	0	0	306	100	306
Ananthapuram	0	0	300	100	0	0	300	100	300
Vishakhapatnam	66	24	209	76	61	22	215	78	275
Srikakulam	59	36	104	64	37	23	124	76	163
East Godavari	0	0	202	100	0	0	204	101	202
Grand Total	**120**	**7**	**1592**	**93**	**103**	**6**	**1609**	**94**	**1712**

5.8.3 Perceptions on Benefits from Improved Roads

When asked about the households' opinion on perceived benefits from the improved roads, about 80% households have responded that there will be increase in business opportunities with accessibility to their village to other places. About 69.3% and 85.5% households have replied that there will be improved Goods Transport and Passengers transport facilities respectively connecting their villages to nearby towns or major roads.

About 70% households have stated that with improved roads will ease and lead to quick access to health facilities and take less time to reach hospital during emergencies. About 75% households perceived that with connectivity and improved roads there will be better access to education facilities outside the village.

Table 5-37 Perception on Benefits from Improved Roads

District	Improve		Same		No		Total
Aspects	Freq	%	Freq	%	Freq	%	Count
Business Opportunity	1371	80.1	23	1.3	318	18.6	1712
Goods transport	1157	69.3	128	7.7	385	23.1	1670
Passengers Transport Facilities	1463	85.50	152	8.90	97	5.70	1712
Access to Health Facilities	1133	70.3	207	12.8	271	16.8	1611
Access to Education	1000	76.5	157	12.0	150	11.5	1308

5.8.4 Focus Group Discussions

The FGDs were conducted after completion of household surveys. The FGDs were conduct during end April – end May 2018. The FGDs were conducted in specific homogeneous groups viz. General Public and Women.

The topic of the FGD was roads connectivity and its impacts on economic activities, access to health facilities, education facilities, markets, etc. The discussion was moderated around these key topics/ issues. The information collected through FGDs were compiled and findings are summarized below:

- The sample villages were away from any of the environmental and eco-sensitive zones.
- Out of 26 villages selected, one village requires crossing a water stream to reach the village.
- The villagers expressed due to poor accessibility and fewer transport facilities they are not able to market the agriculture produce in time. The villagers expressed that most of the time they get delayed in reaching the market with perishable goods and this means they have to sell the goods even at a loss.
- Due to poor transport facility due to bad road/no road to the village. There is no government transport service to the village. The villagers mainly depend on the own transport and private transport service.
- The prevalent mode of transport is either own vehicle or private service (mostly three wheeler/Autos).
- The government transport service is only available once they reach the main connecting road from the village
- For any health facility, villagers have to travel to either nearby town or district headquarters. The main mode of transport to reach the hospital is private services. The Focus Group Discussions reveal that a household pays about Rs. 1000/- per outbound trip to nearby hospitals, against normal charges of Rs. 30/- due to non-availability of public transport.
- It was expressed that to reach in time during pregnancy, women will reach the district hospital two days before the date of delivery. In acute emergencies and during night the villagers pay heavy transport charges and even use tractors to reach the hospital.
- The sampled villages have above 250 population and are interior. Almost all these villagers need to travel to nearby towns for high school and higher education facilities. This corroborates with the survey findings. Only 2% of the surveyed villages have high schools and colleges.
- The villagers noted that female children in some cases had discontinued the school/college as they need to travel to nearby towns. This corroborates with the survey findings. about 30% of the surveyed households report that female members of their households had to discontinue their education due to a) unavailability transport services and unsafe paths (53% of the above 30%), b) unavailability of educational facilities (43% of the above 30%) and c) for other reasons.
- More than half of the village working population are involved in agriculture labour and other labour activities. They are happy to provide their services for road construction.

- Many of these villages have Self Help Groups. These groups are federated at Mandal and district level. Some of these SHGs and their federations, have taken up enterprises. These SHG groups in the villages have shown interest in taking up petty contracts under the project and maintenance of the road if training is given by the project.
- The villagers are of the opinion that with better connectivity and roads to their villages the economic opportunities, access to health and education facilities, transport facilities both goods and passenger will improve.

6 Environmental and Social Impacts

6.1 Introduction

The APRRP is a category B project, from the project development objective, it can be seen that this project and the sub-projects would yield positive and beneficial impacts on the target population. However, any development intervention will also have some negative impacts. Keeping this in view the likely positive and negative impacts are listed below. The significance of these listed impacts would vary depending on the individual sub-project, its size and location. The size of the sub-projects would normally be small both physically and financially. Due to the likely small size of the sub-projects, adverse impacts, if any, would be minimum, localized, temporary and reversible.

The environmental and social impacts, on the basis of assessment during field study are listed below. The impacts could occur during the construction phase and/or operation phase.

Table 6-1: Environmental and Social Impacts Envisaged

Project Type	Environmental and Social Impacts																		
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Construction of Roads	M	M	M	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Construction of Bridges	L	L	L	L	M	M	M	L	L	L	L	L	L	L	L	L	L	L	L

Impacts: S – Significant M – Moderate L – Low

Code	Impact	Code	Impact	Code	Impact
A	Land acquisition	H	Ground Water Quality	O	Noise
B	Transfer of Government Land under Different Tenures	I	Destruction of Habitat/Flora Fauna	P	Smell
C	Involuntary Resettlement	J	Insect and Pest Menace	Q	Smoke
D	Land Use	K	Increased chemical pesticides/ fertilizers use	R	Disturbance to Other Services
E	Hydrology and drainage Pattern	L	Public Health	S	Air Quality
F	Water logging	M	Safety		
G	Surface Water Quality	N	Bio-diversity		

6.2 Positive Impacts

These are positive impacts listed below:

- Improved public safety and security
- Reduced sufferings during monsoons and adverse climatic conditions
- Better infrastructure and connectivity

- Improved access to services
- Productive use of time
- Improvements in income patterns
- Improvement in educational level specially girl child
- Health and Environmental improvements
- Improvements in quality of life and human dignity
- Opportunities for social interaction
- Improved community participation and sense of ownership

6.3 Negative Impacts

The negative environmental and social impacts are summarized below:

6.3.1 Environmental Impacts

The possible negative environmental impacts are listed below.

- Loss of trees due to tree cutting
- Impact on land and soil like loss of productive soil and soil erosion
- Changes in land use
- Impacts due to borrow areas and quarries
- Compaction and contamination of soil due to vehicular movements
- Impact on surface water bodies due to siltation
- Impacts on surface water quality of rivers and other water bodies
- Changes in hydrology and drainage
- Impacts due to construction debris/waste
- Health and safety of construction workers and local people/ community
- Obstruction and disruption of traffic
- Impacts due to transportation and storage of construction materials
- Reduction in air quality due to construction activities
- Increase in noise levels during construction
- Loss/ impact on common property resources

6.3.1.1 Impacts on Topography

There will not be major adverse impacts on the topography on account of the sub-projects to be proposed. Yet there might be the following temporary impacts, which could be mitigated using the specified mitigation measures.

- Erosion and sedimentation
- Temporary disruption of natural drainage pattern
- Accumulation of excess excavated earth in the area of construction and operation
- Excess earth and debris blockage and change in drainage pattern

- Changes to hydrological regime, increased flooding, siltation hampering stream flows, etc.

6.3.1.2 Impacts on Climate

- No changes in climatic conditions or impacts on climate are anticipated due to the sub-projects to be proposed as part of the APRRP.

6.3.1.3 Impacts on Surface Water

The sub-project activities during construction or operations are not expected to interfere with the surface water characteristic of the river or its tributaries. Hence, impacts on surface water are not anticipated. The following temporary impacts are identified.

- Reduced flow to the downstream users at specific points due to river/ stream diversions at bridge sites
- Surface water pollution due to oil and grease from construction vehicles
- Degradation of river banks due to excavation and construction activities

6.3.1.4 Impacts on Air Quality

During the construction phase excavation process, suspended particulate matter and dust are major sources of pollution impairing air quality. However, on the sub-project construction sites the impact on air quality is likely to be higher; though temporary. During construction and sometimes during operation, use of hot mix plants/ drum mix plants, generators, transportation and lifting machinery will be unavoidable. Emissions from the exhaust of these are likely to cause localized and temporary air quality impacts. Adequate dust suppression measures and protective measures to the work force will significantly reduce impacts. As the sub-projects to be proposed would be small by nature, the impact of air pollution will not be very significant. Since these impacts are temporary, adequate precautions during the construction period will mitigate them. There will not be any significant air quality impacts during the operation phase of the sub-projects. However, the following possible impacts are listed.

- Increased dust levels due to earth work excavation and construction activities
- Increased air pollution and smell
- Air pollution through ventilating shafts of machinery, plant and equipment

6.3.1.5 Impacts on Noise Levels

Movement of vehicles transporting construction material and noise generating activities at the construction site, are major sources of noise pollution during construction. Material

movement and associated work are the primary noise generating activities on site. These will be distributed over the entire construction period. Construction activities are expected to produce noise levels that can affect the personnel working on site. Activities involving vehicles, plant and equipment in the close proximity of households will have an adverse impact due to noise pollution. These impacts are temporary and limited to the construction phase. Except during regular maintenance activities, no noise generating activities are envisaged during the sub-projects operation phase. Hence, no noise impacts are predicted. However, the some possible impacts are listed.

- Increased Noise Levels during Construction
- Noise due to movement of vehicles
- Increased Noise Levels during operation
- Noise impact due to operation of DG sets

6.3.1.6 Other Issues

- **Visual impacts**
  - ✓ Disruption to visual resources
  - ✓ Standing out as Eyesore in the surroundings
  - ✓ Ugly and unsightly conditions
- **Damage**
  - ✓ Damage to road surface/ other utilities
- **Hazards**
  - ✓ Digging of unplanned borrow pits on the road side/ other locations causing inconvenience to public and leading to accidents
- **Nuisance**
  - ✓ Storage of materials causing disturbance to public and traffic
  - ✓ Mosquito and fly nuisance
- **Disease**
  - ✓ Disease transmission and Public Health issues
  - ✓ Spills of solid waste enroute construction sites
- **Other probable issues**
  - ✓ Plying vehicles on unpaved roads
  - ✓ Stagnation of water due to construction activities
  - ✓ Oil spillages

6.3.2 Specific Impacts due to Bridges

- Impact on land and soil like loss of productive soil and soil erosion
- Changes in land use
- Impacts due to quarries and borrow pits

- Compaction and contamination of soil due to vehicular movements
- Impact on surface water bodies due to siltation
- Impacts on surface water quality of rivers and other water bodies
- Changes in hydrology and drainage
- Impacts due to construction debris/waste
- Health and safety of construction workers and local people/ community
- Obstruction and disruption of traffic
- Impacts due to transportation and storage of construction materials
- Reduction in air quality due to construction activities
- Increase in noise levels during construction
- Possibly loss of trees due to tree cutting
- Loss/ impact on common property resources

6.3.3 Social Impacts

- **Positive Impacts:**
  - ✓ More employment for locals leading to decrease in poverty
  - ✓ Improvement in Village Economy
  - ✓ Improved accessibility and connectivity within beneficiary areas
  - ✓ Reduced public transport costs
  - ✓ Road safety improvement
  - ✓ Improved access to social services specially health and education
  - ✓ Safety for women and girls
  - ✓ Improved access to markets
  - ✓ More opportunities to go to school and colleges
  - ✓ Reductions in travel times
  - ✓ Stimulation of and improved local economies and induced development

- **Deprivation and Displacement**
  - ✓ Due to acquisition of private residential or agricultural or commercial land and also transfer of Government land under different tenure systems
  - ✓ Loss of assets/ infrastructure
  - ✓ Loss of Common Property Resources/ Community Assets
  - ✓ Loss of Livelihoods
  - ✓ Loss of access to houses/ businesses

- **Inconvenience and nuisance to Public**
  - ✓ Due to accumulation of excavated earth
  - ✓ Disturbance to traffic and resulting congestion
  - ✓ Disruption of utilities such as water, electricity, telephone, cable, etc.

- **Social issues**
  - ✓ Social disruption in the area of construction
  - ✓ Social unrest issues on construction sites
  - ✓ Regional labour issues

- **Safety hazards**
  - ✓ To the households in the neighborhood during construction
  - ✓ Due to impact of vehicles on land outside RoW
  - ✓ Due to risk of accidents

- **Health Hazards**
  - ✓ Due to stagnation of water leading to mosquito breeding and public health problems
  - ✓ Due to spread of AIDS at construction sites
  - ✓ Due to surface water pollution
  - ✓ Due to groundwater pollution

6.4 Impacts due to Labour Influx

Social impacts are critical to address, as even a modest labor influx may lead to negative impacts on the host community. Pre-existing social issues in the host community can easily be exacerbated by the influx of labor. The common categories of social risk associated with labor influx are as follows:

- **Risk of social conflict:** Conflicts may arise between the local community and the construction workers, which may be related to religious, cultural or ethnic differences, or based on competition for local resources. Ethnic and regional conflicts may be aggravated if workers from one group are moving into the territory of the other.

- **Increased risk of illicit behavior and crime:** The influx of workers and service providers into communities may increase the rate of crimes and/or a perception of insecurity by the local community. Such illicit behavior or crimes can include theft, physical assaults, substance abuse, prostitution and human trafficking.

- **Impacts on community dynamics:** Depending on the number of incoming workers and their engagement with the host community, the composition of the local community, and with it the community dynamics, may change significantly. Pre-existing social conflict may intensify as a result of such changes.

- **Increased burden on and competition for public service provision:** The presence of construction workers and service providers (and in some cases family members of either or both) can generate additional demand for the provision of public services,

such as water, electricity, medical services, transport, education and social services. This is particularly the case when the influx of workers is not accommodated by additional or separate supply systems.

- **Increased risk of communicable diseases and burden on local health services:** The influx of people may bring communicable diseases to the project area, including sexually transmitted diseases (STDs), or the incoming workers may be exposed to diseases to which they have low resistance. Workers with health concerns relating to substance abuse, mental issues or STDs may not wish to visit the project's medical facility and instead go anonymously to local medical providers this can result in an additional burden on local health resources.

- **Local inflation of prices, accommodations and rents:** A significant increase in demand for goods and services due to labor influx may lead to local price hikes and/or crowding out of community consumers. Depending on project worker income and form of accommodation provided, there may be increased demand for accommodations, which again may lead to price hikes and crowding out of local residents.

- **Increase in traffic and related accidents:** Delivery of supplies for construction workers and the transportation of workers can lead to an increase in traffic, rise in accidents, as well as additional burden on the transportation infrastructure.

7 Environment and Social Management Planning Framework

7.1 Introduction

The ESMPF was based on the outputs of the Social and Environmental Assessment that was carried out during the APRRP preparation. The assessment included secondary information research, primary visits to 7 districts, 25 Mandals, 28 Panchayats and visiting 28 prposed roads serving 33 villages, primary sruerys in 33 villages, public/ stakeholder consultations, analysis to determine the key social and environmental issues. All the information, analyses and feedback have been suitably incorporated in the ESMPF. Since the project is categorized as Category B, the ESMPF prescribes following:

a) Screening of all sub-projects and decision on ESIA
b) Conducting ESIA, if screening suggests, and development of specific EMP and SMP and preparation of RAP/ ARAP if required
c) Use of generic EMP and SMP for all sub-projects
d) Guidance on using the Environmental Codes of Practice (ECoPs)
e) Preparation of TPP when the sub-project is located in the Scheduled Tribes area
f) Regular monitoring
g) Half-yearly independent third party environmental and social audit

7.2 Screening

A screening and review process for identification of sensitive sub-projects with respect to environmental and social issues will be carried out during the planning phase of the sub-project. The screening exercise will be carried out by the PIUs prior to initiation of the DPR activities. The screening exercise will be a useful tool to identify the environmental and social issues, and thereby plan for their management and mitigation during the project preparation. The screening criteria include factors/aspects such as:

- Sensitive areas, natural habitats, protected areas
- Felling of trees outside the protected areas
- Clearance of vegetative cover
- Cuts across perennial streams or surface water bodies
- Vulnerability to natural hazards, landslides/slips and,
- Environmental features as marshy areas, sand dunes etc
- Loss of productive agricultural land/ residential/ commercial land
- Loss of livelihoods
- Loss or loss of access to common property resources
- Impacts on vulnerables
- Other such features/ aspects

The screening will enable identification of impacts due to sub-projects based on their environmental and social sensitivity as follows:

(i) Sub-projects, wherein no significant adverse environmental and social impacts are expected:

a) The environmental and social impacts will be of the type normally associated with standard rural road construction.
b) The measures suggested in the Environmental Codes of Practice (ECoPs), Generic Environmental Management Plan (EMP) and Social Management Plan (SMP) are adequate to address the general environmental and social issues likely in these sub-projects.

(ii) Sub-projects, wherein there is a potential for significant adverse environmental and social impacts:

a) Sub-projects traversing through sensitive natural habitats, requiring land acquisition and causing loss of livelihoods will be identified through screening.
b) There is a likelihood of adverse impacts requiring specific interventions such as roads passing through forests, sanctuaries, requiring private land acquisition, causing loss of livelihoods and thereby requiring additional environmental and social analysis. In such cases and ESIA will be conducted.
c) In view of the small size of the sub-projects, this ESIA will be conducted by the DPR consultants. The DPR consultants will then prepare a specific EMP and SMP and an RAP/ ARAP if required.
d) DPR consultant and PIUs shall once again verify Forest and Wildlife issues in the rural roads. The rural roads passing through forest area need to be included after obtaining requisite/necessary permission from the forest department.

7.2.1 Steps in Screening

As a first step, filling in an environmental and social screening format would help in identifying the environmental and social impacts. The basic objective of the filling in this data sheet is to collect information on environmental and social aspects of the proposed sub-project. Further the ESMPF requires that environmental and social data pertaining to the proposed sub-project be compiled during the field data collection stage. For this purpose, an Environment and Social Screening Formats (ESSF) are formulated and annexed to this ESMPF. These are given in ***Annexure 1***.

The sub-project Implementing Agency fills up these ESSF with the facilitation support of the PIUs duly identifying the environmental and social issues of concern. Supplementary

notes on environmental and social concerns will also be added to those ESSF. The sub-project Implementing Agency will do the screening through collection of necessary field data. PMU would supervise the screening process ensuring that the person/ Unit has the capacity and familiarity with AIIB safeguards policies/ framework approach to undertake these activities. These ESSF are attached to the sub-project project proposal.

Based on screening results, for the sub projects with fewer environment and social impacts, a generic *EMP/ SMP* will be applicable. This is provided in this ESMPF.

*E*nvironment and Social Impact Assessment (ESIA) will be done only for the sub projects with a potential for significant adverse environment and social impacts. ***However, it is expected that sub projects with the potential for significant adverse environment impacts will be few to none.***

The DPR consultant will conduct the ESIA and prepare a sub-project specific EMP and SMP and if required a RAP/ ARAP. In case the environmental and social issues are identified during implementation, the Project Management Consultant (PMC) will conduct this ESIA and prepare the EMP, SMP, RAP/ ARAP. In case the sub-project is located in the Tribal areas, the DPR consultant/ PMC will prepare a TPP as well.

7.2.2 Environmental Codes of Practices (ECoPs)

The ECoPs have been developed to guide the planning, design, construction and maintenance stages of PMGSY in terms of avoidance or mitigation of the adverse environmental impacts that may result from the projects. The codes define methods and procedures to be followed by the Executing Agencies, Contractors and other agencies involved. The scope of the ECoPs is outlined in the Box given below.

Scope of Environmental Codes of Practice
To form a field guide manual lo the Planners. Field Engineers and Contractors to ▪ Identify project activities that can have potential environmental impacts and to provide mitigation measures ▪ Demonstrate road design and construction practices that are cost-effective and address environmental impacts ▪ Illustrate recommended practices to address the environmental concerns during project planning implementation and operation ▪ Define role for involvement of the rural communities at different stages of the project. and ▪ Achieve the project objectives of rural connectivity through roads planned and constructed to blend with the natural surroundings.

The list of ECoPs prepared and their coverage is presented in

Table 7-1. Checklist for checking the DPR preparation and for identifying issues to be addressed in pre-construction, construction and post-construction stages will be as per the ECoPs.

Implementation of environmental measures shall be monitored through the environmental audit procedures provided in ECoPs. This includes format for reporting the progress in addressing different issues in various stages of the project. This format is given in ***Annexure 8***.

Table 7-1: Environmental Codes of Practice and their Coverage

ECoP	Title	Key Issues Addressed
ECoP 1.0	Project Planning & Design	▪ Incorporation of environmental concerns in project preparation to avoid impacts in construction and operation stages ▪ Avoidance of roads through sensitive areas as reserved forests/sanctuaries/wetlands, etc. ▪ Compliance with legal requirements ▪ Devising enhancement measures into project design
ECoP 2.0	Site Preparation	▪ Relocation of utilities, common property resources and cultural properties ▪ Avoidance of effect on roadside vegetation
ECoP 3.0	Construction Camps	▪ Avoidance of sensitive areas for location of construction camps ▪ Infrastructure arrangements for workers and construction equipment
ECoP 4.0	Alternate Materials for Construction	▪ Use of fly ash as per MoEF Notification ▪ Minimizing earth requirement
ECoP 5.0	Borrow Areas	▪ Avoidance of agriculture lands ▪ Redevelopment of borrow areas
ECoP 6.0	Topsoil Salvage, Storage & Replacement	▪ Topsoil removal from areas temporarily/permanently used for construction ▪ Storage of topsoil in stockpiles and protection from erosion ▪ Reuse of topsoil at areas to be re-vegetated and in agriculture lands
ECoP 7.0	Quarry Management	▪ Redevelopment of quarries in case new quarries are setup for the project
ECoP 8.0	Water for Construction	▪ Extraction of water in water scarce areas with consent of community ▪ Scheduling construction activities as per water availability
ECoP 9.0	Slope Stability and Erosion Control	▪ Slope stability along hill roads ▪ Protection of land on hill side from stability loss due to cutting ▪ Protection of lands on valley side from debris due to construction ▪ Adequacy of drainage for erosion control
ECoP 10.0	Waste Management	▪ Reuse of cut material in hill roads ▪ Safe disposal of wastes
ECoP 11.0	Water Bodies	▪ Avoidance from cutting due to alignment ▪ Protection of embankment slopes in case of alignment on embankments

ECoP	Title	Key Issues Addressed
		▪ Rehabilitation of water body
ECoP 12.0	Drainage	▪ Conduct of hydrological investigations during project preparation ▪ Provision of longitudinal and cross drainage as per requirements ▪ Proper location of drainage outfall
ECoP 13.0	Construction Plants and Equipment Management	▪ Compliance of construction plants and equipment with emission standards of Central Pollution Control Board ▪ Maintenance of machinery and equipment to avoid pollution
ECoP 14.0	Public and Worker's Health & Safety	▪ Provision of Personal Protective Equipment to workers ▪ Provision of basic necessities to workers ▪ Public safety while travel along construction sites ▪ Public safety during operation of the road
ECoP 15.0	Cultural Properties	▪ Avoidance of impacts due to project ▪ Protection of precincts from impacts due to construction ▪ Relocation in case impacts are unavoidable
ECoP 16.0	Tree Plantation	▪ Avoidance of impact on trees ▪ Plantation of trees on roadside
ECoP 17.0	Managing Induced Development	▪ Restricting ribbon development at junctions and bus stops ▪ Earmarking areas for commercial activities and other amenities
ECoP 18.0	Environmental Audit	▪ Monitoring of environmental and social parameters ▪ during project planning, construction and implementation
ECoP 19.0	Natural Habitats	▪ Identification of natural habitats ▪ Management measures for roads passing through natural habitats ▪ Structure of management plan
	Biodiversity	▪ Provisions to address biodiversity issues, in addition to provisions provided for protecting Natural Habitats as per ECoP – 19.0
ECoP 20.0	Consultation Framework	▪ Aspects for consultation ▪ Stage wise consultations ▪ Consultation schedule and responsibilities

7.3 Environmental Impact Mitigation Plan

As per guidelines of the Government of India, the provisions of the Environmental Codes of Practice (ECoPs) must be followed for construction of all Rural Roads in India. GoAP has the experience of following these ECoPs under PMGSY. The Environmental Codes of Practice are available at the National Informatics Centre website http://www.nbrienvis.nic.in/WriteReadData/CMS/Environmental%20Codes%20of%20Practice%20-%20Rural%20Roads(1).pdf (*for reference*). Also, for the project, based on Environmental and Social Risk Assessments, an Environmental Impact Mitigation Plan/ Environmental Management Plan (EMP) and a Social Management Plan (SMP) has been developed. The provisions of the EMP and the SMP needs to be followed along with the guidance provided in the ECoP. For every subproject the EMP and SMP should be developed so as to mitigate the risks identified during impact assessment. A generic EMP has been presented in Table 5-2, below for reference as sample guide.

7.3.1 EMP in Bid Documents

The EMP including EMP Budget items needs to be incorporated in the Bid Documents. A hyper link to the ECoPs needs to be incorporated in the Bidding documents. Penalty Clauses for not complying with EMP requirements shall be incorporated. Indicative penalty clauses proposed in the project are presented below

7.3.2 Clause for Non - Compliance to EMP

The Contractor shall implement all mitigation measures for which responsibility is assigned as stipulated in the EMP Report. Any lapse in implementing the same will attract the penalty as detailed below:

- All non-compliances in obtaining clearances/permissions under statutory compliances and violations of any regulations with regard to eco-sensitive areas shall be treated as a major NC
- Any complaints of public, within the scope of the Contractor, formally registered with the PMU, PRED and communicated to the Contractor, which is not properly addressed within the time period intimated by the PMU/PRED shall be treated as a major lapse
- Non-conformity to any of the mitigation measures stipulated in the EMP Report (other than stated above) shall be considered as a minor lapse
- On observing any lapses, PMU shall issue a notice to the Contractor, to rectify the same
- Any minor lapse for which notice was issued and not rectified, first and second reminders shall be given after ten days from the original notice date and first

reminder date respectively. Any minor lapse, which is not rectified, shall be treated as a major lapse from the date of issuing the second reminder

- If a major lapse is not rectified upon receiving the notice PMU shall invoke reduction, in the subsequent interim payment certificate
- For any non-compliance,10%of the interim payment will be withheld, subject to a maximum amount 5% of the contract value
- If the lapse are not rectified within one month or as specified by the client, the payment, the amount withheld will forfeited subject to maximum of 1% of contract value.

Table 7-2: Generic Environment Management Plan

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility		
				Execution	Supervision	Monitoring
1.	Utility Relocation and common property resources	▪ In case of utilitiesand common property resources being impacted due to the project, they will be relocated with prior approval of the concerned agencies before construction starts, on any sub-section of the project road. ▪ The relocation site identification will be in accordance with the choice of the community.	Pre-construction	Contractor	PIU	Project Monitoring Consultant (PMC) /Project Management Unit (PMU)
2.	Relocation of Cultural Property	▪ In case there is an impact on cultural properties, they will be relocated at suitable locations, as desired by the community before construction starts. ▪ Local Community meetings, will be held to discuss relocation aspects, siting of structures etc.	Pre-construction	Contractor	PIU	PMC/PMU
3.	Site clearance	▪ Site clearance will be done only in the area required for the sub-project.	Pre-construction	Contractor	PIU	PMC/PMU
4.	Tree Cutting	▪ Trees will generally not be removed unless they is a safety hazard. ▪ Removal of trees shall be done only after the permissions/approvals are obtained from concerned regulatory authorities. ▪ Disposal of cut trees is to be done immediately to ensure that the traffic movement is not disrupted.	Pre-construction	Contractor	PIU	PMC/PMU
5.	Debris disposal site identification	▪ Site for temporary storage and disposal of debris refuse to be identified in consultation with local Gram Panchayat / Municipality. ▪ These disposal sites shall be finalized such that they are not located within any designated forest or other eco-sensitive areas, does not impact natural drainage courses and no endangered / rare flora is impacted by such disposal. ▪ Pre-designated sites for disposal could be used with prior permission from PMU.	Pre-Construction	Contractor	PIU	PMC/PMU
6.	Joint Field Verification	▪ The Engineer and the Contractor will carry out joint field verification of the EMP. ▪ The efficacy of the mitigation measures suggested in the EMP will be checked.	Pre-Construction	Contractor	PIU	PMC/PMU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility		
				Execution	Supervision	Monitoring
7.	Modification of the Contract Documents	▪ If required, the Engineer will modify the EMP and Contract documents (particularly the BOQs).	Pre-construction	Contractor	PIU	PMC/PMU
8.	Crushers, Hot-mix plants, Drum-mix plants & Batching Plants	▪ Specifications hot mix plants and batching plants (existing or new) will comply with the requirements of the relevant national, state and local pollution control requirements as per Environment Protection Act 1986, Air (Prevention and Control of Pollution) Act, 1981 and Noise Pollution (Regulation and Control) Rules, 2000. ▪ Hot mix plants and batching plants will be sited sufficiently away from habitation, agricultural operations or industrial establishments. ▪ Such plants will be located at least 1000m away from the nearest habitation, preferably in the downwind direction.	Pre-Construction	Contractor	PIU	PMC/PMU
9.	Other Construction Vehicles, Equipment and Machinery	▪ The discharge standards promulgated under the Environment Protection Act, 1986 will be strictly adhered to. ▪ All vehicles, equipment and machinery to be procured for construction will conform to the relevant Bureau of Indian Standard (BIS) norms. ▪ Noise limits for construction equipment to be procured such as compactors, rollers, front loaders, concrete mixers, cranes (moveable), vibrators and saws will not exceed 75 dB (A), measured at one meter from the edge of the equipment in free field, as specified in the Environment (Protection) Rules, 1986.	Pre-Construction	Contractor	PIU	PMC/PMU
10.	Material sourcing (sand, borrow material and stone material)	▪ Procurement of construction material only from permitted sites and licensed / authorized quarries. ▪ Farm land and forest belts shall not be used for material sourcing or borrow sites. ▪ Arable land shall not be selected as borrow sites as much as possible. ▪ If excavation has to be done in arable land, top soil layer (30 cm) shall be saved and returned after construction work is completed, so as to minimize impacts.	Pre-Construction	Contractor	PIU	PMC/PMU
11.	Quarries	▪ The Contractor will identify materials from existing licensed quarries with the suitable materials for construction.	Pre-Construction	Contractor	PIU	PMC/PMU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility		
				Execution	Supervision	Monitoring
		▪ Apart from approval of the quality of the quarry materials, the Engineer's representative will verify the legal status of the quarry operation. ▪ The quarry operations will be undertaken within the rules and regulations in force.				
12.	Water	▪ The Contractor will be responsible for arranging adequate supply of water for the entire construction period. ▪ The contractor shall consult the local people before finalizing the locations. ▪ The contractor will preferentially source all water requirements from surface water bodies. ▪ The contractor will be allowed to pump only from the surface water bodies. ▪ Boring of any tube wells will be prohibited. ▪ Any groundwater to be extracted requires permission from concerned authorities and PMU. ▪ The contractor will minimize wastage of water during construction.	Pre-construction	Contractor	PIU	PMC/PMU
13.	Sand	The contractor will identify sand quarries with requisite approvals for the extraction of sand from Department of Mines and Geology as per The Mines and Minerals (Development and Regulation) Act, 1957 and AP Minor Mineral Concession rules, 1966	Pre-construction	Contractor	PIU	PMC/PMU
14.	Labour Requirements	▪ The contractor will use unskilled labour drawn from local communities to avoid any additional stress on the existing facilities (medical services, power, water supply, etc.) ▪ Planning of labour camps, if required, needs to be done to ensure adequate water supply, sanitation and drainage etc., in conformity with the "The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996"	Mobilization	Contractor	PIU	PMC/PMU
15.	Generation of Debris from dismantling of pavement structures	▪ Debris generated due to the dismantling of the existing pavement structure shall be suitably reused in the proposed construction, subject to the suitability of the material and the approval of the Engineer. ▪ The contractor shall suitably dispose unutilized debris material; either through filling up of borrows areas created for the project or at pre-designated dump locations, subject to the approval of the Engineer.	Construction	Contractor	PIU	PMC/PMU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility		
				Execution	Supervision	Monitoring
		▪ Debris generated from pile driving or other construction activities shall be disposed such that it does not flow into the surface water bodies or form mud puddles in the area. ▪ Dumping sites shall be identified by the contractor as per regulations in force. The identified locations will be reported to the Engineer.				
16.	Bituminous wastes disposal	▪ The disposal of residual bituminous wastes will be done by the contractor at secure landfill sites, with the requisite approvals for the same from the concerned government agencies, as per the Acts and Laws in force.	Construction	Contractor	PIU	PMC/PMU
17.	Non-bituminous construction wastes disposal	▪ Location of disposal sites will be finalized prior to beginning of the earthworks on any particular section of the road. ▪ The Engineer shall approve these disposal sites conforming to the following ▪ (a) These are not located within designated forest areas. ▪ (b) The dumping does not impact natural drainage courses ▪ (c) No endangered/rare flora is impacted by such dumping. ▪ (d) Settlements are located at least 1.0km away from the site. ▪ (e) Not located 1 Km within any mangrove vegetation/ecologically sensitive areas.	Construction	Contractor	PIU	PMC/PMU
18.	Stripping, stocking and preservation of top soil	▪ The topsoil from borrow areas, areas of cutting and areas to be permanently covered will be stripped to a specified depth of 150mm and stored in stockpiles. ▪ At least 10% of the temporarily acquired area will be earmarked for storing topsoil. ▪ The stockpile will be designed such that the slope does not exceed 1:2 (vertical to horizontal), and the height of the pile is to be restricted to 2m. ▪ Stockpiles will not be surcharged or otherwise loaded and multiple handling will be kept to a minimum to ensure that no compaction will occur. ▪ The stockpiles will be covered with suitable blue sheets or gunny bags or tarpaulin.	Construction	Contractor	PIU	PMC/PMU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility		
				Execution	Supervision	Monitoring
		▪ It will be ensured by the contractor that the topsoil will not be unnecessarily trafficked either before stripping or when in stockpiles. ▪ Such stockpiled topsoil will be returned to cover the disturbed area and cut slopes. ▪ The management of topsoil shall be reported regularly to the Engineer.				
19.	Blasting	▪ Except as may be provided in the contract or ordered or authorized by the Engineer, the Contractor will not use explosives. ▪ Where the use of explosives is so provided or ordered or authorized, the Contractor will comply with the requirements of the regulations in force besides the law of the land as applicable. ▪ The Contractor will at all times take every possible precaution and will comply with appropriate laws and regulations relating to the importation, handling, transportation, storage and use of explosives and will, at all times when engaged in blasting operations, post sufficient warning flagmen, to the full satisfaction of the Engineer. ▪ The Contractor will at all times make full liaison with and inform well in advance and obtain such permission as is required from all Government Authorities, public bodies and private parties whomsoever concerned or affected or likely to be concerned or affected by blasting operations. ▪ Blasting shall be carried out with prior information to the Engineer and only after obtaining permission from the District Police authorities (Superintendent of Police). ▪ All the statutory laws, regulations, rules etc., pertaining to acquisition, transport, storage, handling and use of explosives will be strictly followed. ▪ Blasting will be carried out during fixed hours (preferably during mid-day), as permitted by the Authorities / Engineer. ▪ The timing should be made known to all the people within 1000m (200m for pre-splitting) from the blasting site in all directions.	Construction	Contractor	PIU	PMC/PMU
20.	Transporting Construction Materials	▪ All vehicles delivering materials to the site will be covered to avoid spillage of materials. ▪ All existing highways and roads used by vehicles of the contractor, or any of his sub -contractor or suppliers of materials or plant and similarly roads	Construction	Contractor	PIU	PMC/PMU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility		
				Execution	Supervision	Monitoring
		which are part of the works will be kept clean and clear of all dust/mud or other extraneous materials dropped by such vehicles. ▪ The unloading of materials at construction sites close to settlements will be restricted to daytime only. ▪ For any unloading at night, written permission shall be obtained from the concerned authorities				
21.	Planning Traffic Diversions & Detours	▪ Temporary diversions will be constructed with the approval of the Engineer. Detailed Traffic Control Plans will be prepared and submitted to the Engineer for approval, 5 days prior to commencement of works on any section of road. ▪ Prior to creating diversions and detours the citizens should be consulted well in advance through citizen's meetings. ▪ The traffic control plans shall contain details of temporary diversions, details of arrangements for construction under traffic, details of traffic arrangement after cessation of work each day, safety measures for transport of hazardous material and arrangement of flagmen. ▪ Environmental personnel of the Contractor will assess the environmental impacts associated as the loss of vegetation, productive lands and the arrangement for temporary diversion of the land prior to the finalization of diversions and detours. ▪ Special consideration will be given to the preparation of the traffic control plan for safety of pedestrians and workers at night. ▪ The Contractor will ensure that the diversion/detour is always maintained in running condition, particularly during the monsoon to avoid disruption to traffic flow. ▪ He shall inform local community of changes to traffic routes, conditions and pedestrian access arrangements. ▪ The temporary traffic detours will be kept free of dust by frequent application of water. ▪ Traffic controls and diversions marked with signs, lights and other measures (flags) should be provided.	Construction	Contractor	PIU	PMC/PMU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility		
				Execution	Supervision	Monitoring
		▪ It should be an informed decision taken through public participation. Diversion works to be dismantled to restore the area to original condition after completion of construction.				
22.	Infrastructure provisions at construction camps	▪ The Contractor during the progress of work will provide, erect and maintain necessary (temporary) living accommodation and ancillary facilities for labour to standards and scales approved by the Engineer. ▪ There shall be provided within the precincts of every workplace, latrines and urinals in an accessible place, and the accommodation, separately for each for these, as per standards set by the Building and other Construction Workers (regulation of Employment and Conditions of Service) Act, 1996. ▪ Except in workplaces provided with water-flushed latrines connected with a water borne sewage system ready for use bio-toilets , all latrines shall be provided with dry-earth system (receptacles) which shall be cleaned at least four times daily and at least twice during working hours and kept in a strict sanitary condition. ▪ Receptacles shall be tarred inside and outside at least once a year. ▪ If women are employed, separate latrines and urinals, screened from those for men (and marked in the vernacular) shall be provided. ▪ There shall be adequate supply of water, close to latrines and urinals. ▪ 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 designed, built and operated so that no health hazard occurs and no pollution to the air, ground or adjacent watercourses takes place. Compliance with the relevant legislation must be strictly adhered to. ▪ Garbage bins must be provided in the camp shall be regularly emptied and the garbage disposed in a hygienic manner, in consultation with the local Gram Panchayats / Municipalities, at designated sites. ▪ Separate bins shall be placed for kitchen waste, plastic waste, glass ware and metals duly labeling with stickers.	Construction	Contractor	PIU	PMC /PMU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility		
				Execution	Supervision	Monitoring
		▪ Construction camps are to be sited at least 1000m away from the nearest habitation and adequate health care is to be provided for the work force. ▪ Unless otherwise arranged for by the local sanitary authority, arrangement for disposal of excreta by putting a layer of night soils at the bottom of a permanent tank prepared for the purpose shall be taken up by the contractor. ▪ It should be covered with 15 cm layer of waste or refuse and then with a layer of earth for a fortnight (by then it will turn into manure).				
23.	Operation of construction equipment and vehicles	▪ All vehicles and equipment used for construction will be fitted with exhaust silencers. During routine servicing operations, the effectiveness of exhaust silencers will be checked and if found to be defective will be replaced. ▪ 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 will not exceed 75 dB(A), as specified in the Environment (Protection) Rules, 1986 ▪ Notwithstanding any other conditions of contract, noise level from any item of plant(s) must comply with the relevant legislation for levels of noise emission. ▪ The contractor will ensure that the AAQ concentrations at these construction sites are within the acceptable limits of industrial uses in case of hot mix plants and crushers and residential uses around construction camps. ▪ Dust screening vegetation will be planted on the edge of the RoW for crushers. ▪ Monitoring of the exhaust gases and noise levels will be carried out by the agency identified for Environmental Monitoring for the project.	Construction	Contractor	PIU	PMC/PMU
24.	Material Handling at Site	▪ All workers employed on mixing asphaltic material, cement, lime mortars, concrete etc., will be provided with protective footwear and protective goggles. ▪ Workers, who are engaged in welding works, would be provided with welder's protective eye-shields.	Construction	Contractor	PIU	PMC/PMU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility		
				Execution	Supervision	Monitoring
		▪ Workers engaged in stone breaking activities will be provided with protective goggles and clothing and will be seated at sufficiently safe intervals. ▪ The use of any herbicide or other toxic chemical will be strictly in accordance with the manufacturer's instructions. ▪ The Engineer will be given at least 6 working days' notice of the proposed use of any herbicide or toxic chemical. ▪ A register of all herbicides and other toxic chemicals delivered to the site will be kept and maintained up to date by the Contractor. ▪ The register will 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. ▪ No person below the age of 14 years and no woman will be employed on the work of painting with products containing lead in any form as per The Child Labour (Prohibition and Regulation) Act of 1986. ▪ No paint containing lead or lead products will be used except in the form of paste or readymade paint. ▪ Face masks will be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scrapped.				
25.	Precautionary/Safety Measures During Construction	▪ All relevant provisions of the Factories Act, 1948 and the Building and other Construction Workers (regulation of Employment and Conditions of Service) Act, 1996 will be adhered to. ▪ Adequate safety measures for workers during handling of materials at site will be taken up. ▪ The contractor has to comply with all regulations regarding safe scaffolding, ladders, working platforms, gangway, stairwells, excavations, trenches and safe means of entry and egress.	Construction	Contractor	PIU	PMC/PMU
26.	Protection of Religious Structures and Shrines	▪ All necessary and adequate care shall be taken to minimize impact on cultural properties (which includes cultural sites and remains, places of worship including temples, mosques, churches and shrines, etc., graveyards, monuments and any other important structures as identified during design	Construction	Contractor	PIU	PMC/PMU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility		
				Execution	Supervision	Monitoring
		and all properties/sites/remains notified under the Ancient Sites and Remains Act). ▪ No work shall spillover to these properties, premises and precincts. ▪ Access to such properties from the road shall be maintained clear and clean.				
27.	Dust contamination at construction sites and along theroads	▪ Unpaved haul roads near/passing through residential and commercial areas to be watered thrice a day. ▪ Trucks carrying construction material to be adequately covered. ▪ All earthworks will be protected in a manner acceptable to the Engineer to minimize generation of dust. ▪ The contractor will take every precaution to reduce the level of dust along construction sites involving earthworks, by frequent application of water.	Construction	Contractor	PIU	PMC/PMU
28.	Earth work Excavations	▪ Ensure unobstructed natural drainage through proper drainage channels/structures. Dispose surplus excavated earth at identified sites. Ensure minimum hindrance to normal local activities and business. ▪ Avoid damage to permanent structures. ▪ All excavations will be done in such a manner that the suitable materials available from excavation are satisfactorily utilized as decided upon beforehand. ▪ The excavations shall conform to the lines, grades, side slopes and levels shown in the drawings or as directed by the engineer. ▪ While planning or executing excavation the contractor shall take all adequate precautions against soil erosion, water pollution etc. and take appropriate drainage measures to keep the site free of water, through use of mulches, grasses, slope drains and other devices. ▪ The contractor shall take adequate protective measures to see that excavation operations do not affect or damage adjoining structures and water bodies. ▪ For safety precautions guidance may be taken from IS: 3764.	Construction	Contractor	PIU	PMC/PMU
29.	Earth fill	▪ Embankment and other fill areas, unless otherwise permitted by the Engineer, be constructed evenly over their full width and the contractor	Construction	Contractor	PIU	PMC/PMU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility		
				Execution	Supervision	Monitoring
		will control and direct movement of construction vehicles and machinery over them				
30.	Slope protection and control of erosion	▪ Embankments and other areas of unsupported fill will not be constructed with steeper side slopes, or to greater widths than those shown in design drawings. ▪ While planning or executing excavations the Contractor will take all adequate precautions against soil erosion as per regulations. ▪ Turfing on critical road embankment slopes with grass sods, in accordance with the recommended practice for treatment of embankment slopes for erosion control. ▪ The work will be taken up as soon as possible provided the season is favorable for the establishment of sods. Other measures of slope stabilization will include mulching, netting and seeding of batters and drains immediately on completion of earthworks. ▪ Dry stone pitching for apron and revetment will be provided for bridges and cross drainage structures.	Construction	Contractor	PIU	PMC/PMU
31.	Drainage requirements at construction sites	▪ In addition to the design requirements, the contractor will take all desired measures as directed by the Engineer such measures to prevent temporary or permanent flooding of the site or any adjacent area.	Construction	Contractor	PIU	PMC/PMU
32.	Contamination of soil	▪ 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. ▪ Oil interceptors will be provided for vehicle parking, wash down and refueling areas within the construction camps. ▪ Fuel storage will be in proper bunded areas. ▪ All spills and collected petroleum products will be disposed in accordance with MoEF and SPCB guidelines. ▪ Fuel storage and refilling areas will be located at least 1000m from rivers and irrigation ponds or as directed by the Engineer.	Construction	Contractor	PIU	PMC/PMU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility		
				Execution	Supervision	Monitoring
		▪ In all fuel storage and refueling areas, if located on agricultural land or areas supporting vegetation, the topsoil will be stripped, stockpiled and returned after cessation of such storage and refueling activities.				
33.	Compaction of soil	▪ To minimize soil compaction construction vehicle, machinery and equipment will move or be stationed in designated area (RoW or CoI, haul roads as applicable) only. ▪ The haul roads for construction materials should be routed to avoid agricultural areas.	Construction	Contractor	PIU	PMC/PMU
34.	Silting, Contamination of Water bodies	▪ Silt fencing will be provided around stockpiles at the construction sites close to water bodies. ▪ The fencing needs to be provided prior to commencement of earthworks and continue till the stabilization of the embankment slopes, on the particular sub-section of the road. Construction materials containing fine particles will be stored in an enclosure such that sediment-laden water does not drain into nearby watercourses. ▪ All discharge standards promulgated under Environmental Protection Act, 1986, will be adhered to. ▪ All liquid wastes generated from the site will be disposed as acceptable to the Engineer.	Construction	Contractor	PIU	PMC/PMU
35.	Cutting/Filling of Surface water bodies	▪ Earth works shall be undertaken such that the existing embankments of water bodies are not disturbed. In case of cutting of embankments, the same shall be reconstructed with appropriate slope protection measures and adequate erosion control measures. ▪ Filling of surface water bodies will be compensated by digging an equal volume of soil for water storage. ▪ Such dug-up soil will be used for spreading as topsoil. ▪ Wherever digging is undertaken, the banks will be protected as designed or as approved by the Engineer. ▪ The excavation will be carried out in a manner so that the side slopes are no steeper than 1 vertical to 4 horizontal, otherwise slope protection work, as approved by the Engineer will be provided.	Construction	Contractor	PIU	PMC/PMU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility		
				Execution	Supervision	Monitoring
		▪ As far as practicable, and as approved by the Engineer, excavation for replacement of water bodies will be at the closest possible place/location, with respect to the original water body or part thereof consumed by filling.				
36.	Sub-Base & Base	▪ The contractor will take all necessary measures/ precautions to ensure that the execution of works and all associated operations are carried out in conformity with statutory and regulatory environmental requirements. ▪ The contractor will plan and provide for remedial measures to be implemented in event of occurrence of emergencies such as spillage of oil or bitumen or chemicals. ▪ The contractor will provide the Engineer with a statement of measures that he intends to implement in event of such an emergency, which will include a statement of how he intends to adequately train personnel to implement such measures. ▪ Adequate safety measures for workers during handling of materials at site will be taken up. ▪ The contractor will take every precaution to reduce the level of dust along construction sites by frequent application of water as per regulations. ▪ Noise levels from all vehicles and equipment used for construction will conform to standards as specified. Construction activities involving equipment with high noise levels will be restricted to the daytime. ▪ Transport of materials for construction will be as specified. The contractor will provide for all safety measures during construction as per rules and regulations in force.	Construction	Contractor	PIU	PMC/PMU
37.	Surfacing	▪ The contractor will take all necessary means to ensure that all surfacing works and all associated operations are carried out in conformity with regulations. ▪ All workers employed on mixing asphaltic material etc. will be provided with protective footwear as specified. Noise levels from all vehicles and equipment used for surfacing will conform to standards as specified. ▪ Construction activities involving equipment with high noise levels will be restricted to the daytime.	Construction	Contractor	PIU	PMC/PMU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility		
				Execution	Supervision	Monitoring
		▪ Transport of materials for construction will be as specified. The contractor will provide for all safety measures during construction as per rules and regulations in force.				
38.	Mitigation Measures for Noise Sensitive Receptors	▪ Noisy construction operations in residential and sensitive areas (hospitals, schools and religious places) should be restricted between 7.30 a.m. to 6.00 p.m. to avoid disturbance to local community as per The Noise Pollution (Regulation and Control) Rules, 2000 ▪ Preventive maintenance of construction equipment and vehicles would be done to meet emission standards and to keep them with low noise. ▪ Provision of ear plugs to operators of heavy machinery and workers in near vicinity. ▪ During night, material transport should be uniformly distributed to minimize noise impacts.	Construction	Contractor	PIU	PMC/PMU
39.	Disposal of construction debris	▪ Daily inspection at haul roads and sites for construction debris for safe collection and disposal to land fill sites. Collection and disposal of refuse. ▪ Minimize construction debris by balancing cut and fill requirements, if relevant.	Construction	Contractor	PIU	PMC/PMU
40.	Adjoining water bodies	▪ Provide slope protection works of water bodies, if any, abutting the road.	Construction	Contractor	PIU	PMC/PMU
41.	Bridge Works & Culverts	▪ While working across or close to the rivers, avoid obstructing the flow of water. ▪ If an obstruction is required, to serve notice on the downstream users of water sufficiently in advance. ▪ Construction over and close to the non-perennial streams will be undertaken in the dry season. ▪ Construction work expected to disrupt users and impacting community water bodies will be taken up after serving notice on the local community. ▪ Dry stone pitching for apron and revetment will be provided for bridges and cross drainage structures, if necessary.	Construction	Contractor	PIU	PMC/PMU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility		
				Execution	Supervision	Monitoring
42.	Safety practices during construction	▪ The Contractor is required to comply with all the precautions as required for the safety of the workers as per the International Labour Organization (ILO) Convention No. 62 as far as those are applicable to this contract. ▪ The contractor has to comply with all regulation regarding, working platforms, excavations, trenches and safe means of entry and egress.	Construction	Contractor	PIU	PMC/PMU
43.	Aesthetic impairment	▪ Aesthetic enhancement through proper housekeeping of construction sites. ▪ Disposal of construction wastes at the approved disposal sites. ▪ Immediate closure of the trenches after pipe laying/ completion of work. ▪ Complete construction activity by removing all temporary structures, restoring the sub-project and surrounding areas as near as possible to the pre-construction condition.	Construction	Contractor	PIU	PMC/PMU
44.	Tree plantation	▪ Trees felled will be replaced as per the compensatory afforestation criteria in accordance with the Forest (Conservation) Act, 1980. ▪ Two trees will be planted for every tree lost along the sub-project roads in locations to be identified with support from the PMU.	Construction	Contractor	PIU	PMC/PMU
45.	Risk of accidents	▪ In order to guarantee construction safety, efficient lighting and safety signs shall be installed on temporary roads during construction and adequate traffic regulations shall be adopted and implemented for temporary roads.	Construction	Contractor	PIU	PMC/PMU
46.	Cultural relics / Chance finds	▪ If fossils, coins, articles of value or antiquity, structures, and their remains of geologic or archaeological interest are found, local government shall be immediately informed of such discovery and excavation shall be stopped until identification of cultural relics by the authorized institution and clearance is given for proceeding with work. All the above discovered on 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 precaution 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 Engineer's instructions for dealing with the same, waiting which all work shall be stopped. ▪ The Engineer shall seek direction from the Archaeological Society of India (ASI) before instructing the Contractor to recommence work on the site.	Construction	Contractor	PIU	PMC/PMU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility		
				Execution	Supervision	Monitoring
47.	Monitoring Environmental Conditions	▪ The contractor will undertake seasonal monitoring of air, water, noise and soil quality through a govt. established laboratory or a recognized monitoring agency as per o Under Section 12 of Environment (Protection) Act, 1986 o Section 17(2) of The Air (Prevention and Control of Pollution) Act, 1981 o Section 17(2) of The Water (Prevention and Control of Pollution), Act, 1974 ▪ The parameters to be monitored, frequency and duration of monitoring as well as the locations to be monitored will be as per the Monitoring Plan prepared.	Regular intervals from pre-construction to post-completion	Contractor	PIU	PMC/PMU
48.	Clearing of Construction of Camps & Restoration	▪ Contractor to prepare site restoration plans for approval by the Engineer. ▪ The plan is to be implemented by the contractor prior to demobilization. ▪ On completion of the works, all temporary structures will be cleared away, all rubbish burnt, excreta or other disposal pits or trenches filled in and effectively sealed off and the site left clean and tidy, at the Contractor's expense, to the entire satisfaction of the Engineer. ▪ Residual topsoil will be distributed on adjoining/proximate barren/rocky areas as identified by the Engineer in a layer of thickness of 75mm - 150mm.	De-mobilization	Contractor	PIU	PMC/PMU
49.	Monitoring Operational Performance	▪ The PIU will monitor the operational performance of the various mitigation measures carried out as a part of sub-project. ▪ The indicators selected for monitoring include the survival rate of trees, water bodies, status of rehabilitation of borrow areas and utility of double glazing for noise sensitive receptors.	Operation	Contractor	PIU	PMC/PMU
50.	Orientation of implementing agency and contractors	▪ The PMU shall organize orientation sessions during all stages of the project. ▪ The orientation session shall involve all staff of PIU and field level implementation staff of Contractor. ▪ The contractor needs to comply with the World Bank's Environmental, Health, and Safety Guidelines.	Pre-Construction & Construction	Contractor	PIU	PMC/PMU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility		
				Execution	Supervision	Monitoring
51.	Handling of flora/fauna found in project sites	▪ The Contractor shall train the workers to handle any accidental finds of important species of flora and/or flora and on the procedures to be followed to intimate the Forest Department, and PIU	Pre-Construction & Construction	Contractor	PIU	PMC/PMU Forest Department
52.	Handling of Natural Habitats and Biodiversity Issues	▪ The PMU and PIUs will ensure that sub-project planning, preparation, implementation and operation and maintenance will follow the ECoPs given under PMGSY.	Pre-Construction & Construction	Contractor	PIU	PMC/PMU Forest Department

7.3.3 EMP Budget

An indicative EMP budget is given below and the contractor needs to estimate the EMP implementation cost and quote accordingly.

Table 7-3: Indicative Cost of Implementing Key Environmental Mitigation Measures per Km of Rural Roads

Costs of Implementing Environmental Mitigation Measures per Km of Rural Roads							
S.No.	Description	Unit	Number	Quantity	Rate	Amount	Remarks
1	Project Information Board	Number	1	1	2000	2000	Minimum two boards per road; one at the end and one at beginning, and at junctions and en-route villages
2	Watering for Dust suppression	Trips	1	2	1500	3000	Two times a day at habitations in addition to contractual requirement
3	Transporting Debris to Disposal Sites	Trips	1	1	5000	5000	At the end of construction, say 1 trip per Km
4	Tree Plantation with guards for accidental felling	Number	1	4	1500	6000	At suggested places; not in lieu of trees felled.
5	Provision of Safety gear to labour	LS	1	1	5000	5000	PPE
6	Provision of precautionary warning signs and barricading	LS	1	1	5000	5000	At construction sites and associated sites
7	Temporary Lease of land for Labour Accommodation	LS	1	1	5000	5000	
8	Adequate Water and Sanitary Arrangements	LS	1	1	5000	5000	
9	Provision of LPG, Entertainment, etc.	LS	1	1	3000	3000	
10	Resting place for working women labour (and their children)	LS	1	1	3000	3000	Tent/ Shed with required facilities
11	Rainwater harvesting at construction sites, camps and along drains	LS	1	2	1000	2000	
12	Improvements/ additions at cultural sites	LS	1	1	5000	5000	
13	Reclamation of borrow areas	LS	1	1	5000	5000	After completion of construction

14	Monitoring Environmental Parameters	LS	1	1	5000	5000	
15	Training for workers and community members	LS	1	1	3000	3000	On safety and community liaison aspects
16	Other social actions	LS	1	1	5000	5000	
17	Miscellaneous/ Unforeseen Items					5000	
	Total Cost per KM.					72000	
	Say					75000	
Assumptions							
Each Contractor will get about 100 Km of Roads as a package							
This work can be completed in one year at about 10 Km per month; excluding duration required for planning, mobilization, material sourcing, etc.							
Contractor may have a higher contract period, but will have to start at several locations simultaneously.							
Preferably, one construction labour camp per package.							
Most of the activities in ECOPs and EMP are covered in the DPR Estimates and in Specifications.							
This estimate is only for some critical activities and which will have direct impact on community/ environment/ labour, and have direct exposure to risk.							

7.4 Social Impacts Mitigation Plan

The sub-projects under APRRP, which are likely to require land and/or cause loss of livelihoods, will consider a) alternative engineering designs to avoid or minimize land/ livelihood losses and b) will use Government land under different tenure in order to avoid and minimize adverse social impacts on the people and communities. Particularly the focus will be on[

(i) Avoid or minimize loss of agricultural land
(ii) Avoid or minimize displacement from homesteads resulting in involuntary resettlement
(iii) Avoid or minimize displacement from buildings/structures used for permanent business/commercial activities and other such sources of income
(iv) Avoid or minimize transfer of public land that will have adverse social, economic and cultural impacts on families and communities who depend on them causing involuntary resettlement and loss of access to natural resources.

As mentioned earlier, all the sub-projects under the APRRP aim at benefiting the target population from transportation related inconveniences and improving their living standards.

7.4.1 Resettlement Policy Framework

Resettlement of Project Affected Persons (PAPs) will be planned and implemented as an integral part of APRRP where acquisition of private land and its transfer is unavoidable. The impacts covered are;

i. loss of agricultural land/ homestead;
ii. loss of assets or access to social, economic and cultural assets and
iii. loss of income sources of means of livelihood, whether or not the affected persons must move to another location.

Vulnerability in terms, such as, of social, economic, age, differential abilities and gender differentiations of the PAPs will be identified and mitigated with appropriate actions as part of Resettlement Action Plan (RAP).

The procedures to be used in case of any such land requirement are detailed in the Resettlement Policy Framework (RPF). This RPF would address these impacts. PIU/ PMU will screen all the sub-projects prior to approval to ensure their consistency with the Resettlement Policy Framework provided as guidance. The Entitlement Matrix of the project reflects the project plan to address adverse impacts and mitigation based on the eligibility criteria.

7.4.2 Generic Social Impact Mitigation Plan

A Generic Social Impact Mitigation Plan/ Social Management Plan (SMP), given below, is prescribed for al sub-projects. This SMP needs to be appended to the bid documents.

Table 7-4: Social Management Plan

S No.	Social Issues	Mitigation Measures	Responsibility		
			Execution	Supervision	Monitoring
PRECONSTRUCTION STAGE					
P.1	Assessment of Impacts	The PMU and Project Monitoring Consultants (PMC) Social specialist shall assess impacts and revise/modify the SMP and other required sections of the project document.		PIU	PMC/PMU
CONSTRUCTION STAGE					
C.1	Labour Camp	Provide temporary residential accommodation and other necessary infrastructure facilities for construction workers. Provide all the facilities, such as ▪ Potable water, ▪ Sanitation facilities ▪ Provision of soak pits ▪ Dustbins – separate dustbins for different type of wastes o Bio-degradable o Non-bio-degradable o Hazardous wastes ▪ Insurance o Workmen compensation insurance ▪ Fire safety arrangements ▪ First aid kits Foreseeing the involvement of women, both direct and indirect in the construction activities, Implementing Agency (IA) shall ensure certain measures that are required to be taken by the construction contractor towards welfare and well-being of women and children during the construction phase.	Contractor	PIU	PMC/PMU
C.2	Temporary Housing	During the construction, the families of laborers/workers should be provided with residential accommodation suitable to nuclear families.	Contractor	PIU	PMC/PMU
C.3	Safety Measures	Provision of adequate amount of PPE – Personal Protective Equipment for all laborers (Women and Men) comprising of: o Hard Hats o Reflective Jackets o Boots o Gloves o Goggles o Nose Mask	Contractor	PIU	PMC/PMU

S No.	Social Issues	Mitigation Measures	Responsibility		
			Execution	Supervision	Monitoring
		Display of safety sign boards: o Caution Boards o Reflective Tapes o Caution Tapes o Safety awareness board			
		All the contractors will follow the respective specifications, safety codes and construction method specified In the codes and good practices.			
C.4	Health Problems	Every Sub Project should have First Aid Box to provide minimum medical attention to tackle first-aid requirements	Contractor	PIU	PMC/PMU
		Linkage with nearest higher order hospital (Primary Health Centers – It covers a population of 20,000 and is present In rural areas) to refer patients of major illnesses or critical cases and to handle health problems of the workers by providing basic health care facilities through these centers.			
		Linkage with other health center which has MCW (Mother and Child Welfare) units for treating mothers and children In the camp. Apart from this, the health center should provide with regular vaccinations required for children.			
		Display Emergency number (Police, Fire and Hospitals) at all subprojects.			
C.5	Day Crèche Facilities	Provision of crèche should be made for infants and small children of women workers so that they can leave behind their children in crèche and work for the day in the construction activities.	Contractor	PIU	PMC/PMU
		Crèche facilities to be provided with at least a trained worker, preferably women, who may take care of the children In a better way. In cases of emergency, a trained worker can tackle the health problems of the children much more efficiently and effectively and can organize treatment linking the nearest health center.			
		Women, especially the mothers with infants, should to be exempted from night shifts as far as possible. If unavoidable, crèche facilities in the construction camps must be extended to them in the night shifts too.			
C.6	Education Facilities	Wherever feasible, day crèche facilities may be extended with primary educational facilities or some kind of informal education facilities could be created at the construction camp as the construction workers are mainly mobile groups of people. Thus, there is a need for educating their children at the place of their work.	Contractor	PIU	PMC/PMU

S No.	Social Issues	Mitigation Measures	Responsibility		
			Execution	Supervision	Monitoring
C.7	Participation of Women	Along with other stakeholders, participation and engagement of women and other vulnerable to be ensured during construction. Allow women to take part in the consultation process. Ensure that the women are consulted and Invited to participate in group-based activities, to gain access and control over the resources. Compensation for land and assets lost, being same for all the affected or displaced families, special care needs to be taken by the IAs for women groups, while implementing the process of acquisition and compensation as well. Encourage women to evaluate the project outputs from their point of view and their useful suggestions should be noted for taking necessary actions for further modifications in the project creating better and congenial situation for increasing participation from women. The labour force required for the construction activities has to be of a highly skilled nature, as there is a lot of mechanized work in construction of sub-projects. In addition, there is also a requirement of unskilled labour, where women can certainly contribute.	Contractor	PIU	PMC/PMU
C.8	Capacity Building of Women from Project Affected Families losing their livelihoods	Initiate women's participation through SHG formation in each of the villages affected by the project. These groups can then be linked to special development schemes of the Government. Provide separate trainings to women groups for upgrading the skill in the alternative livelihoods and assist throughout till the beneficiaries start up with production and business. Conduct more consultations and open meetings to make other vulnerable to participate in the project activities and record the same.	Contractor	PIU	PMC/PMU
C.9	Protection of Women Workers	Implement Guidelines in all work places against sexual harassment. Sexual harassment includes unwelcome sexually determined behavior (whether directly or by implication) as: a. Physical contact and advances b. A demand or request for sexual favors c. Sexually colored remarks d. Showing pornography Any other unwelcome physical, verbal or no-verbal conduct of sexual nature. Exploitation of women is very common in such camps. A strong vigilance should be made to ensure cessation of such exploitation.	Contractor	PIU	PMC/PMU

S No.	Social Issues	Mitigation Measures	Responsibility		
			Execution	Supervision	Monitoring
C.10	Measures for Controlling STD, AIDS	Provisions for means of controlling the spread of such diseases should be made at all sub projects like awareness camps should be conducted for the target people, both in the construction camp and neighboring villages as well.	Contractor	PIU	PMC/PMU
		Link up with APSACS (AP State Aids Control Society) for awareness generation camps and IEC materials, and supply of condoms at concessional rate (or free) to the male workers may help to a large extent in this respect.			
C.11	Child Labour	Minors, i.e. persons below the age of 14 years, should be restricted from getting involved in the constructional activities.	Contractor	PIU	PMC/PMU
C.11	Key Legal Provision Related to Women	Ensure Key Legal Provision Related to Women at all projects viz.: • Protection of Women from Domestic Violence Act, 2005 • The Criminal Law (Amendment) Act, 2013 • The Immoral Traffic (Prevention) Act, 1956 • The Maternity Benefit Act 1961	Contractor	PIU	PIU/PMC/PMU
C.12	Grievance Redress Mechanism	Grievance Redress System to be set up for the project at following levels: 1. Grievance Register for Labors and others separately. 2. Grievance Redress Committee (GRC) at District level. 3. GRC at state level The grievances resolving period is from one week to one month at various levels depending on the Grievance. In case of R&R/Land acquisition it is up to 3 months.	Contractor	PIU	PIU/PMC/PMU
C.13	Other Actions	Minimum one-third of the staff and all other involved agencies (including consulting agencies) staff should be women. When qualified/ skilled women are not available, women with lesser qualifications/ skills may be employed and trained. They may be encouraged and facilitated to obtain the necessary qualifications and/or skills during the employment. The proposed women personnel shall be available to work at site for at least 50% of the duration of the contract. Women may be replaced during the period of contract, only with women persons of equivalent qualifications and experience.	Contractor	PIU	PIU/PMC/PMU
		Same wage rate for men and women must be ensured.			
		While selecting community members for training at least half of them should be women and vulnerable persons.			
		The contractor should comply with all the ESMPF, RPF and TPPF requirements.			

8 Grievance Redressal Mechanism

8.1 Introduction

Grievance Redress Mechanism is part and parcel of any project administration, especially when the major stakeholders are public community that too with diverse social and economic characteristics. As these primary stakeholders under the APRRP have comparatively lower literacy levels and are engaged simultaneously in formal as well as informal sectors for livelihood, they in deed require a more user friendly grievance redress mechanism. Grievance redress mechanism should ensure accountability, responsiveness, and user-friendliness. In fact, the grievance redress mechanism of an organization is the gauge to measure its efficiency and effectiveness as it provides important feedback on the working of the administration.

GoAP has established following public complaint/ grievance redress mechanisms to ensure transparency in governance but also hold the officials and people's representatives accountable.

- Meekosam: Mee Kosam is a secured platform that is used for collecting the citizen grievances and route them to the concerned official in the last mile, online in real time. The last-mile official can access Mee Kosam by using dedicated log-in credentials coupled with Aadhaar e-KYC. Any official can see the details of only those grievances which are assigned for him/her. Citizens can also register their grievances through a secured login. Any citizen can see only those grievances which are registered by him/her.
- People First (Dial 1100 and App): People First is a mobile application that will empower citizens with real time governance. This enables citizens to access their profile, the various benefits accrued to them from the government and also register their grievances. This is a two way communication channel between government and the citizens.

Apart from above, for the purpose of this project a grievance redressal mechanism is proposed as project beneficiaries and project affected people needs to access this with utmost ease.

8.2 Grievance Redress Committee

The project proposes to establish a Grievance Redress Committee (GRC) to register and redress the grievances and complaints of project stakeholders and project affected persons and resolve the same. The process will promote settlement of disputes and reduce litigation. GRC will be set up at the district level with EE as head. The following persons will be the members of GRC:

- The Executive Engineer, PRED - Chairperson
- The Social Expert, APRRP of the district - Convener

- The AE/AEE at of respective sub-project - Member
- One Local Representative from Social Sector/ Person conversant with similar issues and he/she should be widely respected and having problem solving skills – Member (woman).
- Two project affected persons of APRRP – Members (at least one women)
- Two project beneficiaries of APRRP – Members (at least one woman)

8.2.1 Functions of GRC

The broad functions of GRC shall be the following:

- Record the grievances of Complainants/ PAPs, if any, categorize and prioritize them and provide solution to their grievances related to any of the provisions set forth in SMF/ RPF.
- The GRC may undertake site visit, ask for relevant information from PRED and other government and non-government agencies, etc., in order to resolve the grievances.
- Fix a time frame for resolving the grievances within the stipulated time period of 30 days.
- Inform Complainants/ PAPs through PRED about the status of their case and their decision to PAPs for compliance.
- The GRC will maintain a Grievacnes Register and send monthly reports on the grievances received and redressed. This will be done by the respective AE/ AEE and Social Experts.

The Environmental and Social Specialists of PMU and Social Experts of PIUs shall provide all necessary help to complainants in presenting in his/her case before the GRC. The GRC shall respond to the grievance within 15 days. The GRC will normally meet once in a month and if the situation so demands, it shall meet more frequently. A specific grievance shall be resolved within a time period of 30 days. The decision of the GRC shall not be binding to PAPs. This means the decision of the GRC does not prevent PAPs taking recourse to court of law, if he/she so desires.

9 Monitoring and Evaluation

9.1 Introduction

The ESMPF requires detailed supervision, monitoring and evaluation of the impact of the project on the environment and social aspects. In order to carry out this, PMU will have specific arrangements made at state and district level. This includes appointment of an Environmental Specialist and Social Specialist for the project period. Further the PMU will instruct PIUs on how to implement the provisions of this ESMPF. Implementation of the provisions of ESMPF will be new to these staff and hence several orientations and trainings are proposed as a part of this ESMPF to build their capacity. In order to achieve the objectives of this ESMPF and to ensure the safeguards are implemented in a proper and effective manner, the following provisions are made in this ESMPF:

9.2 Environmental and Social Supervision

This is basically done by PMU. All the sub-projects will be visited at regular intervals by PMU to check if all safeguard requirements are met and to identify any issues that need to be addressed. PMU would submit half-yearly progress reports to AIIB on safeguards implementation. The Environmental and Social Specialists of the PMU will be primarily responsible for environmental and social supervision.

9.2.1 Environmental and Social Parameters

Once every year, the PMU will prepare a report of the environmental and social situation in the project districts including data and analysis of relevant parameters. This report also should give a listing of relevant new legislation and regulations that have a bearing on the environmental and social performance of the project. PMU will submit this report to AIIB. The ESMPF will be suitably revised annually on the basis of this document by the PMU.

9.3 Concurrent Internal Monitoring

The concurrent internal environmental social monitoring will be done as part of the regular monitoring by the Project Monitoring consultants (PMC) and PIUs. The PMU would sample check this M&E from PMC and PIUs. The monitoring will incorporate both qualitative and quantitative analysis and will also be used as a course correction if necessary. The Environmental and Social Specialists of the PMU will be primarily responsible for environmental and social monitoring and evaluation.

Environmental and Social Monitoring: This will comprise of the following sets of activities:

- Monitoring compliance with environmental and social regulations and safeguards and Environmental and Social Management Plans provisions

- Continuous Social Impact Monitoring at the Community Level
- Independent External Environmental and Social Audit (IEESA)
- Overall State Level Monitoring and Oversight of Environmental and Social Issues at state level

9.3.1 Monitoring Plan

Given in the table below are indicators for project investments, for which monitoring need to be taken up by PMU in a regular manner.

Table 9-1: Monitoring Plan for ESMPF

Project Components	Monitoring Indicators	Frequency	Agency
Construction of Roads	**Environmental parameters** ▪ Air Quality ▪ Noise Quality ▪ Soil Testing ▪ Water Quality ▪ River bank erosion (bridge sites) – Area Affected Sq. m ▪ Sedimentation in water bodies - Turbidity ▪ Debris deposits on lands – Area/ No. of locations **Social parameters** ▪ Adequacy of entitlements (replacement cost, allowances, income generation grant, etc.) ▪ Payment of compensation and entitlements before replacement ▪ Time taken for land acquisition ▪ Number of grievances registered and redressed ▪ Number of court cases ▪ Income patterns ▪ Land holding status ▪ Income from land ▪ Changes in occupations ▪ Housing status (area, floor, walls, roof, etc.) ▪ Ownership of household assets ▪ Length of rural roads **Other** ▪ No. of training programs conducted ▪ No. of personnel trained ▪ Trainees' understanding of the training content ▪ Achievement of learning objectives ▪ Application of methods, tools and techniques learnt during training ▪ Adherence to contract conditions and standards (housing, sanitation, crèches, use of local labour, equal wages to men and women, avoidance of child labour, etc.)	▪ Quarterly by PMU	▪ PMU guiding the collection of information on indicators ▪ PIUs for specific information

Project Components	Monitoring Indicators	Frequency	Agency
	▪ Absence of inconvenience, nuisance and complaints ▪ No. of sub-projects completed without time and cost overruns ▪ Adherence to ESMPF provisions/ guidelines during sub-project preparation and implementation		

9.4 Independent External Environmental and Social Audit (IEESA)

The PMU will be overall in charge of implementing the ESMPF. The Environmental and Social Specialists of PMU will guide and oversee the implementation of the ESMPF at field level through the Environmental and Social Experts at the district level. This overall guidance will be given by them. Further the PMU will incorporate the provisions of this ESMPF as actionable points in the Project Operations Manual or other similar document for the project. These will be non-negotiable and will have to be followed by all PIUs.

In order to achieve the objectives of this ESMPF and to ensure the safeguards are implemented in a proper manner, provision for a half-yearly Independent External Environmental and Social Audit (IEESA) should be made. The PMU will ensure that half-yearly independent external Environmental and Social Audit, of the sub-projects on sample basis (say about of 5% of ongoing works and completed works), is undertaken to assess the level of compliance of the provisions laid under ESMPF and effectiveness of ESMPF compliance in sub-projects by all the partners in development.

9.4.1 IEESA Objectives

The core objective of Audit will be to review the ESMPF compliance in project implementation for corrective action. The other objectives are:

- To review and verify compliance with ESMPF during project planning and implementation.
- To assess the individual and cumulative impacts of the sub projects and how the project area is sensitive to the project activities.
- To assess the effectiveness of implementation of ESMPF in the subproject activities and reporting any gaps.
- To review and verify how well the environmental and social management systems are performing and how well the environmental and social management plans are being implemented.
- To identify and document best practices in environment and social safeguards compliance.
- To assess institutional and administrative effectiveness and make recommendations on improving ESMPF compliance performance.
- To make recommendations to improve ESMPF implementation.

10 Institutional and Implementation Arrangements

10.1 Introduction

PRED will setup a two level project implementation and monitoring mechanism for the purpose of APRRP. At state level overall oversight will be ensured by a setting up of a Project Management Unit, headed by full time Project Director supported by coordinators for each of the components and supported by functional and technical experts.

The second level consists of PIUs in the at district level which will have individual project coordinators supported by the one nodal officer and functional experts. Entire implementation setup will be exclusive to the project and work full time.

At district level additional coordination and oversight will be ensured by the District Collectors. The following diagram gives a schematic arrangement of the project implementation and monitoring arrangements:

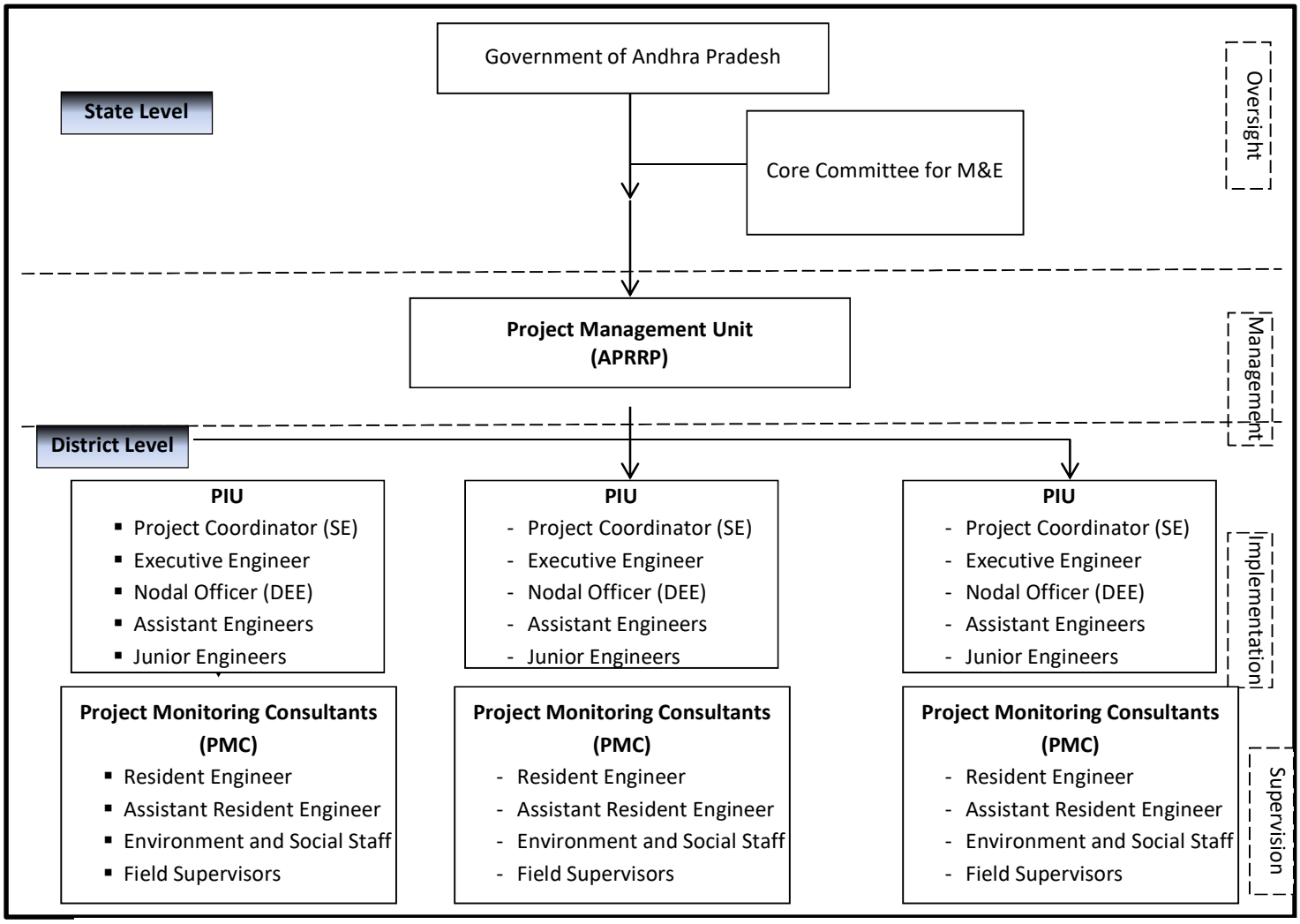

Figure 6: Management and Implementation Arrangement

The PMU will have the overall responsibility for project implementation including, but not limited to, reporting, monitoring and evaluation, procurement control, financial management, audit and disbursements, compliance with the environmental and social policy requirements, as well as coordination with the PIUs and the AIIB.

10.2 Environmental and Social Implementation Arrangements

10.2.1 At PMU Level

Within the PMU, full time Environment Specialist and Social Specialist will be deployed to handle all matters pertaining to environment and social management under the project, including implementing the ESMPF. These Environment Specialist and Social Specialist will be available for the entire project duration. The key responsibilities of the Environment and Social Specialist include:

- Orientation and training of PIU teams and the contractors on environmental and social management,
- leading/ providing oversight on the EMP/ SMP process and its outputs,
- review of monitoring reports submitted by the PIUs and PMC on ESMPF/ EMP/ SMP/ RAP/ TPP implementation,
- conducting regular visits to project sites to review ESMPF compliance during sub-project planning, design and execution,
- providing guidance and inputs to the PIU teams on environment and social management aspects.
- Orient, train, guide and support the Environmental Experts of the PIUs and the two regional Social Experts.

These Specialists will also deal with matters pertaining to integration of ESMPF into the sub-project design and contract documents; preparation of Terms of References for studies (such as for EA/SA); reporting, documentation, monitoring and evaluation on environment and social aspects and will ensure overall coordination with the PMU and PIUs and PMC.

10.2.2 At PIU Level

At the district level, the PIUs will support the Environment and Social Specialists in carrying out the responsibilities listed above. Each PIU will have one AE/AEE designated as Environmental Expert. These district level Environmental Experts will be trained in implementing EMPs. In addition to these, two experienced Social Experts (preferably women) will be appointed and stationed at Visakhapatnam (for 4 districts of North Andhra region; Srikakulam, Vijiyanagaram, Visakhapatnam and East Godavari) and Kadapa (for 4 districts of Rayalaseema region; Kurnool, Kadapa, Ananthapuram and Chittoor). The

Environmental and Social Specialists of the PIU will have primary responsibility for the remaining 5 districts (Nellore, Prakasam, Guntur, Krishna and West Godavari) and overall responsibility for all 13 districts of the state.

10.2.3 Project Monitoring Consultants

Further to support the Environment and Social Specialists, the Project Monitoring Consultants will also engage environmental and social specialists that will implement and review the implementation of various EMP/ SMP/ RAP/ TPP activities for all the sub-projects. In addition to providing regular inputs on improving the safeguard implementation practices in the project, the PMC will submit quarterly reports to PMU, which will be an important resource for Bank team's assessment on safeguards management of the project.

11 Training and Capacity Building

11.1 Introduction

The APRRP implementing staff will need to have awareness, sensitivity, skills and experience regarding the environmental and social aspects of sub-projects' planning and implementation. For sustainability and seamless adaption of the environmental and social principles and safeguards by PMU and all the PIUs, awareness creation and capacity building becomes necessary.

This capacity building and training strategy has been outlined as part of the ESMPF for building environmental and social awareness and environmental and social management capacity in the project administration structure as well as in the intended target communities. Capacity building for environmental and social management will be integrated with overall capacity building component of the project.

11.1.1 Objectives

The objectives of the capacity building initiatives are:

- To build and strengthen the capability of APRRP staff, and other partners to integrate sound environmental and social management into sub-project implementation.
- To orient the APRRP staff, PMU and PIUs at district level and communities to the requirements of the project's ESMPF.

Systematic capacity building initiatives need to be introduced only after completion of training needs assessment. The training should be of cascade mode. All the trained staff and others will in turn conduct further trainings at district and village levels. However, since capacity building goes beyond mere imparting training, institutionalization of best practices becomes a prerequisite for improved sub-project environmental and social management. The training outcomes like trainees' understanding of the training content, achievement of learning objectives, application of methods, tools and techniques learnt during training, etc. need to be monitored and audited.

11.1.2 Trainees

In view of the specialized training and capacity building envisaged for the ESMPF of the project, it is necessary to identify nodal training institutes that will work closely with PMU for conceptualizing, designing, conducting and managing training programs on the ESMPF. Some such specialized institutions are:

- Selected Expert Staff of PRED

- Selected Expert Staff of Women and Child Welfare Department, Social Welfare Department, Disaster Management, Environment and Forests and Climate Change Adaptation Department, Mines and Geology Department, etc.
- Experienced faculty from premier engineering institutions and social institutes
- Respective State Pollution Control Boards and Central Pollution Control Boards
- Engineering Staff College of India, Hyderabad
- Other Identified Consultants

The details of the proposed training programs are as below:

- Orientation/ Learning Training Programs
- Training on the ESMPF and ESIA, EMP, SMP, RAP, TPP, etc.
- Training on Environmental and Social Management
- Workshops on ESMPF

The likely participants are key officials of the project, PMU staff, PIU staff, State Level Environmental and Social Specialists, District level Environment and Social Experts, Resource Persons, GP Representatives, Community Representatives, CSOs, CBOs, Women Groups, etc.

About 20 to 30 trainees would participate in each of the training programs. It is intended that these trained persons will in turn provide onsite training to PIUs, Resource Persons, GP Representatives, Community Representatives, CSOs, CBOs, Women Groups, etc. on site at district/ sub-project level.

11.2 Training Budget

The total estimated cost of training on environmental and social management for members of APRRP, PMU, PIU, etc, under the proposed project is presented in the table below:

Table 11-1: Training Budget

S. No.	Training	No. of Programs	Estimated Unit Cost in Rs.	Total Cost In Rs.
1	Orientation/ Learning Training Programs	3	2,00,000	6,00,000
2	Training on the ESMPF and Mitigation Plans	3	2,00,000	6,00,000
3	Training on Environmental and Social Management	2	2,00,000	4,00,000
4	Workshops (State)	6	2,00,000	12,00,000
5	Workshops (District)	13	1,00,000	13,00,000
6	Provision for travel, allowance, other training expenses, etc.			10,00,000
7	**Total**			**51,00,000**

12 Gender and Vulnerable Action Plan

12.1 Background

Despite the gains made, gender and social inequality remain issues of major concern in rural India. As per gender statistics 2015 data women comprise 37.15% and 40.95% both rural and urban and rural of workers respectively in Andhra Pradesh. Of these women most are concentrated in vulnerable, unsafe and low-paying activities. They earn less, have fewer assets and bear the burden of unpaid work and care. Girls and women face high rates of violence and sexual harassment in the work place; public space (roads, markets, transport) and at homes which in turn restricts their mobility. Informal data also suggests prevalence of trafficking and forced labour, including high prevalence of child labour and homelessness. Poor access to basic services such as education and health facilities, housing, drinking water and electricity compounds issues of gender and social inequality even further.

12.2 Impact on Women

As part of ESMPF, gender and vulnerable guidelines are developed to mitigate any potentially adverse gender specific impacts of the Project and to enhance the design of the Project to promote equality of opportunity and women's socioeconomic empowerment, particularly with respect to provision of services and employment. It particularly speaks of building local economies; improve access to services like transports; strengthen citizen participation and create citizen centric governance and service provisions; ensuring safety of citizens especially children, women, elderly and the other vulnerables. The vulnerable groups include Scheduled Tribes and Castes, Women Headed Households, Widows, Deserted Women, Divorced Women, Destitutes, Sex workers, Transgenders, Differently Abled Persons, Below Poverty Line Families, Old Aged, Chronically Ill and People with Debilitating Illnesses (HIV/ AIDS, Leprosy, Mental Illness, Tuberculosis, etc.), Street Children, Orphans, Rag Pickers, Rickshaw Pullers, Homeless, Construction Workers, Daily Wage Labourers, Domestic Workers, Head Loaders, Sanitary Workers, Vendors, People Living in Night Shelters, etc. The mandate for Gender strategy is also rooted within a number of key government laws, policies and legislations. Some of these relevant legislations are mentioned below:

12.2.1 Gender Strategy through the Project Cycle

The project cycle consists of 5 key phases which are 1) Pre-Planning, 2) Procurement, 3) Implementation, 4) Operation and Maintenance and 5) Transference. The several actions to be taken during project cycle are briefed in the table below. The action to be taken are also detailed in the subsequent sections below:

Table 12-1: Gender Strategy through the Project Cycle

S No.	Project Cycle Phase	Actions to be Taken	Responsibility
1	Planning (This phase includes pre-planning and planning phases. The activities include undertaking feasibility studies, concept reports, inception reports, plan of operations, etc.)	To ensure effective gender and social inclusion it would need the following actions (these are detailed in the below sections): ➢ Collecting data on the socio- economic characteristic of the women and marginalized social groups to be affected by the project. ➢ Organizing consultation with women and social groups to be affected by the project. ➢ Analyzing data (secondary and primary) to identify key gender and social group concerns and ways of tackling them. ➢ Mitigating probability and risk of displacement/land alienation and devise ways to mitigate the impact on people's lives; livelihoods; compensation etc. ➢ Incorporating gender and social group focus provision into the design of the project which includes creating opportunities for job creation; better access to services such as; safety and security to reduce violence against women and girls; mechanism to reduce child labour, etc.	• PMU • PIU • Design consultants
2	Procurement (Activities under this phase include Pre-qualification of consultants and contractors, bidding, contract awards, etc.)	The bidding documents should include statutory requirements related to the following: ➢ Relevant labour laws ➢ Relevant clauses of acts such as equal wages ➢ Child labour ➢ Labour camp requirements ➢ Special provisions for women ➢ Requirements for safety at work place	• PMU • PIU
3	Implementation (This key phase includes Executing the projects, construction, supply of goods and equipment, commissioning, etc.)	This is a key phase where important actions need to be taken. Some of the actions are listed briefly below. Other details are given in the subsequent sections below this table. ➢ Ensure that the women are consulted and invited to participate in project activities, to gain jobs and control over the resources, along with proper scheduling of construction works. ➢ Ensure compensation for land and assets lost faced by women and marginalized groups being adequately identified and covered. ➢ Ensure compensations and assistances would be paid in a joint account in the name of both the spouses; except in the case of women headed households and women wage earners. ➢ Ensure that women and marginalized groups are provided identify cards, helped in opening accounts in the bank, receiving compensation amounts through cheques in their name. ➢ Ensuring facilities in construction camps such as temporary housing; health care facilities; Day Crèche Facilities; water and sanitation.	• PMU • PIU • Contractors • PMC • Independent External Environment And Social Audit

		➢ Prevent use of child labour, unequal wages to women, sexual harassment of women, children at the construction place, build awareness of Controlling STD, HIV/AIDS, etc.	
4	Operation and Maintenance (Operation of facilities and their repair, maintenance (preventive maintenance, corrective maintenance and breakdown maintenance), some augmentation, etc.)	The actions to be taken during this phase are: ➢ Encourage women and vulnerables to be employed in operation and maintenance activities. ➢ Train women and vulnerables to match the skills required for O&M activities. ➢ Train women and vulnerable in suitable livelihoods activities to enhance their skills and income. ➢ Where possible assign O&M contracts to local SHGs. ➢ Build capacity of women and vulnerable organizations/ institutions to take up O&M functions. ➢ Make sure the Grievance Redress committees have at least one third women members and adequate vulnerables as members. ➢ Conduct an Impact Assessment of Social Actions (implementation of SMP, RAP/ ARAP, TPP, etc.) taken.	➢ PMU ➢ PIU ➢ Contractors ➢ PMC
5	Transference (Activities include documenting lessons learnt, dissemination of findings, incorporating these into future projects design, etc.)	The actions to be taken during this phase are: ➢ The Project Completion Report to have an exclusive chapter on Gender and Social Inclusion. ➢ This section in PCR to capture the implementation outcomes of Gender Strategy. ➢ Dissemination of PCR findings for adoption by future projects. ➢ Conduct experience sharing workshops/ seminars with sector agencies.	• PMU • PMC consultants • AIIB

12.2.2 Addressing Inequities

It is envisaged that preparing and implementing Resettlement Action Plans, Tribal People Plans, Gender Action Plans and other Social Management Plans and their implementation, would ensure interests of these vulnerable groups would be adequately addressed and protected.

12.2.3 Information on Women and Vulnerable Groups

Like in other projects, as per available experience, in these sub-projects as well, women are likely to experience differential socio-economic setbacks due to their disadvantaged positioning within socio-economic structures and processes. This is likely to be manifested most in the loss of common property resources as a result of their displacement. In order to mitigate such impacts, the verification and socio-economic survey shall collect information on the following:

- Number of women headed households and Tribal households and other vulnerables

- Socio-demographic characteristics of affected women and tribals and other vulnerables
- Health status including number of children per woman
- Women's role in household economy by collecting information on usual activity, occupation; etc.
- Time Disposition
- Decision making power among women PAFs

As women are often the worst victims of transition between displacement and resettlement, they have to be integrated in the project as full-fledged participants taking part in all the stages of the project starting from planning through implementation and on to the post-project stages. This is the only way to make sure, that the process of resettlement and rehabilitation, an exercise in equitable distribution of resources and benefits in a gender sensitive manner.

12.2.4 Participation of Women and Vulnerables

Participation and engagement of women and other vulnerables can be ensured specifically in the following ways:

- Allow and facilitate women to take part in the consultation process.
- Ensure that the women are consulted and invited to participate in group-based activities, to gain access and control over the resources. Guidelines for compensation for land and assets lost, being same for all the affected or displaced families, special care needs to be taken by the PIU for women groups, while implementing the process of acquisition and compensation as well.
- Ensure that women are actually taking part in issuance of identify cards, opening accounts in the bank, receiving compensation amounts through cheques in their name, etc. This will further widen the perspective of participation by the women in the project implementation. While registering properties make sure they are registered in both the spouses names.
- Provide separate trainings to women groups for upgrading the skill in the alternative livelihoods and assist throughout till the beneficiaries start up with production and business.
- Initiate women's participation through Self-Help Group formation in each of the villages benefitted by the project. These groups can then be linked to special development schemes of the Government.

The Vishakha Guidelines against sexual harassment in the workplace

Sexual harassment includes unwelcome sexually determined behavior (whether directly or by implication) as:

a. Physical contact and advances
b. A demand or request for sexual favours
c. Sexually coloured remarks
d. Showing pornography
e. Any other unwelcome physical, verbal or no-verbal conduct of sexual nature

- Encourage women to evaluate the project outputs from their point of view and their useful suggestions should be noted for taking necessary actions for further modifications in the project creating better and congenial situation for increasing participation from women.
- Devise ways to make other vulnerable to participate in the project activities.

All these done in a participatory manner might bring sustainable results in terms of income restoration of women as a vulnerable group.

12.2.5 Women and Vunerables Involvement during Construction

Wherever possible, women's involvement in construction activities should be encouraged in order to help them have access to benefits of project activities. The construction works starts after the R&R activities are over and sites are clear of any encroachment and other encumbrances. The construction contractors set up their construction camps on identified locations, where labour force required for the construction activities will be provided with temporary residential accommodation and other necessary infrastructure facilities. The labour force required for the construction activities has to be of a skilled nature, as there is a lot of mechanised work in construction of sub-projects. In addition, there is also a requirement of unskilled labour. Women certainly contribute, both as skilled and unskilled.

Apart from this, women as family members of the skilled and semi-skilled labourers, will also stay in the construction camps and will be indirectly involved during the construction phase. The families of labourers will include their children also. The construction contractors are expected to bring along skilled labour whereas local labour available will be used for unskilled activities. The labour force, both migratory as well as local will have male as well as female members.

12.2.6 Ensuring Facilities in Construction Camps

Foreseeing the involvement of women, both direct and indirect in the construction activities, PMU shall ensure certain measures that are required to be taken by the construction contractor towards welfare and well-being of women and children during the construction phase such as:

(a) **Temporary Housing:** During the construction, the families of labourers/workers should be provided with residential accommodation suitable to nuclear families.

(b) **Health Centre:** Health problems of the workers should be taken care of by providing basic health care facilities through health centres temporarily set up for the construction camp. The health centre should have at least a doctor, nurses, General Duty staff, medicines and minimum medical facilities to tackle first-aid requirements or minor accidental cases, linkage with nearest higher order hospital to refer patients of major illnesses or critical cases. The health centre should have MCW (Mother and Child

Welfare) units for treating mothers and children in the camp. Apart from this, the health centre should provide with regular vaccinations required for children.

(c) **Day Crèche Facilities:** It is expected that among the women workers there will be mothers with infants and small children. Provision of a day crèche may solve the problems of such women, who can leave behind their children in such a crèche and work for the day in the construction activities. If the construction work involves women in its day-night schedules, the provision of such a crèche should be made available on a 24-hour basis.

The crèche should be provided with at least a trained ICDS (Integrated Child Development Scheme) worker with '*Ayahs*' to look after the children. The ICDS worker, preferably women, may take care of the children in a better way and can manage to provide nutritional food (as prescribed in ICDS and provided free of cost by the government) to them. In cases of emergency, a trained ICDS worker can tackle the health problems of the children much more efficiently and effectively and can organise treatment linking the nearest health centre.

The National Curriculum Framework 2005

CBSE, acting under NCERT's directives, has designed a kit on gender sensitivity. It includes a handbook, cards and a manual for teachers to equip them with required skills to practice gender-sensitive learning. This curriculum prioritizes gender-sensitive education as a means to attaining quality education. These should be included in all schools, especially those near the APRRP sub-projects to cultivate a gender-sensitive culture.

(d) **Proper Scheduling Of Construction Works:** Owing to the demand of a fast construction work, it is expected that a 24 hours-long work-schedule would be in operation. Women, especially the mothers with infants, should to be exempted from night shifts as far as possible. If unavoidable, crèche facilities in the construction camps must be extended to them in the night shifts too.

(e) **Education Facilities:** The construction workers are mainly mobile groups of people. They are found to move from one place to another taking along their families with them. Thus, there is a need for educating their children at the place of their work. Wherever feasible, day crèche facilities may be extended with primary educational facilities or some kind of informal education facilities could be created at the construction camp.

(f) **Control on Child Labour**: Minors, i.e. persons below the age of 14 years, should be restricted from getting involved in the constructional activities. It will be the responsibility of PMU and social and environmental specialists of PMU and environmental and social experts of PIUs to ensure that no child labourer is engaged in the activities. Exploitation of women is very common in such camps. PMU and PIUs shall keep strong vigilance to ensure cessation of such exploitation.

(g) **Special Measures For Controlling STD, AIDS:** Solitary adult males usually dominate the labour force of construction camps. They play a significant role in spreading sexually transmitted diseases. In the construction camps as well as in the neighbouring areas, they are found to indulge in high-risk behaviour giving rise to STDs and AIDS.

While it is difficult to stop such activities, it is wiser to make provisions for means of controlling the spread of such diseases. PMU and PIUs should conduct awareness camps for the target people, both in the construction camps and neighbouring villages as well. PMU shall have to tie up SACS for awareness and IEC materials, and supply of condoms at concessional rate (or free) to the male workers may help to a large extent in this respect.

12.2.7 Other Actions

- Cases of compensation to vulnerable should be handled with care and concern considering their inhibited nature of interaction.
- All compensations and assistances would be paid in a joint account in the name of both the spouses; except in the case of women headed households and women wage earners.
- PIUs shall prepare a list of able bodied and willing women PAFs for constructional activities and hand over the same to contractors.
- Half (subject to a minimum of one third) of the PMU/ PIUs/ PMC staff and all other involved agencies (including consulting agencies) staff should be woman. When qualified/ skilled women are not available, women with lesser qualifications/ skills may be employed and trained. They may be encouraged and facilitated to obtain the necessary qualifications and/ or skills during the employment. The proposed women personnel shall be available to work at site for at least 50% of the duration of the contract. Women may be replaced during the period of contract, only with women persons of equivalent qualifications and experience.
- Same wage rate for men and women must be ensured.
- Scheduled tribe population identified should be given first preference in selection for any project benefit, viz., livelihoods, etc.
- The petty contracts arising out of the sub-project should considered entrusting to SHGs on community contract basis.
- While selecting community members for training at least half of them should be women and vulnerables.
- The PMU and PIUs should set up action centers with help lines for missing children, migrants, women in distress, etc. the Nodal Officer in charge of Grievance Redress should be made in charge of this.

13 Citizen's Engagement Strategy

13.1 Introduction

The assessment indicates that many programs and schemes exist for rural development and tribal development, however communication on community awareness of these programs is rather limited. Engagement tends to be more focused on individuals rather on community groups, as would be required in some of interventions under this project. Therefore, in a project of this nature involving beneficiaries across different social groups, a citizen engagement strategy is needed to engage with them to ensure intended outcomes are achieved.

The system developed for citizen's engagement will provide project beneficiaries, as well as concerned citizens and civil society space to provide feedback on the project. As an accountability measure, offline and online mechanisms will be created for receiving citizen's feedback. This feedback will be systematically analyzed and used to inform the overall project implementation strategy. The awareness generation effort of the project will also include informing people about ways of providing feedback- like web portals and toll free helplines.

Key elements of this strategy are:

13.1.1 Participatory planning, implementation and monitoring

Some of the project interventions such as project screening and planning and implementation would involve all stakeholders. In such exercises, inclusion and involvement of all social groups at all stages of planning, implementation and monitoring would be made mandatory. For this purpose, meetings will be conducted to ensure representation of all such groups besides recording their attendance by category/group. Continuous process monitoring would lay emphasis on quality of interactions during such meetings.

In addition to use of different community monitoring tools like community monitoring will be conducted to assess community perception about the project activities and seek their feedback. The project strategy also includes involving local communities in monitoring disbursement of entitlements to the affected person due to project before start of construction activities if any.

13.1.2 Feedback - ICT

Feedback from beneficiaries, complaints or grievances would be recorded through innovative use of ICT systems. Such information would be collated at the district level for usage in planning and implementing and further reporting to PMU.

13.1.3 Support to grievance redressal

Project information dissemination, awareness creation among the direct and indirect stakeholders would also include creating awareness about available grievance redressal system that can be used for providing feedback. Regular interaction with the communities for their feedback on project interventions and impact mitigation/ management measures would be taken up.

14 Public Consultation and Disclosure

14.1 Introduction

PMU would engage consultants to assist them in implementing the sub-projects. In the ToR for these consultants, there is an explicit requirement for the consultants to carry out public/ stakeholder consultations. This is a mechanism to ensure the upfront public/ stakeholder inputs in during (preparation and) implementation of the sub-projects.

For all sub-projects, PMU would have to direct the consultants to preparing the DPRs/ EMP/ SMP/ RAP/ ARAP/ TPP to involve all the stakeholders and conduct consultations. In the ToRs for the preparation of these outputs, public/ stakeholder consultations form an integral part. For such type of sub-projects obtaining consent of the local agencies and necessary clearances from competent authorities is mandatory and should form part of the preparation of DPRs/ EMP / SMP/ ARAP/ TPP. These outputs will be reviewed by the AIIB.

During sub-project implementation GPs and Community Based Organizations (CBOs) will be involved. Project monitoring reports would be disseminated in the public consultation meetings in the GPs. The stakeholder meetings would discuss the sub-project progress reports and make recommendations for sub-project control and mid-course corrections/ modifications. These recommendations would be made use for future sub-project design.

Consultations are required for preparation of all safeguards mitigation documents and these consultations should be an on-going activity over the life of the project. These would be documented in the DPRs, EMP / SMP/ RAP/ ARAP/ TPP for each sub-project.

14.2 Key Stakeholders

The following are key stakeholders of the proposed project.

- General road users
- Farmers
- Women
- Children
- Income Groups (Low, middle & high)
- SC/ST
- Vulnerables
- Vendors
- Traders
- Labour
- Passenger Transporters/ Goods Transporter

- Artisans/Craftsman/Skilled workers
- Affected persons
- Health facilities providers
- CBOs/NGOs
- Gram Panchayat
- Local Leaders
- Contractor
- Political representatives
- PRED
- AIIB

The above are the probable stakeholders of the sub-projects under APRRP. Any ESIA to be conducted for any of the sub-project should to an analysis by mapping Key Expectations, Impacts, Issues and Concerns as related to each stakeholder and the subgroups thereof. This Stakeholder analysis will be done using the process like Key Stakeholder Identification, Stakeholders Interests Assessment, Stakeholders Influence Assessment and Stakeholders Importance Assessment.

14.3 Public Consultation

Samaj Vikas Development Support Organisation has prepared Environmental and Social Management Planning Framework, Tribal Population Planning Framework and Resettlement Policy Framework for Andhra Pradesh Rural Roads Connectivity Project (APRRP). It is the policy of the project to disseminate the study findings to the stakeholders. A Public consultation meetings was planned in consultation with Engineering-in-Chief, PRED, Vijayawada and Project Management Unit (PMU), APRRP, Vijayawada. On 28th June 2008, Public Consultation Meeting on Environmental and Social Management Planning Framework (ESMPF) was conducted at Meeting Hall, Sub-Collector Complex Vijayawada. The participants from various districts have attended this meeting including peoples' representatives, Department Engineers, press representatives and general public. The workshop started with brief introduction of the project, the objective of the meeting and with study findings. Some of the key points presented are:

- Roads were selected based on village populations more than 250 and to provide "all weather" road connectivity to Unconnected Habitations.
- A total of 2440 roads accounting a total length 4826 kms is proposed to be constructed for providing connectivity to 3300 habitations with assistance from Asian Infrastructure Investment Bank (AIIB).
- Planning will be done in consultation with community participation.
- For every sub-project screening will be done during planning to categorize and assess the impacts and risks.
- ESMPF is prepared to enhance positive impacts and mitigate or minimize the negative impacts and risks through the project life cycle.

- A EMP, SMP, RFP and TPPF is developed for effective social and environment management of project.
- A project specific redress grievances mechanism is proposed to ensure maximum benefits to the beneficiaries.

The following are Views and Suggestions expressed by the participants

- Nallamekala Venkateswarulu. Achampeta Mandal, pedapalakuru ZPTC has thanked PRED Officials for sanctioning the village road and the worked hard done during project preparation.
- Sarpanch, Achampet Mandal, Chigurupadu Village. RKD Palem is unconnected village and are facing severe problems. There is a small reservoir nearby, it floods during rainy season. The villagers have requested officials to build a *Satta*. It was very difficult to pool the money from limited Gram Panchayat resources to construct the same. With present APRRP. Rs. 4.20 crore was sanctioned for construction of road along with the bridge. The Sarpanch has expressed his happiness and thanked the PRED officials. Likewise in Atchampet mandal there were three other village roads selected under this project. The Assistant Engineer informed that the sub-project includes a culvert to address the reservoir issue.
- Representative of Chinamakkena Village, pedapalakuru said that there is no road connectivity to their village since 50 years. They requested the local officials/ government bodies several times with no positive result. Under the APRRP, the PRED staff have included the village road. He requested to start implementation early and complete within the project period.
- Sarpanch, Avanigadda, said that there are 10 villages in his constituency, out of which only 2 villages has road connectivity. They are all facing issues while going to school, hospital and markets. Recently one road has been sanctioned and completed, but it has worn off within 3 months. He has visited authorities to solve the issue and got an answer that there were no funds. He has suggested that reputed contractors should be awarded to do proper work complying standards.
- Representative of (Mr. Srinivasa Rao), Saarapudi Village, Krishna district has expressed his gratitude to all the officials and AIIB. Chowdapalli village has no basic infrastructure amenities and there is a creek from the ocean. Earlier there used to be a wooden bridge. The road is sanctioned under APRRP. He opined that with this proposed road the connectivity will improve.
- Sarpanch, Rampachodavaram, said that in past 30 years in the mandal no road project was taken for construction with BT surface. Now under the APRRP, BT roads are sanctioned and expressed that this project needs to be completed fast.
- Representative of (Mr. Venkateswara rao) of Chatlai, Nujivid has expressed his happiness and thank the PRED official for the proposed road improvements in Nujivid mandal.
- A representative from Malapalli village has thanked the department for sanctioning the village road and asked to complete the work within the project period.
- Sarpanch, Mandapate, Chatrai Mandal, thanked the PRED officials. He said Mandapeta village is dominated by SC and BC population, which has been granted

Rs. 2.50 crore for road. He said the entire village is pretty happy as it is one of the remote villages in the mandal.

- Sarpanch, Pallipalem village, Bheemavaram mandal, said that 52 lakhs is sanctioned for the village connectivity road. He thanked officials and engineers for including the village in this project.
- Sarpanch, Nuziveedi village said that the village population consist of SC and ST. There is no proper connecting road from the village to the main road. He expressed his gratitude on behalf of the entire village for including the village road under the project.
- Sarpanch, Gudur Mandal, West Godavari. Gokarajupalem village has BC population. There is no road to village; not even a cycle route to main road. During rainy days the villagers cannot even walk. Under the present project, PRED has included the road and Rs. 3.08 crore is sanctioned for construction under this project. He expressed his gratitude on behalf of the entire village for including the village road under the project.
- Sarpanch, Kakeyapadu village, Musugooru mandal says, that the village road is of a distance of about 6-7 kms was constructed in 1995. Now under this project Rs. 2.58 crore sanctioned for 2.74 km. He expressed happiness for the sanction of the road.
- Sarpanch, Tiruvoor village, Misanapet mandal says that the village has given several requisition for road to Tiruvoor village for almost 3 decades. He said that they do not even have an ambulance service to reach hospitals. He expressed happiness and thanked AIIB for assisting his village and officials for the sanction of the road. The villages have fired Rs. 10,000/= worth crackers in jubilation for road sanction. Rs. 2.75 crore is sanctioned for the road.
- Sarpanch, Chadaaripalli village, Gudur Mandal. Under the AIIB assistance road to Chadaaripalli is sanctioned for 1.5 km to the main road. The villagers are mostly involved in selling toddy which needs them commute to other places. With the good roads they can reach in time and access the transport facilities to other places. Sarpanch has request the PRED to include Avanigadda village too to the connecting road. About 30 children travel from village to reach school daily in neighboring village. During rainy season they cannot go to school as there is no road.
- A representative from Tadepalli gudem village expressed happiness and thanked AIIB for assisting this project and officials for the sanction of the road as it benefits the farmers and they can now sell their produce directly in the market.

Finally, to the participants it was suggested and informed that villagers should participate in project planning, implementation and maintenance as this will bring benefits to the village. Participation during project life cycle will make roads more durable. During the execution, there might be temporary impacts like pollution, disruptions and poor accessibility. As part of the project, these issues will be addressed and taken proper care and will be mitigated.

The meeting was concluded by DEE, PMU, APRRP and expressed gratitude to participants for sharing their views and suggestions.

14.4 Contractors Pre-bid Conference

During the contractors pre-bid conference on 25th July 2018, many of the contractors have expressed that they are coming across environmental and social concerns in bid documents for the first time, in road construction. They were briefed that this is necessary as there are several temporary short term impacts which needs to be mitigated properly. The contractors expressed that in their previous contracts, they were facing problems due to land issues and forest lad related issues. They were assured that under APRRP, the PMU and PIUs will take care of all those issues before signing of contract, if there are any issues still unaddressed, the contractors can bring them to the notice of PMU for immediate resolution. The contractors were concerned about engaging the services of environmental expert and safety expert for the contracts. They were made aware that this is necessary in order to implement the mitigation measure proposed in the EMP and SMP.

14.5 Disclosure

14.5.1 State Level

PMU and the PIUs shall disclose this entire ESMPF and all Safeguards related documents and mitigation plans, viz., EMP, SMP, RAP/ ARAP, TPP, etc. at their website. These need to be translated into local language (Telugu) and placed on the website. The Resettlement Policy Framework will be disclosed along with the entitlement framework, though this is a part of the ESMPF, these documents shall be separately identified and disclosed in the PMU website. These two documents shall also be translated into Telugu and made available at the PMU's website.

14.5.2 District Level

PMU will also arrange to disclose the final versions of the ESMPF, EMP, SMP, TPPF and RPF along with Entitlement Matrix, in Telugu and English, in all the District Collectors Offices, PIUs and the local offices of the implementing agencies. These would be in place once the final versions are ready. When this document is updated, then the copies in the different locations would also be updated.

14.5.3 Disclosure by AIIB

The AIIB will disclose this ESMPF along with RPF and TPPF, EMP, SMP, any RAP/ ARAP and TPP for reference to interested parties. During the implementation phase, all the sub-project ESIAs shall be disclosed by PMU and the PIUs both at the local level and at the state level.

14.6 Comprehensive ESMPF Review and Updation

APRRP would undertake one thorough/ comprehensive review of the ESMPF during the project period. Based on the review, the ESMPF would be updated if necessary. APRRP would undertake this review and revision prior to mid-term review by the AIIB. Any revision of this ESMPF will have the concurrence of the AIIB.

15 ESMPF Budget

15.1 Introduction

The total administrative budget for environmental and social management activities under the APRRP has been worked out as Rs. 1.33 Crores. The cost of implementing the proposed mitigation measures is not included in this costing. The cost of mitigating environmental and social impacts need to be included in the respective sub-projects' budgets. The detailed breakup of the administrative budget is presented in the table below.

Table 15-1: Administrative budget for ESMPF activities

S No.	Activity	Amount in Rs.
1	Training and workshops (as estimated)	**51,00,000**
2	Community Mobilization Staff Costs (lump sum)	**5,00,000**
3	Preparation of specific environment and social related community awareness materials (lump sum)	**5,00,000**
	Independent External Environmental and Social Audit	**60,00,000**
4	Sub Total	**121,00,000**
5	Contingencies @ 10%	**12,10,000**
7	**Total**	**133,10,000**
	Say	**Rs. 133 lakhs**

ANNEXURE 1: Environmental and Social Screening Formats

Environmental Screening

Part a: General Information

1. Location of the Road	
Name of Road with length	
Total Length of the Road (Km)	
District	
Mandal	
Village /Habitation	
GPS Coordinates of road	Start End
2. Implementing Agency Details	
Name of the Department/Agency	
Name of the designated contact person	
Designation	
Contact Number	
E-mail Id	

Part b: Environment Screening

Question	Yes	No	Details
A. Is the location of the road is within 1Km from following environmentally sensitive areas?			
1. Type of Terrain (Plain/Hilly/ Mountainous etc.)			If yes, (Explain the topography of the area and how many km of the road are located in the hilly area)
2. Coastal Area			If yes, mention name and distance.
3. National Park			If yes, mention name and distance.
4. Wildlife/Bird Sanctuary			If yes, mention name and distance.
5. Tiger Reserve/Elephant Reserve			If yes, mention name and distance.
6. Wetland			If yes, mention name and distance.
7. Natural Lake			If yes, mention name and distance.
8. World Heritage Sites			If yes, mention name and distance.
9. Archaeological monuments/sites (under ASI's central/state list)			If yes, mention name and distance.
10. Reservoirs/Dams			If yes, mention name and distance.
B. Does road pass through any of the sensitive sites or located along the site and distance to this site?			
1. Whether road pass through or along the inhabited area?			If yes, list them indicating the location (right or left side) and the chainage
2. Whether road pass through or along the agriculture land?			If yes, indicate the location (right or left side) and the chainage
3. Whether road pass through or along the Grazing land?			If yes, lis them indicating the location (right or left side)
4. Whether road pass through or along the Barren land?			If yes, lis them indicating the location (right or left side) and the chainage

Question	Yes	No	Details
5. Whether road passes through Reserved/Protected Forest or located along the forest?			If yes, indicate the location (right or left side) and the chainage
6. Are there any areas with landslide or erosion problems along the road?			If yes, indicate the location (right or left side) and the chainage
7. Are there any lakes/swamps beside the road?			If yes, list them indicating the location (right or left side) and the chainage
8. Are there any nallas/streams/rivers etc. along/crossing the road?			If yes, list them indicating the location (right, left or crossing) and the chainage
9. Are there problems of water stagnation and other drainage issues on or near the road?			(If yes, mention chainage)
10. Is the area along the project road prone to flooding?			If yes, mention flood level and frequency
11. Within 100 meter of the road shoulder or along the road is there any area with threatened/rare/ endangered fauna (outside protected areas)			If yes, indicate the location (right or left side) and the chainage
12. Within 100 meter of the road shoulder or along the road is there any area with threatened/rare/ endangered flora (outside protected areas)			If yes, location (right or Left side) specify details of habitat with chainage
13. Within 100 meter of the road shoulder or along the road is there any Habitat of migratory birds/ animal (outside protected areas)			If yes, location (right or Left side) specify details of habitat with chainage
14. Within 100 meter of the road shoulder or along the road is there any area Historic Places (not listed under ASI – central or state list)			(If yes, indicate the location (right or left side) and the chainage)
15. Within 100 meter of the road shoulder or along the road is there any area Regionally Important Religious Places			(If yes, indicate the location (right or left side) and the chainage)
16. Are there any utility structures(Public Water Supply Areas, Hand pump, Electric pole, telephone pole, cables etc.) within 10 m on either side from the centre line of the road alignment			(If yes, list all the utilities structures indicating the location (right or left side) and the chainage)
17. Is there is need to cut trees for road alignment/construction?			(If yes, indicate the location (right or left side) and the chainage)
18. Are there any black spot along the road?			(If yes, indicate the location (right or left side) and the chainage)
▪ **Information related to roads impact:** **C. Will the construction, operation or decommissioning of this road cause changes to or have impact on the following?**			

Question	Yes	No	Details
1. Will this road construction cause any disfiguration of landscape by road embankment, cuts, fills and quarries?			If yes, please give details
2. Will there be any Landslide/Soil erosion at road construction site?			If yes, please give details
3. Will this road construction and maintenance cause any sedimentation nearby river or stream?			If yes, please give details
4. Will there be any impact on Air – dust during construction, crushing and asphalt processing			If yes, please give details
5. Will there be any Solid waste/sanitary waste disposal at construction camp and work sites causes			If yes, please give details
6. Noise/ vibration/ light/heat energy/ electromagnetic radiation during construction			If yes, please give details
7. Will there be any accident due to increased traffic during construction			If yes, please give details
8. Will there be any health issues like communicable diseases, respiratory problems and stress near project area?			If yes, please give details
9. Any other			If yes, please give details

Part d : Result/Outcome of Environmental Screening Exercise		
1.	EIA Required	Yes/ No
2.	Regulatory Clearance Required	Forest: …… CRZ: …… Wildlife …….. Irrigation: ……... Otters (if any): ……

Social Screening

1. Land Requirement

Details	Unit	Quantity	Classification/Category	Present Use and User
Government Land				
Private Land				
Forest Land				
Title Holder				
Non-titleholders (Encroacher)				
Non-titleholders (Squatter)				
People losing livelihoods/ access due to loss of Govt. Lands to Project				

2. Agriculture Land affected due to road

Details	Unit	Quantity
Total Affected	Number	
Title Holders	Number	
Non-titleholders (Encroacher)	Number	
Non-titleholders (Squatter)	Number	
BPL Families losing Agriculture Land	Number	

3. Dwellings (Residential) affected due to sub-project

Details	Unit	Quantity
Title Holders	Number	
Non-titleholders (Encroacher)	Number	
Non-titleholders (Squatter)	Number	
Total Affected	Number	
BPL Families losing Dwellings	Number	

4. Commercial properties

Details	Unit	Quantity
Total Affected	Number	
Title Holders	Number	
Non-titleholders (Encroacher)	Number	
Non-titleholders (Squatter)	Number	
BPL Families losing Commercial Properties	Number	

5. Common Property Resources Affected: (Please give each type by number)

Type	Unit	Quantity
	Number	

	Number	
	Number	
	Number	
	Number	

1	Total no of HH affected due to proposed project activity (Single or multiple impacts)	Results
2	Total no of vulnerable HH affected due to proposed project activity (Single or multiple impacts)	
3	Total number of Community Property Resources affected	

Part C: Result/Outcome of Social Screening Exercise

1	No SA Require	
2	SA Required	

Part b: Right of Way Table (A table giving the availability of government land on both sides of center line of the damaged portion of the road need to be presented at every 100 m interval and certified by the concerned Executive Engineer. ADD rows for subsequent chainages, until end of road.)

S No	Chainage	Government Land from Centre line of Road		Proposed Road Base Width		Additional Land Requirement		Remarks
		Left	Right	Left	Right	Left	Right	
1	0.000							
2	0.100							
3	0.200							
4	0.300							
5	0.400							
6	0.500							
7	0.600							
8	0.700							
9	0.800							
10	0.900							
11	1.000							
12	1.100							
13	1.200							
14	1.300							
15	1.400							
16	1.500							
17	1.600							
18	1.700							
19	1.800							
20	1.900							
21	2.000							
22	2.100							
23	2.200							
24	2.300							
25	2.400							

Part C: Transect Walk Map

While filling in this data sheet, the implementing agency should hold a consultation with the local community through the Gram Panchayat in order to determine the most suitable alignment, sort out issues of land availability (including forest land), moderate any adverse social and environmental impacts and elicit necessary community participation in the programme. For this purpose the implementing agency should organise an informal 'Transect Walk' and prepare a map (Not To Scale) of this and attach the same to this data sheet. The following points should be borne in mind while preparing this map.

A. The Transect walk shall be undertaken by the Officer filling in this data sheet, accompanied by the Sarpanch of the Panchayat/ Ward Member and other community members after adequate advance publicity. The local Forest official may also be associated if forest land is involved.
B. During the Transect Walk, issues relating to land requirements for the road/ bridges and its impact on landowners, encroachers, squatters, etc. need to be discussed with members of the local community present. Collect all land related revenue records, maps and gazettes for supporting the claims and attach to this report. To this check list attach a typical cross section of the structure at its widest and note the land required.
C. Environmental impact on vegetation, land, soil and water etc. shall be identified and noted for resolution.
D. During the walk, due opportunity shall be given to interested persons to put forward their points of view.
E. At the end of the walk and after recording the issues that arose during the walk, the action taken/ proposed to resolve the issues be noted. This shall be recorded by the Secretary of the Panchayat and countersigned by the Sarpanch/ Ward Member. A copy of this document shall be attached to the data sheet.
F. During or after (as convenient) the Transect Walk, a map (Not To Scale) with the road/ bridges alignment, the environmental features along the road/ bridges, ownership of land need to be prepared. Identify all structures, viz., places of workship, schools, hospitals and other common property resources, forest land, etc. and locate on this Transect Walk Map.
G. To this map attach some (a minimum of four on right side and four on left side and one each at the beginning and ending) photographs showing and highlighting the most critical places.

ANNEXURE 2: Format for Recording Consultation

District/Mandal:	**Date:**
Village:	**Road Name:**
Road No:	**Time:**
Venue:	**Duration:**

1. Project Description

2. Issues raised by the community and responses provided

Issues:

Response by PRED:

3. Key issues

(i)
(ii)
(iii)

4. Conclusion by PRI representatives

Suggested content for consultation sessions
The meeting duration shall be for about 1-1/2 to 2 hours and shall cover the following. All these steps of the consultation shall be recorded in the format 1. The session shall start with a description of the project by the PIU officials to the community. The following information shall be covered: ▪ Overview of APRRP and criteria for selection ▪ Involvement of PRIs & communities in project planning, design and implementation ▪ Expectations of the project from the beneficiaries, the communities Outputs of the transect and how the concerns of the communities have been incorporated into the design, if not, why they have not been incorporated ▪ Provisions of the project as the Resettlement Framework provisions, mechanisms for voluntary land donation process etc 2. Environmental issues in the project, ▪ Codes of practice ▪ Census survey Mechanisms for Grievances, implementation arrangements ▪ Involvement of communities / PRI in tree plantation, managing induced development etc Likely construction schedule

3. After the description of the project, suggestions from the community on the project and issues will be obtained.
4. Responses to the issues raised will be provided by the PIU, PRI during the meeting. For issues that require a visit to the site or involves certain engineering decisions, or consultations with other Government agencies, a date shall be committed for response to the same. The response shall be given by the PIU to the PRI within the specified date.
5. The PRED shall summarize the issues.
6. Conclusion by the PRI representatives and attendance of the participants.

On a separate sheet mark the attendance at the meeting in the following format

Community		**PRED**	
Name of Person and village of residence	**Signature**	**Name and Designation of official**	**Signature**

ANNEXURE 3: Guidance on Census Survey Tool

Design a modular census survey tool which includes the following modules, apart from specific information required by the project.

1. General Information, Project Information, Identification, etc.
2. Household Demographic Information – Household Members, Gender, Vulnerability, Education, Skills, Profession, Employment, Income, Government Assistance Accessed, etc.
3. Socio-Economic Information
4. Housing Status, Type of housing, etc.
5. Household Assets, Livestock, Land, etc.
6. Details of likely Losses to be suffered – Land, Assets, Livelihoods, etc.
7. Access to Utilities
8. Agriculture Practices, Agriculture Labour, Crops, Yields, etc.
9. Migration patterns
10. Expenditure Pattern
11. Loans and Indebtedness
12. Decision making at household level, Women participation, etc.
13. Access to common facilities/ infrastructure
14. Health seeking behavior
15. Perceptions on Project
16. Preferred R&R Options
17. Preferred Income Generation Options
18. Other Key Information
19. Investigator information

ANNEXURE 4: Format for Preparation of Resettlement Plan

1. Introduction

1. Brief Introduction of the sub-project
2. Description of Component(s) that cause land acquisition/alienation and resettlement
3. Overall Estimates of Land Acquisition and R&R

2. Measures to Minimise Resettlement

1. Description of Efforts Made for Minimizing Displacement
2. Description of the Results of these Efforts
3. Description of Mechanisms to Minimize Displacement and Loss of Livelihood/Income during Implementation

3. Census and Socio-Economic Surveys

1. Provide the results of the census and socio-economic surveys
2. Identify all categories of impacts and the extent of impact on each affected

4. Consultation and involvement of PAFs

1. Describe various Stakeholders
2. Summarize process of consultation on the results of socio-economic surveys
3. Describe the need and mechanisms to conduct updates to socio-economic surveys
4. Describe how this process of consultation would be continued through implementation and monitoring
5. Describe the plan for disseminating information to Project Affected Persons

5. Entitlement Framework

1. Provide a definition of AFs and APs together with their categorization based on impacts
2. Describe R&R entitlements for each category of impact
3. Describe method of valuation used for affected land, structures and other assets
4. Using Entitlement Matrix, present a table of all AFs/APs and their losses/ impacts and entitlements

6. Relocation (if applicable)

1. Does the Project need community relocation sites? If yes, have they been inspected and accepted by AFs?
2. Have the Project Affected Persons agreed to the strategy for housing replacement? Will new housing be constructed/allocated? If AFs are to construct houses, explain if compensation entitlement for housing is sufficient to help them construct houses.
3. List of proposed sites along with number of affected families to be relocated
4. Describe respective mechanisms for (i) procuring/acquiring/alienating ; (ii) developing and (iii) allotting resettlement sites
5. Provide detailed description of arrangements for development of resettlement sites including provision of social infrastructure
6. Describe the feasibility studies conducted to determine the suitability of the development of sites.

7. Income Restoration

1. Are the compensation entitlements sufficient to restore income streams for each category of impact? If not, what additional economic rehabilitation measures are necessary?
2. Briefly spell out the restoration strategies for each category of impacts, and describe institutional, financial and technical arrangements/aspects involved
3. Describe the process of consultation with AFs to finalize strategies for income restoration
4. How do strategies for restoration vary with the area/locality of impact
5. If income restoration involves change in livelihoods or other economic activities allow substantial amount of time for capacity building, accessing institutional funds/credits/markets, preparation and implementation. Work out the rate of returns for each of the economic activities opted by the entitled person.
6. How are the risks of impoverishment proposed to be addressed?
7. Explain the main institutional and other risks for effective implementation of plans for restoration of livelihood
8. Describe the process for monitoring the effectiveness of income restoration activities

8. Institutional Arrangements

1. Describe institution(s) responsible for: (a) delivery of each item/activity in the entitlement policy; (b) implementation of resettlement and rehabilitation programs and (c) coordination of all other activities as described in the Resettlement Plan
2. State how coordination issues will be addressed in cases where resettlement and rehabilitation are spread over a number of institutional/departmental jurisdictions
3. Indicate the agency that will coordinate all implementing agencies – do they have the necessary mandate and the resources
4. Describe the external (non-Project) institutions/departments involved in the process of resettlement and restoration of income such as land development, land allocation, credit, training for capacity building and the mechanisms in place to ensure adequate cooperation and performance of these institutions/departments
5. Describe the results of the institutional capacity assessment and give the institutional development plans including staffing schedule and training requirements
6. Discuss institutional capacity for, and commitment to, resettlement and rehabilitation

9. Monitoring and Evaluation

1. Describe the internal monitoring process
2. Define key monitoring indicators for resettlement, rehabilitation and participation and provide a list of these indicators which would be used for internal monitoring
3. Describe institutional (including financial) arrangement
4. Describe frequency of reporting and contents of reports
5. Describe the process for integrating feedback from internal monitoring into implementation
6. Describe financial arrangements for external monitoring including process for awarding and maintenance of contracts for the entire duration of R&R
7. Describe the methodology for external monitoring
8. Describe frequency of external reporting and its contents

10. Redress of Grievances

1. Describe the structure and process of grievances mechanisms at various levels including step-by-step process for registering and addressing grievances and provide specific details

regarding registering complaints, discussing them with AFs, response time, communication modes etc.
2. Describe the mechanism for appeal
3. Describe the provision, if any, to enable AFs to approach civil courts in case these provisions fail.

11. Implementation Schedule

1. List the chronological steps in implementation of Resettlement Plan including identification of agencies responsible for each activity along with a brief explanation of each activity
2. A month-wise implementation schedule (Gantt chart) of activities to be taken as part of Resettlement Plan
3. Description of the linkage between R&R implementation and initiation of civil works for each of the Project component

12. Costs and Budgets

1. Clear statement of financial responsibility and authority
2. List the sources of funds for R&R and describe the flow of funds
3. Indicate if costs of R&R are included in the overall Project costs
4. Identify R&R costs, if any
5. Provide a cost-wise, item-wise budget estimate for the entire R&R costs including administrative expenses, monitoring and evaluation and contingencies
6. Describe the specific mechanisms to adjust cost estimates by *inflation* factor
7. Describe provisions to account for different types of contingencies

ANNEXURE 5: Format for Preparation of Abbreviated Resettlement Plan

1. Introduction

1. Brief Introduction of the sub-project
2. Description of Component(s) that cause land acquisition/alienation and resettlement
3. Overall Estimates of Land Acquisition and R&R

2. Census and Socio-Economic Surveys

1. Provide the results of the census and socio-economic surveys
2. Identify all categories of impacts and the extent of impact on each affected

4. Consultation and involvement of AFs

1. Describe various Stakeholders
2. Summarize process of consultation on the results of socio-economic surveys
3. Describe the plan for disseminating information to Affected Persons

5. Entitlement Framework

1. Describe R&R entitlements for each category of impact
2. Describe method of valuation used for affected land, structures and other assets
3. Using Entitlement Matrix, present a table of all AFs/ APs and their losses/ impacts and entitlements

6. Income Restoration

1. Are the compensation entitlements sufficient to restore income streams for each category of impact? If not, what additional economic rehabilitation measures are necessary?
2. Briefly spell out the restoration strategies for each category of impacts, and describe institutional, financial and technical arrangements/aspects involved
3. Describe the process of consultation with AFs to finalize strategies for income restoration
4. If income restoration involves change in livelihoods or other economic activities allow substantial amount of time for capacity building, accessing institutional funds/credits/markets, preparation and implementation. Work out the rate of returns for each of the economic activities opted by the entitled person.
5. How are the risks of impoverishment proposed to be addressed?

7. Institutional Arrangements

1. Describe institution(s) responsible for: (a) delivery of each item/activity in the entitlement policy; (b) implementation of resettlement and rehabilitation programs and (c) coordination of all other activities as described in the Abbreviated Resettlement Plan

8. Monitoring and Evaluation

1. Describe the internal monitoring process

9. Redress of Grievances

1. Describe the structure and process of grievances mechanisms at various levels including step-by-step process for registering and addressing grievances and provide specific details regarding registering complaints, discussing them with AFs, response time, communication modes etc.
2. Describe the mechanism for appeal

3. Describe the provision, if any, to enable AFs to approach civil courts in case these provisions fail.

10. Implementation Schedule

1. List the chronological steps in implementation of Abbreviated Resettlement Plan including identification of agencies responsible for each activity along with a brief explanation of each activity

11. Costs and Budgets

1. Clear statement of financial responsibility and authority
2. List the sources of funds for R&R and describe the flow of funds
3. Indicate if costs of R&R are included in the overall Project costs
4. Identify R&R costs
5. Describe the specific mechanisms to adjust cost estimates by *inflation* factor
6. Describe provisions to account for different types of contingencies

ANNEXURE 6: Monitoring Environmental Parameters

Environmental monitoring is defined as —an activity undertaken to provide specific information on the characteristics and functions of environmental and social variables in space and time

The environmental monitoring programme will be devised to ensure that the envisaged purpose of the project is achieved and results in the desired benefit to the target population. To ensure the effective implementation of the EMP, it is essential that an effective environmental monitoring programme be designed and carried out. Broad objectives of the monitoring programme will be

- To evaluate the performance of mitigation measures proposed in the EMP
- To suggest improvements in the management plans, if required
- To satisfy the statutory and community obligations

A. Types of Environmental Monitoring

Baseline Monitoring/ Impact Assessment	A survey should be conducted on basic environmental parameters in the area surrounding the proposed project before construction begins (pre-audit study). Subsequent monitoring can assess the changes in those parameters over time against the baseline
Impact Monitoring	The biophysical and socio-economical (including public health) parameters within the project area, must be measured during the project construction and operational phases in order to detect environmental changes, which may have occurred as a result of project implementation
Compliance Monitoring	This form of monitoring employs a periodic sampling method, or continuous recording of specific environmental quality indicators or pollution levels to ensure project compliance with recommended environmental protection standards

The monitoring programme contains monitoring plan for all performance indicators, reporting formats and necessary budgetary provisions. Monitoring plan for performance indicators and reporting system is presented in the following sections.

B. Monitoring Plan for Environmental Conditions

The Environmental monitoring of the parameters involved and the threshold limits specified are discussed below

Ambient Air Quality Monitoring (AAQM)
The air quality parameters viz: Sulphur Dioxide (SO2), Oxides of Nitrogen (NOX), Particulate Matter PM10 and PM2.5 shall be regularly monitored at identified locations from the start of the construction activity. The air quality parameters shall be monitored in accordance with the National Ambient Air Quality Standards as given in Table below.

Table: Ambient Air Quality Standards (National)

S. No	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and Other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
1.	Sulphur Dioxide (SO2), µg/m^3	Annual* 24 hours**	50 80	20 10	Improved West and Gaeke Ultraviolet fluorescence
2.	Nitrogen Dioxide (NO2), µg/m^3	Annual* 24 hours**	40 80	30 80	Modified Jacob & Hochhieser (Na-Arsenite) Chemiluminescence
3.	PM10 µg/m^3	Annual* 24 hours**	60 100	60 100	Gravimetric TOEM Beta attenuation
4.	PM25µg/m^3	Annual* 24 hours**	40 60	40 60	Gravimetric TOEM Beta attenuation

**Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals*
***24 hourly or (8 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.*

Noise Quality Monitoring

The noise levels shall be monitored at designated/ sensitive locations (including Schools, Hospitals etc.) in accordance with the Ambient Noise Quality standards given below.

Ambient Noise Quality Standards (National)

Area Code	Category of Zones	Limits of Leq in dB(A) Day*	Limits of Leq in dB(A) Night*
A	Industrial	75	70
B	Commercial	65	55
C	Residential	55	45
D	Silence Zone **	50	40

** Daytime shall mean from 6.00am to 10.00 pm and Night shall mean from 10.00 pm to 6.00 am*
***Silence zone is defined as area up to 100 meters around premises of hospitals, educational institutions and courts. Use of vehicles horns, loud speakers and bursting of cracking are banned in these zones.*

Water Quality Monitoring

Water quality parameters such as pH, BOD, Coliform count, Total Dissolved Solids, Oil and Grease etc., shall be monitored at surface water bodies (including lake, pond, open well etc.) located along the project road during the construction stage as per standards prescribed by Central Pollution Control Board and Indian Standard Drinking water specifications IS 10500, 1991.

National Standard of Water

Sl. No	Parameters	IS:2296 (Class C)	Method to be Adopted
1.	pH	6.5-8.5	pH meter
2.	BOD (3 days 270C)	3.0	DO-Azide modification of Wrinkler's method
3.	Dissolved oxygen	4	Azide Modification of Wrinkler's method
4.	Total Dissolved Solids	1500	Gravimetric Analysis

5.	Oil and Grease	0.1	Partition – Gravimetric method
6.	Detergents	1.0	Spectrophotometer
7.	Total Coliform (MPN/100 ml)	5000	Multiple Tube Fermentation Technique

C. Environmental Monitoring Locations

In addition of the critical locations selected during design stage, the environmental monitoring will also be done at the construction camp site and any other plant site during construction stage. List of critical locations for caring out monitoring should be presented in report

D. Monitoring and Post Auditing

Construction monitoring, including field inspections and surveys, should be carried out by an environmental expert (to be hired by PRED on regular or contractual basis) to ensure that environmental protection requirements are being met. The monitoring and reporting is to be in line with the reporting system developed for the project. It is important to plan and budget for environmental construction monitoring as part of the project.

ANNEXURE 7: Environmental and Social Audit Checklist

TABLE 1: General Information about the Project

S No	Description	Details		Remarks
1.	Name of the Sub-Project			
2.	Category of Project			
3.	ID			
4.	District /Mandal			
5.	Villages			
6.	Implementing Agency	Name of the Department / Agency		
		Name of the Contact Person		
		Designation		
		Contact Number		
		E-mail id		
7.	Design Consultants			
8.	Supervision Consultant			
9.	Nature of Works			
10.	Project Cost (DPR)			
11.	Tender Cost/Bid Amount			
12.	EMP Budget			
13.	EMP Budget allocated			
14.	Compensatory Budget			
15.	Length in (Km) if Roads / Bridges			
16.	Package No.			
17.	Tender Status			
18.	Name of the Contractor			
19.	Start Date			
20.	Expected Completion Date			
21.	Physical Progress			
22.	Financial Progress			

TABLE 2: Desk Review

S No	Description	Required		Prepared		Remarks / Appropriateness of Documents
		Yes	No	Yes	No	
1.	Detailed Project Report (DPR)					
2.	Environment Screening Report					
3.	EMP/SMP, if required					
4.	Social Screening Report					
5.	RAP / ARAP					
6.	Transact Walk Maps					
7.	Public Consultations conducted during design phase					
8.	EIA Clearance					
9.	NOCs from concerned department					
10.	Permission for use of community water/ground water/surface water					
11.	Tree Cutting Permission					
12.	PUC for construction vehicle					
13.	Permission for Hot Mix Plant NoC from DM CFE/CFO from SPCB					
14.	Labour License					
15.	Insurances					
16.	Labour camps					
17.	NoC for Labour Camps					
18.	Rent agreement for labour camps					
19.	Permission for Sand Mining / Quarrying					
20.	Action Taken Report					
21.	Grievance Redressal Mechanism					

TABLE 3: Social Assessment

<table>
<tr><th>Sl No</th><th>Components</th><th>Details of Requirement</th><th>Details of Compliance</th><th>Remarks</th></tr>
<tr><td rowspan="3">1.</td><td>Area of Land required (Ha)</td><td></td><td></td><td></td></tr>
<tr><td>Private Land</td><td></td><td></td><td></td></tr>
<tr><td>Government Land</td><td></td><td></td><td></td></tr>
<tr><td rowspan="3">2.</td><td>Status of Acquisition</td><td></td><td></td><td></td></tr>
<tr><td>Status of Transfer / Mutation of govt land</td><td></td><td></td><td></td></tr>
<tr><td>Status of Acquisition of private land</td><td></td><td></td><td></td></tr>
<tr><td rowspan="4">3.</td><td>Land Acquisition process adopted</td><td></td><td></td><td></td></tr>
<tr><td>Voluntary Donation</td><td></td><td></td><td></td></tr>
<tr><td>Direct Purchase</td><td></td><td></td><td></td></tr>
<tr><td>LA and Resettlement Act</td><td></td><td></td><td></td></tr>
<tr><td>4.</td><td>Total nos. of PAPs</td><td colspan="3"><table><tr><th>Type of PAPs</th><th>Gen.</th><th>SC</th><th>ST</th><th>WHH</th><th>PH</th><th>BPL</th><th>Others</th><th>Total</th></tr><tr><td>TH</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>NTH</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table></td></tr>
<tr><td>5.</td><td>Compensation Budget</td><td></td><td></td><td></td></tr>
<tr><td rowspan="4">6.</td><td>Compensation paid</td><td></td><td></td><td></td></tr>
<tr><td>Land Acquisition
- Agricultural
- Residential
- Commercial</td><td></td><td></td><td></td></tr>
<tr><td>Structures
- Residential
- Commercial</td><td></td><td></td><td></td></tr>
<tr><td>Loss of
- Crop
- Trees</td><td></td><td></td><td></td></tr>
<tr><td rowspan="4">7.</td><td>Assistance</td><td></td><td></td><td></td></tr>
<tr><td>Loss of Livelihood</td><td></td><td></td><td></td></tr>
<tr><td>Loss of Rental Accommodation</td><td></td><td></td><td></td></tr>
<tr><td>One-time Assistance to Vulnerable PAPs</td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">8.</td><td>Rate at which Private Land is acquired</td><td></td><td></td><td></td></tr>
<tr><td>Method of Rate Fixation</td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">9.</td><td>Site clearance</td><td></td><td></td><td></td></tr>
<tr><td>Clearance of encroachment from govt/urban/local body land</td><td></td><td></td><td></td></tr>
</table>

Sl No	Components	Details of Requirement	Details of Compliance	Remarks
	Clearance of squatters/encroachers from govt/urban/local body land			
10.	**Number of structures to be acquired /cleared**			
	Authorised			
	Unauthorised			
11.	**Number of households affected**			
	Titleholders			
	Non-Titleholders			
	Vulnerable			
12.	**Number of household to be displaced**			
	Titleholders			
	Non-Titleholders			
	Vulnerable			
13.	**Details of Common Properties Resources (CPRs) affected**			
	Type			
	Consultations Conducted			
	Process of Consultation			
	Consent from Community Head			
	Relocation Site			
	Relocation Status of CPR			
	Cultural heritage/Archaeological heritage sites and or required excavation near the same			
	Graves, sacred location or required excavation near the same			
	Existing land use on/around the project area			
14.	**Labour and Employment**			
	Will the project results in construction workers or other people moving into or having access to the area			
	Project likely to provide local employment opportunities			

Sl No	Components	Details of Requirement	Details of Compliance	Remarks
	Is the project designed with sufficient local participation			
15.	**Grievance Redressal Mechanism** in Place			
	Number of Grievances received during last 6 months			
	Number of grievances redressed during last 6 months			

TABLE 4: Environmental Compliance Audit Checklist

S. No.	Description	Details		
	Statutory Clearances /Permissions	**Status**	**Obtained on**	**Validity Upto**
a)	Environmental Clearance / EIA			
b)	Forest Clearance from DoF			
c)	Tree Cutting Permission			
d)	NoC for Hot Mix Plant from DC			
e)	NoC for Hot Mix Plant from SPCB			
f)	NoC for Stone Crushers from DC			
g)	NoC for Stone Crushers from SPCB			
h)	Permission of Storage, Handling and Transportation of hazardous materials from SPCB			
i)	Approval of Location/ layout of workers camp, equipment and storage yards			
j)	Permission of Discharges from Labour Camp			
k)	Permission for Sand mining from River bed			
	EMP	**As per DPR**	**Actual**	**Completed**
a)	Compensatory/Road side plantation			
b)	Noise barrier			
c)	Dust Suppression			
d)	Road user and worker safety			
e)	Project Information Sign board			
f)	Information/Safety signage and safety arrangement at construction site			
	Environmental Monitoring	**As per DPR**	**Actual**	**Completed**
a)	Air			
b)	Water			
c)	Noise			
d)	Soil			

Table 5: Labour / Construction Camp and Facilities

S. No.	Description	Details
1.	**Labour / Construction Camp Facilities**	
a)	Location of Labour Camp	
b)	Road Accessibility to Camp	

c)	No. of labours staying in labour camp Males - Females - Children -		
d)	Whether Constructed or rented		
e)	Type of construction		
f)	Area of accommodation per person (m^2)		
g)	**Accessibility of camp** to		
	Road		
	Source of drinking water		
	Site		
	Local market		
h)	Facilities in Labour /Construction camp	Sanitation facilities	
		Potable water	
		Waste water disposal	
		Solid waste disposal	
		Oil & grease trap	
		Platform for Fuel storage	
		Solid platform for maintenance of construction vehicles	
		Lightening	
		Cooking Facility	
		Fire Safety Measures	
		First Aid Kits	
		Arrangement with Local Hospitals	
		Crèche Facility for kids	
		Any other	

Table 6: Labour and Employment

S. No.	Description	Details
1.	Total no. of labours employed - Males - Females -	
2.	Migrant labours employed - Males - Females -	
3.	Local labours employed - Males - Females -	
4.	Daily Wage Rate	

	Males – Females – Minors -	
5.	Wage - Register / Record maintained	
6.	PPE material provided by contractor	
7.	EHS Awareness program organized by contractor	

Table 7: Health and Safety of Workers

S. No.	Description	Status			
1.	PPE Usage at Construction Site	**PPE**	**Required**	**Available**	**Whether used**
		Hard hats (helmet)			
		Reflective jackets			
		Safety Shoes			
		Safety goggles			
		Safety belts			
		Hand Gloves			
		Nose Mask			
		Safety Signs			
		Access control to construction site			
		First Aid Kits			
2.	**Caution Signs**	**Safety Signage**	**Required**	**Available**	**Whether Used**
a)	Caution Signs Displayed at construction site	Caution Tapes			
		Temporary Safety Sign Boards			
b)	Near noise sensitive receptors	Noise Barriers			
c)	Near Schools, hospitals and other buildings	Dust Traps			
d)	Start and End Points of sub-project	Project Information Board			

Table 8: EMP Implementation

S. No.	Description	Status
1.	Road Accessibility to Site	
2.	Required clearing and grubbing of site - disposal	
3.	Muck / Debris Disposal Site Location identified	
4.	NoC for Muck Disposal Site from Sarpanch / concerned deptt.	
5.	Muck / Debris Disposal Site Plan	
6.	Non-bituminous construction wastes disposal/Muck Disposal	
7.	Water Sprinkling for dust suppression at construction sites and along the roads	
8.	**Utility Shifting required**	
	Electric Poles	
	Drinking Water Supply Lines	
	Hand pumps	
	Drainage Structures	
9.	**Water for Construction**	
	Source	
	NoC from Gram Panchayat / concerned department	

Table 9: List of Persons Interacted

S. No.	Name	Designation	Contact No.	E-mail ID

TABLE 10: Audit Comments

Rationale Behind the Project	

<table>
<tr><td>- Affected Villages
- Problems faced
- Benefits envisaged</td><td colspan="3"></td></tr>
<tr><td>Good Practices</td><td colspan="3"></td></tr>
<tr><td>Observations</td><td colspan="3"></td></tr>
<tr><td>Non- Compliances</td><td colspan="3"></td></tr>
<tr><td rowspan="11">List of documents reviewed /collected</td><td>1. DPR,</td><td colspan="2"></td></tr>
<tr><td>2. Contract Document,</td><td colspan="2"></td></tr>
<tr><td>3. EMP,</td><td colspan="2"></td></tr>
<tr><td>4. Environmental Monitoring Reports,</td><td colspan="2"></td></tr>
<tr><td>5. RAP / ARAP,</td><td colspan="2"></td></tr>
<tr><td rowspan="6">6. Other Documents reviewed& Collected</td><td>Copy of NOCs</td><td></td></tr>
<tr><td>Copy of Labour License</td><td></td></tr>
<tr><td>Copy of workmen Insurance</td><td></td></tr>
<tr><td>PUCs of Construction vehicle</td><td></td></tr>
<tr><td>Details of Borrow Area/Copy of the Lease Agreement</td><td></td></tr>
<tr><td>Permission for sand mining from river bed/Copy of the Lease Agreement of the supplier</td><td></td></tr>
<tr><td></td><td>Any Other Document</td><td></td></tr>
<tr><td>Remarks</td><td colspan="3"></td></tr>
</table>

ANNEXURE 8: ECoP Standards and Reporting

Key Issues Addressed	Provisions	Standards	Reporting
COP 1.0: Project Planning & Design			
Selection of Alignment	▪ **Consultations** with the communities - to identify the concerns and preferences ▪ Alignment shall conform to the natural topography ▪ **Hill Roads**: - align the roads along the hill side ▪ **Coastal areas:** - Alignment adheres to the Coastal Regulation Zone (CRZ) Norms and - level of the constructed surface is above maximum High Tide Line (HTL) ▪ **flood prone areas** - Hydrological Surveys need to be conducted - Culverts / Bridges and Cross-drainage structures are planned	▪ **IRC: SP-20:2002**, Rural Roads Manual ▪ **IRC: SP-48:1998**, Hill Road Manual ▪ **IRC 005:1998**, Roads and Bridges	▪ Consultations Documentation ▪ Revenue Maps: - Inventory of all Environmental features to be prepared on Revenue Maps
Design Considerations	▪ **Design Speed** - Ruling design speed may be reduced to 40 km/hr. from 50 km/hr. in plain and to 35 km/hr. in rolling terrain ▪ **Road Land Width** - minimum road land width may be reduced to 12 m in plains where it 15 m is not available - may be further reduced to 9 m in areas under intensive irrigation and where traffic is less than 100 vehicles/day - land width of 12m shall be maintained in case of hill roads - may be reduced to 9m only in exceptional cases ▪ **Roadway Width** - minimum of 7.5 m of roadway - may be reduced to 6 m in case of hilly terrain and short link village roads connecting single habitations ▪ **Carriageway Width** - standard width of the carriage of 3.75m - may be restricted to 3.0 m under exceptional cases - Hard shoulders of 1 m width may be provided on either side in case	▪ **IRC: SP-20:2002**, Rural Roads Manual ▪ **IRC: 73** Geometric Design Standards for Rural Highways ▪ **IRC: 52** Recommend ations About the Alignment Survey and Geometric Design of	▪ DPR

<table>
<tr><th>Key Issues Addressed</th><th>Provisions</th><th>Standards</th><th>Reporting</th></tr>
<tr>
<td></td>
<td>
longer routes
▪ Embankment Height
- Sandy Areas: Lower embankment height of 0.3–0.4m should be provided
- Flood prone areas: minimum of 0.6m above expected highest water level (based on data of last five years).
▪ Side Slope
<table>
<tr><th>Condition</th><th>Slope (H:V)</th></tr>
<tr><td>Embankment in Silty / gravelly soil</td><td>2:1</td></tr>
<tr><td>Embankment in clay or clayey silt or inundated condition</td><td>2.5:1 to 3:1</td></tr>
<tr><td>Cutting in silty/sandy/gravelly soil</td><td>1:1 to 1/2:1</td></tr>
<tr><td>Cutting in disintegrated rock or conglomerate</td><td>1/2:1 to ¼:1</td></tr>
<tr><td>Cutting in soft rock like shale</td><td>¼:1 to 1/8:1</td></tr>
<tr><td>Cutting in medium rock like sandstone, phyllite</td><td>1/12:1 to 1/16:1</td></tr>
<tr><td>Cutting in hard rock like quartzite, granite</td><td>Near Vertical</td></tr>
</table>
▪ Geometrics
- Plain and rolling terrain: Minimum absolute curve radius of 50m @ 40 km/hr. and 38m @ 35 km/hr.
- Hill roads: minimum radius of 14m shall be provided but may be reduced to 12m in exceptional cases.
▪ Enhancements
- Cattle crossings - to be provided at normal crossing routes.
- Ramps for access to and from agriculture lands for cross traffic.
- CD works shall have steps constructed for inspection, repair and maintenance purpose.
- Shoulders should be paved at destination/roadside villages
- Bus bays to avoid traffic obstruction wherever feasible.
- Wide embankment to provide a platform wherever possible.
- Ducts 300mm ducts should be provided where ever required enabling cultivators to thread agricultural pipes. The invert level of such ducts shall be about 300mm above HFL.
</td>
<td>
Hill Road
▪ IRC: SP : 23 Vertical Curves for Highways
▪ IRC: 38 Guidelines for Design of Horizontal Curves for Highways and Design Tables
▪ IRC :SP-48 Hill Road Manual
</td>
<td></td>
</tr>
</table>

Key Issues Addressed	Provisions	Standards	Reporting
	- **Passing Places** shall be provided on hill roads, to facilitate crossing of vehicles at least two per kilometer. The length of passing places shall be about 15-20m with carriageway of 5m. ▪ **Road Signages** - informatory, cautionary and warning road signs should be provided to ensure traffic safety		
Environmental Considerations	▪ **Consultations with Stakeholders** - Social and Environmental Impacts - Land Acquisition - Relocation of CPR - Dissemination of Project Information ▪ **Screening and Categorization**	▪ **ECoP 20**	▪ DPR
Integration of Environmental Considerations in Bid Document	▪ Identify Mitigation Measures ▪ Preparation of EMP ▪ Integration in Contract Document ▪ Consents and Statutory Clearances	▪ **ESMF**	▪ EMP ▪ Contract Document ▪ Statutory Clearances
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<tr><td></td><td>
15 m is not available
- may be further reduced to 9 m in areas under intensive irrigation and where traffic is less than 100 vehicles/day
- land width of 12m shall be maintained in case of hill roads
- may be reduced to 9m only in exceptional cases
▪ Roadway Width
- minimum of 7.5 m of roadway
- may be reduced to 6 m in case of hilly terrain and short link village roads connecting single habitations
▪ Carriageway Width
- standard width of the carriage of 3.75m
- may be restricted to 3.0 m under exceptional cases
- Hard shoulders of 1 m width may be provided on either side in case longer routes
▪ Embankment Height
- Sandy Areas: Lower embankment height of 0.3–0.4m should be provided
- Flood prone areas: minimum of 0.6m above expected highest water level (based on data of last five years).
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Geometric Design Standards for Rural Highways
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Key Issues Addressed	Provisions	Standards	Reporting
	- **Hill roads:** minimum radius of 14m shall be provided but may be reduced to 12m in exceptional cases. ▪ **Enhancements** - **Cattle crossings** - to be provided at normal crossing routes. - **Ramps** for access to and from agriculture lands for cross traffic. - **CD works** shall have steps constructed for inspection, repair and maintenance purpose. - **Shoulders** should be paved at destination/roadside villages - **Bus bays** to avoid traffic obstruction wherever feasible. - **Wide embankment** to provide a platform wherever possible. - **Ducts** 300mm ducts should be provided where ever required enabling cultivators to thread agricultural pipes. The invert level of such ducts shall be about 300mm above HFL. - **Passing Places** shall be provided on hill roads, to facilitate crossing of vehicles at least two per kilometer. The length of passing places shall be about 15-20m with carriageway of 5m. ▪ **Road Signages** - informatory, cautionary and warning road signs should be provided to ensure traffic safety		
Environmental Considerations	▪ **Consultations with Stakeholders** - Social and Environmental Impacts - Land Acquisition - Relocation of CPR - Dissemination of Project Information ▪ **Screening and Categorization**	▪ **ECoP 20**	▪ DPR
Integration of Environmental Considerations in Bid Document	▪ Identify Mitigation Measures ▪ Preparation of EMP ▪ Integration in Contract Document ▪ Consents and Statutory Clearances	▪ **ESMF**	▪ EMP ▪ Contract Document ▪ Statutory Clearances

Key Issues Addressed	Provisions	Standards	Reporting
ECOP 2.0: Site Preparation			

Key Issues Addressed	Provisions	Standards	Reporting
Marking and clearance of the required Right of Way	▪ **Marking of RoW and Corridor of Impact (CoI)** - Identification of requirements for site clearance – Encroachments, LA requirements ▪ **Preparation of RAP / ARAP** - Defining Entitlements based on RPF - RAP / ARAP prepared ▪ **Public Consultations** - Consent for relocation of Utilities, CPRs - Identification of relocation site - disclosure of Entitlements in case of individual HH is affected ▪ **Clearance of land** - Initiate process for legal transfer of Pvt. Land - Mutation of Govt. land - Obtain Forest Clearance if required - Diversion of Forest Land - Obtain permission for tree – cutting - Relocation of utilities and CPRs - Resettlement of PAFs - Shifting of Utilities and CPRs	▪ RPF ▪ Entitlement Framework	▪ RAP / ARAP ▪ Application for Shifting of Utilities to Concerned Department
Approval of Construction Schedule	▪ Submission of construction Schedule by Contractor to PIU **Public Consultations** ▪ Dissemination of information related to construction schedule **Approval of Construction Schedule** ▪ Contractor to commence operations at site only after obtaining approval of construction schedule from PIU		
Clearing or Grubbing	▪ Transfer of site to contractors for civil works ▪ Clearing and grubbing - Identification of site for disposal of grubbing waste - Obtain consent from concerned for use of site - removal of all materials such as trees, bushes, shrubs, stumps, roots, grass, weeds, part of top-soil and rubbish - Dismantling of cross drainage structures/culverts to be carried out in a manner as not to damage the remaining required portion of structures		

Key Issues Addressed	Provisions	Standards	Reporting
	- Disposal of waste in accordance with the provisions under ECoP 10 **Salvage top-soil** ▪ conservation of top-soil and stockpiling as per the provisions/specifications provided in ECoP 6 ▪ Carry out necessary backfilling of pits resulting from uprooting of trees etc. with excavated or approved materials to the required compaction		
Precautions	▪ In case the alignment passes through forest areas, - Forest Ranger shall be consulted - Identification of presence of any rare/endangered species with in the proposed road way. - Protection of such species if found as per the directions/rules of the Forest Department. ▪ Locations for disposal of grubbing waste shall be finalized prior to the start of the works on any particular section of the road. ▪ Dismantling of cross drainage structures/culverts shall be carried out in a manner as not to damage the remaining required portion of structures and other surrounding properties ▪ The waste generated shall not be disposed off in watercourses, to avoid pollution of water and hindrance to its flow ▪ All necessary measures shall be taken while working close to cross drainage channels to prevent earthwork, stonework and method of operation from impeding cross drainage ▪ In locations where erosion or sedimentation is a problem, clearing and grubbing operations should be so scheduled and performed that grading operations and permanent erosion and sedimentation control features can follow immediately		
Consents / Approvals / NoCs required	▪ written approval of the site restoration plan from PIU ▪ letter/contract agreement between the owner(s) of the land parcel for temporary usage ▪ Tree Cutting Permission from Forest Department ▪ Forest Clearance from Forest Department (if required)		
Key Issues Addressed	**Provisions**	**Standards**	**Reporting**

<table>
<tr><th>Key Issues Addressed</th><th>Provisions</th><th>Standards</th><th>Reporting</th></tr>
<tr><td colspan="4">ECOP 3.0: Construction Camps</td></tr>
<tr><td>▪ Avoidance of sensitive areas for location of construction camps</td><td>Location of Construction Camp
▪ identify the site for construction camp
▪ consultation with
- individual owners in case of private lands
- Gram Panchayat in case of Gram Sabha (GS) land is selected
<table><tr><th>Avoid the following …</th><th>Prefer the following …</th></tr><tr><td>▪ Land close to habitations (nearer than 500m)
▪ Irrigated agricultural lands
▪ Lands belonging to small farmers
▪ Lands under village forests
▪ Lands within 200m of community water bodies
▪ Lands within 500m of watercourses such as rivers Low lying lands
▪ Lands supporting dense vegetation
▪ Grazing lands and lands with tenure rights
▪ Lands where there is no willingness of the landowner to permit its use</td><td>▪ Waste lands
▪ Lands belonging to owners who look upon the temporary use as a source of income
▪ Community land or government land not used for beneficial/ community purposes
▪ Private non-irrigated lands where the owner is willing and
▪ Lands with an existing access road</td></tr></table></td><td rowspan="2">▪</td><td rowspan="2">▪ NoC for Construction Camps
▪ Layout Plan
▪ Restoration Plan</td></tr>
<tr><td>▪ Submission and Approval of Layout Plans</td><td>▪ Layout Plan
- location of the site on a map;
- area of the site
- proposed uses
- Arrangements: drainage; waste water and solid waste disposal arrangements; material stack areas; workshop/ vehicle maintenance fuelling / areas, storage of other materials
- surrounding features/land-uses
- Land ownership papers and haul/ access road details.
- Restoration Plan
▪ Approval
- The ‘location/site’ will be verified by the PIU after site visit</td></tr>
</table>

Key Issues Addressed	Provisions	Standards	Reporting
	- written approval shall be accorded		
▪ **Pre-Construction Stage** - Infrastructure arrangements for workers and construction equipment	▪ **Accommodation for Workers** - Temporary free of cost accommodation for workers ▪ **Drinking Water** - sufficient supply of potable water - Identify suitable community sources - water supply or storage shall be at a distance of not less than 15m from any wastewater/sewage ▪ **Water Supply** - adequate and suitable facilities for washing clothes and utensils - Separate and adequate bathing facilities for male and female workers - facilities shall be conveniently accessible - shall be kept in clean and hygienic conditions ▪ **Sanitary arrangements:** Toilets shall be provided in every work place - Separate toilet for every 25 male or female workers or part thereof - Toilets shall be partitioned and covered to ensure privacy - Toilets shall be properly marked with for "Men (or Women) Only" in vernacular language - Water facilities near every toilet ▪ **Waste Disposal** - Disposal of sanitary wastes and excreta in septic tanks - Kitchen wastes to be disposed into soak pits - Wastewater to be discharged and disposed in a pit - Solid wastes to be reused if recyclable or disposed off in pre-identified/pre-approved locations ▪ **First Aid Facilities** - First Aid Box at campsite - Arrangement to carry injured person to the nearest hospital. - Emergency numbers displayed within camp site ▪ Storage Site - **Storage of POL:** Brick or sand flooring at the storage places of POL to avoid soil and water contamination due to spillage. - **Storage of cement:** Damp-proof flooring, as per IS codes.		

Key Issues Addressed	Provisions	Standards	Reporting
	- **Storage of blasting materials:** Shall be as per the specific provisions of law. ▪ Fire-fighting arrangement - Demarcation of area susceptible to fires - Provision of cautionary signage - Portable fire extinguishers and/or sand baskets - Workers shall be trained on the usage of such equipment.		
▪ **Construction Stage - Precautions**	▪ Construction camps shall be - maintained, - free from litter - in hygienic condition ▪ Wastewater shall not be disposed into water bodies. ▪ Measures to ensure that no leaching of oil and grease into water bodies or underground water takes place. ▪ Regular collection and safe disposal of solid wastes. ▪ First aid equipment, cleaning equipment for maintaining hygiene and sanitation should be recouped promptly.		
▪ **Post Construction: Redevelopment and Restoration**	▪ All construction camp facilities to be dismantled and removed from the site. - The site shall be restored to the same condition as prior to commencement of works. ▪ Oil and fuel contaminated soil shall be removed and transported and buried at waste disposal areas. ▪ Soak pits and septic tanks shall be covered and effectively sealed off. ▪ Restore the site and clear land of all debris. ▪ Hand over to the community/land owner or lesser in clean condition without any encumbrance. ▪ Documentation (including photographs and certificate signed by the land owner) for site hand-over shall be submitted by the contractor.		
▪ Avoidance of sensitive areas for location of construction camps	**Location of Construction Camp** ▪ identify the site for construction camp ▪ consultation with - individual owners in case of private lands - Gram Panchayat in case of Gram Sabha (GS) land is selected		

Key Issues Addressed	Provisions		Standards	Reporting
	Avoid the following ...	**Prefer the following ...**		
	▪ Land close to habitations (500m) ▪ Irrigated agricultural lands ▪ Lands belonging to small farmers ▪ Lands under village forests ▪ Lands within 200m of community water bodies ▪ Lands within 500m of watercourses such as rivers ▪ Lands supporting dense vegetation ▪ Grazing lands and lands with tenure rights ▪ Lands where there is no willingness of the landowner	▪ Waste lands ▪ Lands belonging to owners who look upon the temporary use as a source of income ▪ Community land or government land not used for beneficial/ community purposes ▪ Private non-irrigated lands where the owner is willing and ▪ Lands with an existing access road		

Key Issues Addressed	Provisions	Standards	Reporting
ECOP 4.0: Alternate Materials for Construction			
▪ Use of fly ash as per MoEF Notification ▪ Minimizing earth requirement	**Project Preparation Stage** ▪ sources and suitability of alternate materials should be identified ▪ In case of availability, DPR shall specify the following: - Characteristics and availability of the material - Possibility of use in the project - Methods of testing, specifications, recommended usage and - Mechanism for procuring and transporting to the site. ▪ PIU must ensure that provision shall be made in bid document under SCC for use of fly-ash ▪ separate BoQ should be included for alternate materials	▪ Blast Furnace Slag - IRC: SP-20:2002	▪ DPR ▪ Progress Reports
	Pre-Construction Stage ▪ Testing shall be done as per IS specifications to evaluate suitability of the alternate materials. - In case test results do not match the specifications; option of blending the		

<table>
<tr><th>Key Issues Addressed</th><th>Provisions</th><th>Standards</th><th>Reporting</th></tr>
<tr><td></td><td>material with standard materials should be explored.
- 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.

Construction Stage
▪ All loose material (fly ash, quarry overburden) are covered to avoid fugitive emissions and spillage during transportation.
▪ In case of transporting slag as well as marble slurry, free board should be maintained and tailboard should be properly closed and sealed.
▪ While storing the alternate material, all precautionary measures to prevent leaching/spillage of the materials shall be undertaken.

Alternate Materials
<table>
<tr><th>Material</th><th>Source</th><th>Properties / Use</th></tr>
<tr><td>Blast Furnace Slag</td><td>iron and steel plants</td><td>▪ high bearing capacity
▪ good interlocking between slag and aggregate
▪ pavement material as a base or sub-base</td></tr>
<tr><td>Fly Ash</td><td>Burning of Coal - Thermal Power Plants</td><td>▪ embankment</td></tr>
<tr><td>Quarry Over-Burden</td><td>Quarries</td><td>▪ fill material for construction of embankment</td></tr>
<tr><td>Marble Slurry</td><td>Mining Industry</td><td>▪ Construction of road pavement layers
▪ Construction of embankments
▪ Back fill material for retaining walls</td></tr>
</table></td><td></td><td></td></tr>
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Key Issues Addressed	Provisions	Standards	Reporting
ECOP 5.0: Borrow Areas			

Key Issues Addressed	Provisions	Standards	Reporting
▪ Reduction of earthwork and redevelopment plan of borrow areas	**Project Planning and Design** ▪ Design measures for reduction in quantity of earth work ▪ The DPR shall contain - Guidelines for locating site of borrow areas - The arrangements to be worked out with the land owner/community for the site and - Sample designs for redevelopment of borrow areas.	▪ IRC: 10-1961	▪ Guidelines for Borrow Areas in DPR ▪ NoC / Agreement for land used as Borrow areas ▪ Progress Reports ▪ Environmental Compliance Report
	Pre-construction stage – Arrangements for Borrow areas ▪ contractor shall identify the borrow area locations ▪ Consultations - individual owners in case of private lands - Gram Panchayat in case of Gram Sabha lands ▪ Agreement for borrowing of land - Written No-objection certificate of the owner/cultivator - Extent of land required and duration of the agreement - Photograph of the site in original condition ▪ Details of site redevelopment after completion		
	Construction stage – Precautions ▪ **Water Sprinkling** on unpaved surfaces used for haulage ▪ Size and shape of borrow pits will be decided by the Engineer. ▪ Borrow pits situated less than 0.8 km (if unavoidable) from villages and settlements should not be dug for more than 30 cm after removing 15cm of topsoil and should be drained. ▪ The Contractor shall maintain erosion and drainage control in the vicinity of all borrow pits. ▪ In case the borrow pit is on agricultural land, the depth of borrow pits shall not exceed 45 cm including stripping of 15 cm top soil. ▪ Buffer zone 3 m wide or equal to the depth of excavation whichever is greater shall be maintained around borrow pits to avoid damage to adjacent lands. ▪ Borrow pit should be located not less than 15m from the toe of the river bank. ▪ In no case shall be borrow pit be within 5m from the Toe line of the		

Key Issues Addressed	Provisions	Standards	Reporting
	proposed embankment. - The reclamation of borrow area shall begin within one month after earthworks are complete.		
	Post Construction Stage - Redevelopment ▪ Reclamation in accordance with the redevelopment plan. ▪ Certificate of Completion of Reclamation is to be obtained from the land owner		

Key Issues Addressed	Provisions	Standards	Reporting
ECOP 6.0: Topsoil Salvage, Storage & Replacement			
▪ Topsoil removal from areas temporarily / permanently used for construction ▪ Storage of topsoil in stockpiles and protection from erosion ▪ Reuse of topsoil at areas to be re-vegetated and in agriculture lands	**Project preparation stage**, the following shall be estimated: ▪ Extent of loss of top soil due to widening and siting of construction activities ▪ Estimates of borrowing requirements and ▪ Area requirement for topsoil conservation.	▪ ECoP 6.0	▪ BoQ ▪ Environmental Compliance Report
	Pre-Construction Stage - Arrangements ▪ arrangements for temporary usage of land, borrowing of earth and materials ▪ Conservation / preservation of topsoil.		
	Construction Stage – stockpiles of Top Soil ▪ stripped topsoil should be carefully stockpiled at suitable accessible locations ▪ In hilly and desert areas, topsoil with humus shall be stripped and stockpiled		
	Precautions ▪ Stockpiles not to be surcharged or otherwise loaded ensuring that no compaction occurs. ▪ Divert runoff around stockpiles unavoidably located in drainage paths using a perimeter bank uphill. ▪ Stockpiles to be covered with gunny bags or tarpaulin immediately		
	Post Construction Stage ▪ The topsoil shall be re-laid on the area after taking the borrow earth to maintain fertility of the agricultural field. ▪ The stockpile material shall be spread evenly to a depth of 5-15 cm.		

	▪ Temporary arrangements made for preservation and erosion control to be removed after reusing the stockpile material.		

Key Issues Addressed	Provisions	Standards	Reporting
ECOP 7.0: Quarry Management			
▪ Redevelopment of quarries in case new quarries are setup for the project	**Project Planning and Design Phase** ▪ The PIU shall provide in the DPR, - A list of licensed quarries operating within the district and adjoining districts. - Lead from the various existing quarries and - Adequacy of materials for the project in these quarries.	▪ Mines and Minerals (Development & Regulation) Act, 1957 ▪ The Explosive Rules, 1983. ▪ ECoP-10.0, "Waste Management" ▪ The Explosive Rules, 1983 ▪ ECoP-14.0, "Public & Workers Health & Safety". ▪ Redevelopment Plan	▪ NoC from Concerned Authorities ▪ Progress Report ▪ Environmental Compliance Report
	▪ **New Quarries –** Operation and Redevelopment Plan - Photograph of the quarry site prior to commencement. - Quarry boundaries as well as location of the materials deposits, working equipment, stockpiling, access roads and final shape of the pit. - Drainage and erosion control measures at site. - Safety Measures during quarry operation. - Design for redevelopment of exhausted site.		
	Pre-Construction Stage ▪ Material may be procured from licensed existing quarries only		
	Construction Stage - Precautions ▪ **Site Development** - Adequate drainage system provided to prevent flooding of the excavated area - At the stockpiling locations, sediment barriers to be constructed to prevent erosion of excavated material. - Construction of offices, laboratory, workshop etc. shall be done in up-wind of the plant. - The access road to the plant shall be constructed taking into consideration location of units and slope ▪ **Operations** - Overburden shall be removed and disposed. - During excavation, slopes shall be flatter than 20 degrees to prevent		

Key Issues Addressed	Provisions	Standards	Reporting
	their sliding. - In case of blasting, the procedure and safety measures shall be taken. - All Safety measures related for workers' are taken - Ensure maintenance of crushers regularly.		
	Post Construction ▪ Restore all haul roads used in quarry for haulage to their original state. ▪ Rehabilitation of quarry site as per the approved plan		

Key Issues Addressed	Provisions	Standards	Reporting
ECOP 8.0: Water for Construction			
▪ Extraction of water in water scarce areas with consent of community ▪ Scheduling construction activities as per water availability	**Project Planning and Design Phase** The DPR shall contain the following information: ▪ Estimate of water requirement based on construction schedule ▪ Identification of potential sources of water for construction ▪ Arrangements to be worked out by the contractor with individual owners, when water is obtained from private sources ▪ Permits required, if any for opening up new sources, ▪ Whether scarcity of water would have any impact on schedule of construction.	▪ Indian Standard for Drinking Water IS: 10500, 1991	▪ DPR ▪ NoC from Concerned Authorities ▪ Environmental Compliance Report
	Pre-Construction Stage - Arrangement for extraction of water for construction from different sources ▪ Community water sources - Carry out consultations - Obtain written consent of Gram Panchayat. ▪ Private water sources - Written consent of all current registered owners of the parcel or parcels. ▪ New tube-wells - Obtain clearances required from the Ground Water Board as required. - Siting of such tube-wells shall be at a distance of not less than 20m from any septic tank/soak pit. ▪ Perennial sources, - Adhere to all administrative procedures pertaining to procurement of		

Key Issues Addressed	Provisions	Standards	Reporting
	water from such sources.		
	Construction Stage - Supervision ▪ The arrangements worked out with the PRI/individual land owners for water extraction is adhered to. ▪ Extraction of water is restricted to construction requirement and for domestic use of construction workers. ▪ Water requirement for curing of concrete shall be minimized by pooling of water over the concrete or by covering with wet gunny bags. ▪ Potable water used for drinking purposes of construction workers shall be as per the standards.		

Key Issues Addressed	Provisions	Standards	Reporting
ECOP 9.0: Slope Stability and Erosion Control			
▪ Slope stability along hill roads ▪ Protection of land on hill side from stability loss due to cutting ▪ Protection of lands on valley side from debris due to construction ▪ Adequacy of drainage for erosion control	**Project Planning and Design Stage** - DPR preparation phase ▪ Following investigations shall be carried out: - Topographical - Hydrological : Interruption and disruption due to existing drainage system - Geo-technical - Geological Investigation (particularly, slide prone areas of hill roads) - Aesthetic consideration. ▪ Slope stability analysis for retaining / breast walls of height > 5m ▪ slope stabilization measures are to be incorporated	▪ IRC: SP-48:1998 ▪ IRC: SP-42:1994 ▪ IS: 2720 (Parts: 4, 5, 8 & 40) ▪ IRC: SP: 20-2002 ▪ IRC: SP: 48-1998 ▪ IRC: SP 48-1998, Chapter 11	▪ DPR - Topographical Survey Report - Hydrological Study Report - Geo-technical - Geological Investigation Report - Slope stability analysis ▪ Progress Report
	Pre-Construction Stage ▪ Interceptor ditches are constructed in hill areas to protect the road bench and hillside slope from erosion ▪ PIU must ensure that the layout and siting of ditches is as per guideline on Road Drainage.		
	Construction Stage ▪ Provision of suitable measure or combination of measures for slope stabilization and erosion control - Vegetative cover		

Key Issues Addressed	Provisions	Standards	Reporting
	- Brush Barrier - Sausage Walls / Gabions - Bally Benching - Check dams - Silt Fencing - Erosion Control Matting		
	Post Construction Stage ▪ All the exposed slopes shall preferably be covered with vegetation using grasses brushes etc. ▪ In case of steep and bare slopes require stabilization, asphalt mulch treatment shall be given. ▪ Anchoring shall be carried out in case of rocks. ▪ Regular inspection of check dams and repositioning/replacement of dislodged or stolen stones. ▪ Repair and maintenance of eroded side drain inverts in order to arrest retrogation of levels in side drains.		

Key Issues Addressed	Provisions	Standards	Reporting
COP 10.0: Waste Management			
▪ Reuse of cut material in hill roads ▪ Safe disposal of wastes	**Project Planning and Design Stage** As part of DPR preparation, PIU shall carry out the following ▪ Finalize road design and alignment to minimize waste generation through balancing of cut and fill operations. ▪ Identify the type of wastes as well as sources of waste during construction and suggest options for possible reuse. ▪ Assess the quantity of cut material that can be used in construction of the parking spaces, passing places and other facilities. ▪ In case debris generated cannot be reused, these need to be disposed of properly. ▪ Examine the possibility of utilizing the hard stones and other cut materials for pavement construction, retaining or protection walls, lining of side and chute drains, stabilizing sub-base, head walls, wing walls parapets etc.	▪ ECoP- 6.0, "Topsoil Salvage, Storage and Replacement", ▪ ECoP-9.0, "Slope Stability and Erosion Control" and ▪ ECoP-12.0, "Drainage".	▪ DPR ▪ Progress Report ▪ NoC from Concerned Authorities

Key Issues Addressed	Provisions	Standards	Reporting
	▪ Provide guidelines to the contractor for locating waste disposal sites for non- toxic wastes ▪ Identify locations, in consultation with the community, to use the waste material for leveling of playgrounds of village schools. ▪ Utilizing the cut material for laying and compacting a capping layer on full width of formation ▪ Identify existing landfill sites if available for disposal of toxic materials. ▪ Incase no existing landfill sites are available, identification of landfill site as well as decommissioning of these site should be undertaken.		
	Pre-Construction Stage ▪ Identify the activities that have the potential to generate waste ▪ Work out measures for the same in the construction schedule. ▪ Identify the location for disposal in consultation with the community/Gram Sabha - for the disposal of excess cut and unsuitable (non - toxic) materials. ▪ Any toxic materials shall be disposed in existing landfill sites that comply with legislative requirements. ▪ Prior to disposal of wastes onto private/community land, obtain a NOC from the land owner/community. ▪ The Contractor shall educate his workforce on issues related to disposal of waste, location of disposal site		
	Construction Stage ▪ The contractor shall either re-use or dispose the waste generated during construction depending upon the nature of waste. ▪ Wastes that could not re-used shall be disposed off safely. The contractor shall adopt the following precautions while reusing wastes for construction: ▪ In case of bituminous wastes, dumping will be carried out over a 60 mm thick layer of rammed clay. ▪ In case of filling of low-lying areas with wastes, it needs to be ensured that the level matches with the surrounding areas. ▪ The heaps of waste materials, shall be properly benched and sloped to ensure that the material does not spread over the adjoining areas ▪ Proper toe walls may be constructed to contain the waste to remain within		

Key Issues Addressed	Provisions	Standards	Reporting
	the identified site.		
	Post-Construction Stage ▪ After decommissioning of construction sites, the Contractor shall hand over the site after clearing the site of all debris/wastes to the PIU. ▪ The site shall be inspected by the PIU. ▪ In case of disposal of wastes on private land, certificate of Completion of Reclamation is to be obtained. ▪ The same is to be submitted to the PIU before final payment is claimed.		

Key Issues Addressed	Provisions	Standards	Reporting
ECOP 11.0: Water Bodies			
▪ Avoidance from cutting due to alignment ▪ Protection of embankment slopes in case of alignment on embankments ▪ Rehabilitation of water body	**Project Planning and Design Stage** ▪ Avoid the alignments passing adjacent to water bodies. Where possible, it should be realigned away from the water body ▪ Adequate drainage arrangements have to be provided. ▪ Stream bank characteristics and hydrology of the area are to be studied before finalizing the alignment ▪ If it is not possible to shift the alignment and the road is located on the banks of a drinking water pond, the camber shall be away from water body. ▪ The embankment slopes shall be protected from erosion. ▪ The decision on shifting the alignment or provision of erosion control measures on embankments shall be taken by the PIU. ▪ Complete filling of water body with soil shall not be carried out. Following measures should be adopted: - If storage area is lost, the water body is to be deepened to regain an equivalent volume. Deepening is to be done when the pond is dry. - Locations of erosion protection works and silt fencing should be provided. - Location of side drains before entering the water body - Work program should be prepared in relation to the anticipated	▪ IRC: SP -20:2002	▪ Progress Report ▪ Environmental Compliance Report

Key Issues Addressed	Provisions	Standards	Reporting
	season of flooding/overflowing - Reconstruction and stabilization of embankment. - Drawings indicating the landscape details along with species of trees / bushes to be planted in the surrounding environs - Concurrence of the community has to be sought on the Rehabilitation Plan. - Cost estimates to mitigate impacts on water bodies through the rehabilitation plan shall be incorporated in DPR.		
	Pre-Construction Stage ▪ When there is interruption to regular activities of villagers near water body due to construction or rehabilitation work, following are the Contractor's responsibilities: - Restriction on use of water if any should be intimated to the community in advance. - Alternate access to the water body is to be provided in case there is interruption to use of exiting access. - If the water body affected is a drinking water source for a habitation, alternate sources of water are to be provided to the users during the period for which its use is affected. **Working near Water Bodies – Precautions** ▪ Avoid locating roads on pond embankment ▪ Collect road runoff before entering the water bodies ▪ Runoff to be filtered of sediments before letting into water bodies ▪ Avoid debris disposal into water bodies ▪ Avoid disposal of oil/grease/other contaminants into water bodies		
	Construction Stage - Precautions ▪ The runoff from construction site entering the water body is free from sediments. ▪ Silt/sediment should be collected and stockpiled for possible reuse as surfacing of slopes where they have to be re-vegetated. ▪ Cutting of embankment reduces the water retention capacity and		

Key Issues Addressed	Provisions	Standards	Reporting
	also weakens it, hence: - The decrease in water retention should not lead to flooding of the construction site and surroundings. - Any perceived risks of embankment failure and consequent loss/damage to the property shall be assessed and necessary precautions undertaken. ▪ Failure to do so and consequences arising out of embankment failure shall be the responsibility of the contractor. - The PIU shall monitor regularly whether safe construction practices near water bodies are being followed. ▪ Alternate drain inlets and outlets shall be provided in the event of closure of existing drainage channels. ▪ Movement of machinery and workforce shall be restricted around the water body. ▪ No waste from construction camps or sites shall be disposed into it.		

Key Issues Addressed	Provisions	Standards	Reporting
ECOP 12.0: Drainage			
▪ Conduct of hydrological investigations during project preparation ▪ Provision of longitudinal and cross drainage as per requirements ▪ Proper location of drainage outfall	**Project Planning and Design** – Preparation of DPR ▪ prepare a drainage plan especially when finalizing roads in hilly regions ▪ The alignment shall be routed such that minimum drainage crossings are encountered. ▪ All drains crossing the alignment shall be identified on site and marked on map during transect walk ▪ Consultations with the community shall provide information on the HFL in the area ▪ In areas of high and medium intensity rainfall, flood prone areas and hilly areas design of CD structures shall be prepared to avoid scouring on the downstream side and afflux on the upstream side	▪ IRC: SP-20:2002 ▪ IRC: SP-13: 1973 "Guidelines for the Design of Small Bridges & Culverts" ▪ IRC: SP-33:1989, "Guidelines on Supplemental Measures for	▪ DPR ▪ BoQ ▪ Progress Reports

Key Issues Addressed	Provisions	Standards	Reporting
	▪ Design of cross-drainage structures shall be based on the inputs from the hydrological studies	Design ▪ IRC SP 42:1992, Guidelines on Road Drainage ▪ ECoP-9.0, "Slope stability & erosion control"	
	Design of C-D structure ▪ Normal alignment of the road is followed even if it results in a skew construction of culverts and stream bank protection are incorporated ▪ Afflux generated is limited to 45 cm in plains with flat land slopes as it may cause flooding of upstream areas ▪ The fish friendly – fish passage is not interrupted either in upstream or downstream direction ▪ Adequate openings are provided along with adequate scour protection measures for stream bank, roadway fill as head walls, wing walls and aprons. ▪ Reinforced road bed (of concrete or rock) for protection against overflow in case of low water crossing ▪ The design of C-D structure should have steps leading to the bed of the drainage channel, for regular inspection of the sub-structure.		
	Longitudinal Drains ▪ To be designed to drain runoff from highest anticipated rainfall as per hydrological analysis in high rainfall areas and hill areas ▪ Outfall of the roadside drains shall be into the nearby stream or culvert or existing depressions in the ground. ▪ outfall should be at such a level that there would be no backflow ▪ Wherein pond/low lying areas exist in the vicinity, the flow may be diverted into them for possible ground water recharge. ▪ Drains shall be lined shall be lined to protect from runoff of high velocities. ▪ Suitable cross-drainage culverts or scuppers, at least three per kilometer, shall be provided to direct the discharge to the valley side.		
	Pre-Construction Stage – Arrangements ▪ The downstream as well as upstream user shall be informed one month in advance ▪ The contractor shall schedule the activities based on the nature of flow in the stream.		

Key Issues Addressed	Provisions	Standards	Reporting
	▪ The contractor should inform the concerned departments about the scheduling of work. ▪ Erosion and sediment control devices if site conditions so warrant, are to be installed prior to the start of the civil works. ▪ Interceptor drains to be dug prior to slope cutting to avoid high runoff from slopes on hill roads ▪ Runoff from temporary drains and interceptor drains to be directed into natural drainage system in hill roads ▪ In case of up-gradation of the existing CD Structures, temporary route / traffic control shall be made for the safe passage of the traffic. ▪ All the safety/warning signs are to be installed before start of construction		
	Construction Phase - Precautions ▪ Proper compaction at the bridge approach and at the junction of bridge span. ▪ In hill areas sub-surface drains, if required, shall be provided immediately after slope-cutting and sub-grade formation. ▪ Velocity of runoff to be controlled to avoid formation of rills/gullies ▪ Sediment control measures shall be provided. In such case Silt fencing / brush barrier shall be provided across the stream that carries sediment. ▪ Safety devices and flood warning signs to be erected while working over streams and canals.		
	Post Construction ▪ Inspection and cleaning of drain to remove any debris or vegetative growth that may interrupt the flow. ▪ HFL should be marked on all drainage structures ▪ Temporary structures constructed during construction shall be removed. ▪ The piers and abutments should be examined for excessive scour and make good the same. ▪ In case of causeway, following aspects shall be taken into consideration:		

Key Issues Addressed	Provisions	Standards	Reporting
	- Dislocation of stones in stone set pavements, scouring of filler material due to eddy currents. - Floating debris block the vents. In case of large amount of floating material, debris arrestor shall be provided in upstream side. - Damage to guide stones, information boards shall be inspected and replaced accordingly. ▪ Schedule of inspection shall be drawn up to check: - Settlement of piers/abutments & settlement of approach slabs have to be checked - Cracks in C-D structures or RCC slabs - Drainage from shoulders to be ensured - Ditches & drains to be kept clean of debris or vegetation growth - Repairs to parapet of culverts whenever required are to be undertaken		

Key Issues Addressed	Provisions	Standards	Reporting
ECOP 13.0: Construction Plants and Equipment Management			
▪ Compliance of construction plants and equipment with emission standards of Central Pollution Control Board ▪ Maintenance of machinery and equipment to avoid pollution	**Project Planning and Design Stage** ▪ Selection criteria for setting up a plant area and parking lot for equipment and vehicles shall be done as per siting criteria for construction camp **Pre-Construction Stage** ▪ Contractor must educate the workers to undertake safety precaution while working at the plant / site as well as around heavy equipment. ▪ Before setting up the crusher and hot-mix plant the "Consents" from the SPCB shall be obtained. ▪ All machinery, equipment, and vehicles shall comply with the existing CPCB noise and emission norms, as applicable. ▪ The Contractor shall submit a copy of the approvals and PUC Certificates, as applicable to the PIU before the start of relevant work.	▪ ECoP 3.0 ▪ Clause 14.3.2, Section 14.3, ECoP-14.0, "Public and Worker's Health & Safety" ▪ Air (Prevention and Control of Pollution) Act, 1981, Chapter IV, Section 21	▪ Progress Report ▪ Environmental Compliance Report

Key Issues Addressed	Provisions	Standards	Reporting
	Construction ▪ Undertake measures to minimize - dust generation, emissions, noise, oil spills, residual waste and accidents at the plant site. ▪ minimize dust generation and frequent water sprinkling ▪ Cautionary and informatory sign shall be provided at all locations specifying the type of operation in progress. ▪ Minimum generation of dust and waste while unloading material from trucks. ▪ The equipment required to move forward and backward, shall be equipped with alarm for backward movement. ▪ PIU shall carry out periodic inspections to ensure that all the pollution control systems installed and comply with emission and noise norms.		
	Post Construction Stage ▪ In case any haul road is damaged while transporting construction material or wastes, the contractor shall restore the road to its original condition. ▪ De-commissioning of plant shall be done in environmentally sound fashion and the area is restored to its original state.		

Key Issues Addressed	Provisions	Standards	Reporting
ECOP 14.0: Public and Worker's Health & Safety			
▪ Provision of Personal Protective Equipment to workers ▪ Provision of basic necessities to workers ▪ Public safety while travel along	**Project Planning and Design Stage** To address the safety concerns to road user during operational phase, the DPR shall contain the following: ▪ Selection and location of regulatory as well as informatory signs depending upon the geometry of the road. ▪ In case of hill roads, provision of passing places and parapet wall shall be included in road design.	▪ IRC: 67-2001 ▪ The Explosives Rules, 1983 ▪ IRC: 67-2001 ▪ ECoP-3.0, "Construction Camp" ▪ ECoP-10.0, "Waste	▪ DPR ▪ Progress Report ▪ Environmental Compliance Report
	Pre-Construction Stage **Disseminate information to the community**: ▪ Location of construction camps, borrow areas and quarry areas.		

Key Issues Addressed	Provisions	Standards	Reporting
construction sites ▪ Public safety during operation of the road	▪ Extent of work ▪ Time of construction ▪ Diversions, if any ▪ Involvement of local laborers in the road construction ▪ Health issues - water stagnation, exposure to dust, communicable diseases ▪ Location and use of first aid kits ▪ Location, names, and phone numbers to the nearest clinic/ hospital /doctor **EHS Training to Workers and Staff** on: ▪ Personal safety measures and location of safety devices. ▪ Interaction with the host community ▪ Protection of environment with respect to: - Trampling of vegetation and cutting of trees for cooking - Restriction of activities in forest areas, including hunting - Water bodies protection - Storage and handling of materials - Disposal of construction waste	Management	
	Construction Stage **Safety Measures at site** ▪ Personal safety equipment (such as footwear, gloves and eye protection devices, helmets etc.) for the workers. ▪ Additional provisions need to be undertaken for safety at site: - Adequate lighting arrangement - Adequate drainage system to avoid any stagnation of water - Lined surface with slope 1:40 (V: H) and provision of lined pit at the bottom, at the storage and handling area of bitumen and oil, as well as at the location of generator (grease trap). - Facilities for administering first aid **Public Safety** ▪ The Contractor shall schedule the construction activities taking into consideration factors such as: - Sowing of crops		

Key Issues Addressed	Provisions	Standards	Reporting
	- Harvesting - Local hindrances such as festivals etc. - Availability of labour during particular periods ▪ All the cautionary signs and traffic control devices (such as barricades, etc.) shall be placed throughout the construction. ▪ Following case specific measures need to be followed during the progress of the activity: - In case of blasting, provisions under the Act to be followed. - There shall not be any unauthorized parking as well as storage of material, adjacent to road. - Approved methods to be used to prevent breeding of mosquitoes, at all the water logging areas.		
▪	**Post Construction Stage** ▪ Inspection and maintenance of installed regulatory and informatory signs. ▪ Ensure that the location of signage does not obstruct the visibility ▪ In case of hill roads, maintenance of parapet wall as well as of overtaking zones. ▪ construction site shall be cleaned of all debris, scrap materials and machinery	▪	

Key Issues Addressed	Provisions	Standards	Reporting
ECOP 15.0: Cultural Properties			
▪ Avoidance of impacts due to project ▪ Protection of precincts from impacts due to construction ▪ Relocation in case	**Project Planning and Design Stage** Measures for mitigation of impacts on cultural properties ▪ Identification of locally significant cultural properties ▪ Assessment of likely impacts on each cultural property due to project implementation ▪ detailed design of the relocated structure and its site plan along with the necessary BoQ are to be presented DPR ▪ relocation shall be carried out before construction activities **Construction Stage**	▪ RFCTLARR 2013	▪ DPR ▪ RAP ▪ Progress Report ▪ NoC from Concerned Authorities ▪ Environmental

Key Issues Addressed	Provisions	Standards	Reporting
impacts are unavoidable	**Major impacts** are mainly due to ▪ movement of construction machinery ▪ Construction activity near the cultural property. **Precautionary measures**: ▪ Provision of temporary barricades to isolate the the cultural property. ▪ Restrict movement of heavy machinery near the structure. ▪ Avoid disposal or tipping of earth near the structure. ▪ Access to properties shall be kept clear from dirt and grit. **During earth excavation**, if any cultural property is unearthed: ▪ The same shall be intimated to the Engineer. ▪ Work shall be suspended until further orders from PIU. ▪ The State Archeological Department shall be intimated ▪ Actions as appropriate shall be intimated to the Contractor.		Compliance Report
	Post Construction ▪ Clearance of the precincts of cultural properties. ▪ In case access to any of the cultural properties is severed during construction, it needs to be restored at the earliest. ▪ PIU to certify relocated structure - quality and restoration of access.		
Key Issues Addressed	**Provisions**	**Standards**	**Reporting**
ECOP 16.0: Tree Plantation			
▪ Avoidance of impact on trees ▪ Plantation of trees on roadside	**Project Planning and Design Stage**: Provision of Plantation in DPR ▪ Tree felling, if unavoidable, shall be done only after obtaining requisite permission from the State Forest Department ▪ Compensatory plantation of at least three saplings for every tree cut is to be done. ▪ Plantation may be in the form of avenue trees or cluster plantation ▪ plantation is carried out only in areas where water can be made available during dry seasons ▪ species shall be identified in consultation with officials of forest department ▪ Consultations shall include the role of the PRIs in maintaining and managing the trees	▪ ECoP-1.0, "Project Preparation" ▪ IRC: SP: 21-1979 ▪ IRC: 66-1976	▪ Plantation Plan in DPR

Key Issues Addressed	Provisions	Standards	Reporting
	▪ A MoU shall be signed between the Gram Panchayat, PIU and Forest Department towards maintenance of the trees ▪ Development of cluster plantations on Gram Sabha lands ▪ In arid areas, shelter belt plantation shall be proposed as wind breaks ▪ nurseries shall be developed as per landscape plan and subsequent upkeep		
	Construction Stage ▪ Planting of saplings from the nurseries and subsequent maintenance may be carried out by the PRI, with its own funds. ▪ Planting shall be undertaken immediately after rainy season or initial weeks of spring. ▪ The activities to be taken up by the PRI as part of maintenance shall include - cutting/lopping branches up to a height of 2.5m above ground level to ensure visibility - Removal of dead wood from the roadway - Weed cutting from shoulders and keeping the shoulders free from any growth of vegetation. - Ensuring a healthy survival rate by planting replacement saplings in cases where the survival rate is less than 80%. - Watering of trees during the initial period of two to three years ▪ Final payment, if any, shall be on the basis of the number of trees surviving at the end of three years of initial plantation.		

Key Issues Addressed	Provisions	Standards	Reporting
ECOP 17.0: Managing Induced Development			
▪ Restricting ribbon development at junctions and bus stops ▪ Earmarking areas for commercial activities	▪ Project Planning and Design Stage ▪ PIU may identify areas that are susceptible to induced development. ▪ These locations will be finalized in consultation with the Gram Sabha. ▪ Educating the community on the safety issues due to ribbon development. **Operation Stage**	▪ IRC: SP: 20-2002	▪ Consultation Document ▪ Progress Report

Key Issues Addressed	Provisions	Standards	Reporting
and other amenities	**Development of Residential Sites:** ▪ The Gram Sabha/ village council shall encourage local development through education to the communities to construct property with setback from the road rather than on the road. **Development of Repair Shops, Petty Shops at Junctions:** ▪ A road junction, especially where the village road meets district road is a site where repair shops, petty shops tend to come up. ▪ Gram Panchayat/ village council or other regulatory authority shall ensure that no such shops or structures come up within the line of sight. **Community assets:** following preventive measures must be taken up ▪ Area around bus stops has potential to induce growth of kiosks/petty shops. ▪ Such growth needs to be encouraged away from the road. ▪ Community source of water-hand pumps are generally sited on shoulders. - Gram Sabha shall identify lands outside the RoW and any suitable gram Sabha land accessible from the road ▪ planning and developing small markets / fairs - Restricting the activity to one side of the road - Provide parking areas - Providing a good visibility on the approaches. - Sites to be located 150m away from access or egress pointshould be preferably planned lateral to the road than in parallel direction		

Key Issues Addressed	Provisions	Standards	Reporting
ECOP 18.0: Environmental Monitoring and Audit			
▪ Monitoring of environmental and social parameters ▪ during project planning, construction and	PIU to assess whether ▪ construction activities comply with environmental standards and regulatory requirements, ▪ by monitoring and conducting an Environmental Audit. **Monitoring Procedure** ▪ PIU/Technical Examiner shall be responsible for conduct of the	▪	▪

Key Issues Addressed	Provisions	Standards	Reporting
implementation	periodical environmental monitoring ▪ Environmental audit shall be as per the Checklists 1 and 2 provided in the ECoP.		

Key Issues Addressed	Provisions	Standards	Reporting
ECOP 19.0: Natural Habitats			
▪ Identification of natural habitats ▪ Management measures for roads passing through natural habitats ▪ Structure of management plan ▪ Provisions to address biodiversity issues, in addition to provisions provided for protecting Natural Habitats as per ECoP – 19.0	▪ A precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development has been adopted for the project. **Project Planning and Design Stage** ▪ Detailed inventory of ecological features along the proposed road shall be prepared. ▪ Nature and type of impact on natural habitats shall be identified. ▪ Magnitude of the impact to the extent feasible on the ecological features shall also be assessed. ▪ Impacts identified on the natural habitats shall be minimized - Constricting the road width to 6m to minimize the extent of diversion of forest land and cutting of trees - Traffic calming devices shall be introduced. - Signage (viz. speed limit, animal crossing, switch of headlight etc.) shall be provided. **Pre-Construction Stage** ▪ No Construction Camps, Stockyards, Concrete Batching or Hot Mix Plants shall be located within the natural habitat or within 500m from its boundary. ▪ Contractor in consultation with forest ranger / concerned authority shall prepare a schedule of construction with in the natural habitat. ▪ Due consideration shall be given to the time of migration, time of crossing, breeding habits and any other special phenomena taking place in the area for the concerned flora or fauna. **Construction Stage** ▪ Procurement of any kind of construction material from within the	▪ IRC: 67-2001	▪ Biodiversity Management Plan

Key Issues Addressed	Provisions	Standards	Reporting
	natural habitat shall be strictly prohibited ▪ No water resources within the natural habitat shall be tapped for road construction. ▪ Use of mechanized equipment shall be kept to minimum within the natural habitat. ▪ No parking of vehicles, machine and equipment within the natural habitat. ▪ Disposal of construction waste within the natural habitat shall be strictly prohibited		
	Post-Construction Stage ▪ The road passing through the natural habitat shall be declared as a silence zone. ▪ Compensatory tree plantation within the available Right of Way shall be done. ▪ The PIU must ensure maintenance of drainage structure.		

Key Issues Addressed	Provisions	Standards	Reporting
ECOP 20.0: Consultation Framework			
▪ Aspects for consultation ▪ Stage wise consultations ▪ Consultation schedule and responsibilities	▪ Information dissemination about proposed rural roads ▪ During Project Preparation for - Dissemination of project information - For finalizing alignment - For disseminating information on incorporation/non-incorporation of environmental concerns into project design ▪ During Implementation for - Seeking consent on temporary use of land for setting up construction facilities, borrowing, traffic diversions and disposal of wastes - Seeking consent on extraction of water for construction, relocation of common property resources and cultural properties - Encouraging tree plantation and - Avoiding / minimizing induced development	▪	▪ Consultation Document ▪ Progress Report

ANNEXURE 9: Photographs

A. Field Survey

Focus Group Discussion
PH road to lovaguda, Seethampeta Mandal Srikaulam District

Focus Group Discussion with Vendors

Minumuluru to sangodi Road, Paderu Mandal, Vishakapatnam

Focus Group Discussion
NH 14 to Chinnavedi, Amalapuram, East Godavari District

Focus Group Discussion with women labourers
Dosakayalapadu to Thotavenganpallem Road, Thalluru Mandal, Prakasam District

Household Survey
Lampaka lova road to T rayavaram, Prathipadu Mandal, East Godavari

Household Survey
Peddamandayam-Chinnamandayam to C.Gollapalli, Peddamandayam Mandal, Chittoor District

Damaged single connectivity road in KVBpuram Mandal, Chittoor District

Village road passing through a stream in Badvel Mandal, Kadapa District

Lampaka lova road to T rayavaram, Prathipadu Mandal, East Godavari

PH road to lovaguda, Seethampeta Mandal, Srikakulam

B. Public Consultation Meeting

C. List of Public Consultant Participants

ZONE-3
GUN-PRAKAS-Nellore

Government of Andhra Pradesh
Panchayat Raj Engineering Department
Andhra Pradesh Rural Roads Connectivity Project

8 members from Zone-3

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ZONE-3
(Guntur, Prakasam, Nellore)

Government of Andhra Pradesh
Panchayat Raj Engineering Department
Andhra Pradesh Rural Roads Connectivity Project

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	———				
	3 members in Zone-3				

ZONE - 1
VIJA - VIZA - SVIKS

Government of Andhra Pradesh
Panchayat Raj Engineering Department
Andhra Pradesh Rural Roads Connectivity Project

1 members from zone-1

DISCLOSURE WORKSHOP

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Total 45 staff members from All zones.

ZONE - 2
EAST - WEST - Krishna.

Government of Andhra Pradesh
Panchayat Raj Engineering Department
Andhra Pradesh Rural Roads Connectivity Project

28 ~~15~~ members in zone-2

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-	G. SREENIVASULU	AEE/PIUSSR/Mac	AEE	9542275271	
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	D. R. Mohan	AE/PIU/Man	AE	9441236129	D. R. Mohan
12	K.V.V. Satyanarayana Murty	DEE/PIU/Amalapuram	DEE	9885746270	
13	V. N. Veeraraghavulu	DEE/PIU/Akiveedu	DEE	9985845981	
14	S. PRASAD	EE/PIU/Eluru	EE	7675971856	S. Prasad
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ZONE-V

Government of Andhra Pradesh
Panchayat Raj Engineering Department
Andhra Pradesh Rural Roads Connectivity Project

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19	V. VIJAYA KUMAR	PRED	DEE/PIU/PIC	8440833592	
20	N. Nageswara Rao	PIU, PRED	AEE/PIU/Kalligudi	7702211661	
21	M. Srinivas	PIU PRED	DEE/PIU/Mavva	9502385610	
22	GVSN Swamy Yadav	PIU, PRED	AEE/PIU/PIC	9908248858	
23	B Raja Rao	PRED PIU VJA	DEE	9493852399	
24	N. Narayana Reddy	~~DEE PIU RJY~~ PRED	DEE PIU RJY	9908813777	
25	K. Ranga Rao	PIU, PRED	Asst. Engineer	9440832514	
26	P. Rama Chandra	PIU, PRED	AEE	9866224863	
27	Md. Sadik Pasha	PIU SO, PRED (WGDT)	AEE	9866836391	
28	U. Naveen	PIU PRED (WGDT)	~~AEE~~	8861897131	

Total 54 MS Public Representatives from zone-2 and zone-3

ZONE-2
(East, West, Krishna)

Government of Andhra Pradesh
Panchayat Raj Engineering Department
Andhra Pradesh Rural Roads Connectivity Project

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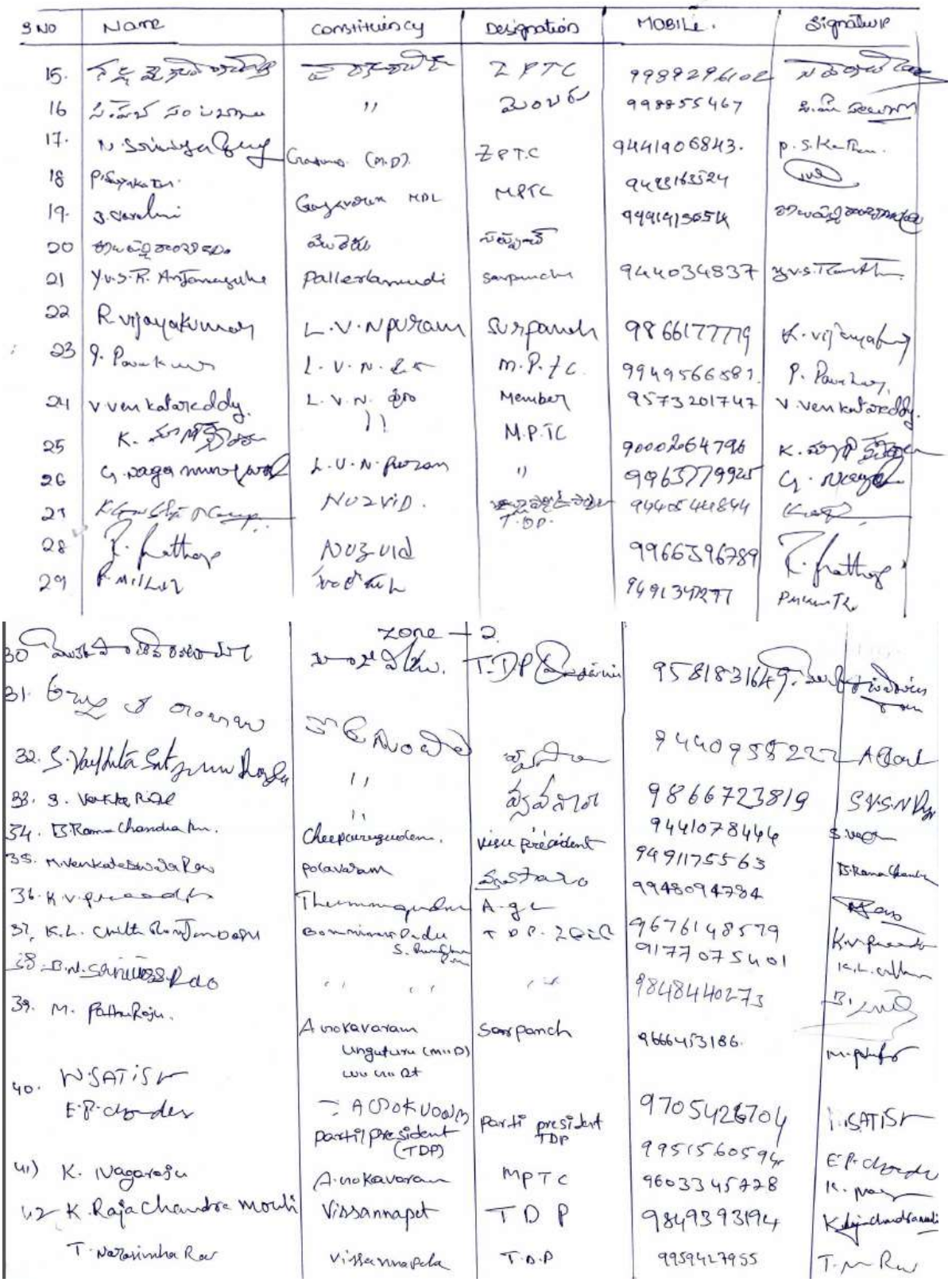

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19.		Gajuwaka MDL	MPTC	9491413554	
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22	R.vijayakumar	L.V.Npuram	Surpanch	9866177779	
23			M.P.T.C	9949566581	
24	V venkatareddy.	L.V.N. పురం	Member	9573201747	
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ZONE-2

Government of Andhra Pradesh
Panchayat Raj Engineering Department
Andhra Pradesh Rural Roads Connectivity Project

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45 members in Zone – 2.					
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ZONE-4

Government of Andhra Pradesh
Panchayat Raj Engineering Department
Andhra Pradesh Rural Roads Connectivity Project

8 – members from Zone-4

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