

ENVIRONMENTAL & SOCIAL MANAGEMENT FRAMEWORK (FINAL DRAFT)

Meghalaya Logistics and Connectivity Improvement Project

May 30th, 2026

Meghalaya
Infrastructure
Development
Finance
Corporation

This ESMF applies to Component 1, 3.1 and 4.

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List of Abbreviations

ASCI –Administrative Staff College of India
CEE –Centre for Environmental Education
CERC –Contingent Emergency Response Component
CPF – Country Partnership Framework
CSC – Construction Supervision Consultant
DOA – Department of Agriculture & Farmer’s Welfare
DFO – Divisional Forest Officer
DPIU –Divisional Project Implementation Unit
E&S Cell – Environmental & Social Cell
ERP – Emergency Response Plan
ESCP – The project Environmental and Social Commitment Plan
ESF – World Bank Environmental and Social Framework
ESIA –Environmental and Social Impact Assessment
ESIMS – Environmental and Social Information Management System
ESIRT – Environmental and Social Incident Response Toolkit
ESMF –Environmental and Social Management Framework
ESMP –Environmental and Social Management Plan
ESRC –Environmental and Social Risk Classification
ESS – Environmental and Social Standards
FPIC – Free Prior Informed Consent
GAP –Gender Action Plan
GMS –Grievance Management System
GRM –Grievance Redress Mechanism
GRS – Grievance Redress Services
ICR –Implementation Completion Report
IIMA –Indian Institute of Management Ahmedabad
IP – Indigenous Peoples
ITNDP –Integrated Transport Network Development Plan
MBMA –Meghalaya Basin Management Agency
MDF – Moderately Dense Forest
MDR – Major District Roads
MIDFC –Meghalaya Infrastructure Development and Finance Corporation

MIG –Meghalaya Institute of Governance
MITP –Meghalaya Integrated Transport Project
MLCIP –Meghalaya Logistics and Connectivity Improvement Project
MPWD –Meghalaya Public Works Department
NEERI –National Environmental Engineering Research Institute
ODR – Other District Roads
OF – Open Forest
OHS – Occupational Health and Safety
PA – Protected Area
PIU –Project Implementation Unit
PMC –Project Management Consultant
PMU –Project Management Unit
POM –Project Operations Manual
PTCS – Pla Tangka Cooperative Society
RPF – Resettlement Policy Framework
SEA/SH – Sexual Exploitation & Abuse / Sexual Harassment
SH – State Highway
TL – Team Leader
TMP – Traffic Management Plan
TOR – Terms of Reference
WB – World Bank
WII –Wildlife Institute of India
WPR – Working Participation Rates

EXECUTIVE SUMMARY

This Executive Summary sets out the purpose, scope, methodology, implementation arrangements, monitoring & reporting, capacity development and training requirements described in the Environmental and Social Management Framework (ESMF) for the Meghalaya Logistics & Connectivity Improvement Project (MLCIP). ESMF Component 1 is limited to Roads and bridges which covers upgradation, rehabilitation and maintenance of roads and bridges (component 1), institutional strengthening and capacity building (component 3.1) and CERC (component 4).

The ESMF Component 2 for the Agro-logistics will be prepared following the technical studies after project becomes effective. The technical study will inform the broad parameters for investments required for the federated group of farmers to process the produce and market the same. The catchment area to select the produce will be determined based on the technical study to finalize the geographical location for the investments, which is a pre-requisite to comply with the requirements of Bank's ESF including FPIC.

Purpose and Scope of the ESMF

ESMF Component 1 presently provides a uniform, robust method to screen, assess, consult, disclose, mitigate, and monitor environmental and social (E&S) risks for roads and bridges and road safety measures covered under MLCIP investments. It specifies processes, methodology, documentation, and approvals to ensure E&S due diligence is completed prior to mobilization of the contractors. These processes will also support tracking of implementation of E&S mitigation plans. Instruments foreseen by the ESMF, Resettlement Policy Framework (RPF), and Indigenous People Planning Framework (IPPF) include, Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plan (ESMP) and Contractor ESMP (C-ESMP), Resettlement Action Plan (RAP), Labor Management Procedures (LMP), Indigenous Peoples Development Plan (IPDP), Stakeholder Engagement Plan (SEP), Biodiversity Management measures, Cultural Heritage procedures, Traffic/Road Safety plans, and emergency preparedness and Response plans. The framework will be treated as a living document and shall be reviewed at least annually by the PMU (ESMU), and updated as required based on implementation experience, monitoring and audit findings, emerging environmental and social risks, and any regulatory changes. Any revisions to the ESMF shall be subject to prior review and clearance by the World Bank and shall be disclosed in accordance with applicable requirements, without diluting safeguard standards.

Project Context and Development Objectives

MLCIP supports resilient, efficient, and safe logistics and connectivity in Meghalaya's context while strengthening institutions. The development results include improved road safety outcomes, reduced travel time and transport costs on project corridors, and better movement of Agri-produce through logistics improvements. The project's approach is corridor-based with an emphasis on climate-resilient engineering, slope stability and drainage, and inclusion of vulnerable users. The E&S screening of sub-projects will determine the risk classification and inform the scope and depth of the ESIA, ESMP, and other relevant instruments based on the nature, scale, sensitivity, and implementation context of the identified risks and impacts.

Project Components (Overview)

Component 1 focuses on climate-resilient roads and Road Safety. The project will rehabilitate and upgrade approximately 300 km of selected state highways, MDRs, six bridges, integrating climate resilient features and road safety measures.

Component 2: Developing the Regional and Rural Logistics Ecosystem (*The ESMF for the agro-logistics will be prepared following the technical studies after project becomes effective*)

Component 3: Institutional Strengthening and Capacity Building for Road Sector Reforms and for Efficient and Sustainable Agri-logistics and Market Access. - strengthens institutions through data systems, asset management practices, capacity building for implementing agencies and contractors, and the standardized supervision and audit regime.

Component 4: Entails the Contingent Emergency Response Component (CERC) to enable rapid restructuring for disaster response in line with Bank procedures.

ESMF Component 1 provides the environmental and social management framework for roads and bridges under Component 1, institutional strengthening under Component 3.1 and CERC under Component 4 of the MLCIP.

Risk and Mitigation Strategy

The ESMF details out the processes to manage the risks through: (i) early, geo-enabled screening and alternative analysis to avoid and minimize adverse impacts on resources and people (ii) preparation and implementation of site-specific ESIAs/ESMPs proportionate to risk; (iii) enforceable C-ESMP obligations with method statements for camps, borrow areas, waste, traffic, and emergency response; (iv) undertake structured stakeholder engagement to comply with the norms for FPIC; (v) preparation and implementation of plans for loss of private, community and common property, bio-diversity, cultural assets, etc and (vi) routine supervision, third-party audits, and corrective action tracking. No-go rules apply to certain critical habitats or cultural heritage sensitivities unless specific clearances and mitigation conditions are satisfied.

FPIC due diligence has been undertaken for priority sub-projects using structured assessment templates, and the findings are documented in the respective Indigenous Peoples Development Plans (IPDP) of the sub projects.

Additionally, the ESMF maps responsibilities, submission formats, and sequencing so that statutory and ESF requirements are complied with and disclosure requirements followed.

Policy and Legal Framework

ESMF Component 1 follows the World Bank Environmental and Social Framework (ESF) as well as the national and state laws and regulations of Meghalaya. MLCIP operates under India's Sixth Schedule Area (Article 244(2)) granting Autonomous District Councils powers over land and forests, with customary land tenure through traditional institutions. The environmental legislation (EIA Notification 2006, Forest Conservation Act 1980, Wildlife Protection Act 1972, Water/Air Pollution Acts), social legislation (Land Acquisition Act 2013, PESA 1996, Forest Rights Act 2006, SC/ST Prevention of Atrocities Act 1989), and labor framework (four Labour Codes 2025) are relevant and directly applicable to the environmental and social risks and impacts of the project activities.

ESS1: Assessment and Management of Environmental and Social Risks and Impacts

ESS1 establishes the framework for identifying, assessing, and managing environmental and social risks throughout the project lifecycle. MLCIP shall undertake proportionate environmental and social assessments of sub-projects, covering physical environment (air, water, soil, noise), biological environment (flora, fauna, habitats), and socio-economic conditions (livelihoods, vulnerable groups, Indigenous Peoples). The Project will apply the mitigation hierarchy to avoid impacts through design alternatives, minimize unavoidable impacts, mitigate impacts through corrective measures, and address residual impacts through biodiversity offsets or livelihood restoration measures only when technically and financially feasible and consistent with ESS requirements. Environmental and Social Management Plans (ESMPs) will guide the preparation of site specific ESMPs, implementation and supervision. Monitoring

will be carried out by qualified competent professionals, with third-party verification and progress reported to the World Bank.

ESS2: Labour and Working Conditions

ESS2 ensures fair treatment and safe working conditions for all project workers: direct workers (PMU/PIU staff), contracted workers (civil works contractors), primary supply workers, and community workers. The Project shall implement Labor Management Procedures (LMP) consistent with ESS2 covering occupational health and safety, terms of employment meeting national labor law, prohibition of child labor and forced labor, SEA/SH prevention as per World Bank Good Practice Note, and a dedicated worker grievance mechanism will be established. Contractors will be contractually required to comply with ESS2, four labor codes and ESMP provisions, monitored by PIU specialists and verified through third-party monitoring, as required.

ESS3: Resource Efficiency and Pollution Prevention and Management

ESS3 requires resource efficiency and pollution prevention per Good International Industry Practice (GIIP). Sub-projects shall implement water conservation, energy-efficient equipment (BS-IV emission standards), and material reuse. Pollution prevention measures address: (i) air quality through dust suppression and NAAQS 2009 compliance; (ii) water quality through erosion control, wastewater treatment per Water Act 1974, and hazardous materials containment; (iii) noise control per Noise Rules 2000; and (iv) waste management per hierarchy (avoid-reduce-reuse-recycle-dispose) covering Construction & Demolition waste (C&D Rules 2016), hazardous waste (Hazardous Waste Rules 2016), and municipal solid waste. All Contractor ESMPs (C-ESMPs) incorporate these requirements as contractual obligations.

ESS 4 (Community Health and Safety):

ESS4 addresses risks and impacts on community health and safety arising from project activities. The Project will establish traffic management and road safety measures, emergency preparedness and response procedures, and safeguards related to construction camps, plants, and material storage areas.

Measures will also address risks related to labor influx, exposure of communities to construction-related hazards, and SEA/SH risks, with coordination mechanisms established with local authorities and emergency services, consistent with GIIP and ESS4 requirements.

ESS 5 (Land Acquisition, Restrictions on Land Use and Involuntary Resettlement):

ESS5 provides the framework for managing impacts related to land acquisition, restrictions on land use, and involuntary resettlement. The project level Resettlement Policy Framework consistent with ESS 5 will guide where land acquisition or livelihood impacts are unavoidable, targeted social assessments and resettlement instruments will be prepared and implemented.

The Project will ensure compensation at replacement cost, livelihood restoration for affected persons, establishment of cut-off dates, meaningful consultation and disclosure of resettlement instruments, and access to project-level grievance redress mechanisms, in line with ESS5 and applicable national legislation.

ESS6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources):

ESS6 applies to the project due to Meghalaya's location in the Indo-Burma Biodiversity Hotspot, the presence of critical natural habitats, protected areas, and ecosystem services essential to project-affected communities. The project will implement measures to protect and conserve biodiversity and promote the sustainable management of living natural resources.

ESS 7 (Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities):

ESS7 applies where Indigenous Peoples are present in, or have collective attachment to, the project area. The Project level Indigenous People Planning Framework consistent with ESS 7 will ensure culturally appropriate and inclusive stakeholder engagement, access to grievance mechanisms, and equitable benefit-sharing arrangements.

Indigenous Peoples Development Plan (IPDP) will be prepared and Free, Prior and Informed Consent (FPIC) will be applied only under the specific circumstances defined in ESS7, related to impacts on land and natural resources under traditional ownership, physical relocation, or significant impacts on cultural heritage.

ESS 8 (Cultural Heritage):

ESS8 addresses tangible and intangible cultural heritage. The Project will implement screening procedures to identify known or potential cultural heritage sites, and apply chance-find procedures during construction.

No-go or restricted zones will be established where necessary, and activities in such areas will proceed only after obtaining statutory clearances and implementing approved mitigation measures, consistent with ESS8 requirements.

ESS 10 (Stakeholder Engagement and Information Disclosure):

ESS10 mandates early, continuous, and meaningful stakeholder engagement throughout the project lifecycle. The Project level Stakeholder Engagement Plan (SEP) will ensure structured disclosure of information, inclusive consultations with affected parties, and accessible and responsive grievance redress mechanisms.

Engagement with Indigenous Peoples will be conducted in a culturally appropriate manner, with FPIC applied where required under ESS7, and not as a general requirement under ESS10.

The ESMF sets out triggers and seeks approval pathways for forest/wildlife permissions and Eco Sensitive Zone requirements where relevant, pollution control consents for plants and camps, construction and demolition waste management, hazardous waste handling, and any cultural heritage chance find procedures.

Environmental and Social Baseline and Key Risks

The framework uses a baseline narrative appropriate for Meghalaya's ecology: steep slopes, high rainfall, and landslide susceptibility in places; forested stretches and wildlife movement; and sensitive streams and wetlands that can be affected by linear works if not planned well. Typical construction risks include slope cutting and spoil, obstruction of natural drainage, dust and noise, fuel and lube spills, unsafe storage and handling of bitumen and cement, and poor housekeeping at camps and plants. The ESMP template requires drainage and erosion control, sediment traps, slope stabilization and bio-engineering where feasible, regulated materials storage, spill prevention and response, dust suppression, noise control near settlements and receptors, water-quality protection, and progressive site reinstatement. Material sourcing is restricted to permitted quarries and borrow areas with rehabilitation requirements.

The project may also result in indirect impacts due to improved accessibility, including increased human activity in previously less accessible areas, potential pressure on forest and community-managed lands, and localized land-use changes. These risks are expected to be limited and context-specific; however, the ESMF incorporates mitigation measures such as alignment optimization within existing right-of-way, avoidance of sensitive areas, and coordination with local institutions, supported by monitoring during the post-construction phase.

In addition to these environmental effects, improved accessibility may also give rise to indirect social risks, including in-migration of labour, increased pressure on local land and natural resources, and risks of informal land transactions or land speculation. While such risks are expected to remain limited due to the nature of interventions largely within the existing right-of-way and the continued remoteness of several project areas, the ESMF incorporates measures to manage them. These include implementation of labour management procedures, regulation of worker camps, engagement with local communities and traditional institutions, and monitoring through the grievance redress mechanism (GRM). Where such risks are identified as significant, additional mitigation measures will be undertaken in coordination with relevant authorities and community institutions.

The ESMF recognizes Meghalaya's social landscape and the relevance of distinct indigenous communities in the project areas. Impacts on land will vary by sub-project; where requirements or access restrictions are unavoidable, the Resettlement Policy Framework will be adopted to prepare RAP to establish eligibility, valuation, assistance, and livelihood restoration, including provisions for non-titleholders consistent with ESS5. The Indigenous People Policy framework sets out steps to prepare an Indigenous People Development Plan and to conduct Free, Prior and Informed Consent, where required- for the indigenous communities. It also mainstreams universal access and road safety features for pedestrians, school children, older persons, and persons with disabilities in design and work-zone management.

Demographic Profile of Meghalaya

Meghalaya's population is predominantly tribal (86.1% per Census 2011), comprising three major Indigenous Peoples groups: Khasi (49.5%), Garo (31.2%), and Jaintia (11.4%), each with distinct languages, customary practices, and traditional governance systems. Land ownership follows matrilineal customary tenure among Khasis and Jaintias, and patrilineal systems among Garos, with no formal land titling—ownership established through clan lineage verified by Dorbar Shnong (village councils) and traditional authorities. Project areas exhibit rural agrarian economy with 65.8% population engaged in agriculture, horticulture (areca nut, oranges, pineapple), and allied activities, with average landholding of 1.2 hectares and literacy rate of 75.5% (Census 2011). Poverty levels vary by district: East Khasi Hills (11.9%), West Garo Hills (15.4%), South Garo Hills (28.9%), with vulnerable groups including female-headed households (12% of households), persons with disabilities (2.3% of population per Census 2011), and landless agricultural laborers. Traditional institutions (Syiemship, Doloiship, Sirdarship, Rangbah Shnong) maintain authority over land allocation, dispute resolution, community resources, and implementation of customary law recognized under Sixth Schedule. Sacred groves (approximately 79 documented in Meghalaya) and cultural heritage sites hold spiritual significance and are protected through customary practices and community stewardship.

Labor Management, OHS, and Community Safety

Labor Management Procedures prepared in line with the requirements of ESS2 apply to all workers engaged on the project, covering fair recruitment, terms and conditions, prohibition of child and forced labor, and worker accommodation standards where relevant. Contractor EHS plans must address hazard identification, job safety analysis, PPE, training, medical facilities, incident reporting, and emergency preparedness, including heat, heavy rainfall, landslide, or traffic-related events. Community health and safety measures include work-zone traffic control, signage, speed management, safe pedestrian diversions, and interface management at schools, markets, and health centers. A code of conduct addressing SEA/SH is required for all site personnel, reinforced by induction, refresher training, and confidential reporting pathways integrated with the project GRM.

Biodiversity, Forests, and Cultural Heritage

Screening identifies sensitive habitats, protected areas, wildlife corridors, and Eco-Sensitive Zone considerations. Where works are in proximity, sub-projects will apply avoidance and minimization first, adjust design footprints, time works to avoid sensitive periods, and implement site-specific biodiversity measures consistent with permits and ESMPs. Tree felling requires authorization and compensatory plantation as applicable, with species selection aligned to local ecology and survival monitoring. Chance-find procedures are embedded for tangible and intangible cultural resources; work must stop in the affected area and competent authorities be notified, with resumption only after clearances and agreed protection measures.

Climate and Disaster Resilience

The engineering approach emphasizes resilient siting and design: hydrology-aware drainage, culvert sizing and placement, slope stabilization, scour and erosion protection, debris-flow considerations, and materials and detailing suitable for high-rainfall hill environments. Construction planning accounts for monsoon windows and emergency preparedness. The ESMF requires climate and disaster-risk considerations to be reflected in screening, options analysis, ESMP measures, and O&M practices so that climate risks are managed across the asset lifecycle, including vegetation management, drainage upkeep, and slope inspection protocols.

Stakeholder Engagement and Disclosure

Stakeholder engagement is consistent with ESS10 on Stakeholder Engagement and includes early-stage information sharing, site-specific consultations in local languages, and continued dialogue during construction and operation using culturally appropriate mechanisms as practiced in the communities. The approach balances inclusivity with practicality, ensuring representation of women, Indigenous groups, shopkeepers and transporters, farmers, and vulnerable households in meeting formats they can access. Disclosure covers ES instruments, permits, audit summaries, and GRM performance at accessible locations and online. Feedback is captured, tracked, and closed with documented actions; material viewpoints and their treatment are summarized in ESIA/ESMP chapters. A separate Stakeholder Engagement Plan (SEP) has been prepared for the Project, based the World Bank's ESS 10.

Grievance Redress Mechanism (GRM)

The GRM provides multiple intake channels (in-person, phone, web/toll-free) and service standards for acknowledgment, assessment, resolution, and escalation. A PMU focal point oversees registration and tracking; contractors maintain a site-level register for quick fixes. SEA/SH cases are handled under survivor-centered, confidential protocols with appropriate referral pathways. The ESMF requires the GRM to be operational before project's effectiveness, with periodic public reporting of categories, status, and resolution timelines while protecting personal data.

Gender and Inclusion

The framework (GAP) integrates gender and inclusion throughout the project cycle. Engagement activities seek meaningful participation of women and vulnerable groups; designs incorporate safer crossings, lighting where feasible, and context-sensitive features. Contractors will be required to enforce equal wages for equal work, provide facilities that meet women's needs, and implement and enforce worker codes of conduct. Monitoring uses sex-disaggregated indicators for participation, employment, and grievance uptake. Additionally, an SEA/SH Prevention and Response Plan has been prepared for the Project. Where the risk of SEA/SH are assessed to be higher, specific prevention and response measures

are scaled, and these measures are explicitly incorporated into bidding documents, contracts and supervision checklists, ensuring enforceability.

Monitoring, Supervision, and Corrective Action

The ESMF prescribes indicator-based monitoring, supervision frequency, and documentation standards. Contractors submit C-ESMPs, method statements, training logs, waste and materials records, and incident registers. Supervision consultant and PIU perform routine and unannounced inspections using checklists aligned to ESMP commitments, with photo-geotagged evidence and time-bound non-compliance reports. The PMU consolidates monthly/quarterly progress and ensures corrective actions are closed. Third-party audits provide independent assurance and recommend systemic improvements; recurrent issues lead to targeted training or contractual remedies.

Institutional Arrangements and Capacity

The project design includes a PBC on strengthening of Institution for management of E&S risks and opportunities. Accordingly, the state will establish a dedicated Environmental and Social Management Unit (ESMU) within the PMU at Meghalaya Infrastructure Development and Finance Corporation (MIDFC). It serves as the state's nodal agency for planning, financing, and implementation oversight of major infrastructure and development projects across Meghalaya.

The PMU will lead stakeholder engagement at the project level and serves as the primary interface with the World Bank. Key officials include the Commissioner-cum-Project Director, Additional Project Director (MIDFC), and specialized procurement and financial experts.

The ESMU at the PMU level shall comprise at minimum an Environmental Specialist and a Social-cum-Tribal Specialist. Both positions shall be procured through a market-based recruitment process and stationed at the PMU (MIDFC) for the project duration. The ESMU shall be responsible for overall coordination, technical oversight, monitoring, and compliance of environmental and social safeguards, including Indigenous Peoples requirements, across the Project. The ESMU shall ensure alignment with the Project's ESMF and ESCP, undertake technical review of safeguard instruments, will be responsible for direct purchase of land (private/clan/community) through negotiations, consolidate monitoring and reporting, and coordinate with all implementing entities, including the PIU (PWD) and the RAP/IPDP implementation agency.

The establishment of the ESMU at the PMU level shall operate in conjunction with a dedicated Environmental and Social (E&S) Cell within the PWD at the PIU level. Accordingly, preparation and implementation of environmental and social safeguards shall be undertaken by the PIU (PWD), under the overall oversight, coordination, and compliance responsibility of the PMU (MIDFC).

The Public Works Department (PWD) is the primary implementing agency for the civil works components of the Project (roads and bridges and others for Agro-Logistics). The Project Implementation Unit (PIU) under PWD shall be responsible for day-to-day execution of the Project, including DPR preparation, procurement management, contract administration, and supervision of construction activities through its divisions.

Environmental and social safeguard implementation shall be anchored within a dedicated **Environmental and Social (E&S) Cell** at the PIU level, led by designated Environmental and Social Nodal Officers and shall report to the Additional Chief Engineer (EAP). The PIU-level E&S Cell shall be supported by a team of qualified thematic experts, including environmental, social, biodiversity, labour, land, gender, and tribal specialists. The thematic experts supporting the PIU-level E&S Cell shall be engaged through a combination of market-based procurement and government deputation.

The PIU (PWD) shall be responsible for preparation, implementation, supervision, and field-level compliance of all safeguard instruments, including, Labour Management Plan (LMP), Stakeholder Engagement Plan (SEP), ESIA/ESMPs, RAPs, and IPDPs including FPIC, in accordance with guidance provided by the PMU (MIDFC). The PIU shall also coordinate with local institutions, including those operating under Sixth Schedule provisions, and shall report progress to the PMU.

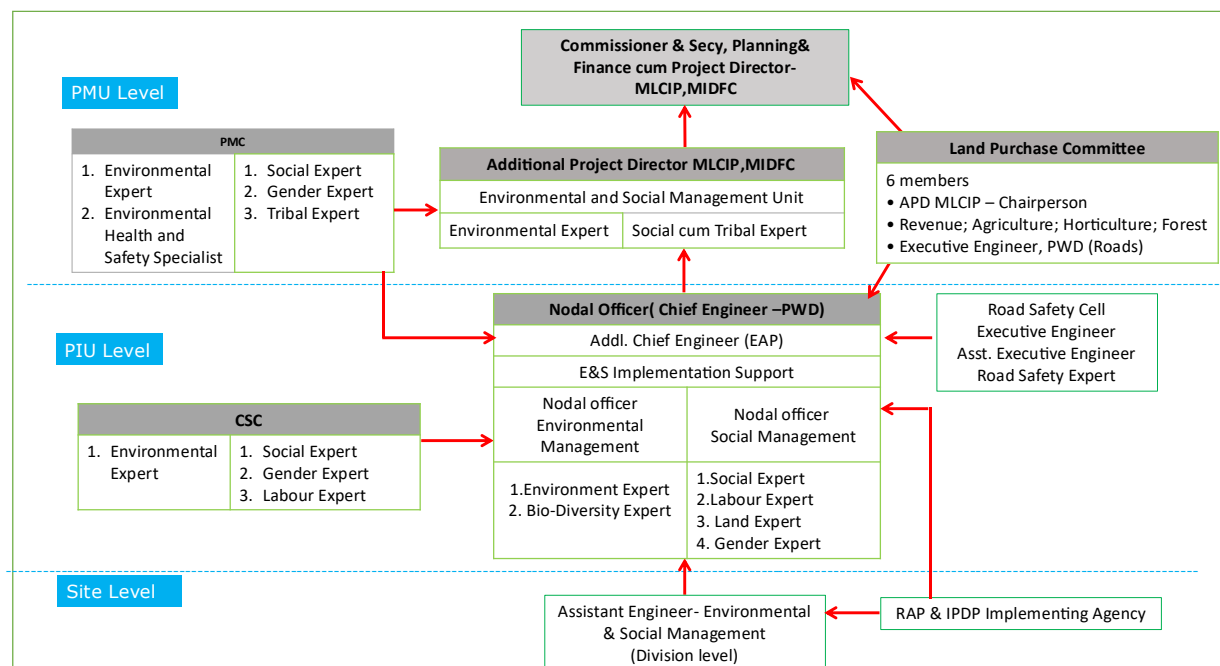
Implementation of RAPs and IPDPs shall be supported by a dedicated implementation agency, to be engaged by the project, which shall work in close coordination with the PIU and report to the PMU through the ESMU.

The PMU and the PIU will be supported by the Project Management Consultant (PMC) that will provide technical, managerial, and E&S. It will assist in reviewing the DPR preparation, safeguards documents, responsible for progress monitoring, and capacity building, and ensure compliance, and timely implementation across all components.

The Construction Supervision Consultant (CSC) oversees on-site construction to ensure adherence to technical, contractual, and safeguard standards. It monitors quality, safety, and environmental compliance, verifies progress, supports DPIUs in documentation, and reports any deviations to the PIU for corrective action.

The PIU-level E&S Cell shall be responsible for implementation and supervision of environmental and social safeguard measures, including ESMPs, RAPs, and IPDPs. The Nodal Officers shall ensure close coordination with the RAP/IPDP implementation agency at the sub-project level.

Organogram for E&S management



Contingent Emergency Response (CERC)

The ESMF defines how the CERC may be activated and supervised under the ESF. It requires screening and the application of proportional ES instruments even when activities are fast-tracked, ensuring that essential mitigation, stakeholder communication, and monitoring arrangements remain in force. Roles,

documentation, and disclosure practices follow the same accountability standards, adapted to emergency timelines.

Budgeting and Resource Provision

Budget lines are provided for staffing, capacity building, monitoring, supervision and audits, site-specific mitigation and restoration, GRM operations, and contingency. Costs are systematically integrated into contracts and PMU/PIU budgets at planning and implementation stages to avoid under-resourcing. This ensures that E&S actions are implementable and financially sustained through construction as well as operations and maintenance phases.

SI No	Budget Head	Total Amount in INR
A	Human Resource (PMU + PIU)	3,40,80,000
B	Trainings and Capacity Building (Specialized Trainings and Refresher Trainings)	75,40,000
C	Information and Awareness (GRM Awareness, GBV, SEA/SH Awareness)	52,30,000
D	SEP Implementation	2,32,00,000
E	IPPF Implementation	1,52,90,000
F	LMP Implementation	5,00,000
G	RAP/IPDP Implementation Agency	83,67,975
H	App Based Field Reporting (Development + Maintenance)	15,56,000
I	Audit (Mid Term and End Term)	60,00,000
J	Biodiversity Management Plan	50,00,000
K	Contingency	1,06,76,397.50
	Total (A – K)	11,74,40,372.50
L	R&R Budget including Land**	5,34,01,242
	Grand Total	17,08,41,615

*****Note: The R&R budget, including land costs, is indicative and subject to revision during implementation. The final cost will depend on the mode of land procurement—whether through statutory acquisition in accordance with applicable laws or through direct purchase/negotiated settlement—as well as updated valuation and site-specific requirements***

1 INTRODUCTION

1.1 Background

The Sixth Schedule of the Constitution provides for the administration of tribal areas to safeguard the rights of the tribal population in the state of Meghalaya. This special provision is provided under Article 244(2) and Article 275(1) of the Constitution. The state plays an important role in the connectivity of two important river valleys in the Assam region i.e. Brahmaputra and Barak, which are important production centres. The state is thus important from the logistics point of view in the transportation of the produce. A large part of Meghalaya is a highland between these two river valleys. It has different agro-climatic conditions and is thus endowed with various natural resources. It is also part of the North-Eastern Biodiversity Hotspot.

The state has a heavy reliance on road transport. Over 80 percent of freight and nearly 100 percent of passenger movement within the state rely on roads. However, about half of the residents lack all-weather road access. Additionally, many semi-permanent timber bridges are in poor condition, limiting the maximum allowable axle load. The problem is worsened by rugged terrain and extreme climate conditions, which increase road maintenance costs. Similarly, rapid urbanization has created a large gap between the demand for and supply of urban services and infrastructure. It has been estimated that, besides the capital area, urban mobility in other cities and towns of the state is less than satisfactory.

The Government of Meghalaya, with support from the World Bank, had initiated a comprehensive road infrastructure improvement programme through the Meghalaya Integrated Transport Project (MITP, P168097). The project commenced on 21 January 2020 and is currently under implementation, with completion anticipated by October 2026.

The project focused on i) Improving transport infrastructure of approximately 300 km and ensuring effective maintenance delivery., ii) Strengthening institutional capacity and transport services by implementing asset management, modernization, and climate-resilient strategies component, iii) Supporting efficient project management, supervision, and preparation through provision of technical assistance, iv) Providing funding support for immediate response to crises or emergencies. The project is being implemented by *Meghalaya Infrastructure Development Finance Corporation (MIDFC)*, with the Public Works Department, Government of Meghalaya as the major implementing partner.

Given the requirement of further road improvement and enabling logistics support for movement of the agricultural produce from the farms to the market to enable people to sell their produce, the Government of Meghalaya (GoM) is developing the Meghalaya Logistics & Connectivity Improvement Project (MLCIP).

The objective of the MLCIP is to enhance the climate and disaster resilience of public infrastructure, particularly roads and bridges, improve road safety, strengthen agro-logistics infrastructure, and build institutional capacity for effective emergency preparedness, including a Contingent Emergency Response Component (CERC).

Under Component 1, approximately 300 km of state roads, major district roads and six bridges will be rehabilitated or upgraded with climate-resilient features, including improved drainage, slope protection, and resurfacing of damaged sections, verified through engineering reports. Road safety will be strengthened through audits, monitoring systems, public awareness campaigns, accident data management, and the establishment of emergency response posts equipped with paramedics, ambulances, and tow trucks, with a target of reducing accidents by 20% on project roads.

Component 2 will develop multi-modal logistics parks and rural transport hubs, along with supporting facilities such as storage, grading, digital transport services, and solar-powered amenities, aiming to increase the volume of agricultural produce transported efficiently through these hubs by 25%.

Component 3 will include adoption of climate-resilient and road safety frameworks, establishment of an Environment and Social Safeguards Management Unit, and training of PWD/MIDFC Private sector engagement will mobilize at least two major investments in state logistics infrastructure through PPPs. Finally, the Contingent Emergency Response Component (CERC) will ensure timely emergency response, with funds disbursed within 30 days of an eligible crisis and support for one to two emergency interventions per event. All targets will be monitored through official reports, site inspections, and operational data to ensure effective project implementation and results.

1.2 MITP - Environment and Social Management

To systematically address the environmental and social issues in the Meghalaya Integrated Transport Project (MITP), the Environmental and Social Management Framework (ESMF) was developed. It provided an approach to identify, assess and manage environmental and social risks in transport infrastructure development in line with the requirements of the national regulations, and the World Bank's safeguard policies (including OP/BP 4.01, 4.04, 4.36, 4.11, and 4.12). It outlined procedures for screening, impact assessment, and preparing site-specific ESMPs and also process for implementation of these plans during construction activities to ensure sustainability.

By integrating safeguards into planning, procurement, and implementation, the ESMF aligned with Bank standards. The framework helps MPWD to integrate safeguards into planning, procurement, and implementation, and ensures that MITP interventions are environmentally sustainable, and aligned with national and World Bank policy requirements. It emphasizes stakeholder consultation, disclosure, grievance redress, and compliance monitoring, supported by clear institutional arrangements and capacity-building measures.

1.3 MLCIP: Environment and Social Management

The MITP's ESMF was developed under the Operational Policies of the World Bank. However, in the intervening period, the World Bank policies on sustainability have transitioned from Operational Policies to the Environmental and Social Framework (ESF). Additionally, based on lessons learned from the implementation of the safeguard instruments of MITP, the ESMF of the MLCIP has been updated. The ESF adopts a proportionate based risk-based approach and emphasizes adaptive management across the full project life cycle. It is operationalised through a set of Environmental and Social Standards (ESSs), which define the requirements for managing specific environmental and social risk. The key standards applicable to the project are outlined below.

- **Labor And Working Conditions, Including Worker Grievance Redress Mechanisms (ESS 2):** Ensures fair wages, safe working conditions, freedom of association, non-discrimination, and accessible worker grievance mechanisms. (applicable)
- **Resource Efficiency And Pollution Prevention (ESS 3):** Addresses efficient use of resources, pollution prevention and abatement, waste management, and greenhouse gas (GHG) emissions reduction (applicable).
- **Community Health And Safety (ESS 4):** Protects community members from project-related hazards including traffic safety, emergency preparedness, disease vectors, and occupational exposure (applicable).

- **Land Acquisition, Restrictions On Land Use, And Livelihood Restoration (ESS 5):** Ensures that land-related impacts are managed through transparent, participatory processes with due compensation and livelihood restoration (applicable).
- **Biodiversity Conservation And Sustainable Management Of Living Natural Resources (ESS 6):** Protects critical habitats, maintains ecosystem services, and prevents conversion of natural habitats except under strict conditions (applicable).
- **Indigenous Peoples' Engagement And Inclusion (ESS 7):** Ensures Free, Prior, and Informed Consent (FPIC), cultural respect, and benefit-sharing with Indigenous Peoples in project-affected areas (applicable).
- **Cultural Heritage Protection (ESS 8):** Protects cultural heritage sites and establishes chance-find procedures for heritage discoveries during project implementation (applicable).
- **Stakeholder Engagement And Information Disclosure (ESS 10):** Mandates early, continuous, and inclusive stakeholder engagement, free access to project information, and transparent grievance redress (applicable).
- ESS 9 (Financial Intermediaries)- **Not Applicable** as MLCIP does not involve financial intermediary instruments.

The ESMF of MLCIP is prepared to comply with World Bank's ESF, and build on the lessons from MITP. In addition to this ESMF, the Project has prepared complementary environmental and social instruments, including the Resettlement Policy Framework (RPF), Indigenous Peoples Planning Framework (IPPF), Stakeholder Engagement Plan (SEP), and Environmental and Social Commitment Plan (ESCP). These instruments shall be read in conjunction with the ESMF and will guide the management of specific environmental and social risks and impacts during project implementation.

1.4 Learning from MITP

1.4.1 ESMP Implementation Learning

Independent environmental and social compliance audits conducted by third-party auditors for the MITP identified several recurring lessons and challenges, as outlined below:

- **Upstream integration of environmental considerations into the design;** MITP incorporated upstream integration of environmental considerations into project design, enhanced monitoring processes, and localized grievance management systems supported by robust oversight. These measures facilitated effective tracking of environmental performance.
- Sensitive planning and design e.g. inclusion of canopy bridges and wildlife signage, through mandatory design reviews for forest-adjacent works, helped alleviate or largely **minimize biodiversity impacts**.
- Adoption of **environmentally friendly practices and innovations**, including bamboo crib walls for slope stabilization in landslide-prone terrain, bamboo dustbins for waste segregation, check dams for water harvesting, and native vegetation for slope protection, drawing inspiration from IRC guidelines and the Green Highways initiative of the Government.
- Effectively used **safety measures during construction;** speed-calming devices at habitat-sensitive locations were some of the safety measures, but there were gaps.
- While health & safety measures were effective, gaps in contracts to address risks associated with labour influx, displacement of non-titleholders without disbursement of compensation; lack of

agreement on use of land for borrow areas, camps, etc; incomplete and inconsistent application of the ESMF across subprojects; **lack of information on land required**; ad-hoc institutional arrangement to implement, monitor and report on safeguard compliances — were observed.

- **The implementation of ESMP** faltered. Third-party audits revealed lapses in labour camp maintenance, PPE provision and usage, and emergency response. Irregular monitoring by the PMU and Construction Supervision Consultant delayed the corrective course of action. There was inadequate maintenance monitoring, leading to low sapling survival rates and post-construction deterioration of initial tree plantations and bio-engineering works, with no long-term plans or budgets for ongoing audits or community-led upkeep.

1.4.2 ESMP Implementation Challenges

Uneven Institutional Capacity: Environmental management capacity varied across the PMU, PIU, and contractors, resulting in inconsistent ESMP implementation across road corridors. While central oversight was generally effective, site-level execution depended significantly on individual staff expertise.

Staff Turnover at Contractor Level: Frequent turnover of environmental and safety personnel among contractors disrupted supervisory continuity and institutional knowledge, especially in remote and logistically challenging areas. Replacement staff typically require additional orientation and training to meet ESMP requirements.

Construction-Driven Prioritization: During peak construction periods in hilly terrain, contractors occasionally prioritized physical progress over timely environmental mitigation measures, including erosion control, waste management, and occupational health and safety protocols.

Regulatory and Statutory Clearance Delays: Delays and uncertainties in securing Consents to Establish and Operate (CTE/CTO), quarry licenses, and approvals for ancillary facilities impacted on work sequencing and, in certain instances, heightened compliance risks.

Limited Use of Monitoring for Decision-Making: Environmental monitoring (covering air, noise, and water quality) was primarily conducted to meet compliance obligations, with limited incorporation of findings into site-specific corrective actions or adaptive construction practices.

Biodiversity and Forest Interface Challenges: Implementing biodiversity mitigation measures proved complex in forested and community-managed landscapes, where wildlife corridors are informal and not officially designated, necessitating context-specific and flexible approaches.

Plantation Tracking and Maintenance: Although compensatory plantation activities were carried out, initial systems for tracking locations, survival rates, and long-term maintenance responsibilities were not sufficiently robust.

Terrain and Climate Constraints: Intense rainfall, steep slopes, and fragile geology frequently caused erosion, slope instability, and damage to temporary mitigation structures, especially during extreme weather events.

Community Interface and Expectations: Community expectations regarding access enhancements, road safety, and ancillary facilities occasionally exceeded ESMP commitments, resulting in grievances unrelated to direct impacts.

Inter-Agency Coordination under Sixth Schedule: Coordination among the Public Works Department (PWD), Forest Department, State Pollution Control Board, and Autonomous District Councils required

additional time due to Sixth Schedule governance structures, thereby affecting implementation schedules.

1.4.3 Key Lessons Learned

Strengthening Institutional Arrangements: Early and ongoing capacity building, including the deployment of dedicated full-time environmental and safety staff at PMU, PIU, and contractor levels, is essential for consistent ESMP implementation in multi-corridor transport projects.

Contractual Accountability: Tying ESMP compliance to interim payment certificates, performance assessments, and supervision ratings substantially enhances contractor accountability for environmental and social safeguards.

Proactive Regulatory Management: Implementation of a centralized clearance tracking system and regular engagement with regulatory agencies helps minimize delays and compliance risks.

Outcome-Oriented Monitoring: Environmental monitoring systems prove most valuable when designed as management tools, incorporating clear feedback mechanisms that link results to corrective actions, site instructions, and supervision reviews.

Adaptive Biodiversity Management: Conducting early ecological assessments, developing flexible mitigation plans, and maintaining close collaboration with forest authorities and local communities improve the efficacy of biodiversity conservation in forested and community-managed areas.

Sustainable Plantation Management: Maintaining geo-tagged records, establishing survival rate targets, conducting regular monitoring, and clearly defining post-construction maintenance responsibilities are critical to achieving enduring environmental benefits.

Continuous Stakeholder Engagement: Aligning ESMP implementation with the Stakeholder Engagement Plan (SEP) and Grievance Redress Mechanism (GRM) effectively manages community expectations, mitigates conflicts, and fosters sustained local support.

Climate-Resilient ESMP Design: In regions like Meghalaya with high rainfall and hilly topography, ESMPs should prioritize climate-resilient designs, phased construction scheduling, bioengineering techniques, and sufficient contingency measures.

Inter-Agency Coordination: Establishing early and formalized coordination mechanisms among the PWD, Forest Department, Pollution Control Board, and Autonomous District Councils is vital for timely ESMP execution in Sixth Schedule areas.

1.5 Way Forward:

Building on the lessons from MITP, the ESMF for MLCIP will focus on strengthening institutional capacity, and ensuring that the E&S risk management is aligned with the requirements of the World Bank ESF. The following key steps, integrated into the MLCIP's ESMF is based on MITP's experiences which, represents the approach of risk management through the project cycle.

Institutional Strengthening and Capacity Development: The Project will establish a dedicated Environmental and Social Management Unit (ESMU) within the PMU at MIDFC, staffed with a full-time Environmental Specialist and Social-cum-Tribal Specialist, responsible for overall coordination, technical oversight, supervision, and documentation of ESMF implementation and compliance with the ESCP. At the implementation level, the PIU within the Public Works Department (PWD) will be supported by a dedicated E&S Cell comprising designated nodal officers and thematic experts, including environmental, biodiversity, social, labour, gender, and tribal specialists, responsible for field-level implementation and supervision of E&S requirements. A structured capacity-building and training plan will be developed for

engineers, contractors, supervision consultants, and field staff, covering E&S requirements, occupational health and safety, labour management, grievance redress mechanisms (GRM), and prevention of sexual exploitation and abuse and sexual harassment (SEA/SH). In addition, an ICT-based system for monitoring and reporting will be institutionalized to support real-time tracking, data consolidation, and reporting of E&S performance across the Project.

Screening and Early Identification: Screening using overlay analysis will be carried out for all proposed sites/sub-projects. The purpose of this initial screening is to enable early identification of environmental and social risks and sensitivities.

Monitoring and reporting - A performance monitoring dashboard, quarterly compliance reporting, and escalation protocols for delays will be established to enforce accountability. Key performance indicators covering all material risk areas, including biodiversity protection and habitat restoration, labour conditions and OHS compliance (including child/forced labour), GRM functionality and response time, FPIC processes for Indigenous Peoples, land acquisition and economic displacement, livelihood restoration and R&R effectiveness, gender mainstreaming and GBV risk mitigation, worker and community health & safety, and climate resilience measures. All indicators will be disaggregated by gender and vulnerability status wherever applicable. Monitoring will rely on field-based verification, structured site inspection forms, and consistent documentation through Monthly and Quarterly Progress Reports. Regular joint site visits by PIU, CSC, and line departments will reinforce compliance and facilitate timely corrective actions. Third-party audits will continue to provide independent validation of field performance and compliance.

Stakeholder Engagement: Consultation processes will emphasize participation of traditional institutions, women's groups, and vulnerable households, using local languages (Khasi, Pnar, Garo).

Comprehensive Labour Management Procedures (LMP): In accordance with ESF requirements, the LMP is prepared to include a dedicated worker grievance redress mechanism (GRM), occupational health and safety (OHS) systems, prohibitions on child and forced labour, and ongoing monitoring of contractor labour standards to foster fair, safe, and compliant employment practices.

Integrated Community Health and Safety Measures: The ESMF includes traffic and road safety, emergency preparedness, prevention of gender-based violence (GBV), sexual exploitation and abuse (SEA), and sexual harassment (SH). It also outlines protocols for the responsible conduct of security personnel and the management of hazardous materials and public health risks.

1.6 Objectives of the ESMF Component 1 for MLCIP Project

The objectives of ESMF Component 1 are to:

- Set out the principles, rules, guidelines, and procedures to assess the environmental and social risks and impacts.
- Define the processes and tools to identify the measures and plans to reduce, mitigate, and/or offset adverse risks and impacts, provisions for estimating and budgeting the costs of such measures.
- Ensure compliance with applicable national, state, and local laws, regulations and World Bank Environmental and Social Standards (ESS) requirements.
- Define roles, responsibilities, and institutional arrangements specify which agencies/units implement, supervise, and monitor E&S requirements and ways to strengthen the capacities to manage environmental and social risks and impacts.

- Provide monitoring, reporting, and compliance mechanisms establish monitoring indicators, frequency, reporting lines, and corrective action protocols to ensure mitigation is implemented and effective.

ESMF Component 1 should be read together with other plans prepared for the project, including Resettlement Policy Framework (RPF), Indigenous People Policy Framework (IPPF), the Stakeholder Engagement Plan (SEP), Labor Management Procedures (LMP), and the Environmental and Social Commitment Plan (ESCP).

1.7 Purpose of the ESMF

The primary purpose of this Environmental and Social Management Framework (ESMF) – Component 1 is to establish a systematic process for identifying, assessing, and managing the environmental and social risks and impacts of investment related to Roads, bridges, road safety (Component 1), institutional strengthening (Component 3.1) and CERC (Component 4) financed under MLCIP, in accordance with the World Bank's Environmental and Social Framework (ESF) and applicable legal requirements. The ESMF will ensure that all sub-projects are implemented in an environmentally sustainable and socially acceptable manner in consistent with the ESSs. The ESMF serves as the overarching environmental and social risk management framework for the Project and shall operate in conjunction with the RPF, IPPF, SEP, ESCP, and other sub-project specific instruments prepared under the World Bank ESF.

1.8 Environmental & Social Risk Categorization

Based on the E&S screening conducted in accordance with ESS1 and considering the nature, scale, location and implementation context of project activities, MLCIP has an Environmental and Social Risk Classification (ESRC) of High. This classification reflects:

- The project's location in hilly, ecologically sensitive areas, including proximity to reserved forests, wildlife habitats, eco-sensitive zones, and wildlife sanctuaries (ESS6);
- High risks related to biodiversity impacts, slope instability, soil erosion, drainage obstruction, landslides, and impacts on natural habitats and ecosystem services in fragile landscapes (ESS1, ESS3, ESS6);
- Limited contractor capacity to effectively manage social and environmental risks and impacts in such socially and environmentally sensitive landscapes.
- Pollution prevention and resource management challenges associated with construction activities, including spoil disposal, quarry and borrow area management, waste generation, and construction-stage emissions (ESS3);
- Land acquisition, restrictions on land use, and involuntary resettlement impacts (ESS5) resulting in physical and/or economic displacement, including impacts on livelihoods, assets, and access to resources. Land acquisition and livelihood-related impacts shall be managed in accordance with the provisions of the RPF.
- Occupational and community health and safety risks associated with construction activities, including labour influx, worker-community interactions, traffic and road safety risks, and contractor capacity to manage labour and working conditions in remote project locations (ESS2, ESS4). Labour and working condition risks shall be managed in accordance with the LMP;

- Potential risks related to Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH), particularly in relation to labour influx and contractor-managed works (ESS4);
- Identifiable risks to cultural heritage and culturally significant community resources (ESS8);
- Climate and disaster risk considerations requiring resilient design (ESS1, ESS4).
- Potential impacts on Indigenous Peoples and customary institutions in Sixth Schedule Areas, including risks associated with community engagement, customary land systems, and culturally appropriate consultation processes (ESS7). Engagement with Indigenous Peoples, customary institutions, and culturally appropriate consultation processes shall be guided by the IPPF.
- Stakeholder engagement and implementation challenges associated with geographically dispersed communities, vulnerable groups, and coordination with traditional governance institutions (ESS10). Stakeholder consultations, information disclosure, and grievance management shall be undertaken in accordance with the SEP.

To further substantiate the overall Environmental and Social Risk Classification, sub-project level screening was undertaken for all identified road corridors under MLCIP. The screening assessed environmental and social risks based not only on the scale of physical impacts and land requirements, but also on contextual and implementation-related risks associated with labour and working conditions, community health and safety, Indigenous Peoples sensitivities, stakeholder engagement complexity, institutional capacity, and the sensitivity of project locations, in accordance with the World Bank Environmental and Social Framework (ESF).

The summary of risk categorization and key risk drivers across the selected road corridors is presented in Table 1-1 below.

Table 1-1: E&S Risk Categorization of the Sub Projects

Sl. No.	Sub-Projects	Risk Category	Key Risks and Rationale
A. Roads			
1	Rongsai–Borjhora–Bajengdoba (RBB) Road	Overall: High; Environment: High; Social: High	The corridor includes elephant crossings (Chainage 17+020–17+600) and community vegetation, indicating high ecological sensitivity, along with risks of erosion and waterlogging. Social impacts include 0.133 ha of private land acquisition for road upgrading and 1.142 ha required for spoil disposal on a temporary lease basis (no acquisition). The project will affect 156 PAHs (48 encroachers, 102 street vendors, and 6 landowners) comprising 419 PAPs, including loss of 30 private betel nut trees. Construction activities may also involve labour influx, worker-community interactions, road safety risks, and stakeholder engagement challenges in Indigenous Peoples areas.

Sl. No.	Sub-Projects	Risk Category	Key Risks and Rationale
			The overall risk is High due to combined ecological sensitivity, significant livelihood impacts and implementation-related social risks.
2	Ampati– Purakhasia (AP) Road	Overall: Substantial; Environment: Substantial; Social: Substantial	Environmental risks include slope instability, erosion, drainage constraints, and seasonal inundation. Land acquisition and displacement impacts are limited, with no land acquisition required and 0.35 ha required for spoil disposal on a temporary lease basis (no acquisition). The project affects 5 PAHs (encroachers) and 20 PAPs. However, construction activities may involve labour influx, worker-community interactions, traffic and road safety risks, and stakeholder engagement challenges in remote Indigenous Peoples areas. The overall risk is Substantial due to environmental vulnerabilities and implementation-related social risks.
3	Rongrenggre– Simsanggre– Nengkhra (RSN) Road	Overall: High; Environment: High; Social: High	The alignment passes through Rongrenggre Reserved Forest (0–6.2 km), indicating high ecological sensitivity, along with risks of slope instability, erosion and impacts on natural habitats. Social impacts include 1.2459 ha of community land acquisition affecting 6 village councils, and 0.55 ha required for spoil disposal on a temporary lease basis (no acquisition). The project affects 40 PAHs (28 street vendors and 12 encroachers) and 100 PAPs. Construction activities may also involve labour influx, worker-community interactions, community health and safety risks, and consultation requirements with customary institutions and Indigenous communities. The overall risk is High due to forest sensitivity combined with community land impacts and implementation-related social risks.
4	Songsak– Mendipathar (SMR) Road	Overall: High; Environment: High; Social: High	The alignment passes through Songsak Reserved Forest (0–3.525 km), with risks of slope instability, erosion, and waterlogging. Social impacts include 0.2712 ha of community land acquisition affecting 3 village councils, and 0.97 ha required for spoil disposal on a temporary lease basis (no acquisition). The project affects 48 PAHs (23

Sl. No.	Sub-Projects	Risk Category	Key Risks and Rationale
			encroachers, 24 street vendors, and 1 landowner losing 10 betel nut trees), comprising 144 PAPs. Additional risks relate to labour influx, worker-community interactions, road safety, and stakeholder engagement in Indigenous Peoples areas. The overall risk is High due to forest and environmental sensitivity and significant social and implementation risks.
5	Umsning–Jagi Road (40.13–77.615 km)	Overall: High; Environment: High; Social: High	The project involves significant risks, including landslides, deep cutting (up to 12 m), slope instability, and drainage congestion. Social impacts include 0.6868 ha of land acquisition (private and community) and 0.53 ha required for spoil disposal on a temporary lease basis (no acquisition), affecting 22 PAHs (13 encroachers, 1 street vendor, and 8 landowners) and 124 PAPs, along with impacts on 5 village councils due to land requirements. Additional risks relate to labour influx, worker-community interactions, traffic and road safety, and stakeholder engagement with customary institutions. The overall risk is High due to combined environmental hazards, livelihood impacts and implementation complexity.
6	Weiloi–Mawsynram Road	Overall: High; Environment: High; Social: Substantial	Environmental risks include substantial cutting and filling, slope instability, debris disposal, high-altitude conditions (>1000 m AMSL), and the presence of cultural resources (monoliths and caves). Land acquisition and displacement impacts are limited, with no land acquisition and 4.466 ha required for spoil disposal on a temporary lease basis (no acquisition), affecting 10 PAHs (encroachers) and 66 PAPs. Construction activities may involve labour influx, road safety risks, worker-community interactions, and stakeholder engagement challenges in culturally sensitive Indigenous Peoples areas. The overall risk is High due to environmental and cultural sensitivity combined with implementation-related social risks.

Sl. No.	Sub-Projects	Risk Category	Key Risks and Rationale
7	Dkhiah–Sutnga–Saipung–Pala Road	Overall: High; Environment: High; Social: High	Environmental risks include landslide-prone zones, significant cutting and filling, debris disposal, high-altitude terrain, and presence of cultural resources. Social impacts include 1.902 ha of community land acquisition involving 2 Elakas, and 2.64 ha required for spoil disposal on a temporary lease basis (no acquisition), affecting 37 PAHs (34 street vendors and 3 encroachers) and 176 PAPs. Additional risks include labour influx, worker-community interactions, community health and safety concerns, and engagement with customary institutions and Indigenous communities. The overall risk is High due to combined environmental hazards, cultural sensitivity, community land impacts, and implementation-related social risks.
B. Bridges			
8	LPL Bridge	Overall: High; Environment: Substantial; Social: High	Environmental risks relate to river/stream interaction, erosion, sedimentation, and construction-stage impacts on water bodies. Social impacts include 0.26 ha of community land requirement for bridge approaches. Although displacement impacts are limited, the involvement of community land, combined with labour management challenges, temporary access disruptions, worker-community interactions, and community health and safety risks during construction, elevates the social risk to High. The overall risk is therefore assessed as High due to community land sensitivities and implementation-related social risks.
9	RRD 52/11	Overall: High; Environment: Substantial; Social: High	Environmental risks include erosion, sedimentation, and localized construction impacts. Social impacts include 0.22 ha of community land requirement and impacts on 5 PAHs (1 Encroacher and 4 Street Vendors) affecting 12 PAPs. Construction activities may involve labour influx, temporary access disruptions, road safety risks, and worker-community interactions in Indigenous Peoples areas. The involvement of community land and associated stakeholder engagement considerations elevate the

Sl. No.	Sub-Projects	Risk Category	Key Risks and Rationale
			social risk to High. The overall risk is therefore assessed as High
10	Dalu 2/1	Overall: High; Environment: Substantial; Social: High	Environmental risks include localized erosion, drainage disturbance, and construction-stage impacts on nearby water bodies. Social impacts include 0.3 ha of community land requirement with no physical displacement. However, construction activities may involve labour management challenges, community health and safety risks, temporary access disruptions, and stakeholder engagement requirements with local communities. The involvement of community land and associated implementation sensitivities elevate the social risk to High. The overall risk is therefore assessed as High.
11	Dalu 21/3	Overall: High; Environment: Substantial; Social: High	Environmental risks include minor hydrological disturbance and localized construction impacts. Social impacts include 0.1 ha of community land requirement with no physical displacement. Construction activities may involve labour influx, worker-community interactions, community safety risks, and consultation requirements with local communities. The involvement of community land and stakeholder engagement sensitivities elevate the social risk to High. The overall risk is therefore assessed as High.
12	RMA Bridge 54/3	Overall: High; Environment: Substantial; Social: High	Environmental risks include riverine disturbance, erosion, and sedimentation during construction. Social impacts include 0.28 ha of community land requirement with no physical displacement. Construction activities may involve labour management challenges, temporary access disruptions, worker-community interactions, and community health and safety risks during bridge construction. The involvement of community land and associated community sensitivities elevate the social risk to High. The overall risk is therefore assessed as High.
13	AMPT 15/3	Overall: High; Environment: Substantial; Social: High	Environmental risks include erosion, sedimentation, and localized construction-stage impacts. Social impacts include 0.3 ha of community land requirement with no physical displacement. Construction activities may involve labour influx, worker-community

Sl. No.	Sub-Projects	Risk Category	Key Risks and Rationale
			interactions, temporary access disruptions, and stakeholder engagement challenges with local communities. The involvement of community land and associated stakeholder sensitivities elevate the social risk to High. The overall risk is therefore assessed as High.

The sub-project level screening presented in the table above indicates that the majority of road sub-projects are classified as High Risk due to their location in ecologically sensitive areas, including reserved forests and wildlife movement corridors, combined with moderate to significant environmental and social risks associated with land requirements, livelihood impacts, contractor workforce deployment, community health and safety, and stakeholder engagement in Indigenous Peoples areas. A limited number of road sub-projects are categorized as Substantial Risk where environmental sensitivities and construction-stage social risks are present, but the scale of direct impacts is comparatively lower.

Bridge sub-projects are also classified as High Risk due to the involvement of community land and associated stakeholder engagement sensitivities, combined with construction-stage social and community management risks such as labour management challenges, temporary access disruptions, interaction between construction workers and local communities, and community health and safety considerations during implementation. Environmental risks for bridge sub-projects remain Substantial and are primarily associated with riverine construction activities, erosion, sedimentation, and localized impacts on water bodies.

The aggregation of these sub-project level risks substantiates the overall Environmental and Social Risk Classification of High for the MLCIP.

Mitigation measures following the mitigation hierarchy (avoid, minimize, mitigate, and offset/compensate) in accordance with ESS1 will be detailed in the respective sub-project ESMPs.

1.9 Status of Environmental and Social Assessments

The Project has identified priority sub-projects for initial implementation. Detailed Environmental and Social Impact Assessments (ESIAs), along with corresponding Environmental and Social Management Plans (ESMPs), have been completed for seven (7) road corridors and six (6) bridge sub-projects in accordance with the requirements of the World Bank Environmental and Social Framework (ESF).

ESIAs and ESMPs for the remaining sub-projects are currently under preparation and will be completed prior to commencement of procurement and civil works. No civil works shall be initiated for any sub-project without an approved ESIA and ESMP, consistent with ESF requirements and the Environmental and Social Commitment Plan (ESCP).

All ESIAs and ESMPs shall be subject to review and clearance by the World Bank, as applicable, prior to implementation.

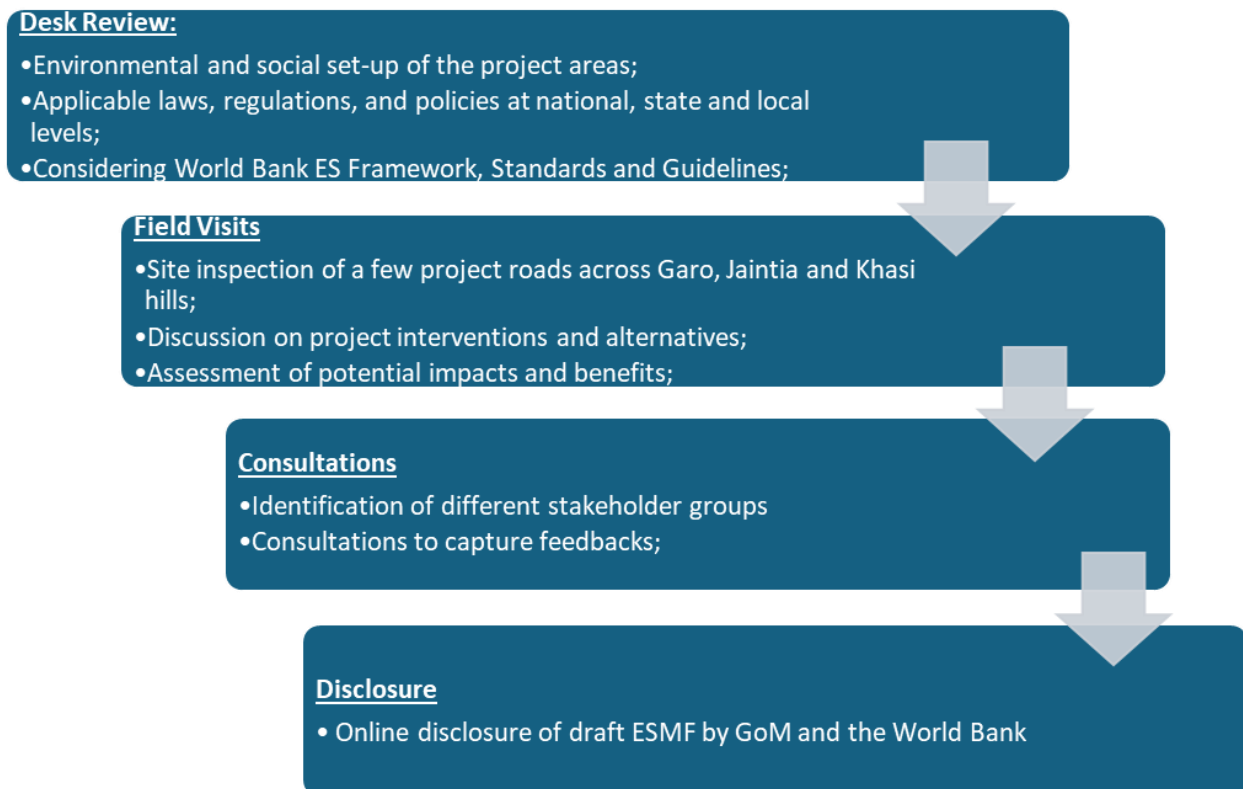
1.10 Methodology of ESMF Development

The **ESMF** was drafted through a participatory, process, consulting diverse stakeholders—line departments, technical experts, Village Employment Councils (VECs), local men/women, road users,

CBOs/NGOs, women workers, vulnerable groups, and Indigenous Peoples/Scheduled Tribes along project roads in September 2025. Enhanced by MITP audits, missions, aide-mémoires, and compliance reports, it followed a clear sequence: (a) **desk review** of environmental/social laws, World Bank ESF, guidelines, relevant publications and secondary baseline data [Census data 2011, NFHS 5 data, etc.]; (b) **field visits** to roads across Garo, Jaintia, and Khasi hills to evaluate interventions, impacts, and benefits; **targeted consultations** with line departments, technical experts, Village Headmen such as Rangbah Shnongs, Nokmas, Waheh Chnongs and Executive Members of the Village Councils to gather feedback; and **online disclosure** of the draft by the Government of Meghalaya and the World Bank. These consultations provided early insights into stakeholder priorities and concerns, which have been incorporated into the identification of key environmental and social risks, including access disruptions, safety risks, and livelihood impacts during construction.

For further details related to targeted consultations, refer to the Stakeholder Engagement Plan (SEP).

Figure 1-1: Key steps followed for drafting ESMF



Grounded in preliminary site assessments and stakeholder inputs, it delivers context-specific insights into risks and expectations. As a **living document**, it guides the entire project lifecycle and will be regularly updated—via agency and partner consultations—to reflect design changes, legal shifts, and implementation lessons. It embeds **climate resilience** using historical hazards and secondary projections. Through **adaptive management**, it integrates ongoing feedback, audits, and evolving ESF standards, with annual review workshops institutionalized to capture lessons, share best practices, and keep

environmental and social safeguards practical, responsive, and effective across Meghalaya's infrastructure initiatives.

1.11 Structure of ESMF

The structure of the ESMF shall be as per the details given below:

Table 1-2: Structure of ESMF

Chapter Name	Details Covered in the Chapter
Chapter 1: Introduction	Provides an overview of the Meghalaya Logistics and Connectivity Improvement Project (MLCIP) and the purpose of the Environmental and Social Management Framework (ESMF). Outlines project objectives, scope, and guiding principles for integrating environmental and social safeguards, along with relevance to the World Bank ESF.
Chapter 2: Application of ESMF	Describes the scope, applicability, and application of the ESMF across various project components and phases. It details screening procedures, risk classification, decision-making processes, and the integration of ESMF provisions into project planning, design, implementation, and supervision.
Chapter 3: Existing Policy and Legal Framework	Summarizes national, state, and World Bank policies and regulations governing environmental protection, land acquisition, labor, and social inclusion. Identifies compliance obligations and institutional linkages.
Chapter 4: Baseline Study	Describes the baseline environmental and social conditions across the project area—covering physical, biological, and socio-economic aspects. Establishes key data for impact prediction and mitigation planning.
Chapter 5: Impact Assessment & Mitigation Measures	Analyzes potential environmental and social impacts of project interventions during construction and operation. Defines mitigation hierarchies and links them to Environmental and Social Management Plans (ESMPs).
Chapter 6: Gender Action Plan	Outlines strategies for promoting gender equality and women's empowerment within the project. Addresses gender-based risks, including GBV/SEA/SH prevention, and promotes women's participation, safe working conditions, and equitable access to employment and decision-making opportunities.

Chapter Name	Details Covered in the Chapter
Chapter 7: Institutional Arrangement	Details the organizational structure, roles, and responsibilities of the PMU, PIU, contractors, and consultants in ESMF implementation. Defines reporting, coordination, and accountability frameworks.
Chapter8: Capacity Development and Training	Outlines capacity needs and training plans for project stakeholders to strengthen E&S management competencies. Specifies modules, frequency, and expected outcomes.
Chapter9: Monitoring and Reporting Framework	Defines indicators, tools, and methodologies for monitoring ESMF implementation. Includes provisions for reporting, third-party audits, community feedback, and adaptive management.
Chapter 10: ESMF Budget	Presents cost estimates for implementing ESMF, covering staffing, capacity building, monitoring, mitigation, and contingencies. Ensures financial provisions for safeguarding sustainability.

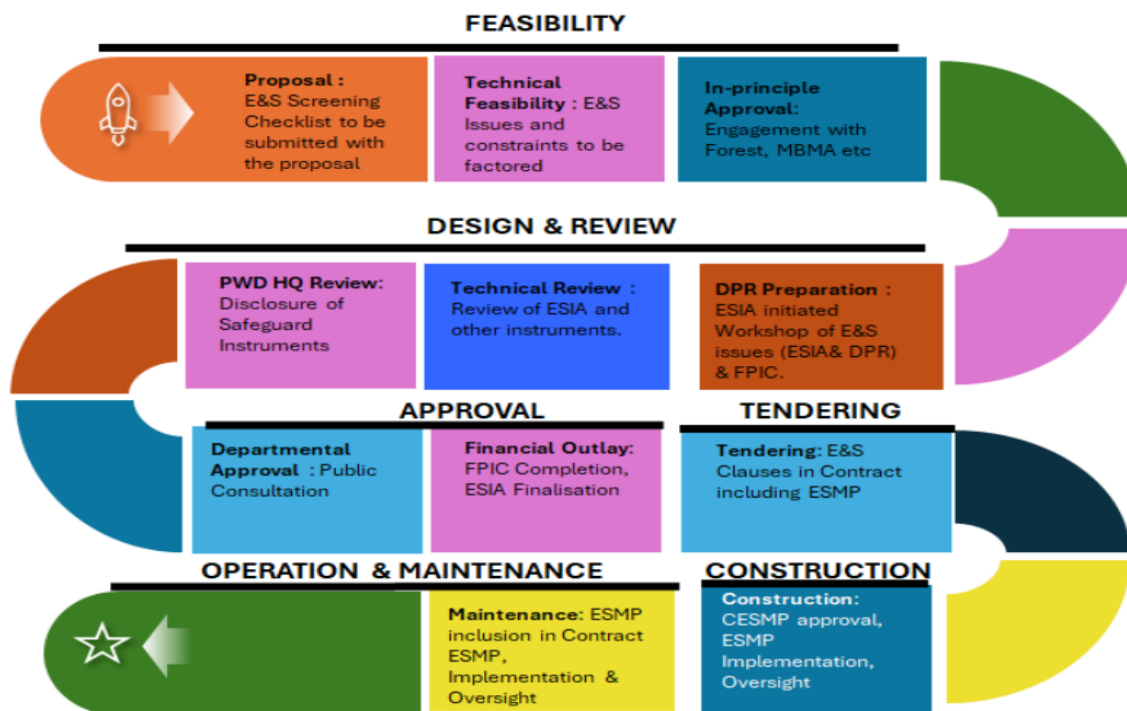
2 APPLICATION OF ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

2.1 Introduction

The Environmental and Social Management Framework (ESMF) establishes a structured and integrated approach to ensure that all MPWD road and bridge sub-projects under the Meghalaya Logistics and Connectivity Improvement Project are planned, implemented, and maintained in an environmentally sound and socially responsible manner. It provides the overarching mechanism for identifying, assessing, mitigating, monitoring, and reporting environmental and social risks in compliance with the World Bank Environmental and Social Framework and applicable regulatory requirements.

The ESMF embeds environmental and social considerations within MLCIP's core planning, design, procurement, construction, and maintenance processes, ensuring safeguards are treated as integral project inputs rather than standalone or post-facto activities. The accompanying schematic diagram provides an overview of the main stages within a typical project cycle, illustrating where E&S measures are to be incorporated. Furthermore, the subsequent table elaborates on the activities and instruments to be employed at different stages of project development and implementation.

Figure 1-2: The E&S Process integrated into the Project Cycle



2.2 E&S Process Table for the MPWD

Table 2-1: E&S Process Table for the MPWD

Project Stage	Activity	E&S Action	E&S Instruments	Responsibility
Feasibility: Proposal	Consolidation of proposals at MPWD HQ for prioritization	Initial identification of potential environmental and social risks and sensitivities to inform early decisions; screening for proximity to forests, wildlife habitats, water bodies, settlements, cultural properties, Indigenous Peoples' areas, and potential land acquisition; flag high-risk corridors and avoid untenable proposals.	Preliminary Environmental and Social Screening Checklist; Compendium of Environmental and Social Sensitivities (forests, wildlife corridors, cultural heritage, landslide-prone areas, Indigenous Peoples' areas)	Assistant Engineer (AE) completes the screening checklist; Executive Engineer (EE) reviews and signs; PIU (E&S Cell) provides technical guidance and reviews the screening for consistency with ESF requirements.
Technical Feasibility	Assessment of alignment options, preliminary engineering, cost estimates, and constructability	Integrate environmental and social considerations into technical feasibility by assessing notified forests, protected areas, wildlife corridors, sensitive zones, land requirements, customary land ownership, cultural heritage sites, and Indigenous Peoples' presence. Identify higher-risk sub-projects for enhanced assessment and resources.	Feasibility Note incorporating E&S considerations; Preliminary maps and alignment drawings with E&S overlays	Executive Engineer prepares feasibility documentation; Additional Chief Engineer (EAP) considers E&S implications; E&S Cell advises on additional studies (biodiversity, Indigenous Peoples, cultural heritage) and indicative resources
In-Principle Approval	Submission of shortlisted proposals to the Government of Meghalaya	Initiate early coordination with statutory authorities to confirm the presence of forests, wildlife corridors, protected species, or	Official correspondence with Forest Department and Wildlife authorities;	Executive Engineer provides alignment data; Chief Engineer/Nodal Officer coordinates inter-departmental communication; E&S

Project Stage	Activity	E&S Action	E&S Instruments	Responsibility
		other regulated sensitivities along alignments to reduce downstream approval risks.	alignment maps and GIS/KML files	Cell provides technical inputs
DPR Preparation	Detailed engineering design and safeguard studies were undertaken concurrently	Conduct detailed E&S screening and baseline surveys (physical, biological, social). Assess impacts, evaluate alternatives, and integrate mitigation into design. Coordinate DPR and ESIA consultants so E&S findings inform alignment refinement, design modifications, and cost estimates.	Detailed E&S Screening Report; Environmental and Social Impact Assessment (ESIA); Environmental and Social Management Plan (ESMP), including monitoring framework and cost estimates	E&S Cell facilitates appointment of ESIA consultants and reviews outputs; Additional/Chief Engineer oversees coordination between DPR and ESIA consultants; outcomes incorporated into ESIA and DPR
Technical Review	Review and acceptance of DPR and safeguard instruments by MPWD	Present ESIA findings (impacts, mitigation, residual risks, implementation arrangements). Incorporate comments from technical and E&S reviewers to finalize safeguard instruments.	Draft ESIA and ESMP	Executive Engineer forwards documents for review; E&S Cell reviews and provides consolidated comments; ESIA consultants revise documents
State - Level Review (PWD/PMU)	Final scrutiny of DPR, costs, and technical soundness at the state level	Review ESIA and ESMP for completeness and compliance with World Bank ESF and national regulations; highlight critical E&S issues, risks, and mitigation costs for senior management decision-making.	Draft ESIA and ESMP ready for disclosure; summary of critical E&S issues	PIU (E&S Cell) reviews safeguard instruments for completeness and consistency with ESF requirements and provides inputs; PMU (ESMU) provides oversight and advises senior management on key environmental and social risks and obligations

Project Stage	Activity	E&S Action	E&S Instruments	Responsibility
Departmental Approval	Formal approval of DPR, ESIA, and ESMP by the Department	Upon approval, disclose ESIA publicly for transparency. Conduct public consultations in project-affected areas to disclose findings, record stakeholder concerns, and integrate feedback into final ESIA and ESMP.	Disclosure notice; ESIA disclosure on website; minutes of public consultation meetings with attendance sheets and photographs	E&S Cell manages disclosure and consultations; reviews outcomes and ensures stakeholder feedback is integrated
Financial Outlay	Finalization of project budget and financial approvals	Integrate environmental and social costs (mitigation, monitoring, capacity building, compensation) into budget. Complete and document FPIC processes for Indigenous Peoples where applicable.	FPIC documentation (where applicable); Final ESIA and ESMP	ESIA consultants finalize documents; E&S Cell verifies FPIC documentation and safeguards compliance
Tendering	Procurement of civil works contractors	Embed E&S requirements into bidding documents, including ESMP provisions, Codes of Conduct, labour management, and E&S qualification criteria to bind contractors contractually to safeguard obligations.	ESMP; Codes of Conduct; E&S clauses in bidding documents	E&S Cell provides E&S inputs to Procurement Cell; Procurement Cell incorporates into bid documents
Construction	Execution of civil works	Contractors prepare site-specific Contractor ESMP (CESMP), Occupational Health & Safety Plans, and Traffic Management Plans.	CESMP; Safety Management Plans; daily and monthly E&S monitoring reports	Contractor E&S Officer implements CESMP; CSC E&S Officers review and monitor; E&S Cell provides oversight and reports

Project Stage	Activity	E&S Action	E&S Instruments	Responsibility
		Real-time monitoring of E&S performance by supervision consultants; non-compliances tracked, corrected, and linked to payment approvals.		KPIs to MPWD management
Maintenance	Routine and intensive maintenance of completed assets	Apply relevant ESMP provisions during maintenance to manage environmental, safety, and social risks. Monitor long-term impacts and implement corrective actions as required.	E&S monitoring and reporting formats; maintenance-related ESMP provisions	Responsible maintenance teams and E&S Cell ensure continued compliance

This table translates the ESMF from a policy framework into an implementable management tool by embedding environmental and social requirements within each defined stage of the MLCIP project cycle. It specifies stage-wise E&S actions, applicable instruments, and institutional responsibilities, thereby establishing clear lines of accountability and decision-making authority. By aligning screening, assessment, mitigation, disclosure, implementation, and monitoring activities with existing engineering and procurement processes, the table ensures timely risk identification, regulatory compliance, and integration of mitigation costs into project planning. This structured approach enables systematic tracking, audit ability, and effective supervision of E&S performance throughout the lifecycle of MPWD road and bridge projects.

The ESMF as a living document is adaptable based on the regular review and monitoring of the risks and its management. The E&S assessments of sub-projects to which this ESMF applies shall be undertaken to help ensure that projects are environmentally and socially sound and sustainable. The E&S assessment will be proportionate to the risks and impacts of the sub-project. It will inform the design of the sub-project and be used to identify mitigation measures and actions and to improve decision-making. The process includes the following steps: E&S assessment including the baseline, E&S screening to determine the level of risk and impacts, ESIA, analysis of alternatives and E&S issues for design consideration, and mitigation plans.

The E&S assessment will include:

- identification of potential E&S risks and impacts such as Threats to the protection, conservation, maintenance, and restoration of natural habitats and biodiversity as well as ecosystem services and the use of living natural resources, such as fisheries and forests

- Disproportionate impact on individuals or groups who may be disadvantaged or vulnerable; negative economic and social impacts relating to the involuntary taking of land or restrictions on land use, and/or impacts associated with land and natural resource tenure and use, including (as relevant) potential project impacts on local land use patterns and tenurial arrangements and land access and availability; impacts on the health, safety, and well-being of workers and project-affected communities; and risks to cultural heritage
- Identification of the relevant actors involved in implementation (including collaboration needs between agencies and with local-level authorities and private sector agencies) and analysis of institutional arrangements and linkages
- Assessment of commitment demonstrated in past performance and current capacity, including financial and human resources available; and monitoring institutional capacity, as well as confirmation of the suitability of proposed ES tools.

3 EXISTING POLICY AND LEGAL FRAMEWORK

This section provides an overview of the applicable policies, laws, and regulations at the national, state, and local levels concerning environmental and social safeguards relevant to the proposed project activities. It also highlights the environmental and social standards (ESS) of the World Bank that apply to the project.

Table 3-1: National and State regulatory framework and World Bank ESF

Requirements	National and State regulations and policies	World Bank	Applicability
ESS 1: ASSESSMENT AND MANAGEMENT OF RISKS AND IMPACTS			
Use of Environmental and Social Framework (ESF)	The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (RFCTLARR) Act, 2013 and Meghalaya RFCTLARR Rules, 2017	When a project is proposed for Bank support, the Borrower and the Bank will consider whether to use all, or part, of the Borrower's ESF in the assessment, development and implementation of a project. IF assessment identifies gaps in the Borrower's ESF, the Borrower will work with the Bank to identify measures and actions to address such gaps. The agreed measures and actions, together with the time frames for their completion, will form part of the ESCP. Borrower will take all actions necessary to maintain the ESF in accordance with the measures and actions identified in the ESCP, throughout the project life cycle. If the Borrower's ESF is changed in a manner inconsistent with the requirement of ESF and the ESCP, the Borrower will carry out, as appropriate, additional assessment and stakeholder engagement in accordance with the ESSs, and propose changes, for approval by the Bank, to the ESCP.	The regulatory framework and WB's ESF is applicable. In addition to the E&S measures and plans, it mandates the need to prepare an ESCP. The Project will operationalize these requirements through preparation and implementation of an ESCP, including time-bound mitigation, monitoring and institutional responsibilities.

Requirements	National and State regulations and policies	World Bank	Applicability
Environmental and Social Assessment (ESA)	Whenever the Government intends to acquire land for a public purpose, it shall consult the concerned Village Council, Municipality or Municipal Corporation, at village level or ward level, in the affected area and carry out a Social Impact Assessment study in consultation with them, in such manner and from such date as specified by notification. [RFTCLARR Act 2013, Section 4(1)]	The Borrower will carry out an ESA of the project to assess the E&S risks and impacts of the project throughout the project life cycle. The ESA will be proportionate to the potential risks and impacts of the project, based on current information/ baseline data and will assess, all relevant direct, indirect and cumulative E&S risks and impacts. The SA will include stakeholder engagement as an integral part of the assessment. The Social Assessment takes into account the national laws, and regulations, and institutional capabilities; project context; applicable requirements under the ESSs; The SA will take into account: (a) Social risks and impacts, including threats to human security; conflict, crime or violence; risks on disadvantaged or vulnerable individuals and groups; negative economic and social impacts relating to involuntary taking of land or restrictions on land use; impacts on health, safety and well-being of workers and project-affected communities; and risks to cultural heritage.	National laws mandate Social Impact Assessment primarily linked to land acquisition. The Project will undertake ESIA/ESMP in accordance with ESS1, covering environmental, social, health, and cumulative impacts proportionate to risk. The social regulatory framework is applicable and meets the requirements of Banks' ESF
Mitigation Hierarchy	The Government shall ensure that— (a) there is a legitimate and bona fide public purpose for the proposed	The SA will apply a mitigation hierarchy, which will: (a) Anticipate and avoid risks and impacts adopting analysis of alternatives;	National provisions support minimization of impacts and consideration of public purpose. The Project will further apply the mitigation hierarchy systematically, including

Requirements	National and State regulations and policies	World Bank	Applicability
	acquisition which necessitates the acquisition of the land identified; (b) the potential benefits and the public purpose shall outweigh the social costs and adverse social impact as determined by the Social Impact Assessment. [RFTCLARR Act 2013, Section 8]	(b) Where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels; (c) Once risks and impacts have been minimized or reduced, mitigate; and (d) Where significant residual impacts remain, compensate them.	alternatives analysis and residual impact compensation and therefore meets the requirements of the Bank's ESF.
Environmental and Social Commitment Plan (ESCP)	Social Impact Management Plan (SIMP) for addressing the impact of the project shall be prepared along with the Social Impact Assessment Report.	The Borrower will develop and implement an ESCP, which will set out measures and actions required for the project to achieve compliance with the ESSs. The ESCP will form part of the legal agreement. The draft ESCP will be disclosed as early as possible, and before project appraisal. The ESCP will take into account the findings of the ESA, the Bank's E&S due diligence, and the results of engagement with stakeholders. It will be a summary of the measures and actions required to avoid, minimize, reduce or mitigate the potential environmental and social risks and impacts of the project. A completion date for each action will be specified in the ESCP. The ESCP will describe the different management tools – ESMP, ESMF,	The Project will prepare, disclose, and implement an ESCP as an integrated project management instrument under the ESF framework, with defined timelines, monitoring arrangements, and corrective action measures.

Requirements	National and State regulations and policies	World Bank	Applicability
		etc. that the Borrower will use to develop and implement the agreed measures and actions. The Borrower will notify the Bank promptly of any proposed changes to the scope, design, implementation, or operation of the project that are likely to cause an adverse change in the E&S risks or impacts of the project. The Borrower will carry out, additional assessment and stakeholder engagement in accordance with the ESSs, and propose changes to the ESCP and relevant management tools, in accordance with the findings of such assessments and consultation. The updated ESCP will be disclosed.	
Project Monitoring and Reporting	The State Government shall constitute a State Monitoring Committee for reviewing and monitoring the implementation of rehabilitation and resettlement schemes or plans. [RFTCLARR Act 2013, Section 50]	The Borrower will monitor the E&S performance of the project in accordance with the legal agreement (including the ESCP). Monitoring will normally include recording information to track performance, and establishing relevant operational controls to verify and compare compliance and progress. The Borrower will provide regular reports as set out in the ESCP providing record of project implementation including compliance with the ESCP and the requirements of the ESSs including information on stakeholder engagement conducted during project implementation. Based on the results of monitoring, the Borrower will identify any	National provisions provide for monitoring of rehabilitation and resettlement activities. The ESF framework further strengthens monitoring and reporting through the ESCP and associated environmental and social management tools.

Requirements	National and State regulations and policies	World Bank	Applicability
		necessary corrective and preventive actions, and will incorporate these in an amended ESCP or the relevant management tool. The Borrower will notify the Bank promptly of any incident or accident relating to the project which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public, or workers. The Borrower will take immediate measures to address the incident or accident and to prevent any recurrence.	
Stakeholder Engagement and Information Disclosure	Whenever the Government intends to acquire land for a public purpose, it shall consult the concerned Village Council, Municipality or Municipal Corporation, at village level or ward level, in the affected area. [RFTCLARR Act 2013, Section 4(1)] The Social Impact Assessment study report shall be made available to the public in the	The Borrower will continue to engage with, and provide sufficient information to stakeholders throughout the life cycle of the project, in a manner appropriate to the nature of their interests and the potential social risks and impacts of the project. For High Risk and Substantial Risk projects, the Borrower will provide to the Bank and disclose documentation, relating to the E&S risks and impacts of the project prior to project appraisal. If there are significant changes to the project that result in additional risks and impacts, the Borrower will provide information on such risks and impacts, consult with project-affected parties and disclose an	National laws provide for consultation and disclosure during land acquisition processes. The Project will maintain continuous stakeholder engagement and information disclosure throughout the project lifecycle through the ESMF and SEP.

Requirements	National and State regulations and policies	World Bank	Applicability
	manner prescribed under section 6. [RFTCLARR Act 2013, Section 4(3)]	updated ESCP, setting out the mitigation measures.	

Requirements	National and state regulations and policies	World Bank	Applicability
ESS 2: LABOUR AND WORKING CONDITIONS			
Labour Standards	Various Labour Laws	ESS 2 of ESF, 2018	National and state labour laws are aligned with the principles and requirements of ESS2 and will be implemented through the Project's labour management arrangements.
Terms and conditions of employment	Terms and conditions of employment related to Age of employment [Sec 12 (1) of the BOCW Act, 1996] wages, [Sec-4 of Minimum Wages Act, 1948] hours of work [Sec- 28 of BOCW act, 1996] Service certificate and ToR of engagement [Sec 30 (2), of Contract Labour Act, 1970 and Central Rule 77 of Contract Labour Act, 1971]	Workers involved in the project can be divided into four categories: direct, contracted, primary supply, and community workers. They will be issued standardized written employment terms that detail their working hours, wages, overtime, compensation, and benefits. Compensation will be provided regularly at minimum wage rates as per national law, with applicable statutory deductions. Furthermore, they will have access to rest periods, annual holidays, sick leave, and maternity leave. Upon termination of their employment, a written notice of termination, along with all payments and a service	National and state labour laws provide the framework for employment conditions, wages, working hours, and worker entitlements. These provisions will be implemented and operationalized through standardized labour management procedures under the Project.

Requirements	National and state regulations and policies	World Bank	Applicability
		certificate, will be issued to these workers. [A-(10 to 12) working conditions and management of worker relationships of ESS 2: Labour and Working Conditions]	
Non-discrimination and equal opportunity	Non-discrimination and equal opportunities [Sec-4-5 of Equal Remuneration Act, 1976; Sec 21 of Rights of Persons with Disabilities Act, 2016]	The engagement of project workers will adhere to the principles of equal opportunity and equitable treatment. There shall be no discrimination in any facet of the employment relationship, including but not limited to recruitment and hiring processes, compensation, wages and benefits, working conditions and terms of employment. [A-(13 to 15) working conditions and management of worker relationships of ESS 2: Labour and Working Conditions]	National and state legal provisions relating to equal opportunity and non-discrimination are consistent with ESS2 requirements and will be applied throughout Project implementation.
Worker's organization	Workers' organization [Sec 4 of Trade Union Act, 1926]	In situations where national law supports the rights of workers to form and join organizations of their selection and to engage in collective bargaining without interference, the project will be implemented in accordance with the provisions of national law. In these circumstances, the significance of legally established workers'	National legal provisions supporting worker representation and collective engagement are consistent with ESS2 requirements and applicable to the Project workforce.

Requirements	National and state regulations and policies	World Bank	Applicability
		organizations and recognized representatives will be respected and upheld. [A-(16) working conditions and management of worker relationships of ESS 2: Labour and Working Conditions]	
Prohibition of Forced labour	No person shall be compelling any person to render any bonded labour or other form of forced labour which expressed in the Sec 4 of the Bonded Labour System (Abolition) Act, 1971	In the execution of the project, there will be a strict prohibition against the use of forced labour, including indentured and bonded labour, and the employment of trafficked individuals will not occur, thereby safeguarding principles of fairness and efficiency. [B-(20) Protecting the Workforce of ESS 2: Labour and Working Conditions]	National legal provisions prohibiting forced and bonded labour are consistent with ESS2 requirements and will be applied across all Project activities.
Prohibition of Child labour	No child shall be employed or permitted to work in any occupation or process which express in Sec-3 as well as no adolescent shall be employed or permitted to work in any hazardous occupation or process as expressed in Sec 3 A of The Child and Adolescent (Prohibition and Regulation) Act, 1986	The project's labour management policies require that the minimum age for employment or engagement is 14 years, unless a higher age is mandated by national law. Moreover, children who are above this minimum age but under 18 years will not be employed or engaged in any project-related activities that are likely to be hazardous. [B-(17 to 19) Protecting the Workforce of ESS 2: Labour and Working Conditions]	National laws governing child labour are consistent with ESS2 requirements, and Project labour management procedures will ensure compliance across all Project activities.
Grievance Redressal Mechanism	The Work Committee is an authority under the Industrial Dispute Act, 1947 and the duties of such committee is to promote measures for securing and preserving	A grievance mechanism will be established for both direct and contracted employees to address workplace issues, safeguarding against retaliation. This mechanism will be characterized by	National legal provisions relating to labour dispute resolution and worker welfare are complemented through the Project-level worker grievance

Requirements	National and state regulations and policies	World Bank	Applicability
	amity and good relations between the employers and workmen. [Se 3 of the Industrial Dispute Act, 1947, Chapter-III, Authority under this Act]	transparency, prompt feedback, and the opportunity for employees to express concerns regarding working conditions and employment terms, except where national legislation imposes restrictions on their organizations. [C-(21 to 23) Grievance Mechanism of ESS 2: Labour and Working Conditions]	mechanism established under ESS2 requirements.
Occupational Health and Safety	Safety Committee and appointment of Safety Officer [Sec 38 of BOCW Act, 1996], Notice of certain Accident [Sec 39 of BOCW Act, 1996], Responsibility of Employer [Sec 44 of BOCW Act, 1996], Excessive Noise & Vibration Fire protection Emergency action plans Fencing of motors, etc. Lifting and carrying of excessive weight, Health and safety, Dangerous and harmful environment. Slipping, tripping, cutting, drowning and falling hazards, Dust, gases, fumes etc. Eye protection, Head protection and other protective apparel, Electrical hazards Use of safety helmets and shoes	The initiative seeks to develop protocols for occupational health and safety, emphasizing the identification of hazards, the implementation of preventive strategies, staff training, accident documentation, emergency preparedness, and the reduction of negative impacts. It mandates organizations to foster a safe workplace, collaborate with employees, and perform regular evaluations to detect hazards and risks. [D-(24 to 30) Occupational Health and Safety of ESS 2: Labour and Working Conditions]	National labour and occupational safety provisions provide the basis for workplace safety management. The Project will further strengthen implementation through ESS2-aligned OHS procedures, training, monitoring, and emergency preparedness measures.
Contracted Workers	The Contract workers are ruled as per the Contract Labour (Regulation and Abolition) Act, 1970.	It is essential for employers to authenticate the legitimacy of third parties and their labour management systems, develop	National legal provisions governing contract labour are applicable to Project activities. The Project will

Requirements	National and state regulations and policies	World Bank	Applicability
	However, it does not include (i) who employed in a managerial or administrative capacity or (ii) who employed in a supervisory capacity draws wages exceeding five hundred rupees per mensem; (iii) who is an out worker i.e. a person to whom any articles or materials are given out by or on behalf of the principal employer The other facilities such as workers like Canteen Facility [Sec 16], Rest Room [Sec-17], Drinking Water, Latrine, Urinal and washing facilities [Sec 18 a,b, & c], First aid facility [Sec 19], Liability of principal employer and Responsibility of the principal for payment of wages [Sec 20 & 21]	performance management procedures, embed ESS requirements within contracts, provide remedies for instances of non-compliance, and, if needed, create a grievance mechanism for contracted workers. [E (31, 32 & 33)-Contracted Workers of ESS 2: Labour and Working Conditions]	additionally implement ESS2-aligned contractor management, monitoring, and grievance procedures.
Community Workers	There are no specific act or rules for Community Workers in India. However, if anyone employed community Workers on a contract basis as worker then the Contract Labour (Regulation and Abolition) Act, 1970 will be applicable for such workers [Sec 2 I, A, B & C] In such cases, the employer shall follow all	It is essential to evaluate projects that engage community workers for their reliance on voluntary or community-driven labour. Employers seeking to implement ESS provisions should take into account the project's scope, activities, and associated risks Furthermore, an assessment of Working Conditions and Occupational Health and Safety will be performed, with labour management procedures specifying the terms and	Project-specific procedures for community workers will be defined through the Labour Management Procedures (LMP), including provisions relating to OHS, working conditions, and monitoring arrangements.

Requirements	National and state regulations and policies	World Bank	Applicability
	the provisions for such engagement and need to provide the facilities to such workers as laid in the act, such as- Canteen Facility [Sec 16], Rest Room [Sec-17], Drinking Water, Latrine, Urinal and washing facilities [Sec 18 a, b, & c], First aid facility [Sec 19], Liability of principal employer and Responsibility of the principal for payment of wages [Sec 20 & 21]	conditions of employment, such as working hours. Employers must also evaluate risks, monitor responsibilities, and take appropriate corrective actions if child or forced labour is discovered. [F (34 to 38)- Contracted Workers of ESS 2: Labour and Working Conditions]	
Primary supply Workers	Under the Contract Labour (Regulation and Abolition) Act, 1970, 'Contractor' in relation to an establishment, means a person who undertakes to produce a given result for the establishment, other than a mere supply of goods or articles of manufacture to such establishment, through contract labour or who supplies contract labour for any work of the establishment and includes a sub-contractor. In such conditions, the primary supply of such workers will also be governed by the Contract Labour Act, 1970 for such workers [Sec 2 I, A, B & C]	The employer is responsible for examining potential risks related to child labour, forced labour, and safety matters among primary suppliers. Suppliers will be obligated to identify these risks, develop labour management procedures, and rectify any occurrences. Should safety concerns be substantial, suppliers must adopt mitigation measures and periodically review them to ensure they remain effective. [F (39 to 42)- Contracted Workers of ESS 2: Labour and Working Conditions]	National legal provisions applicable to primary supply workers will be complemented through ESS2-aligned screening, monitoring, and labour management measures.

Requirements	National and state regulations and policies	World Bank	Applicability
	In such cases, the employer shall follow all the provisions for such engagement and need to provide the facilities to such workers as laid in the act, such as- Canteen Facility [Sec 16], Rest Room [Sec-17], Drinking Water, Latrine, Urinal and washing facilities [Sec 18 a,b, & c], First aid facility [Sec 19], Liability of principal employer and Responsibility of the principal for payment of wages [Sec 20 & 21		

Requirements	National and state regulations and policies	World Bank	Applicability
ESS 3: RESOURCE EFFICIENCY AND POLLUTION PREVENTION			
<i>Energy use</i>	The Energy Conservation Act, 2001: Mandates promotion of energy efficiency and conservation across sectors.	Contribute to sustainable development by ensuring the efficient use of energy throughout the project design and implementation. For projects that are potentially significant energy users:	Not explicitly applicable

Requirements	National and state regulations and policies	World Bank	Applicability
<i>Water use</i>	The Water (Prevention and Control of Pollution Cess Act 1977 deals with water use and related Cess payable for industries. Ministry of Jalshakti, Gol has issued guidelines to regulate and control ground water extraction in India	For projects with significant water usage or potential impacts on water quality: Apply resource efficiency requirements. Adopt measures to minimize water usage and avoid significant adverse impacts on communities, other users, and the environment, to the extent technically and financially feasible. For high water-demand projects with significant adverse impacts: Develop, maintain, and periodically report a detailed water balance. Identify and implement opportunities to improve water use efficiency. Benchmark operations against industry standards for water use. Assess the cumulative impacts of water use on communities, other users, and the environment, and implement appropriate mitigation measures.	The Contractor needs to obtain permission if it sinks a borewell for the project.

Requirements	National and state regulations and policies	World Bank	Applicability
<i>Raw material use</i>		Adopt measures to support efficient use of raw materials, to the extent technically and financially feasible.	There is no comprehensive regulatory framework for resource-efficient design and use of raw materials across all industries in India. The Project will adopt resource-efficient design and material use measures, to the extent technically and financially feasible, consistent with ESS3 principles
<i>Management of air pollution</i>	Air (Prevention & Control of Pollution) Act, 1981: This Act provides the standards for prevention and control of Air pollutions. It also provides some process to be followed by the applicant seeking permission for setting up unit/ process/ activity which can lead to emission of pollutant Central Motor Vehicle Act 1988 and Central Motor Vehicle Rules 1989: The Motor Vehicle Act and the Central Motor Vehicle Rules are a comprehensive set of legislations for	Consider and implement technically and financially feasible options to minimize or avoid air emissions during the design, construction, and operation of the project. As part of the environmental and social assessment, estimate the sources of air pollution, including gross greenhouse gas (GHG) emissions, provided that such estimations are technically and financially feasible.	The Contractor is likely to set up hot-mix plants, and concrete batching plants which attract permission i.e. Consent to Establish and Consent to Operate under the Air (Prevention & Control of Pollution) Act, 1981. Accordingly, Consent to Establish and Consent to Operate from the State Pollution Control Board are mandatory prior to the installation and operation of such facilities. For Third party facilities the CTO needs to be provided to the PMU before procurement of any material.

Requirements	National and state regulations and policies	World Bank	Applicability
	registering, ;licensing and controlling motor Vehicles. It also provides for the enforcement of the emission standards from vehicles.		Central Motor Vehicle Act 1988 and Central Motor Vehicle Rules 1989: Contractors shall ensure that all vehicles deployed during construction hold valid Pollution Under Control certificates and comply with the applicable Bharat Stage CEV/TREM IV and V emission standards as notified under MoRTH G.S.R. 1114(E). All Construction Equipment, Vehicles used in the project need to meet the GSR 1114 (E) requirements
<i>Management of hazardous and non-hazardous wastes</i>	Hazardous and other Wastes (Management and Transboundary Movement) Rules, 2016 and amendments: The Hazardous and Other Wastes (Management and Transboundary Movement) Rules define and classify hazardous wastes, and establish procedures for their handling, storage, treatment, and disposal, including the use of Treatment, Storage, and Disposal Facilities (TSDFs). Batteries (Management and Handling) Rules,	Prioritize waste reduction, reuse, recycling, and recovery in ways that protect human health and the environment Adhere to both national laws and international standards on safe storage, transport, and disposal. Where no such regulations exist, adopt recognized good international industry practices (GIIP) for managing hazardous waste. If a third party handles waste, ensure these contractors are licensed, reputable, and maintain custody documentation throughout the waste's journey to its final disposal site.	Hazardous and other Wastes (Management and Transboundary Movement) Rules, 2016 and amendments: All waste oil and hazardous wastes generated during construction and operation must be managed in accordance with CPCB guidelines . Contractors must obtain authorization from the Meghalaya State Pollution Control Board (MSPCB), maintain accurate records, submit statutory returns, and ensure safe storage, transportation, and disposal. Batteries (Management and Handling) Rules, 2022: All

Requirements	National and state regulations and policies	World Bank	Applicability
	2022 : The rules require the proper collection, disposal, and recycling of used lead-acid batteries, assigning responsibility to manufacturers, dealers, and consumers to ensure their return for environmentally sound recycling. Construction and Demolition Waste Management Rules 2016: The rules provide a framework for the management of construction and demolition (C&D) waste generated from the construction, repair or demolition of any civil structure, ensuring environmentally sound handling, recycling, and disposal practices. Municipal Solid Waste (Management & Handling) Rules, 2000 (MSW Rules): Requires municipalities and waste generators to segregate waste into wet and dry categories at the source and ensure its	Verify that disposal sites meet acceptable standards	used lead-acid batteries generated by the project shall be collected, stored, and returned to the authorized recycling system in accordance with this Rule, ensuring environmentally sound disposal and recycling. Construction and Demolition Waste Management Rules 2016: Construction and demolition (C&D) waste generated during project activities shall be managed, handled, and disposed of in accordance with the provisions of the Rules. Disposal of C& D waste shall be done under the guidelines of local authorities like Village council, and municipal boards. The necessary clauses will be included in the Bidding document. Solid Waste Management Rules, 2016: All campsites shall be provided with designated waste collection and storage facilities Disposal is done under the provided guidelines of local

Requirements	National and state regulations and policies	World Bank	Applicability
	proper collection, transportation, and disposal. Waste processors must adhere to environmentally sound methods for recycling, composting, and disposing of waste, with an emphasis on reducing landfill usage. The rules also require bulk waste generators (like large hotels or institutions) to manage their waste independently.		authorities like Village council and municipal boards
<i>Management of chemicals and hazardous materials</i>	Manufacture, Storage, and Import of Hazardous Chemicals (MSIHC) Rules, 1989: Requires industries involved in the manufacture, storage, or import of hazardous chemicals to take measures for their safe handling, storage, and disposal. These rules mandate the preparation of safety data sheets, labeling, and documentation for hazardous chemicals. Facilities must obtain authorization from the	Avoid the manufacture, trade, and use of chemicals and hazardous materials that are subject to international bans, restrictions, or phaseouts, unless an acceptable purpose is defined under relevant conventions or protocols, or an exemption is obtained in line with the government commitments to international agreements. Minimize and control the use and release of hazardous materials by assessing their production, transportation,	Manufacture, Storage, and Import of Hazardous Chemicals (MSIHC) Rules, 1989: Not applicable to this project The Petroleum Rules, 2002: Storage of petroleum up to 2,500 litres in non-bulk containers does not require a license but must comply with prescribed safety guidelines. Bulk storage above 1,000 litres and up to 25,000 litres requires a license from the District Authority, subject to safety,

Requirements	National and state regulations and policies	World Bank	Applicability
	relevant authorities, maintain safety protocols, and develop emergency plans for chemical accidents. The rules also require regular monitoring, safety audits, and reporting of incidents involving hazardous chemicals, with an emphasis on minimizing environmental and health risks associated with their use. The Petroleum Rules, 2002: The Rules mandate obtaining licenses for most petroleum-related activities, emphasize safe handling and storage to prevent accidents, and establish reporting procedures for incidents involving petroleum products.	handling, storage, and use during the project. Consider and, where possible, adopt less hazardous substitutes for chemicals used in manufacturing or other operations to reduce environmental and health risks.	fire protection, and facility compliance. Storage between 25,000 and 45,000 litres requires prior PESO approval, while quantities exceeding 45,000 litres require a full license in Form XVI. In case the Contractor stores petroleum product above the threshold quantities the following provisions apply.

Requirements	National and State Regulations and policies	World Bank	Applicability
ESS 4: COMMUNITY HEALTH AND SAFETY			
<i>Infrastructure and Equipment Design and Safety</i>	The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 The Act regulates employment, safety, health, and welfare of building and construction workers in India and looks at the social security. The act addresses the vulnerabilities of construction workers, who often face temporary employment, uncertain working hours, inadequate amenities, and high risk of accidents. It also stipulates the provisions for safer site operations and worker safety.	Initial Screening: Identifies potential hazards from project infrastructure, like structural risks and environmental impacts. Detailed Risk and Impact Assessment: Evaluates risks to both workers and nearby communities, including infrastructure stability, pollution, and traffic hazards. Mitigation Planning: Develops plans to reduce risks through design adjustments, safety barriers, and emergency response procedures. Adherence to Global Safety Standards: Enforces international building codes and the World Bank's Environment, Health, and Safety (EHS) Guidelines for robust infrastructure and occupational safety. Training and Awareness: Trains workers on safety protocols and informs community members of potential risks near project sites.	Directly applicable to all construction activity. Registration of workers, provision of drinking water, toilets, crèche, first aid, PPE, accident reporting, skill training.

Requirements	National and State Regulations and policies	World Bank	Applicability
		Ongoing Monitoring: Conducts regular safety audits and adjusts risk management practices as needed. Community Grievance Mechanism: Provides a channel for community members to report safety concerns and incidents.	
<i>Safety of Services</i>	The Public Health Acts (The Public Health (Prevention, Management and Control of Epidemic) Act 2000, Epidemic Diseases Act, 1897 – historic framework for epidemic control, Drugs and Cosmetics Act, 1940 – regulates quality and safety of medicines Food Safety and Standards Act, 2006 – ensures food safety) 4., broadly ensure that health-related services adhere to safe practices, indirectly benefiting communities	Initial Risk Assessment: Evaluates potential health and safety risks associated with services provided by or linked to the project, such as health clinics, sanitation facilities, and water supply systems. Development of Service Safety Protocols: Based on the risk assessment, specific safety protocols for these services are required, ensuring they meet national and international health standards to prevent potential hazards. Ensuring Service Accessibility and Usability: Mandates that essential services (like water	Not applicable to the project as present

Requirements	National and State Regulations and policies	World Bank	Applicability
	involved in large infrastructure projects.	and sanitation) are accessible, particularly to vulnerable community members, and designed to be safely usable by all. Regular Monitoring and Compliance: Throughout the project, the World Bank performs safety audits to confirm compliance with these protocols and adjusts as needed to address new risks or safety issues. Community Feedback Mechanisms: Communities are provided with channels to report any safety concerns related to these services, allowing for timely responses and continuous improvement.	
<i>Traffic and Road Safety</i>	The Motor Vehicles Act of 1988 establishes criteria for safe driving and vehicle maintenance and regulates driver licenses, traffic laws, and vehicle safety standards. By regulating traffic flow and enforcing penalties for breaking traffic laws, it indirectly benefits the	Risk Assessment for Traffic and Road Safety: Initiates with a detailed assessment to identify traffic risks in and around the project site, particularly focusing on high-risk areas where increased project-related traffic may impact community safety. Development of a Traffic Management Plan: Based on assessment findings, the World Bank requires a Traffic Management Plan. This plan	Applicable to MLCIP. Implementation of the same would be governed by the ESMF, Detailed Design and the Bidding documents.

Requirements	National and State Regulations and policies	World Bank	Applicability
	communities surrounding project sites. Regulations for Motor Vehicles (Driving), 2017 emphasizes road safety for drivers and vehicles rather than community-specific traffic management around project sites. It defines safe driving behaviours, including restrictions for speed, lane discipline, and safe driving in construction zones.	includes measures like speed limits, vehicle routes, and times of operation to minimize risks, especially in populated areas. Road Infrastructure Improvements: Requires upgrades to existing road infrastructure, such as widening roads or adding pedestrian crossings, to accommodate increased traffic and improve overall safety. Installation of Road Safety Signage: Signage and warnings are installed to alert both project workers and community members of potential road hazards, guiding safe use of roads near the project site. Community Road Safety Training: Road safety awareness to affected communities will be implemented to sensitize on safe practices for navigating areas with heavy project-related traffic. Ongoing Monitoring and Adjustment: Requires continuous monitoring of traffic conditions and periodic	

Requirements	National and State Regulations and policies	World Bank	Applicability
		adjustments to traffic management strategies to address emerging risks	
<i>Ecosystem Services</i>	The Biological Diversity Act, 2002 protects and conserves biodiversity, mandating that natural resources be used sustainably. It indirectly supports ecosystem services by protecting biodiversity that communities rely on for livelihoods. Forest Conservation Act, 1980 restricts deforestation and the diversion of forest land for non-forest purposes, conserving the forest and its resources. The Wildlife Protection Act, 1972 ensures the protection of wildlife and their habitats, and is limited to protected areas and specified wildlife habitats. Meghalaya's forest and wildlife	Assessment of Ecosystem Services: Requires a thorough assessment to identify critical ecosystem services in the project area, such as water sources, pollinators, and vegetation used by local communities. Evaluation of Community Dependence: Evaluates how local communities rely on ecosystem services for activities like drinking water, agriculture, grazing, or fishing, ensuring that community needs are recognized. Mitigation of Potential Disruptions: If the project poses risks to ecosystem services, appropriate measures will be developed to avoid or minimize disruptions to ecosystem services, such as rerouting infrastructure to avoid sensitive areas or implementing protective measures for local resources. Implementation of Compensatory Measures: In	The Biological Diversity Act, 2002 :In compliance with the Biological Diversity Act, 2002, MLCIP shall consult the Meghalaya Biodiversity Board and Biodiversity Management Committees. Project activities shall avoid Biodiversity Heritage Sites and eco-sensitive zones, undergo pre-construction biodiversity screening, and integrate appropriate safeguards to mitigate impacts on sensitive habitats, species, and community-conserved landscapes. Forest Conservation Act, 1980 Under the project all works will stay strictly within the pre-1980 right-of-way (RoW), eliminating the need for additional forest land requirement /diversion for the project. Even though Meghalaya's forests are largely community-owned, the state Forest Department

Requirements	National and State Regulations and policies	World Bank	Applicability
	context triggers MoEF&CC OM No. J.11013/41/2006-IA/II(I) (2 December 2009), requiring NBWL clearance for projects on forest land or within 10 km of National Parks, Wildlife Sanctuaries, or ESZs under the Wildlife (Protection) Act, 1972.	case of unavoidable impacts, restoration or compensatory measures will be considered, as appropriate, such as restoring affected areas, enhancing other local ecosystems, or providing alternative resources to communities. Monitoring and Adaptive Management: Enforces continuous monitoring of ecosystem impacts, adjusting mitigation and restoration efforts as needed to respond to any unanticipated disruptions.	has verified that no MLCIP alignments overlap with designated Community Forest areas. The Wildlife Protection Act, 1972 As no MLCIP subprojects fall within or near notified ESZs, NBWL clearance is not required. However, subprojects near elephant corridors shall incorporate , species specific safeguards in line with the Act and Supreme Court directions Civil Appeal Nos. 3438–3439 of 2020 for protecting elephant migration routes.
Community Exposure to Health Issues	Air (Prevention and Control of Pollution) Act, 1981: Regulates emissions and requires pollution monitoring in industrial zones to limit community exposure to air pollutants, but lacks specific guidelines for health protection in project sites. Water (Prevention and Control of Pollution) Act, 1974: Controls wastewater discharge to protect water bodies, indirectly safeguarding	Requires proactive health risk assessments for communities, focusing on pollution, disease prevention, and community health management during the project lifecycle. Labour Influx Labor influx is recognized as a risk factor for community health, especially regarding infectious diseases and increased demand on local healthcare systems. It requires project developers to manage health risks associated with large numbers of workers entering project areas, including the potential for disease spread and social conflict.	The Contractor is required to obtain the Consent to Establish and the Consent to Operate under the Air Act and Water Act. The Consent would mandate standards for discharge / emission of pollutants. The ESF framework further strengthens community health and safety management through proactive health risk assessment, labour influx management, SEA/SH risk mitigation, and community-focused monitoring measures.

Requirements	National and State Regulations and policies	World Bank	Applicability
	community health by maintaining water quality standards near project sites. Noise Pollution (Regulation and Control) Rules, 2000: Sets noise limits for industrial and construction zones to minimize disturbances, which benefits nearby communities but lacks enforcement for temporary or mobile construction activities. The Inter-State Migrant Workmen Act, 1979: Focuses on welfare and rights of migrant workers but does not provide detailed safeguards to prevent health risks to local communities due to labour influx. GBV/SEA/SH Indian Penal Code (IPC): Section 354 (Assault or Criminal Force to Woman with Intent to Outrage Her Modesty) and Section	GBV/SEA/SH: Requires a comprehensive SEA/SH risk assessment and prevention strategy for projects. World Bank standards mandate Codes of Conduct for workers, training on respectful conduct and GBV awareness, and the establishment of grievance mechanisms for community members to report issues.	

Requirements	National and State Regulations and policies	World Bank	Applicability
	509 (Word, Gesture, or Act Intended to Insult Modesty of a Woman): Address harassment and assault, aiming to prevent SEA/SH by establishing legal consequences for inappropriate actions against women. Section 375 (Rape) and Section 376 (Punishment for Rape): Define and penalize rape and sexual assault, crucial for protecting women in both community and work settings. Sexual Harassment of Women at Workplace (Prevention, Prohibition, and Redressal) Act, 2013: Mandates safe environments and complaint mechanisms for women, although it is more applicable in formal workplaces and may be under-enforced in informal, project-based work environments or labour camps.		

Requirements	National and State Regulations and policies	World Bank	Applicability
	The Meghalaya State Commission for Women Act 2005: This Act established the Meghalaya State Commission for Women, tasked with investigating and addressing complaints related to women's safety and welfare across Meghalaya. While primarily an advisory body, the Commission can play a vital role in raising awareness, supporting grievance mechanisms, and advocating for the protection of women affected by labor influx and SEA/SH issues in large-scale projects.		
<i>Management and Safety of Hazardous Materials</i>	Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016: Specifies guidelines for the handling, storage, and disposal of hazardous substances, aiming to protect communities from potential exposure, though largely implemented at the project level rather than tailored	Strict Regulations: Enforces guidelines for the safe handling, storage, and disposal of hazardous materials to prevent environmental contamination and health risks. Risk Identification and Assessment: Requires identification of hazardous materials and assess the potential risks they pose to	Not Applicable to the Project

Requirements	National and State Regulations and policies	World Bank	Applicability
	for specific community impacts.	the environment and local communities. Safety Procedures: Detailed safety procedures are required for the transportation, storage, and handling of hazardous materials to avoid accidents or exposure. Training and Awareness: Workers involved in handling hazardous materials must receive proper training on safety protocols and emergency response procedures. Monitoring and Compliance: Ongoing monitoring of hazardous materials management is required to ensure compliance with safety standards. Emergency Response Plans: Projects must develop and implement emergency response plans in case of spills or accidents involving hazardous materials. Proper Disposal: Ensures that hazardous materials are disposed of in a safe, environmentally responsible manner to avoid	

Requirements	National and State Regulations and policies	World Bank	Applicability
		contamination of local resources.	
Emergency Preparedness and Response	Disaster Management Act, 2005 provides a national disaster management framework, requiring regional disaster response plans, though it primarily addresses natural disasters and does not mandate project-specific emergency protocols. National Disaster Management Plan, 2019 outlines strategies for disaster resilience and readiness, largely focusing on national-scale disaster events rather than emergency preparedness specific to project areas.	Tailored Emergency Plans: Requires emergency preparedness plans that are customized to address the specific risks and potential hazards of each project. Risk Assessment: A thorough assessment of potential emergency scenarios is conducted to identify key risks (e.g., natural disasters, industrial accidents). Community Awareness: Plans include efforts to raise community awareness about emergency procedures, ensuring local populations are informed and prepared. Regular Drills: Mandates the conduct of regular emergency drills to ensure that both workers and communities are ready to respond effectively. Clear Communication: Emergency plans must include clear communication strategies for informing affected communities and stakeholders during a crisis. Capacity Building: Training programs for project staff and local authorities are required to ensure proper preparedness and response capabilities. Continuous Review	National laws provide the overarching framework for emergency preparedness and response. The Project will additionally implement community-centered emergency preparedness, communication, training, and response procedures consistent with ESF requirements.

Requirements	National and State Regulations and policies	World Bank	Applicability
		Emergency plans are reviewed and updated regularly to account for any changes in project scope or risks.	
Security Personnel	The Private Security Agencies Regulation Act, 2005: Regulates private security agencies operating in India, including those deployed at construction sites. The Act mandates minimum training and vetting standards for private security personnel, aiming to ensure professional conduct. However, it does not provide community-specific protocols or detailed guidelines for managing interactions between security personnel and local residents in construction areas.	Requires that security personnel at project sites operate with respect for community rights and safety. This includes training on minimal use of force, human rights awareness, and protocols that limit aggressive actions. It is mandatory that projects involving security forces have grievance mechanisms accessible to community members to report and address issues.	National legal provisions relating to private security agencies are applicable. The ESF framework provides for security personnel management measures, including training on community relations, proportional use of force, grievance redressal, and human rights considerations.

Requirements	National and state regulations and policies	World Bank	Applicability
ESS 5: LAND REQUIREMENT AND R&R (RESETTLEMENT AND REHABILITATION)			
Meaning of terms associated with land acquisition	Section 3(p) "Land" includes benefits to arise out of land, and things attached to the earth or permanently fastened to	"Involuntary resettlement" refers to impacts due to project-related land acquisition or restrictions on land use may cause physical	National and state laws are broadly aligned with the requirements of ESS5. Project implementation will additionally consider restrictions on land use,

Requirements	National and state regulations and policies	World Bank	Applicability
	anything attached to the earth. For livelihood, the Act recognizes impacts on individuals, families and communities whose primary source of livelihood stand affected by the acquisition of land. Security of tenure is implied under Section 32, 42 & 39 of the Act. As per Section 32, in every resettlement area, all infrastructural facilities and basic minimum amenities specified in the Third Schedule are to be provided. Other benefits available to the Scheduled Tribes in the affected areas shall continue in the resettlement area, as per Section 42. In the case of multiple displacement, such land can be acquired on the condition that double the amount of compensation shall be paid for the successive displacements. (Section 39)	and economic displacement, or both. “Land acquisition” refers to all methods of obtaining land for project purposes, which may include outright purchase, expropriation of property and acquisition of access rights, such as easements or rights of way. “Land” includes anything growing on or permanently affixed to land. “Restrictions on land use” refers to limitations or prohibitions on the use of agricultural, residential, commercial or other land that are directly introduced and put into effect as part of the project. “Livelihood” refers to the full range of means that individuals, families and communities utilize to make a living. “Replacement cost” is the method of valuation	livelihood impacts, and replacement cost principles consistent with ESS5 requirements. Project implementation will additionally apply replacement cost principles consistent with ESS5 requirements, including consideration of associated transaction costs and livelihood restoration measures. The 2013 Act specifies that the market value be determined on the date of issuance of preliminary notification prescribed under Section 11(1).

Requirements	National and state regulations and policies	World Bank	Applicability
		yielding compensation sufficient to replace assets, plus necessary transaction costs associated with asset replacement. “Security of tenure” means that resettled individuals or communities are resettled to a site that they can legally occupy, where they are protected from the risk of eviction and where the tenure rights provided to them are socially and culturally appropriate.	
Persons affected by land acquisition	The 2013 Act defines the affected area and affected family [Section 3 (b) & (c)] 3(b)-Affected area means such area as may be notified by the appropriate Government for the purposes of land acquisition; 3(c) —Affected family includes — (i) a family whose land or other immovable property has been acquired; primary source of livelihood stand	Affected persons may be classified as persons: (a) Who have formal legal rights to land or assets; (b) Who do not have formal legal rights to land or assets, but have a claim to land or assets that is recognized or recognizable under national law; or (c) Who have no recognizable legal right or claim to the land or assets they occupy or use.	National provisions relating to affected persons and affected families are applicable. Additional Project measures under the RPF and RAP processes will address aspects relating to identification of non-titleholders, eligibility criteria, and applicable cut-off procedures consistent with ESS5.

Requirements	National and state regulations and policies	World Bank	Applicability
	affected; primary source of livelihood for three years prior to the acquisition of the land is dependent on forests or water bodies; (ii) the Scheduled Tribes and other traditional forest dwellers who have lost any of their forest rights recognised under Forest Rights Act, 2006; (v) a member of the family who has been assigned land by the State/Central Government under any of its schemes; (vi) a family residing on any land in urban areas for preceding three years or whose primary source of livelihood for three years prior to the acquisition is affected;	The census will establish the status of the affected persons.	
Integrating land requirement in project design	As per Section 4(4) of the 2013 Act, the Social Impact Assessment (SIA) study would cover: (a) assessment as to whether the proposed acquisition serves public purpose; (d) whether the extent of land proposed for acquisition is the absolute bare- minimum	Demonstrate that involuntary land acquisition or restrictions on land use are limited to direct project requirements for clearly specified project purposes. Consider feasible alternative project designs to avoid or	Requirements of national and state laws are aligned with ESF of World Bank requirement and applicable to the Project.

Requirements	National and state regulations and policies	World Bank	Applicability
	extent needed for the project; (e) whether land acquisition at an alternate place has been considered and found not feasible	minimize land acquisition, especially physical or economic displacement, balancing environmental, social and financial costs and benefits, paying particular attention to gender impacts and impacts on the poor and vulnerable.	
Compensation and Benefits for Affected Persons	Based on the survey and census, a draft R&R Scheme, with particulars on entitlements of each land owner and landless whose livelihoods are primarily dependent on the lands being acquired. [Section 16(1) and (2)] Compensation is calculated as per Sections 26, 28 and 29 of the 2013 Act. R&R award is calculated as per Section 31 of the Act. This is done based on the details laid out in First and Second Schedules of the Act. The draft R&R Scheme shall be made public in the affected areas and public hearing conducted after giving adequate publicity about	When land acquisition cannot be avoided, offer compensation to affected persons at replacement cost, and other assistance to help them improve or restore their livelihoods. Compensation standards for categories of land and fixed assets will be disclosed. Compensation rates may be subject to upward adjustment where negotiation strategies are employed. In all cases, a clear basis for calculation of compensation will be documented, and compensation distributed in	The 2013 Act compensates selected vulnerable non-titleholders (encroachers and squatters) who have resided on the acquired land for 3 years before the acquisition and whose primary source of livelihood is affected. [Section 3(c)] Project implementation processes will additionally consider livelihood restoration, replacement cost principles, and support measures consistent with ESS5 requirements.

Requirements	National and state regulations and policies	World Bank	Applicability
	the same (Section 16(4) and (5)). The summary and declaration of the R&R Scheme is published in the Official Gazette, in two daily newspapers, in the office of the Panchayat, Municipality, etc. (Section 19). A notice is also issued under Section 21 for all persons interested to claims for their compensation, rehabilitation and resettlement. Possession of land to be acquired after ensuring that full payment of compensation as well as R&R entitlements are paid to the entitled persons within specified periods. (Section 38) The 2013 Act provides for negotiated settlements in certain cases (Section 46 and 2(3)(a)). Further, the 2013 Act empowers state governments to frame laws or policies which allow for a higher compensation than that	accordance with transparent procedures Option for replacement land, resettlement assistance, livelihood restoration and improvement programs, etc. will also be provided to the affected persons. Take possession of acquired land and related assets only after compensation has been made available.	

Requirements	National and state regulations and policies	World Bank	Applicability
	calculated under the Act (Section 108).		
Establishing cut-off date for eligibility	Cut-off date- Section 3 (c) (ii), (iv) and (vi) indicate that those families are eligible who have been residing in the affected area for preceding 3 years or more, prior to “acquisition of land”.	In conjunction with the census, establish a cut-off date for eligibility. Information regarding the cut-off date will be well documented and will be disseminated throughout the project area at regular intervals in written and non-written forms and in relevant local languages.	The cut-off date for eligibility prescribed in the ESS is the date when the census begins. As per the Act, only those families are eligible who have resided in the affected area for preceding 3 years or more, prior to acquisition of land. The Project will apply eligibility and census procedures consistent with both national requirements and ESS5 provisions, including dissemination of cut-off date information to affected stakeholders.
Community Engagement	Consultations with the Panchayat, Municipality or Municipal Corporation are to be done as part of the SIA study. [Section 4(1)] After publication of preliminary notification under Section 11, objections can be heard from any person	Engage with affected communities, including host communities, through the process of stakeholder engagement. Disclosure of relevant information and meaningful participation of affected communities	National legal provisions relating to consultation, disclosure, and public participation are aligned with ESS5 requirements and applicable to the Project.

Requirements	National and state regulations and policies	World Bank	Applicability
	interested in the land (Section 15). The draft R&R Scheme shall be made public in the affected areas and public hearing conducted after giving adequate publicity [Section 16(4) and (5)]. Once the R&R Scheme is approved, it is made public in the local language (Section 18 & 19). Notice to be issued to all persons interested [Section 21] With respect to indigenous peoples, where land has to be acquired in Scheduled Areas prior consent shall be obtained. [Section 41(3)]. Details on the provisions for displaced persons belonging to Scheduled Tribes and Castes are given in Sections 41 and 42.	and persons including women, will take place during the consideration of alternative project designs	
Grievance Mechanism	Provides various opportunities for hearing of objections pertaining to land acquisition process. The jurisdiction of the Civil Courts has been	Ensure that a grievance mechanism for the project is in place, to address specific concerns about compensation, relocation, or livelihood	National legal provisions relating to objections, appeals, and grievance redress are aligned with the requirements of the ESF and will be complemented through Project-level

Requirements	National and state regulations and policies	World Bank	Applicability
	replaced by the Land Acquisition, Rehabilitation and Resettlement (LARR) Authority. An appeal from the decision of the Authority will lie only to the High Court within a time-limit of six months. Any decision of the High Court can be appealed by taking leave to appeal from the High Court or the Supreme Court. (Sections 51- 63)	restoration measures raised by displaced persons (or others) in a timely fashion.	grievance management arrangements.
Planning and implementation of land acquisition process	After publication of preliminary notification under Section 11(1), census survey of the affected families will be undertaken, which shall include— (a) particulars of lands and immovable properties being acquired of each affected family; (b) livelihoods lost whose livelihoods are primarily dependent on the lands being acquired; (c) list of public utilities and Government buildings which are affected or likely to be affected; (d) details of the amenities and infrastructural facilities which are affected; and	Where land acquisition is unavoidable, as part of E&S assessment, conduct a census to identify persons who will be affected by the project, to establish an inventory of land and assets to be affected, to determine who will be eligible for compensation and assistance. Full cost of resettlement activities is included in total project costs. To address the issues identified in the E&S assessment, resettlement plan proportionate to the risks and impacts will be prepared:	Requirements of national and state laws and aligned with ESF and applicable to the project.

Requirements	National and state regulations and policies	World Bank	Applicability
	(e) details of any common property resources being acquired SIA report and Social Impact Management Plan (SIMP) will contain specific findings about the public purpose of the project, extent of displacement, extent of land affected, whether bare minimum land is being acquired, availability of alternative land and ameliorative measures required to be undertaken for addressing the impact of the project. [Section 4(4), 4(5), 4(6) and Rules 3 (3) and 3(4) in accordance with Forms II and III]. The SIA study and Social Impact Management Plan (SIMP) thus prepared are also published [Section 6(1)]. Based on census survey, a draft R&R Scheme will be prepared. A detailed list of R&R measures is provided in Second and Third Schedules of the Act.	(a) For projects with minor land acquisition, as a result of which there will be no significant impact on incomes or livelihoods, the plan will establish eligibility criteria for affected persons, set out procedures and standards for compensation, and incorporate arrangements for consultations, monitoring, and addressing grievances; (b) For projects causing physical displacement, the plan will set out the additional measures relevant to relocation of affected persons; (c) For projects involving economic displacement with significant impacts on livelihoods or income generation, the plan will set out the additional measures relating to livelihood improvement or restoration; and (d) For projects that may impose changes in land use that restrict	

Requirements	National and state regulations and policies	World Bank	Applicability
	The 2013 Act provides for negotiated settlements in certain cases (Section 46 and 2(3)(a)). Further, the 2013 Act empowers state governments to frame laws or policies which allow for a higher compensation than that calculated under the Act (Section 108). Under this provision, Meghalaya had enacted Direct Purchase Policy 2022 allowing for negotiated settlements.	access to resources in legally designated parks or protected areas or other common property resources on which local people may depend for livelihood purposes, the plan will establish a participatory process for determining appropriate restrictions on use and set out the mitigation measures. Establish procedures to monitor and evaluate the implementation of the plan and will take corrective action as necessary during implementation The Resettlement Policy Framework (RPF) covers a brief description of the project and components for which land acquisition and resettlement are required; principles governing resettlement preparation and implementation; process for preparing and approving resettlement plans; estimated displacement impacts and estimated numbers and categories of displaced persons, with eligibility criteria; legal	

Requirements	National and state regulations and policies	World Bank	Applicability
		framework reviewing applicable laws and regulations; methods of valuing affected assets; implementation process, GRM, monitoring and budget.	
Displacement - Physical and Economic	SIA report and SIMP will contain specific findings about the extent of displacement and land affected. [Section 4(4), 4(5), 4(6) and Rules 3 (3) and 3(4) in accordance with Forms II and III]. Section 41 provides that the affected families of the Scheduled Tribes will be resettled preferably in the same Scheduled Area in a compact block so that they can retain their ethnic, linguistic and cultural identity. The 2013 Act compensates selected vulnerable non-titleholders (encroachers and squatters) who have resided on the acquired land for 3 years before the acquisition and whose primary source of livelihood is affected. [Section 3(c)] Section 3(x)(v) includes “any person whose	“Physical displacement” occurs when there is relocation, loss of residential land, or loss of shelter. “Economic displacement” occurs when there is loss of land, assets, or access to assets leading to loss of income sources or other means of livelihood. Develop a plan to mitigate negative impacts of displacement including resettlement budget, implementation schedule, and entitlements of all categories of affected persons. Document all transactions to acquire land rights, provision of compensation, and other assistance	Requirements of national and state laws are aligned with World Bank ESF and applicable.

Requirements	National and state regulations and policies	World Bank	Applicability
	primary source of livelihood is likely to be adversely affected” under the definition of ‘person interested.’ The SIA study as well as the R&R Scheme cover livelihoods affected by the proposed land acquisition. The Second Schedule details the R&R Entitlements. The R&R Award has provisions to include a subsistence grant, transportation costs and a one-time resettlement allowance. (Second Schedule)	associated with relocation activities. If people living in the project area are required to move to another location, resettlement options and relocation assistance shall be provided. In case of projects affecting livelihoods or income generation, measures to allow affected persons to improve, or at least restore, their incomes or livelihoods will be provided and will be included in RAP. Economically displaced persons who face loss of assets or access to assets will be compensated for such loss at replacement cost and will be provided opportunities to improve, or at least restore, their means of income-earning capacity, production levels, and standards of living.	

Requirements	National and state regulations and policies	World Bank	Applicability
ESS 6- BIODIVERSITY CONSERVATION			
Biodiversity Conservation Objective	Wildlife Protection Act (WPA), 1972 - Provides legal protection to wildlife and their habitats, inside the protected areas including creating Protected Areas The Forest (Conservation) Act (FCA), 1980 - Regulates the diversion of forest land for non-forest purposes and mandates compensatory afforestation and net present value through Compensatory Afforestation Fund Act (CAMPA), 2016 Meghalaya Forest Regulation (Application and Amendment) Act, 1973: Protection of unsettled government forests includes regulating or prohibiting the felling, cutting, girdling, lopping, tapping, or injury of trees, the sawing, conversion, and removal of timber, and the collection of other forest produce. It also covers the regulation or prohibition of quarrying stones, boiling catechu, and burning lime or charcoal. In addition the following laws enacted by the District Councils under the Sixth Schedule of the Constitution of India also deals with a framework for the District Council to manage forests:	The Environmental and Social Framework (ESF) of the World Bank consists of ten Environmental and Social Standards (ESS 1–10). Among these standards, ESS 6 specifically provides guidelines for biodiversity conservation. The primary aim of ESS 6 is to protect and conserve biodiversity and habitats by applying a precautionary approach and the mitigation hierarchy during the planning and execution of projects that may impact biodiversity.	The Project does not pass through any protected area thus the Wildlife Protection Act 1972 and the The Forest (Conservation) Act (FCA), 1980 is not applicable. However, Rehabilitation of the sub-project roads may requires sourcing of stone materials from designated quarry sites. Accordingly, all provisions under the Meghalaya Forest Regulation (Application and Amendment) Act, 1973 shall be applicable.

	- The Garo Hills District (Forest) Act, 1958 (within the Garo Hills Autonomous District.) - The United Khasi and Jaintia Hills Autonomous District (Management and Control of Forest) Act, 1958 (United Khasi – Jaintia Hills Autonomous District) - United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 - Khasi Hills Autonomous District (management and Control of Forests, Revised rate of Royalty) Rules, 1984 (within the Khasi Hills Autonomous District)		
Critical habitat identification and legally protected habitat regulation	Van (Sanrakshan Evam Samvardhan) Amendment Rules, 2025 – The government of India notified designated forest as protected areas to protect the forest and biodiversity within the protected areas. Reserve Forest (RF) and Protected Forest (PF) have been recognized and notified under the act. Wildlife Protection Act 1972 : Any intervention in the PAs such as National Park (NP), Wildlife Sanctuary (WLS), Tiger Reserve and Corridor (TRC) require clearance from National Board of Wildlife. For the Community Reserve or Conservation Reserve (CR) certain restrictions can be implemented under the WPA, 1972	The World Bank's Environmental and Social Standards (ESS1 and ESS6) address all habitat types, including "modified," "natural," and "critical" habitats as per the presence of biodiversity value, as well as areas of biodiversity importance that are legally protected by national laws and internationally recognized. As per the ESS 6 – “Critical habitat is as areas with high biodiversity importance or value, including: (a) habitat of significant importance to Critically Endangered or Endangered species, as listed	The Project would not be involving any diversion of forest land. As no MLCIP subprojects fall within or near notified ESZs, NBWL clearance is not required. However, subprojects near elephant corridors shall incorporate, species specific safeguards in line with the Act and Supreme Court directions Civil Appeal Nos. 3438–3439 of 2020 for protecting elephant migration routes.

	Eco-Sensitive Zones notified under the Environment Protection Act 1986 and the Environment (Protection) Rules, 1986 where there can be partial restriction on development activity India is a signatory to the Man and Biosphere Program, Ramsar convention etc. Sites which are under the above laws have legal protection.	in the IUCN Red List of threatened species or equivalent national approaches; (b) habitat of significant importance to endemic or restricted-range species; (c) habitat supporting globally or nationally significant concentrations of migratory or congregatory species; (d) highly threatened or unique ecosystems; (e) ecological functions or characteristics that are needed to maintain the viability of the biodiversity values described above in (a) to (d)."	
Invasive species consideration	The Wildlife Protection Act, 2022 defines "Invasive Alien Species" as any species of animal or plant that is not native to India. The Central Government is empowered to regulate or prohibit the import, trade, possession, or spread of invasive alien species that threaten wildlife habitats in India.	ESS-6 defines "invasive Alien Species" as any species of flora or fauna that is not native to a specific area and whose intentional or accidental introduction can pose a significant threat to local biodiversity. ESS-6 prohibits introducing high-risk invasive species, requiring risk assessments and mitigation measures for accidental introductions.	Not Applicable because the tree plantation would be done only with native species and with advice from the Forest Department and involvement of the community

Biodiversity Impact Assessment	The EIA Notification of 2006: Projects which are listed under Schedule I are under the preview of the notification and require EIA clearance. Projects requiring Environmental Clearance situated within National Parks, Wildlife Sanctuaries, Biosphere Reserves, or having presence of schedule 1 Species are required to carry out a Biodiversity Impact Assessment Wildlife (Protection) Act, 1972: A biodiversity impact assessment (as recommended by standing NBWL/SBWL and management plan are mandated for wildlife clearance for any project falling within the PAs (notified under the WPA, 1972) and ESZ (under the FCA, 1980)	The project proponent will identify potential risks and impacts (Direct, Indirect and Cumulative Impact) associated with the project on habitats and the biodiversity they support through the environment and social assessment guidelines (ESS1 & ESS6). Following the mitigation hierarchy, the initial assessment will be conducted without factoring in the possibility of biodiversity offsets. The assessment will include identifying the types of habitats that might be affected, evaluating potential risks and impacts on the ecological functions of those habitats, and considering areas of biodiversity importance	The Project does not require diversion of Protected Area as no MLCIP subprojects fall within or near notified ESZs, NBWL clearance is not required. However, subprojects near elephant corridors shall incorporate, species specific safeguards in line with the Act and Supreme Court directions Civil Appeal Nos. 3438–3439 of 2020 for protecting elephant migration routes.
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		potentially impacted by the project, regardless of their legal protection status. WB E&S policy classifies all projects into four classifications – High Risk, Substantial Risk, Moderate Risk and Low Risk based on the type, location, sensitivity, and scale of the project; the nature and magnitude of the potential environmental and social risks and impacts.	
Mitigation Hierarchy Principle	Wildlife (Protection) Act, 1972, Van (Sanrakshan Evam Samvardhan) Amendment Rules, 2025: These laws follows the principle of avoidance to minimise the impacts on habitats and species inside protected areas (PAs)	For different habitats, ESS 1 and ESS 6 outline distinct risk management approaches: Modified and Natural Habitats: Adverse impacts must be avoided using the mitigation hierarchy if no feasible alternatives are available. Critical Habitats: Projects will not proceed unless no viable alternatives exist in habitats of lower biodiversity value, and the project complies with international and national laws. Species Protection: Mitigation measures must ensure no net reduction or negative	The Project does not require diversion of Protected Area as no MLCIP subprojects fall within or near notified ESZs, NBWL clearance is not required. However, subprojects near elephant corridors shall incorporate, species specific safeguards in line with the Wildlife Protection Act.

		impact on populations of Endangered, Critically Endangered, or restricted-range species, as well as overall biodiversity value. Critical Habitat Gains: The project's mitigation strategy must be designed to achieve net biodiversity gains for critical habitats.	
Biodiversity Management Plan	Wildlife (Protection) Act, 1972 A site-specific Wildlife Conservation Plan/Biodiversity Management Plan has to be prepared as per the recommendation of the Chief Wildlife Warden/standing committee of SBWL/NBWL.	For, critical habitat (including natural and modified habitats) mitigation strategy has to be described in the Biodiversity Management Plan or it has to be included as part of the ESCP under ESS1.	Subprojects near elephant corridors shall incorporate, species specific safeguards in line with the Wildlife Protection Act

Requirements	National and state regulations and policies	World Bank	Applicability
ESS 7- INDIGENOUS PEOPLE/ SCHEDULED TRIBES			
Impact Assessment	Conducting Social Impact Assessment (SIA) in case of land requirement. [Section 4 – 8 and Meghalaya RFCTLARR Rules, 2015, Section 4-10]	Targeted social assessment is to be conducted when IP are present in, or have collective attachment to, the project area. The assessment is proportionate to the nature and scale of the proposed projects potential risks to, and impacts on, as well as the vulnerability of, the IP.	National and state Laws and ESF requirements are aligned and applicable

Requirements	National and state regulations and policies	World Bank	Applicability
Projects designed solely to benefit IP	Special provisions for Scheduled Caste and Scheduled Tribes are included in RFCTLARR Act (Section 41 & 42) In case of a project involving land acquisition on behalf of a Requiring Body which involves involuntary displacement of the Scheduled Castes or the Scheduled Tribes families, a Development Plan shall be prepared. [Section 41(4)]	Proactively engage with the relevant IP to ensure their ownership and participation in project design, implementation, monitoring and evaluation. Consult with them as to the cultural appropriateness of proposed services or facilities and will seek to identify and address any economic or social constraints (including those relating to gender) that may limit opportunities to benefit from, or participate in, the project. Elements of the plan may be included in the overall project design, and preparation of a stand-alone IPP is not necessary.	National and state Laws requirements are aligned ESF and applicable.
Projects where IP are not the sole beneficiaries	Special provisions for relocation of Scheduled Caste and Scheduled Tribes are included in RFCTLARR Act including preparation of Development Plan. (Section 41 & 42)	Design and implement the project in a manner that provides affected IP with equitable access to project benefits. The concerns or preferences of IP will be addressed through meaningful consultation and project design, and documentation will summarize the consultation results and describe how IPs' issues have been addressed in project design.	National and state Laws aligned with the ESF and applicable.

Requirements	National and state regulations and policies	World Bank	Applicability
Adverse impacts on IPs to be avoided where possible.	The RFCTLARR Act states that as far as possible, no acquisition of land shall be made in the Scheduled Areas. Where land acquisition does take place in scheduled areas, it shall be done only as a demonstrable last resort. [Section 41 (1) and (2)] Affected families of the Scheduled Tribes shall be resettled preferably in the same Scheduled Area in a compact block so that they can retain their ethnic, linguistic and cultural identity. [Section 41 (7)] Where the affected families of Scheduled Castes and Scheduled Tribes are relocated outside of the district, then, they shall be paid an additional twenty-five per cent rehabilitation and resettlement benefits to which they are entitled in monetary terms along with a one-time entitlement of fifty thousand rupees. [Section 41 (11)]	Adverse impacts on IP will be avoided where possible. Where alternatives have been explored and adverse impacts are unavoidable, the Borrower will minimize and/or compensate for these impacts in a culturally appropriate manner proportionate to the nature and scale of such impacts and the form and degree of vulnerability of the affected IP.	National and state Laws and ESF requirements are aligned and applicable.
Indigenous Peoples Plan (IPP)	Whenever the Government intends to acquire land for a public purpose, it shall carry out a Social Impact Assessment study and prepare a Social Impact Assessment Report and Social Impact Management Plan. (Section 5 of Meghalaya RFCTLARR Rules 2015)	In consultation with IP, an IPP is to be prepared that sets out culturally appropriate mitigation measures and benefits, and specifies the timing for completion of actions required.	Requirements of plan for development of IPs are aligned with ESF and applicable.

Requirements	National and state regulations and policies	World Bank	Applicability
	In case of a project involving land acquisition on behalf of a Requiring Body which involves involuntary displacement of the Scheduled Castes or the Scheduled Tribes families, a Development Plan shall be prepared. [Section 41(4)]		
Rights of Particularly Vulnerable Tribal Groups	The RFCTLARR Act emphasizes that land acquisition in Scheduled Areas shall be done only as a demonstrable last resort-determined at the time of the social impact assessment. These forest right holders, Gram Sabha and village level institutions are empowered to ensure that the habitat is preserved from any form of destructive practices affecting their cultural and natural heritage. [Section 5 (c)] Further, the Act provides for certain safeguards for protection of the forest rights of the forest rights holders recognized under the Act in the critical wildlife habitats of National Parks and Sanctuaries. [Section 4(2)]	When situations arise in which projects potentially affect remote groups with limited external contact, also known as peoples “in voluntary isolation,” “isolated peoples” or “in initial contact,” appropriate measures to be taken to recognize, respect and protect their land and territories, environment, health and culture, as well as measures to avoid all undesired contact with them as a consequence of the project. The aspects of the project that would result in such undesired contact will not be processed further.	National and state laws relating to forest rights and habitat protection are applicable. The Project will additionally consider provisions in the ESF relating to protection of vulnerable tribal groups, habitats, culture, and customary rights.
Opportunities for IP in a manner that is accessible, culturally appropriate and inclusive	RFCTLARR Act states that no land shall be transferred by way of acquisition, in the Scheduled Areas in contravention of any law (including any order or judgment of a court which has become final) relating to	The determination, delivery, and distribution of compensation and shared benefits to affected IP will take account of the institutions, rules and customs of these IP as	National and state Laws aligned with the ESF and applicable

Requirements	National and state regulations and policies	World Bank	Applicability
	land transfer, prevailing in such Scheduled Areas. [Section 2 (2)]. In terms of collective based compensation- where the community rights have been settled, the compensation under RFCTLARR will be quantified in monetary terms and be paid to the individual concerned in proportion with its share in such community rights. [Section 42 (3)] Benefits to affected persons will be determined based on several factors. In case of irrigation or hydel projects, affected Scheduled Tribes, other traditional forest dwellers and the Scheduled Castes having fishing rights in a river or pond or dam in the affected area shall be given fishing rights in the reservoir area of the project. [Section 41 (10)]. Affected families may also opt for employment opportunities created through the project, after providing suitable training and skill development in the required field. [Second Schedule]	well as their level of interaction with mainstream society. Eligibility for compensation can either be individually or collectively-based, or be a combination of both. Where compensation occurs on a collective basis, as far as practicable mechanisms that promote the effective distribution of compensation to all eligible members, or collective use of compensation in a manner that benefits all members of the group, will be defined and implemented. Various factors including, but not limited to, the nature of the project, the project context and the vulnerability of affected IP will determine how affected IP will benefit from the project. Identified opportunities will aim to address the goals and preferences of the affected IP, including improving their standard of living and livelihoods in a culturally appropriate manner, and to foster the long-term sustainability of the natural resources on which they depend.	

Requirements	National and state regulations and policies	World Bank	Applicability
Grievance Redressal Mechanism	As per Article 338-A of the Constitution, the National Commission for Scheduled Tribes has been set-up to investigate and inquire into specific complaints with respect to the deprivation of rights and safeguards of the Scheduled Tribes. Any member of the Scheduled Tribe or any other forest-dweller covered by the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 is entitled to make an objection under the RFCTLARR Act. 1 The person may object to— (a) the area and suitability of land proposed to be acquired; (b) justification offered for public purpose; (c) the findings of the Social Impact Assessment report. Under the Forest Rights Act, if any forest dwelling Scheduled Tribe (in case of a dispute relating to a resolution of the Gram Sabha or any higher authority/Committee or officer or member of such authority/Committee) gives a notice to the State Level Monitoring Committee	A grievance mechanism is to be established for the project, as described in SEP, which is culturally appropriate and accessible to affected IP	National and state Laws aligned with the ESF and applicable.

Requirements	National and state regulations and policies	World Bank	Applicability
	regarding contravention of any provision of this Act or Rules concerning recognition of forest rights, the Committee should hold an inquiry within sixty days from the receipt of the notice and take appropriate action. The complainant and the Gram Sabha should be informed about the outcome of the inquiry. The Scheduled Caste and Scheduled Tribe (Prevention of Atrocities) Act, 1989 also safeguards the interest of indigenous groups. Wrongfully dispossessing any member of the Scheduled Castes or Scheduled Tribes from their land or premises or interfering with the enjoyment of their rights, including forest rights, over any land or premises or water or irrigation facilities or destroying the crops or taking away their produce is subject to punishment under the said Act.		
Meaningful consultation with the IP affected by a project throughout the project's life cycle.	Under the RFCTLARR Act, a preliminary notification is issued ² and published in a manner prescribed stating that land in a particular area is required or likely to be required for any public purpose. Immediately after	The engagement process with affected IP will include stakeholder analysis and engagement planning, disclosure of information, and meaningful consultation, in a culturally appropriate	National and state Laws aligned with the ESF and applicable. The Project will build upon existing statutory consultation mechanisms

Requirements	National and state regulations and policies	World Bank	Applicability
	publishing the notification, the concerned Gram Sabha/s, municipalities in case of municipal areas and the Autonomous Councils in the Sixth Schedule shall be informed of the contents of the notification issued at a meeting called especially for this purpose. [Section 11 (2)] The RFCTLARR Act further mandates prior consent of the concerned Gram Sabha or the Panchayats or the Autonomous District Councils during acquisition or alienation of any land in the Scheduled Areas. In cases where the Gram Sabha does not exist or has not been constituted, the consent of the Panchayats or the Autonomous Districts Councils shall be obtained. [Section 41 (3)] Under the Forest Rights Act, central government can provide for diversion of forest land of less than one hectare for any development project specified in Section 3(2) of the Act. However, the clearance of such project is subject to the condition that the same is recommended by the Gram Sabha.	and gender and inter-generationally inclusive manner. For IP, the process of meaningful consultation will also: (a) Involve IPs' representative bodies and organizations (e.g., councils of elders or village councils, or chieftains) and, where appropriate, other community members; (b) Provide sufficient time for IPs' decision-making processes; and (c) Allow for IPs' effective participation in the design of project activities or mitigation measures that could potentially affect them either positively or negatively.	and strengthen continued stakeholder engagement throughout the project lifecycle.
Free, Prior, and Informed Consent (FPIC) of affected IPs	As per RFCTLARR Act, prior consent of the Gram Sabha, the Panchayats or the Autonomous District Councils in Scheduled Areas is needed in all cases of land	Specific Requirements: Obtain the FPIC of the affected IP in circumstances in which the project will:	National Laws are partially aligned with the ESF. ESF requires ascertaining Free Prior and Informed Consent under three

Requirements	National and state regulations and policies	World Bank	Applicability
	acquisition (including acquisition in case of urgency) before issuance of any notification under this Act. In case the Gram Sabha does not exist or has not been constituted, the consent of the Panchayat or Autonomous District Councils shall be sought. [Section 41 (3)] The names and signatures of all members who attended the meeting of the Gram Sabha must be recorded. The terms and conditions, Rehabilitation & Resettlement, compensation committed by the Requiring Body shall be explained to the Gram Sabha members in the local language and signatures of the members along with representative of Requiring Body, shall be obtained on such terms and conditions. After deliberations, the Gram Sabha shall pass a resolution with majority giving or withholding consent for the proposed acquisition and the resolution shall contain the negotiated terms and conditions for Rehabilitation and Resettlement, compensation, impact management and mitigation that the Requiring Body has committed and which have been signed by the District Collector or designated district officer and the representative of the	(i) have adverse impacts on land and natural resources subject to traditional ownership or under customary use or occupation; (ii) cause relocation of IP from land and natural resources subject to traditional ownership or under customary use or occupation; or (iii) have significant impacts on IP cultural heritage that is material to the identity and/or cultural, ceremonial, or spiritual aspects of the affected IP lives.	circumstances – impacts on land, cultural heritage and if requiring relocation.

Requirements	National and state regulations and policies	World Bank	Applicability
	Requiring Body. The Gram Sabha resolution once received shall be counter signed by the District Collector or a designated District Officer and a signed copy shall be handed over to all the panchayat representatives. Further, all the proceedings of the Gram Sabha shall be video recorded, documented in writing and shall be made available in the respective panchayat offices and uploaded on the website of the appropriate Government. [Rule 17 of the RFCTLARR (SIA and Consent) Rule 2014] As per Forest Rights Act, free informed consent of the Gram Sabha in the areas concerned is needed prior to relocation of forest rights holders from 'critical wildlife habitats' for wildlife conservation. The Gram Sabha will pass a resolution on the proposed resettlement and package, which will be obtained in writing. [Section 4 (2)]		
Consent	Meeting for seeking consent requires a quorum of at least fifty % of the total members of Gram Sabha (provided that one third of the total women members of the Gram Sabha are also present in the Gram Sabha meeting). The resolution should be passed with majority giving	Consent refers to the collective support of affected IP for the project activities that affect them, reached through a culturally appropriate process. It may exist even if some individuals or	National legal provisions relating to community consent processes are applicable. The Project will apply culturally appropriate consultation and consent processes as per ESF. FPIC as per ESF does not require unanimity and may be

Requirements	National and state regulations and policies	World Bank	Applicability
	or withholding consent for the proposed acquisition. [Rule 17 of the RFCTLARR (SIA and Consent) Rule 2014]	groups object to such project activities.	achieved even when individuals or groups within IP/groups explicitly disagree.
Preservation of culture, knowledge, and practices of IP	The Ancient Monuments and Archaeological Sites and Remains Act, 1958 (AMASR) prohibits construction and repair works in the protected monuments and sites under two circumstances: (i) Approximately 100 m radius is “prohibited” area – wherein no construction or reconstruction can be carried out, although repairs are allowed. However, in exceptional cases and having regard to the public interest, the government can permit project essential to the public or other constructions to be carried out in a prohibited area. The AMASR refers to the application of the RFCTLARR Act. Thus, in case of acquisition of protected monuments and sites, the provisions of the RFCTLARR Act would apply, which stipulates consulting with the affected persons prior and during the course of acquisition. As per RFCTLARR Act, affected families of the Scheduled Tribes shall be resettled preferably in the same Scheduled Area in a compact block, so that they can retain their ethnic,	Where a project may significantly impact cultural heritage that is material to the identity and/or cultural, ceremonial, or spiritual aspects of the affected IPs’ lives, priority will be given to the avoidance of such impacts. Where significant project impacts are unavoidable, FPIC of affected IP will be obtained.	National legal provisions relating to cultural identity, resettlement in Scheduled Areas, and protection of traditional institutions are applicable. The Project will additionally implement measures to avoid or minimize impacts on cultural heritage and traditional practices consistent with the WB ESF. FPIC would only be relevant if the significantly impacted cultural heritage sites were in the Scheduled Areas, and not otherwise.

Requirements	National and state regulations and policies	World Bank	Applicability
	linguistic and cultural identity. [Section 41 (7)]. In case of displacement from the Scheduled Areas, the affected families, as far as possible, shall be relocated in a similar ecological zone, so as to preserve the economic opportunities, language, culture and community life of the tribal communities. [Schedule II (5) of the Act]. The resettlement area will include places of worship and chowpal/ tree platform for every fifty families for community assembly, including separate land earmarked for traditional tribal institutions. The forest dweller families must be provided, where possible, with their forest rights on non-timber forest produce and common property resources, if available close to the new place of settlement and, in case any such family can continue their access or entry to such forest or common property in the area close to the place of eviction, they must continue to enjoy their earlier rights to the aforesaid sources of livelihood. [Schedule III (21, 22, 23) of the Act]		
Preparation of a development plan for the legal	The RFCTLARR Act mandates the preparation of a Development Plan laying down the details of procedure for settling land	While IP may not possess legal title to land as defined by national law, their use of the land, including seasonal or	The laws provide opportunities for settling land rights due to scheduled tribes who do not possess legal title.

Requirements	National and state regulations and policies	World Bank	Applicability
recognition of IP ownership	rights due, but not settled and restoring titles of the Scheduled Tribes on the alienated land by undertaking a special drive together with land acquisition. Development Plan shall also contain a programme for development of alternate fuel, fodder and non-timber forest produce resources on non-forest lands within a period of five years, sufficient to meet the requirements of tribal communities. [Section 41 (4) and (5)] The RFCTLARR Act further states that any alienation of tribal lands or lands belonging to the Scheduled Castes in disregard of the laws and regulations for the time being in force shall be treated as null and void, and in the case of acquisition of such lands, the rehabilitation and resettlement benefits shall be made available to the original tribal landowners or landowners belonging to the Scheduled Castes. [Section 41 (9)] The Forest Rights Act guarantees forest dwellers' right to conversion of patta, leases, or grants issued by the local authority on forest land to titled land. [Section 3 (g) and (h)] However, such forest rights are heritable but not alienable or transferable.	cyclical use, for their livelihoods, or for cultural, ceremonial, and spiritual purposes that define their identity and community, can often be substantiated and documented. Where projects involve (a) activities that are contingent on establishing legally recognized rights to lands and territories that IP have traditionally owned or customarily used or occupied, or (b) the acquisition of such lands, a plan for the recognition of such ownership, occupation, or usage, with due respect to the customs, traditions and land tenure systems of the IP concerned. The objective of such plans will be the following: (a) recognition of existing customary land tenure systems of IP/SSAHUTLC; or (b) conversion of customary usage rights to communal and/or individual ownership rights. If neither option is possible under national law, the plan includes measures for the recognition of IPs' perpetual or long-term renewable custodial or use rights.	Only those IP who are recognized constitutionally are eligible for respective benefits and safeguards.

Requirements	National and state regulations and policies	World Bank	Applicability
	[Section 4 (1)] Further, it shall be restricted to the area under actual occupation and shall in no case exceed an area of four hectares. [Section 6]		

Requirements	National and State regulations and policies	World Bank	Applicability
ESS8: CULTURAL HERITAGE AND PRESERVATION			
Stakeholder consultation and identification of cultural heritage	The Ancient Monument and Records Act, and The Rules: Provides the framework for the protection and conservation of monuments and sites of historical and archaeological importance within the state of Meghalaya.	Identify stakeholders that are relevant for the cultural heritage that is known to exist or is likely to be encountered during the project life cycle. Carry out meaningful consultations with stakeholders to identify cultural heritage that may be affected by the potential project; consider the significance of the cultural heritage affected by the project; assess the potential risks and impacts; and explore avoidance and mitigation options.	National and state legal provisions relating to archaeological and cultural heritage management are applicable. Project implementation will additionally incorporate structured stakeholder consultation and cultural heritage management procedures. Consultations with the Archaeology Branch of the Directorate of Arts and Culture, GoM and the Archaeological Survey of India (ASI) will be conducted before any construction or excavation in areas with significant cultural heritage.
Legally Protected Cultural Heritage Areas	Ancient Monuments and Archaeological Sites and Remains (Amendments and Validation) Act, 2010: Protects ancient monuments, archaeological sites, and remains of national	Determine the presence of all listed legally protected cultural heritage areas affected by the project. Support the inclusion and cooperation of the various stakeholders through a dialogue with the	National legal provisions relating to protected monuments and regulated zones are applicable. The Project will additionally support stakeholder coordination, cultural heritage assessment, and

Requirements	National and State regulations and policies	World Bank	Applicability
	importance. It establishes regulated zones around protected sites (100 meters as a prohibited area and 200 meters as a regulated area). Under Section 20A, if a project is within the vicinity of a protected monument or site, the National Monuments Authority (NMA) must be consulted to determine any restrictions or necessary approvals. This effectively requires identifying any legally protected cultural heritage sites that may be affected by the project.	appropriate authorities, including the relevant national or local regulatory authorities entrusted with the protection of cultural heritage, to establish the most effective means for addressing the views and concerns of the stakeholders and involving them in the protection and management of the cultural heritage. Comply with local, national, regional or international cultural heritage regulations and the protected area management plans Consult the protected area sponsors and managers, project-affected parties (including individuals and communities) and other interested parties on the proposed project; Implement additional programs, as appropriate, to promote and enhance the conservation aims of the protected area.	management measures consistent with the WB ESF.
Provisions for specific types of cultural heritage	Ancient Monuments and Archaeological Sites and Remains (Amendments and Validation) Act, 2010: Focuses on protecting monuments and archaeological sites of national importance Mandates reporting discoveries of antiquities	Archaeological sites and material: Conduct desk-based research and field surveys to document, map, and investigate archaeological remains in the project area. Document the location and characteristics of archaeological sites and materials discovered,	National legal provisions relating to archaeological discoveries and reporting obligations are applicable. Project implementation will additionally incorporate documentation, assessment, conservation, and management measures consistent with ESS8 requirements.

Requirements	National and State regulations and policies	World Bank	Applicability
	to the relevant authorities	providing this information to relevant national or subnational cultural heritage authorities. In consultation with cultural heritage experts, assess whether the discovered archaeological materials require: Documentation only; Excavation and documentation; or Conservation in place. Establish ownership and custodial responsibility for the archaeological materials according to national or subnational law.	
	Ancient Monuments and Archaeological Sites and Remains (Amendments and Validation) Act, 2010: Protects monuments and archaeological sites of national importance, requiring that any activity within a regulated area around these sites obtain permission from the Archaeological Survey of India (ASI).	Built heritage: Identify appropriate mitigation measures to address the impacts on Built Heritage, which may include (a) documentation; (b) conservation or rehabilitation in situ; and (c) relocation and conservation or rehabilitation. During rehabilitation or restoration efforts, preserve the authenticity of the structure's form, materials, and construction techniques to maintain its historical integrity. Consider both the physical setting and visual impact of new project	National legal provisions relating to protected monuments and regulated areas are applicable to the Project. The Project will additionally incorporate documentation, conservation, rehabilitation, restoration, and visual impact management measures consistent with the WB ESF, including consideration of the physical setting, historical character, and contextual integrity of built heritage resources.

Requirements	National and State regulations and policies	World Bank	Applicability
		infrastructure on individual or groups of historic structures, particularly those within the project's visible range, to ensure the heritage site's context remains intact.	
		Natural features with cultural significance: Identify natural features with cultural heritage significance affected by the project through research and consultation with project-affected parties, including communities and individuals who value such features. If in situ preservation is not feasible, relocation of the cultural heritage should be carried out in consultation with project-affected parties and in alignment with Good International Industry Practice (GIIP) Any relocation agreement must respect traditional practices associated with the heritage and allow these practices to continue at the new location.	Document and report the measures taken to identify and protect such features in meaningful consultation with cultural heritage experts and project-affected persons
	The Antiquities and Art Treasures Act, 1972: This is the primary Indian legislation for the protection of movable cultural heritage items, including artworks, manuscripts, sculptures,	Movable cultural heritage: Identify movable cultural heritage objects that could be affected by the project. These include items such as historic books, manuscripts, artworks,	National legal provisions relating to antiquities and movable cultural heritage are applicable. The Project will additionally implement stakeholder consultation,

Requirements	National and State regulations and policies	World Bank	Applicability
	and archaeological material. It defines "art treasures" and "antiquities" and establishes provisions for their protection, registration, and export controls. The Act prohibits the theft, export, or illicit trade of art treasures and antiquities. It mandates that any antiquities or art treasures discovered or owned must be registered with the Director General of Archaeological Survey of India (ASI). Section 3 of the Act specifically requires that any object older than 100 years and classified as an antiquity must be registered, and its theft or export is prohibited.	sculptures, religious artifacts, and archaeological materials, among others. Work in consultation with relevant cultural heritage authorities to determine which movable heritage items may be endangered by the project and ensure their protection throughout the project lifecycle. Take measures to protect movable cultural heritage from theft, illegal trafficking, or abuse. Inform religious or secular authorities or other custodians responsible for movable cultural heritage about the project schedule and any activities that might affect these objects. Maintain open communication with relevant stakeholders to ensure that movable cultural heritage objects are preserved and protected, and to address any concerns that may arise related to their safety or handling during project activities.	protection, documentation, and monitoring measures.
Commercial use of cultural heritage		Inform the project affected parties of: (a) their rights under national law; (b) the scope and nature of the commercial development and the potential impacts; and (c) the potential	The Project will adopt consultation, mitigation, and benefit-sharing measures aligned with the WB ESF for commercial use of cultural heritage.

Requirements	National and State regulations and policies	World Bank	Applicability
		consequences of such development and impacts. Do not proceed with such commercial use unless it: (a) carries out meaningful consultation with stakeholders (b) provides for fair and equitable sharing of benefits from commercial use of such cultural heritage, consistent with customs and traditions of the project affected parties; and (c) identifies mitigation measures according to the mitigation hierarchy	
Chance Finds Procedures	The Ancient Monuments and Archaeological Sites and Remains (AMASR) Act, 1958: Section 4 of the AMASR Act provides for the protection of monuments and archaeological sites. If a project unearths or encounters any archaeological remains during construction or excavation, this section requires that the discovery be reported to the Archaeological Survey of India (ASI) or the appropriate local authorities. Section 3(2) also stresses the protection of monuments and archaeological sites, stating that no construction or	Include a requirement to notify relevant authorities of found objects or sites by cultural heritage experts; to fence off the area of finds or sites to avoid further disturbance; to conduct an assessment of found objects or sites by cultural heritage experts; to identify and implement actions consistent with the requirements of ESS8 and national law.	Project implementation will follow detailed Chance Find Procedures consistent with national regulations and ESS8 requirements, including notification, assessment, protection, and management measures.

Requirements	National and State regulations and policies	World Bank	Applicability
	excavation should disturb the integrity of such sites without approval from the ASI or the relevant authority. Section 7 requires that, in case any archaeological remains are discovered during the execution of a project, the work should be stopped and proper procedures should be followed, including informing the ASI or relevant authorities to take appropriate action.		

Requirements	National and state regulations and policies	World Bank	Applicability
ESS 10 - STAKEHOLDER ENGAGEMENT AND INFORMATION DISCLOSURE			
Stakeholder Identification and Analysis	EPA 1986, EPA Rules, 1986 and the Notification issued thereunder in 2006: Stakeholders under this Act include local affected persons and other stakeholders that have plausible stake in the environmental aspect of the project such as Ministry of Environment and Forest and Climate Change (MoEF&CC), State Environment Impact Assessment Committee" (SEIA), etc. Under 2006 EIA	Identify different stakeholders: project-affected parties and other interested parties including disadvantaged or vulnerable. "Project-affected parties" - individuals or groups that are affected or likely to be affected by the project. "Other interested parties" - other individuals or groups that may have an interest in the project. Include detail in stakeholder identification and analysis so as to	National and state laws identify relevant stakeholders, aligned with ESF and applicable

Requirements	National and state regulations and policies	World Bank	Applicability
	notification, all the projects and activities of Category “A” require prior “Environmental Clearance” (EC) from MoEF&CC, based on the recommendations of the “Expert Appraisal Committee” (EAC) of the Central Government. Category “B” projects require prior EC from “State Environment Impact Assessment Committee” (SEIA) based on the recommendations of “State Expert Appraisal Committee” (SEAC). FCA 1980 and Rules: Stakeholders under this Act includes those who will be affected due to de-reservation of forests i.e., the forest-dwellers and gram sabhas/village council where the forest is located, user agency who submits the proposal, and government agencies including divisional forest officer, district commissioner, forest conservator and advisory committees responsible for due-diligence prior to	determine appropriate level of communication.	

Requirements	National and state regulations and policies	World Bank	Applicability
	diversion of forest land. FRA 2006: As per Section 4, the Gram Sabha will pass a written resolution on the proposed resettlement and package. The Forest Rights Committee assists the Gram Sabha in receiving, acknowledging and retaining the claims. Upon recognition of forest right as per Section 3(i) of the Act, the Gram Sabha is empowered to regulate access to community forest resources and stop any activity which adversely affects the wild animals, forest and the bio-diversity. AMASR 1958 : The Act identifies following affected parties - owner including a joint owner who are invested with powers of management on behalf of himself and other joint owners and the successor-in-title of any such owner; any manager or trustee exercising powers of management and the successor-in-office of any such manager or trustee; and occupier		

Requirements	National and state regulations and policies	World Bank	Applicability
	of a protected monument or land. RTI Act, 2005: The Act identifies stakeholders in two categories who have the right to information from public authority - Citizens of India (Section 3) and Third party [Section 2(n)].		
Stakeholder Engagement Plan (SEP)	RFCTLARR Act, 2013: Section 4 of the Act provides that in order to acquire land for public purpose, the appropriate government must consult the concerned Panchayat/ Municipality/ Municipal Corporation at village/ward level in the affected area and carry out a Social Impact Assessment in consultation with the affected parties. AMASR 1958: In case of land acquisition of protected monuments and protected areas, RFCTLARR Act shall be applied meeting the requirements related to stakeholder consultation and disclosure as specified in the RFCTLARR Act.	Develop and implement SEP proportionate to the nature and scale of the project and its potential risks and impacts. Content of the SEP will include project-affected parties and other interested parties; timing and methods of engagement with stakeholders throughout the life cycle of the project; range of information to be communicated and type of information to be sought from them. Disclose draft SEP as early as possible, and before project appraisal, to seek views of stakeholders on the SEP, including on the identification of stakeholders and the proposals for future engagement. If significant changes are made to the SEP, disclose the updated SEP.	National and state laws mention the stages wherein involvement of stakeholders is required and aligned with ESF and applicable

Requirements	National and state regulations and policies	World Bank	Applicability
Information Disclosure	RFCTLARR Act, 2013: Public hearing is mandated under section 5 during the SIA, wherein appropriate Government shall ensure that the views of the affected families are recorded and included in the SIA Report. RTI Act, 2005: Information can be obtained within thirty days of application. Information is defined under section 2 (f), (i), (j) as any material in any form, including records, documents, memos, emails, opinions, advices, press releases, circulars, orders, log books, contracts, reports, papers, samples, models, data material held in any electronic form and information relating to any private body which can be accessed by any public authority. EPA 1986, Rules 1986 and the Notification issued there under in 2006: As per 2006 notification, draft EIA report along with the summary shall be sent	Disclose project information to allow stakeholders to understand the risks and impacts of the project, and potential opportunities. Provide following information to stakeholders (a) Purpose, nature and scale of the project; (b) Duration of proposed project activities; (c) Potential risks and impacts of the project on local communities, and proposals for mitigating these, highlighting potential risks and impacts that might affect vulnerable and disadvantaged groups; (d) Proposed stakeholder engagement process; (e) Time and venue of any proposed public consultation meetings, and the process by which meetings will be notified, summarized, and reported; and (f) Process and means by which grievances can be raised and will be addressed. Information will be disclosed in relevant local languages and in a manner that is accessible and culturally appropriate,	Requirement of national and state laws are aligned with ESF and applicable.

Requirements	National and state regulations and policies	World Bank	Applicability
	to following stakeholders: District Commissioner, Zila Parishad/ Municipal Corporation/ Panchayat, District Industries Office and Urban Local Bodies (ULBs) / Concerned PRIs for wide publication within their jurisdiction and shall be made available for inspection to the public till the public hearing is over. Pollution Control Board, Meghalaya (PCBA) shall finalize and advertise the date, time and exact venue of the public hearing within 7 days of the date of receipt of the draft EIA report, in one major National Daily and one regional vernacular daily. A minimum notice period of 30 days shall be provided to the public for responses. The advertisement shall also inform the public about where they can access the draft EIA report before the public hearing. After the public hearing, PCBA shall also display the proceedings on its website for general	taking into account any specific needs of groups such as, disability, literacy, gender, mobility, differences in language or accessibility.	

Requirements	National and state regulations and policies	World Bank	Applicability
	information and further comments. RFCTLARR, 2013: Section 16 of the Act specifies that after issue of notification in accordance to section 11, the particulars of compensation, rehabilitation and resettlement (R&R) are to be disclosed. Draft R&R Scheme shall be made public in the affected areas and public hearing shall be conducted. Under Section 19, declaration of appropriate government that the land identified is required for a public purpose needs to be published in the official gazette, two daily newspapers and at the office of local Panchayat and District Administration and also uploaded on the website of the appropriate government. Thereafter, as per Section 21, the District Commissioner is required to publish a public notice stating that the Government intends to take possession of the land, and that claims to compensations and		

Requirements	National and state regulations and policies	World Bank	Applicability
	R&R for all interests in such land may be made to him. AMASR 1958: Where the Central Government is of opinion that any ancient monument or archaeological site and remains is of national importance, it may, by notification in the Official Gazette, give two months' notice of its intention to declare such ancient monument or archaeological site and remains to be of national importance; and a copy of every such notification shall be affixed in a conspicuous place near the monument or site. Any person interested in any such ancient monument or archaeological site and remains may, within two months after the issue of the notification, object to the declaration of the monument, or the archaeological site and remains, to be of national importance. On the expiry of the said period, the Central Government may, after considering the objections, declare		

Requirements	National and state regulations and policies	World Bank	Applicability
	by notification in the Official Gazette, the ancient monument or the archaeological site and remains to be of national importance. Further, the Act stipulates that adequate notice must be provided to the owners prior to any excavation work in protected areas or any other areas that contain ruins or relics of historical or archaeological importance. RTI, 2005: Every public authority is also required to computerize their records for wide dissemination and to proactively publish certain categories of information which are listed out in Section 4. This includes information such as the budget allocated to each of its agency, indicating the particulars of all plans, proposed expenditures and reports on disbursements made; the manner of execution of subsidy programs, including the amounts allocated and the details of		

Requirements	National and state regulations and policies	World Bank	Applicability
	beneficiaries of such programs; and particulars of recipients of concessions, permits or authorizations granted by it.		
Meaningful Consultation	EPA 1986, Rules, 1986 and the Notification issued thereunder in 2006: According to the EIA notification, the Environment Impact Assessment (EIA) report should include a section on stakeholder consultation. There are 5 stages in the process of granting EC i.e. screening, scoping, public consultation, appraisal and grant. Thus, except for B2 category projects, stakeholders are consulted at the stage of public consultation, once the draft EIA report is prepared. FCA 1980 and Rules: As a part of the due-diligence process, the District Commissioner will obtain consent for diversion of forest land of each Gram Sabha having jurisdiction over the forest land; organize and maintain records of consultations and	Meaningful consultation is a two-way process, that: (a) Begins early in the project planning process to gather initial views; (b) Encourages stakeholder feedback; (c) Continues on an ongoing basis; (d) Based on the prior disclosure of information; (e) Considers and responds to feedback; (f) Supports active and inclusive engagement with project-affected parties; (g) Free of external manipulation, interference, coercion, discrimination, intimidation; (h) Documented and disclosed.	Meaningful consultation is required under national and state laws and aligned with ESF and applicable.

Requirements	National and state regulations and policies	World Bank	Applicability
	meetings with the Forest Rights Committees, Gram Sabhas, Sub- Division Level Committees and the District Level Committee and forward its findings to the Conservator of Forests who will examine the feasibility of the proposal.		
Engagement during Project Implementation and External Reporting	Right to Information Act, 2005 (RTI Act): Provides citizens the right to access information from public authorities and promotes transparency and disclosure in public programmes and projects. RFCTLARR Act, 2013: Provides for disclosure of Social Impact Assessment reports, Rehabilitation and Resettlement Schemes, awards, and related information to affected persons and local institutions during the land acquisition and resettlement process. Environment (Protection) Act, 1986 and EIA Notification, 2006: Provides for public consultation and	Continue to engage with and provide information to, project-affected parties and other interested parties throughout the life cycle of the project, in a manner appropriate to the nature of their interests and the potential E&S risks and impacts of the project. Continue to conduct stakeholder engagement in accordance with the SEP. Implementation of ESCP.	National provisions relating to consultation, disclosure, and stakeholder participation provide an important foundation for engagement processes. The Project will additionally implement continuous stakeholder engagement, information disclosure, external reporting, and ESCP implementation measures throughout the project lifecycle in accordance with the SEP and ESS10 requirements.

Requirements	National and state regulations and policies	World Bank	Applicability
	disclosure of environmental assessment documentation for applicable projects.		
Grievance Mechanism	EPA 1986, Rules 1986 and the Notification issued there under in 2006: Interested persons may send their comments to the concerned regulatory authorities. FRA 2006: Section 14 and 15, provides that to resolve any petitions raised to the Sub-Divisional Level Committee and District Level Committee, a hearing is fixed and intimated to the petitioner and the concerned Gram Sabha in writing as well as through a notice at a convenient public place in the village of the petitioner at least 15 days prior to the date fixed for the hearing. On a written request of the Gram Sabha or the Forest Rights Committee for information, records or documents, the concerned authorities shall provide an authenticated copy of	Inform the project-affected parties about the grievance process in the course of its community engagement activities. The grievance mechanism will address concerns promptly and effectively, in a transparent and culturally appropriate manner. The grievance mechanism will be proportionate to the potential risks and impacts of the project and will be accessible, at no cost and without retribution. Where feasible, the grievance mechanism will utilize existing formal or informal grievance mechanisms, supplemented as needed with project-specific arrangements. The mechanism will not prevent access to judicial or administrative remedies.	Requirements of ESF are aligned with National and state laws and applicable.

Requirements	National and state regulations and policies	World Bank	Applicability
	the same to the Gram Sabha or Forest Rights Committee, and facilitate its clarification, if required, through an authorized officer as mentioned in Section 12.		
Organizational Capacity and Commitment	RFCTLARR Act 2013: With respect to indigenous peoples, Section 41(3) of the Act provides that, where land has to be acquired in Scheduled Areas, prior consent of the concerned Gram Sabha or the Panchayats or the Autonomous District Councils shall be obtained. FRA 2006: Under this Act, the Central Government can provide diversion of forest land for any development project, subject to the recommendation of the Gram Sabha/village council. Under this Act, free informed consent of the Gram Sabhas/village council in the areas concerned is needed prior to relocation of forest rights holders from 'critical wildlife	Define clear roles, responsibilities, and authority, as well as designate specific personnel to be responsible for the implementation and monitoring of stakeholder engagement activities.	Requirements of ESF are aligned with National and state laws and applicable.

Requirements	National and state regulations and policies	World Bank	Applicability
	habitats' for wildlife conservation.		

3.1 Environment Laws and Regulations

The following table(s) outlines the key provisions of the applicable laws, rules, and policy frameworks that are of particular relevance to the planning, design, and implementation of the proposed project.

Table 3-2: Applicable Environmental Legislation and Specific Requirements for the Project

Legislation (Acts/Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
National level				
Environmental Protection Act, 1986, and subsequent amendments	The Environmental (Protection) Act, 1986, empowers MoEFCC to set standards, regulate pollution, and issue notifications like the EIA Notification (2006). Its rules on air, water, waste, and hazardous substances apply to all MLCIP sub-project works.	State Pollution Control Boards (SPCBs)	All project activities must comply with the Act's provisions, including adherence to prescribed environmental standards, obtaining statutory clearances (e.g., Consent to Establish/Operate from MSPCB), and implementing mitigation measures under the Environmental Management Plan (EMP). The Act provides the overarching legal basis for ensuring that the construction, operation, and maintenance of Project infrastructure do not cause environmental degradation	Contractor & MPWD
Environmental Impact Assessment Notification-2006,	Regulates prior Environmental Clearance (EC) for categorized projects.	MoEF&CC and SEIAA	Project components do not trigger Item 7(f) unless they involve major highway expansion or land acquisition, as documented in screening. Ropeway projects under Item 7(g)	1. MPWD 2. DPR/ESIA Consultant 3. Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
and its amendments			require mandatory EC Category A (MoEFCC) for eco-sensitive/protected areas and Category B (SEIAA) elsewhere with ESIA, ESMP, and consultation. Contractors must obtain prior EC for material extraction under the EIA Notification, 2006. Procedures are in Annexure II.	
The Forest (Conservation) Act, 1980 and Amendments and Van (Sanraksh an Evam Samvardh an) Rules, 2023	Provision for obtaining Forest Clearance shall apply if any forestland is proposed to be diverted for the project, including notified community forest that are deemed forest under the provisions of the Forest (Conservation) Act, 1980 , and the rules framed thereunder.	MoEFCC, GoM Forest Department	Under the Meghalaya Logistic & Connectivity Improvement Project (MLCIP), environmental screening pinpointed just three road sections that cross notified forest areas. For these, all works will stay strictly within the pre-1980 right-of-way (RoW), eliminating the need for additional forest diversion. Should any expansion occur beyond this RoW, full compliance with the Forest (Conservation) Act is mandatory, routed through the PARIVESH portal, with Stage-I and Stage-II approvals, compensatory afforestation (CA), net present value (NPV) payments, and settlement of Forest Rights Act (FRA) rights. Even though Meghalaya's forests are largely community-owned, the state Forest Department has verified that no MLCIP alignments overlap with	1. MPWD 2. DPR Consultant 3. ESIA Consultant

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
			designated Community Forest areas.	
Wildlife (Protection) Act, 1972 amended 1993 and Rules 1995; Wildlife (Protection) Amendment Act, 2002	The Wildlife (Protection) Act, 1972 provides comprehensive protection for wild animals, birds, and plants through six Schedules with varying degrees of safeguards. Schedule I and Part II of Schedule II offer absolute protection with the highest penalties, while Schedules III and IV offer protection with lower penalties. Schedule V lists animals that may be legally hunted, and Schedule VI identifies endemic plant species prohibited from cultivation and planting.	National / State Board for Wildlife	Meghalaya's forest and wildlife context triggers MoEF&CC OM No. J.11013/41/2006-IA/II(I) (2 December 2009), requiring NBWL clearance for projects on forest land or within 10 km of National Parks, Wildlife Sanctuaries, or ESZs under the Wildlife (Protection) Act, 1972. As no MLCIP subprojects fall within or near notified ESZs, NBWL clearance is not required. However, subprojects near elephant corridors shall incorporate enhanced, species-specific safeguards in line with the Act and Supreme Court directions Civil Appeal Nos. 3438–3439 of 2020 for protecting elephant migration routes.	1. MPWD 2. DPR Consultant 3. ESIA Consultant
Biological Diversity Act, 2002	The Act emphasizes the Conservation of India's biodiversity and promotes the sustainable use of biological resources. It establishes a comprehensive framework for the protection of biodiversity, the sustainable utilization of its components, and the equitable sharing of benefits arising	<u>National Biodiversity Authority</u> (NB A), State Biodiversity Board	In compliance with the Biological Diversity Act, 2002, MLCIP shall consult the Meghalaya Biodiversity Board and Biodiversity Management Committees, particularly near Biodiversity Heritage Sites, and adhere to their directives. Project activities shall avoid Biodiversity Heritage Sites and eco-sensitive zones, undergo pre-construction biodiversity screening, and integrate appropriate	1. MPWD 2. DPR Consultant 3. ESIA Consultant

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
	from the use of biological resources.		safeguards to mitigate impacts on sensitive habitats, species, and community-conserved landscapes.	
Notification of Eco Sensitive Zones (ESZs)	Buffer areas surrounding protected areas, such as National Parks and Wildlife Sanctuaries, are designated as Eco-Sensitive Zones (ESZs) under this notification. Specific restrictions on activities, including construction, tree felling, and other potentially harmful operations, apply within these zones.	Forest Department, GoM and MoEFCC	The MLCIP avoids all activities prohibited in Eco-Sensitive Zones (ESZs). Assessments confirm that no road subproject alignments fall within or intersect any notified ESZs; all are located outside legally designated boundaries. Consequently, no ESZ-related restrictions or regulatory procedures apply. The project fully complies with relevant wildlife and environmental protection provisions.	1. MPWD 2. DPR Consultant 3. ESIA Consultant 4. Contractor
Water (Prevention and Control of Pollution) Act, 1974, and amendments	This Act provides for the control and prevention of water pollution by regulating the discharge of pollutants into water bodies in accordance with prescribed standards.	Meghalaya State Pollution Control Board	Water pollution risks from sediments, oil and grease, and organic runoff from construction plants, workshops, ancillary facilities, and labour camps shall be managed through mandatory Consent to Establish and Consent to Operate from the Meghalaya State Pollution Control Board, to be obtained prior to commencement of related activities.	CSC & Contractor
Air (Prevention and Control of Pollution) Act, 1981, and	This Act provides the standards for the prevention and control of Air pollution.	Meghalaya State Pollution Control Board	Air pollution may arise from emissions from crushers, hot-mix plants, and concrete batching plants, as well as fugitive dust from scarification, aggregate handling, and waste	CSC & Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
amendments			management. Accordingly, Consent to Establish and Consent to Operate from the State Pollution Control Board are mandatory before the installation and operation of such facilities.	
Noise Pollution (Regulation and Control Rule) 2000	The Ministry of Environment, Forest and Climate Change (MoEF&CC) has promulgated noise standards for both day and night, applicable to various land use categories, to regulate and control ambient noise levels.	State Pollution Control Board	Noise pollution during construction may arise from heavy machinery, material transport, piling and foundation works, demolition, drilling, and cutting activities. While no specific “noise permission” is required under the Noise Pollution Rules, all activities shall comply with the prescribed ambient noise limits applicable to the respective area.	CSC & Contractor
Ancient Monuments & Archaeological Sites and Remains Act, 1958	The Act has been enacted to safeguard and prevent damage to archaeological sites and monuments identified and protected by the Archaeological Survey of India (ASI).	Archaeological Dept. GOI and GoM	The State contains several nationally and state-protected heritage sites and ancient caves. Sub-projects near ASI notified monuments shall comply with the Act, including the 100 m prohibited and 200 m regulated zones. Project documentation ensures adherence to these requirements, avoidance where feasible, and application of mitigation measures and a Chance Finds Procedure for any unanticipated discoveries.	1. MPWD 2. DPR Consultant 3. ESIA Consultant 4. Contractor
Construction and Demolition	The rules provide a framework for the management of	Village council,	Construction and demolition (C&D) waste generated during project activities shall	CSC and Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
n Waste Management Rules, 2016	construction and demolition (C&D) waste generated from the construction, repair or demolition of any civil structure, ensuring environmentally sound handling, recycling, and disposal practices.	Municipal authority	be managed, handled, and disposed of in accordance with the provisions of the Rules. Disposal of C& D waste shall be done under the guidelines of local authorities, like the Village council, and municipal boards	
Municipal Solid Waste (Management & Handling) Rules, 2000 (MSW Rules)	Segregation, Handling, & safe Disposal of Domestic Solid Waste	Municipal Boards/ Town Committees, village council	All workforce campsites shall provide designated waste collection and storage facilities and maintain controlled access to prevent intrusion by stray animals or wildlife, thereby minimizing environmental and health risks. Disposal is done under the provided guidelines of local authorities, like the Village council and municipal boards	MPWD, CSC and Contractor
Hazardous and other Wastes (Management and Transboundary Movement) Rules, 2016 and amendments	The Hazardous and Other Wastes (Management and Transboundary Movement) Rules define and classify hazardous wastes, and establish procedures for their handling, storage, treatment, and disposal, including the use of Treatment, Storage, and Disposal Facilities (TSDFs).	Central Pollution Control Board (CPCB) and Meghalaya State Pollution Control Board	All waste oil and hazardous wastes generated during construction and operation must be managed in accordance with CPCB guidelines and the Extended Producer Responsibility (EPR) framework. Producers, importers, recyclers, and collection agents shall register on the CPCB EPR portal, ensuring wastes are supplied only to authorized recyclers. Contractors must obtain authorization from the Meghalaya State Pollution Control Board (MSPCB), maintain accurate	MPWD, CSC and Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
			records, submit statutory returns, and ensure safe storage, transportation, and disposal. Unauthorized disposal is strictly prohibited, and all activities must be reported via the EPR system.	
The Explosive Act 1884; Explosives Rules, 2008	Safe transportation, storage and use of explosive material	PESO, District Magistrate /Deputy Commissioner	Blasting for hill slope cutting, bridge foundations, shall be conducted only by trained, licensed personnel using controlled methods. All required licenses and approvals must be obtained in advance, and explosives shall be stored, handled, and transported according to safety standards. Adequate safety measures, warnings, and exclusion zones shall be maintained, with contract provisions ensuring full compliance with the Explosives Act and related rules.	MPWD, CSC and Contractor
Batteries (Management and Handling) Rules, 2022	The rules require the proper collection, disposal, and recycling of used lead-acid batteries, assigning responsibility to manufacturers, dealers, and consumers to ensure their return for environmentally sound recycling.	Meghalaya State Pollution Control Board	All used lead-acid batteries generated by the project shall be collected, stored, and returned to the authorized recycling system in accordance with this Rule, ensuring environmentally sound disposal and recycling.	MPWD, CSC and Contractor
Central Motor Vehicle	To check vehicular air and noise pollution	Regional Transport Authority	Contractors shall ensure that all vehicles deployed during construction hold valid	MPWD, CSC and Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
Act 1988 and Central Motor Vehicle Rules 1989		(RTA), the State Transport Authority (STA),	Pollution Under Control certificates and comply with the applicable Bharat Stage CEV/TREM IV and V emission standards as notified under MoRTH G.S.R. 1114(E). All Construction Equipment Vehicles and agricultural tractors used at project sites shall employ certified engines meeting conformity of production, durability, and NOx control requirements under AIS-137, thereby supporting cleaner, energy-efficient, and environmentally compliant construction practices under MLCIP.	
Public Liability and Insurance Act 1991	The Act aims to provide immediate relief to those affected by accidents involving hazardous substances.	District Collector	The Contractor shall maintain Public Liability Insurance as mandated under this Act, covering third-party damages or injuries, particularly during hazardous operations, to ensure prompt compensation and minimize financial exposure.	MPWD, CSC and Contractor
The Petroleum Rules, 2002	The Rules mandate obtaining licenses for most petroleum-related activities, emphasize safe handling and storage to prevent accidents, and establish reporting procedures for incidents involving petroleum products.	Petroleum and Explosives Safety Organization (PESO) and the district authority	Storage of petroleum up to 2,500 litres in non-bulk containers does not require a license but must comply with prescribed safety guidelines. Bulk storage above 1,000 litres and up to 25,000 litres requires a license from the District Authority, subject to safety, fire protection, and facility compliance. Storage between 25,000 and 45,000	MPWD, CSC and Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
			litres requires prior PESO approval, while quantities exceeding 45,000 litres require a full license in Form XVI.	
Plastic waste Management Rules, 2016	The Plastic Waste Management Rules provide for the control and management of plastic waste generated from any activity.	Meghalaya State Pollution Control Board	The Contractor shall manage all plastic waste generated from project activities in accordance with the Plastic Waste Management Rules, ensuring proper segregation, collection, and disposal/recycling through authorized facilities.	MPWD, CSC and Contractor
State Level				
Meghalaya Forest Regulation (Application and Amendment) Act, 1973	Protection of unsettled government forests includes regulating or prohibiting the felling, cutting, girdling, lopping, tapping, or injury of trees, the sawing, conversion, and removal of timber, and the collection of other forest produce. It also covers the regulation or prohibition of quarrying stones, boiling catechu, and burning lime or charcoal.	Department of Forest, GoM	Rehabilitation of the sub-project roads will necessitate stone quarrying from designated quarry sites. Accordingly, all provisions under the Act shall be applicable.	MPWD and Contractor
The Mines and Minerals (Regulation and Development) Act	Provides the legal framework for the regulation of mines and the development of all minerals, including rules for the granting of mining	Department of Mining & Geology, GoM	Project will require quarrying of stones for aggregate preparation. This act will be applicable for such activities.	MPWD and Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
(MMRD Act), 1957 and Concession Rules 2016	leases and quarrying permits. It further stipulates that such operations shall not be undertaken in forest land, catchment areas, protected areas, biodiversity heritage sites, or other designated no-mining zones			
The Garo Hills District (Forest) Act, 1958	Act provides a framework for the District Council to manage forests within the Garo Hills Autonomous District.	Garo Hills Autonomous District Council (GHADC)	Applicable where project activities (road construction, material sourcing, or site development) fall within forest areas under GHADC jurisdiction.	MPWD and Contractor
The United Khasi and Jaintia Hills Autonomous District (Management and Control of Forest) Act, 1958	Act is provided for the management and control of forests in the United Khasi – Jaintia Hills Autonomous District	Khasi Hills Autonomous District Council Jaintia Hills Autonomous District Council	Applicable for all project components located within KHADC/JHADC forest jurisdictions, including road alignments, slope stabilization works, and material sourcing areas.	MPWD and Contractor

4 PROJECT BASELINE STUDY

4.1 Background:

Till 1970, Meghalaya was part of the undivided state of Assam. In 1971, Meghalaya was conferred autonomy through the North-Eastern Areas (Reorganization) Act, 1971. On 21 January 1972, Meghalaya was created by combining the hill regions of Garo, Khasi, and Jaintia to form a separate state.

The state comprises 12 districts, namely South Garo Hills, South West Garo Hills, West Garo Hills, East Garo Hills, North Garo Hills, West Khasi Hills, East Khasi Hills, Eastern West Khasi Hills, South Khasi Hills, Ri-Bhoi, West Jaintia Hills and East Jaintia Hills, lying between 25°47" - 26°10" N and 89°45" - 92°45" E and covers 22,429 km² area. It is bounded on the north by Goalpara, Kamrup, Karbi Anglong, and Nagaon districts, on the east by Cachar and North Cachar Hills districts of Assam, and on the west by the Rangpur division and the Mymensingh division of Bangladesh (Figure 2.1). The altitude ranges from 50 to 1950 m. The highest peak is Shillong Peak.

The state of Meghalaya is physiologically a plateau region. The general altitude of this plateau lies between 300 m above mean sea level (msl) and 1900 m msl. This plateau is characterized by gentle slopes in the northern and western regions; however, the southern and eastern slopes are very steep, forming gorges. Meghalaya is divided into three physiographic regions, namely, Western Meghalaya (Garo Hills), Central Meghalaya (Khasi Hills), and Eastern Meghalaya (Jaintia Hills).

4.2 Project Influence Area:

Defining the geographic boundaries of the sub-project for which baseline will be collected will be determined by the project influence area (PIA). This will be based on the scope and encompassing regions that are expected to experience direct or indirect effects due to the construction and operation activities. A project influence typically includes physical construction zone, buffer zone, ecological impact zone, water bodies, traffic and access routes likely to experience changes in volume and characteristics, and health and safety zone. The PIA can vary for different projects based on factors such as the project's nature, scale, location, and potential impacts and considering legal requirements. These areas will be vulnerable to potential unplanned but foreseeable changes caused by the sub-project and will also be susceptible to cumulative impacts when combined with other activities within their influence zone. Once the geographic boundaries are defined, the E&S components of interest, such as air quality, water resources, biodiversity, soil, land use, land ownership, and socioeconomic factors will be identified.

The E&S baseline survey will be carried out on the sub- projects to inform decisions on the design, operation, or mitigation measures. The baseline will be based on current information that assesses the scope of the area to be studied and describes relevant physical, biological, and socioeconomic conditions, including any changes anticipated before the project commences. The baseline data will take into account current and proposed development activities within the sub-project area, but not directly connected to it.

4.3 Environmental baseline

4.3.1 Geology and Soil

Geologically, Meghalaya is part of the Shillong Plateau, dominated by Precambrian and Paleozoic sedimentary formations comprising sandstone, shale, and extensive limestone belts, particularly in the southern hills. Prolonged weathering and dissolution of limestone under very high rainfall have resulted in well-developed karst landscapes, underground drainage systems, and caves such as Siju. The

combination of steep terrain, intense monsoon rainfall, and soluble rock formations strongly influences surface hydrology, slope stability, and erosion processes.

The soils of Meghalaya are mainly lateritic, red loamy, red and yellow, alluvial, and ferralsolic, with localized peaty and colluvial soils. These soils are generally acidic, low in fertility, and prone to erosion due to steep slopes and heavy rainfall. From an engineering perspective, lateritic and red loamy soils are suitable for embankment construction with stabilization, while alluvial and organic soils require ground improvement and robust drainage and slope protection measures.

4.3.2 Climate

Meghalaya features a humid subtropical to temperate climate, strongly influenced by orography, and receives some of the world's highest rainfall, particularly in Mawsynram and Cherrapunji. Annual precipitation varies from approximately 2,800 mm to over 12,000 mm, with the majority occurring during the southwest monsoon season (June–September). Temperatures typically range from 10–32 °C, varying with elevation.

Recent observations show a 1.0–1.5 °C increase in mean temperatures, accompanied by greater rainfall variability, including more frequent extreme events (>150 mm/day). These changes have heightened risks of flash floods, landslides, slope failures, and soil erosion, which significantly impact roads and bridges.

Climate projections from CMIP6 models, the World Bank Climate Knowledge Portal, and the State Action Plan suggest a temperature rise of 1.5–3.0 °C by mid-century and up to 4 °C by 2100 under high-emission scenarios. Total annual rainfall is expected to remain largely stable, but with increased storm intensity and prolonged dry spells. The primary climate-related hazards flash floods and landslides pose the most significant threats to hill roads, bridges, and logistics infrastructure, while heat and wind effects remain moderate.

Recommended adaptation measures include enhanced drainage systems, slope stabilization, greater bridge free board and scour protection, durable construction materials, flood resilient and elevated facilities, wind-resistant designs, and bio-engineering combined with catchment area treatments to mitigate runoff and erosion.

4.3.3 Drainage Pattern

Meghalaya has a structurally controlled drainage system, with rivers aligned along joints, faults, and monoclines, reflecting the influence of lithology, tectonics, and long-term erosion. The Garo Hills are characterized by relatively gentler slopes but fault-controlled rivers requiring flood and erosion management, while the Eastern and Central Plateau features hard-rock terrains with incised valleys and ridge–valley systems influencing alignment design. The southern Khasi and Jaintia Hills exhibit steep gradients, deep gorges, waterfalls, and karst features in limestone terrains, necessitating high bridges, robust drainage, and slope stabilization. The State is drained by eight major rivers to the north (Brahmaputra basin) and five to the south (Meghna basin), with several rivers flowing into Bangladesh. Consequently, infrastructure works affecting these waterways may trigger World Bank OP 7.50 requirements, including transboundary impact assessment, notification to Bangladesh, and prior clearance to manage downstream hydrological, sediment, and ecological impacts.

4.3.4 Springs and Streams of Meghalaya

Meghalaya's springs and streams are closely linked to its geology, high rainfall, and rugged terrain. Groundwater percolates through fractured gneisses, granites, and sedimentary formations and emerges as springs locally known as umiong or umshyap. These springs feed a dense network of hill streams such as the Umkhrah, Umiew, Umngot, and Umiam, which join larger river systems including the Umiam,

Myntdu, Simsang, Kynshi, and Umngot. Major spring types include fracture, depression, contact, karst, and seepage springs, reflecting varied hydrogeological conditions. Springs are widely distributed across the Khasi, Jaintia, Ri-Bhoi, and Garo Hills and are critical sources of drinking water and base flow for streams, making their protection important for water security and slope stability.

4.3.5 Natural Hazards

As the State's topography is dominated by steep hills, dissected plateaus, and deep valleys, which together with one of the highest rainfall regimes in the world, create a unique set of natural hazards. For infrastructure development and corridor improvement projects, understanding these hazards is critical to ensure safety, resilience, and long-term functionality. The primary natural hazards of concern include landslides and slope instability, earthquakes, floods and flash floods, and extreme climatic conditions such as heavy rainfall and storms.

4.3.6 Vulnerability to Earthquakes

Meghalaya lies entirely in India's Seismic Zone V, the highest-risk area, perched on the active Shillong Plateau. Hilly terrain worsens quake impacts, loose soils amplify shaking, while steep slopes trigger landslides, rockfalls, surface ruptures, liquefaction, settlement, slope failures, and river disruptions. These threats endanger roads, pavements, bridges, culverts, and embankments. Seismic forces and debris block corridors, demanding swift restoration. Critical infrastructure—elevated roads, storage facilities, and buildings—must resist shaking; failures could cripple supply chains and cause severe losses.

4.3.7 Vulnerability to Cyclones

Meghalaya's proximity to Bangladesh and the Bay of Bengal makes several districts vulnerable to strong winds and occasional cyclonic impacts, particularly during the monsoon. The western districts (South West and South Garo Hills, South West and West Khasi Hills) fall in a very high wind zone with speeds up to about 50 m/s, while West and East Jaintia Hills may experience winds up to 55 m/s. For the Meghalaya Logistics Corridor, the main risks are rainfall-induced landslides affecting slope cuttings and embankments (high vulnerability), cyclone-related heavy rainfall impacting roads, bridges, and drainage systems (medium to medium-high), and moderate disruption risks to logistics facilities and communities.

4.3.8 Vulnerability to Floods

Meghalaya's intense monsoon rainfall frequently causes flash floods in hilly areas and inundation of river valleys, driven by cloudbursts and rapid runoff from saturated slopes. High-velocity floodwaters can erode road embankments, damage bridges and culverts, and deposit debris along transport corridors, with risks aggravated by deforestation and unplanned urban growth. Low-lying stretches and flood-prone facilities are particularly vulnerable to submergence and waterlogging, affecting traffic and logistics continuity. Flood-prone areas include western Meghalaya (Tirikilla–Phulbari belt), plains near the Bangladesh border (Baghmara, Dawki–Shella), localized urban pockets of Shillong, Tura, and Williamnagar, and parts of West, South West, and East Khasi Hills, Jaintia Hills, and Ri-Bhoi districts.

4.3.9 Vulnerability to Landslides

Meghalaya's hilly terrain makes it highly prone to landslides, particularly during heavy rains from June to October, causing loss of life, property, and disruption of transport. Landslides are driven by steep slopes, fragile geology, neo-tectonic activity, and unplanned land use. The southern regions are more vulnerable, with landslide-prone stretches along highways such as Bajengdoba–Tura–Dalu, Damra–Siju–Baghmara, Guwahati–Shillong–Tamabil, and Shillong–Jowai–Badarpur. Urban areas like Shillong, Tura, and Jowai also face risks due to rapid urbanization and poor construction practices.

4.3.10 Biodiversity Profile

Meghalaya is located within the Indo-Myanmar Biodiversity Hotspot and forms part of the North-East India bio-geographic zone, a globally significant transition belt linking the Indo-Malayan, Indo-Chinese and Eastern Himalayan regions. Owing to this strategic ecological position and its complex geological evolution—arising from the detachment of the Indian plate from Gondwana and its subsequent collision with the Eurasian landmass—the state exhibits exceptionally high biological diversity. Its landscape supports a continuum of habitat types ranging from tropical evergreen rainforests in the foothills to montane forests, alpine meadows, and cold-climate ecosystems. This diversity in elevation, climate, and forest types underpins the presence of rich and unique assemblages of flora and fauna, making Meghalaya one of India's most ecologically sensitive and species-rich regions.

4.3.11 Flora

Meghalaya, part of the Indo-Burma hotspot, supports 4,243 flowering-plant species (1,449 genera, 216 families) across the Khasi, Jaintia and Garo Hills. Vegetation ranges from tropical/subtropical broadleaf forests to montane temperate woodlands and grasslands, hosting high endemism and phylogenetic diversity. Notable groups of conservation and project relevance include orchids (110 genera, 439 taxa), gymnosperms and tree ferns (e.g., *Podocarpus neriifolia*, *Cyathea gigantea*), and carnivorous plants (endemic *Nepenthes khasiana*, *Drosera* spp.). These taxa—many confined to sacred groves, riparian strips and high-altitude grasslands—are highly sensitive to habitat loss, fragmentation and overcollection. Given that the MLCIP corridor intersects such sensitive landscapes, targeted botanical surveys, avoidance of key sites, and site-specific mitigation (buffering, translocation only as last resort, community engagement) are required to minimize biodiversity impacts.

- **Endemism and Rare Plant Species:**

Meghalaya's Khasi and Jaintia Hills are rich in endemic and rare plant species, including *Aeschynanthes parasiticus*, *Aeschynanthes superba*, *Callicarpa psilocalyx*, *Camellia caduca*, *Citrus latipes*, *Ilex embelioides*, *Impatiens khasiana*, *Impatiens laevigata*, *Lindera latifolia*, *Paramignya micrantha*, *Rubus khasianus*, and *Tectona grandis*. *Nepenthes khasiana*, a notable endemic pitcher plant, is protected under CITES Appendix I and Schedule VI of the Wildlife (Protection) Act, 1972. **Tertiary and Eastern Asiatic Flora**

The Khasi and Jaintia Hills harbor a high concentration of eastern Asiatic and tertiary flora. This includes several primitive plant families such as Elaeocarpaceae, Elaeagnaceae, Annonaceae, Ranunculaceae, Piperaceae, Menispermaceae, Caryophyllaceae, Lauraceae, Myricaceae, and Lazarbiaceae. Primitive genera like *Schizandra*, *Corylopis*, *Myrica*, *Magnolia*, and *Michelia* underscore the region's importance as a repository of ancient plant lineages. These taxa are sensitive to habitat fragmentation, making corridor planning in MLCIP crucial.

4.3.12 Fauna

Meghalaya, is renowned for its rich biological diversity, which spans a variety of ecosystems including subtropical forests, grasslands, wetlands, and limestone caves. The faunal diversity of Meghalaya constitutes a total of 5,538 species recorded so far, representing approximately 6.2% of the 89,451 species documented in India (ZSI, 1995). Remarkably, the state harbors nearly 35% of Indian mammals and 50% of vertebrate species, including birds. In addition to vertebrates, the invertebrate fauna of Meghalaya is highly diverse, comprising 4,580 species across 2,114 genera, with insects alone accounting for 3,624 species. Porifera is the smallest group, represented by a single species.

The high faunal diversity is coupled with a significant percentage of endemic and threatened species, which underscores the ecological importance of the state. Recent studies have highlighted the discovery

of new invertebrate species, reflecting both the richness of the fauna and the under-explored nature of Meghalaya's ecosystems

Faunal Diversity of Meghalaya

Meghalaya's vertebrate fauna comprises 451 genera and 1,112 species across five classes: mammals, birds, reptiles, amphibians, and fishes.

Mammals: 139 species (35 endangered, vulnerable, or data-deficient), including Western Hoolock gibbon (*Hoolock hoolock*), clouded leopard (*Neofelis nebulosa*), Indian elephant (*Elephas maximus indicus*), and Asiatic black bear (*Ursus thibetanus*). Most are forest-dependent and vulnerable to habitat fragmentation.

Birds: 659 species, including forest-dependent endemics and threatened species such as Great Hornbill (*Buceros bicornis*), Rufous-necked Hornbill (*Aceros nipalensis*), and Blyth's Tragopan (*Tragopan blythii*). Wetlands host significant migratory waterbird assemblages.

Reptiles: 107 species (nine threatened), including king cobra (*Ophiophagus hannah*) and hill endemics associated with rocky and forested habitats.

Amphibians: 55 species, many endemic and highly sensitive to alterations in water quality and hydrology.

Fishes: 152 species in rivers, streams, and wetlands, with notable endemism. Key taxa include hill-stream cyprinids (*Danio meghalayensis*, *Devario aequipinnatus*), loaches (*Schistura* spp., *Aborichthys garoensis*), mahseers (*Tor* spp.), carps (*Labeo pangusia*), catfishes (*Clarias*, *Mystus* spp.), spiny eels (*Mastacembelus* spp.), ornamental species (*Aplocheilichthys* spp., *Botia rostrata*), cold-water specialists (*Schizothorax* spp.), and hillstream catfishes (*Pillaia*, *Glyptothorax* spp.).

Meghalaya's invertebrate fauna includes 2,114 genera and 4,580 species, dominated by insects (3,624 species). Other groups comprise bryozoans, annelids, mollusks, nematodes, rotifers, platyhelminthes, medusae, porifera, and protozoa

These diversity patterns emphasize the necessity for corridor planning, habitat retention, and hydrological safeguards under the Meghalaya Logistics & Connectivity Improvement Project (MLCIP) to prevent habitat fragmentation and degradation of critical sites.

- Endangered, Vulnerable, and Endemic Species

Meghalaya hosts a significant number of species with high conservation priority. Table 4.1 provides a summary.

Table 4-1: Endangered, Vulnerable, and Endemic Species in Meghalaya

Taxa	Total Species	Endangered	Vulnerable	Endemic
Mammals	139	10	15	8
Birds	659	6	4	12
Reptiles	107	5	4	7
Amphibia	55	3	5	6
Fishes	152	7	5	10

Source: Zoological Survey of India

4.3.13 Protected Area

Meghalaya's Protected Area (PA) network forms the cornerstone of biodiversity conservation in the State, encompassing National Parks, Wildlife Sanctuaries, Biosphere Reserves, and Community Conservation Areas. As of 2024, Meghalaya has seven legally designated Protected Areas covering approximately 1,133.9 km², around 5.06% of the State's geographical area (Meghalaya Biodiversity Board, 2024). The PA system safeguards diverse ecological zones ranging from tropical evergreen and semi-evergreen forests in the Garo Hills to montane subtropical forests in the Khasi and Jaintia Hills.

Meghalaya has two national parks: Balpakram National Park and Nokrek National Park. Balpakram is known for its "land of spirits" folklore and unique forest-covered canyon, while Nokrek, a UNESCO Biosphere Reserve, is a core area for biodiversity in the Garo Hills. There are four wildlife Sanctuaries and two Elephant reserves are present in this state.

Table 4-2: Protected Areas

Protected Area	Category	District(s)	Approx. Area (sq. km)	Key Ecological Features
Balpakram National Park	National Park	South Garo Hills	352	High biodiversity, karst features, endemic flora and fauna
Nokrek National Park	National Park	East/West/ South Garo Hills	47.48	Citrus gene sanctuary, rich faunal diversity
Nokrek Biosphere Reserve	Biosphere Reserve	Garo Hills	820	Buffer around Nokrek NP, core area for conservation
Nongkhylllem Wildlife Sanctuary	Wildlife Sanctuary	Ri-Bhoi	29	Subtropical broadleaf forest, elephant corridor
Siju Wildlife Sanctuary	Wildlife Sanctuary	South Garo Hills	5.18	Cave ecosystems, bat colonies, limestone formations
Baghmara Pitcher Plant Sanctuary	Wildlife Sanctuary	South Garo Hills	0.02	Unique <i>Nepenthes khasiana</i> (pitcher plant) habitat
Narpuh Wildlife Sanctuary	Wildlife Sanctuary	East Jaintia Hills	59.9	Moist evergreen forest, critical for elephants and primates

Source: ENVIS Meghalaya

Note: None of the present project roads are passing through the Designated protected area, however to be rechecked for ropeways

4.3.14 National Park & Wild Life Sanctuaries

- Bird Migration in Meghalaya

Meghalaya, part of the Indo-Burma biodiversity hotspot, supports diverse habitats—subtropical forests, wetlands, grasslands, and rivers—that are vital for resident and over 150 migratory bird species. Key migratory species include Bar-headed Goose (*Anser indicus*), Eurasian Wigeon (*Mareca penelope*), Common Teal (*Anas crecca*), Oriental Honey Buzzard (*Pernis ptilorhynchus*), and Pacific Swallow (*Hirundo tahitica*). Migratory birds use Meghalaya as a stopover or wintering ground along the East Asian–Australasian and Central Asian Flyways, with major corridors in the Garo Hills (Simsang, Ganol, Bokabil wetlands), Khasi Hills (Umiang, Umsning reservoirs), and Jaintia Hills (small riverine wetlands). Wetlands, reservoirs, and forested ridgelines are particularly sensitive, while agricultural margins provide feeding areas. Integrating these routes into the MLCIP planning—through strategic alignment, timing of construction, buffer retention, and limiting tree clearing—ensures sustainable infrastructure development while minimizing ecological impacts.

Elephant Migration Routes in Meghalaya:

Elephant migration routes in Meghalaya connect forests across the Garo, Khasi, and Jaintia Hills, linking habitats with Assam and Bangladesh and maintaining ecological connectivity for this Schedule I species. In the Garo Hills, key corridors include Siju–Rewak (Balpakram National Park to Rewak Reserve), Nokrek–Imangre–Simsang (Nokrek National Park to Simsang valley), and Baghmara–Khakija–Balpakram toward Bangladesh. In the Khasi Hills, major routes are Umsning–Nongpoh–Khanapara (toward Assam’s Kaziranga–Karbi Anglong landscape), Mawphlang–Mawsynram–Shella (extending to Bangladesh), and Nongkhylllem–Jorabat (linking to Assam’s Amchang–Killing forests). In the Jaintia Hills, Saipung–Tyrshi–Narpuh and Amlarem–Borhill–Sutnga corridors connect Narpuh Reserve Forests with the Barail Hills (Assam) and Patharia Hills (Bangladesh), supporting seasonal movement, reducing human–elephant conflict, and reinforcing conservation efforts.

4.3.15 Forest

Meghalaya, a forest-rich state, has 76.3% of its area under forest cover, with only 1,113 sq. km managed directly by the State Forest Department; the remainder is community-managed under the Khasi, Jaintia, and Garo Hills ADCs, including Community Reserve Forests and vegetative green patches. These forests are vital for ecological balance and tribal livelihoods. For the Meghalaya Logistics and Connectivity Improvement Project (MLCIP), corridor alignments have been finalized, and site-specific mitigation measures will ensure construction and operation respect forest ownership, biodiversity-rich habitats, and community-managed areas, promoting sustainable infrastructure while balancing economic growth and conservation.

4.3.16 Reserved Forest

There are 23 Reserved Forests (RFs) in the state with areas varying from 0.44 km² to 150 km², covering a total of 712.74 km². The largest of these is Saipung RF in the Jaintia Hills district (150.35 km², Table 3.3.3). Nongkhylllem RF is the second largest RF of the state, and it lies adjacent to Nonkhylllem WLS. The Narpuh Block I and II of Jaintia Hills are among the other large RFs. Though Garo Hills has two National Parks and many RFs, the total area under legal protection is still inadequate given the richness of biodiversity and the need for long-term conservation of mega-herbivores such as the Asian elephant.

4.3.17 Community Reserve Forest

Community and Conservation Reserves in Meghalaya serve as ecological buffers and corridors linking larger protected areas, supporting landscape-level conservation. Introduced under the Wildlife (Protection) Amendment Act, 2002, they recognize the role of local communities in biodiversity protection while allowing subsistence use. As of October 2025, 182 Community Reserves are notified. Under the Sixth

Schedule, over 88% of forests are managed by ADCs and communities, and any diversion for non-forest purposes requires compliance with the Forest (Conservation) Act, 1980. Legally notified Community Reserve Forests are treated as “deemed forests” under Section 36C of the Wildlife (Protection) Act 1972 and amended, making FCA clearance mandatory for land-use change, as per SOP (Annexure-III B).

4.3.18 Sacred Groves

In Meghalaya, indigenous communities such as the Khasi, Garo, and Jaintia maintain over 1,000 sacred groves (Law Kyntang) dedicated to deities like Ryngkew, Basa, and Labasa. These groves serve as spiritual sanctuaries and traditional conservation systems that preserve biodiversity, regulate microclimates, and protect vital watersheds. Within the MLCIP framework, they function as ecological buffers and landscape connectors along development corridors. Governed by customary laws and the Sixth Schedule through acts like the United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Act these sacred groves exemplify the integration of cultural heritage with ecological sustainability in Meghalaya’s development planning.

4.3.19 Governance of Sacred Groves

In Meghalaya, sacred groves are legally protected under the United Khasi and Jaintia Hills Autonomous District (Management and Control of Forests) Act, 1958 and the Garo Hills Autonomous District (Management and Control of Forests) Act, 1961. These Acts empower the Lyngdoh (priest) or other designated persons to manage and control sacred groves in accordance with customary practices and the rules framed by the respective Autonomous District Councils. Section 7 of the Act prohibits the felling of trees within sacred groves without written approval from the Chief Forest Officer, while Section 9 restricts tree removal to religious purposes sanctioned by the Lyngdoh or authorized persons. Sacred groves in Meghalaya vary in size from small patches to areas exceeding 1,200 hectares and collectively cover over 10,000 hectares, serving as vital centers of cultural heritage and biodiversity conservation.

4.3.20 Climate Risk Screening and Integration into Design

Climate considerations have been incorporated into the Environmental and Social Impact Assessments (ESIAs) prepared for priority sub-projects, including assessment of key hazards such as landslides, flooding, and extreme rainfall events.

For all sub-projects, site-specific ESIAs shall assess exposure to relevant climate and disaster risks and inform design decisions accordingly. Based on this assessment, appropriate climate-resilient design measures—such as slope stabilization, improved drainage systems, bioengineering measures, and structural protection works—shall be incorporated into sub-project designs, as applicable.

These measures shall be reflected in Detailed Project Reports (DPRs), cost estimates, and implementation plans, and shall be maintained throughout the asset lifecycle through appropriate operation and maintenance practices.

4.4 Social baseline

In addition to the environmental baseline, the following parameters will be collated through primary surveys and secondary information to establish the baseline socioeconomic conditions of the communities in the PIA:

- **Data collection:** Conduct socioeconomic or census surveys to gather socioeconomic baseline information from the PIA. Additionally, carry out focus group discussions and key informant interviews

with community members including vulnerable groups, community leaders and representatives, and local authorities in the area.

- **Socioeconomic profile:** Identify the socioeconomic profile of project affected families and households within the PIA. Some of the parameters to be covered in the baseline include education level, ethnicity, religion, source of livelihood, and income level.
- **Vulnerable and indigenous or tribal communities:** Collect information on the demographic, socioeconomic, cultural, and other relevant characteristics of vulnerable groups or persons within the PIA for whom special provisions may have to be made.
- **Land use pattern and land ownership details:** Determine local land use patterns, tenurial arrangements (both individual and collective), and others dependent on the land for shelter and livelihood.
- **Cultural heritage:** Identify any public, community and/or any cultural, historic, or religious sites and buildings or services that may be affected.
- **Other social vulnerabilities relevant to the project:** Determine social impacts such as gender equality, prevalence of GBV, threats to human security, communal or interstate conflict, in- and out-migration patterns, and other social vulnerabilities.

4.4.1 Socio-Demographic Profile

Meghalaya has a geographical area of 22,429 sq Km. The State has a predominantly tribal population which contributes about 86% of the total population. The Khasis, the Jaintias and the Garos form the three major ethnic groups of original inhabitants of the State. The remaining 14% includes other tribes who inhabit the state and form the minor tribes, comprising of the Koch, Rabhas, Hajongs, Karbis, Biatas and others and non-tribal communities such as Bengali, Nepali, Assamese, Bihari, and other small ethnic groups, mainly residing in towns, trade centers, and peri-urban areas. The Garos are also called Achiks. The Khasis and the Jaintias predominantly inhabiting the districts towards eastern parts of the state. The Garo, Khasi and Jaintia follow a matrilineal system of society. The population of the State as per census 2011 is 29,66,889 which comprises of 14,91,832 males and 14,75,057 females. The sex ratio is 989 Females/ '000 Males as per Census 2011. The population of the state as of 2020, as per population projection by Economic Survey Report of Meghalaya is 36,88,942. Of this 18,46,798 are males and 18,42,144 are females. The decadal growth rate of population of the state is 27.95.

Meghalaya comprises of 12 districts spread across Khasi, Garo and Jaintia hills. Figure below illustrates the profile of the State.

Table 4-3: Demographic Profile of the State

Category	Urban	Rural	Scheduled Tribe (Urban)	Scheduled Tribe (Rural)	Total ST Population	% of ST Population	Literacy ST (%)
Total	2,966,889	595,450	2,371,439	158,358	2,136,891	74%	61.3%
Male	1,491,832	297,572	1,194,260	75,009	1,070,557	76%	63.5%

Category	Urban	Rural	Scheduled Tribe (Urban)	Scheduled Tribe (Rural)	Total ST Population	% of ST Population	Literacy ST (%)
Female	1,475,832	297,878	1,177,179	83,349	1,066,334	73%	59.2%

Source: Census of India, 2011

4.4.2 Religion

As per the 2011 Census, Christianity is the predominant religion in Meghalaya constituting 74.59 percent of the state's population and the remaining population follows Hinduism (11.53%), Islam (4.40%) and other religions. Demographic characteristics of the districts further reveals that over 90 percent of the population of West Khasi Hills, East Garo Hills and South Garo Hills comprises of Christians. The East Khasi Hills (17.55 %) and West Garo Hills (19.11%) also have a sizeable population of Hindus, whereas, 16.60 percent of the population in West Garo Hills constitute of Muslims.

Table 4-4:Religion-Wise Population of Meghalaya

Religion	Population in 2011
Hindus	342078
Muslims	130399
Christians	2213027
Sikhs	3045
Buddhist	9864
Jains	627
Other Religions.	258271
1. Khasi.	138480
2.Niamtre	85169
3.Songsarek	19886
4.Others	14736
Religion not stated	9578
Total	2966889

Source: Census of India, 2011 (**Niam Khasi** (also called Ka Niam Khasi)-This is the traditional religion practised by many Khasi communities. It is an indigenous belief system centred on reverence for nature, ancestors, and a supreme creator (U Blei

Nongthaw). **Niamtre** (also spelled Niam Tre)-This is the traditional religion of the Jaintia (Pnar) community. Like Niam Khasi, it emphasizes rituals, ancestral worship, and a deep connection with natural elements.

4.4.3 Literacy Level

Literacy rate in Meghalaya is 74.43 percent as per 2011 population census. district-wise literacy rate is given in the table below:

Table 4-5: District wise Literacy Rate of the State (in %)

Name	Total (in %)	Male (%)	Female (%)
East Garo Hills	69.83	74.72	64.70
North Garo Hills	77.35	80.24	74.41
South Garo Hills	71.72	76.23	66.90
West Garo Hills	67.04	71.68	62.35
South West Garo Hills	69.00	74.23	63.63
East Khasi Hills	84.15	84.51	83.81
West Jaintia Hills	63.12	58.51	67.61
East Jaintia Hills	58.29	57.31	59.24
South West Khasi Hills	75.08	76.93	73.18
West Khasi Hills	78.85	79.11	78.59
Ri- Bhoi	75.67	76.79	74.49
Meghalaya	74.43	75.95	72.89

4.4.4 Health

According to National Family and Health Survey-5 (NFHS) 2019-21 Meghalaya continues to show a child malnourishment (stunting 46.5%, wasting 12.1%, underweight 26.6%). Anaemia remains widespread among females: about 53.8% of women (15–49) and ~52.5% of adolescent girls (15–19) are anaemic.

4.4.5 Livelihood

Agriculture: Meghalaya, a predominantly agrarian state, has nearly 80% of its population dependent on agriculture for their livelihood. The agricultural sector is a major driver of the state's economy, contributing around 22% to the Gross State Domestic Product (GSDP) Agriculture remains the principal occupation of the people, as reflected in the distribution of cultivated land:62% – food grains 25% – cash crops 9% – horticultural crops 4% – miscellaneous crops (Source: Directorate of Economics and Statistics, Meghalaya)

4Particular	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
1.Reporting area for Land Utilization Statistics	2195718	2195719	2195719	2195719	2195719	2203402
2.Forest	940164	928815	913972	913824	913428	866351
3.Not available for cultivation	240401	254238	270924	271531	272067	322197
4.Other Uncultivated land excluding Fallow Land	548938	548970	546020	544728	544907	538891
5.Fallow land	213883	210887	210049	210633	212020	207405
6.Net Area Sown	252333	252809	254754	255003	253296	268559
7. Area sown more than once	56247	56396	57412	57911	56128	56080
8. Total cropped area.	308580	309205	312166	312914	309424	324639

Mining and Quarrying: Meghalaya is endowed with large deposits of valuable minerals such as coal, limestone, kaolin, clay and iron. Due to intensive unscientific rat hole mining in major coal reserve areas, vast lands have been degraded, with forests and water bodies equally affected by the mining activity. Thus, mining activities have been intermittently banned in the State in 2014 by the National Green Tribunal.

Tourism: The tourism sector is also an important aspect of the state of Meghalaya. With its natural beauty and undulating hills, streams and flora and fauna Meghalaya are a tourist hot spot. This sector however is still largely untapped due to lack of reliable road connectivity.

Incidence of Poverty: In Rural Meghalaya, 12.53% of the population are BPL while the figure for urban areas of the state is 9.26 %. The recent survey (2020) indicates that the poverty rate is highest in Jaintia Hills, wherein about 94% of the households surveyed are poor. Whereas, 63% of the households surveyed in Khasi Hills fall under the BPL category, followed by Garo Hills which has about 45.94% of BPL households.³

4.4.6 Status of Women

The indigenous communities of Meghalaya the Khasi, Garo, and Jaintia follow matrilineal systems in which lineage, clan affiliation, and inheritance of ancestral property pass through the female line. While these systems grant women significant rights to custodianship and succession, they do not automatically confer authority in communal governance or collective decision-making. In practice, women's participation in traditional institutions remains limited, and formal leadership structures continue to be male-dominated.

In Khasi society, adjudicative authority over clan matters and the dorbar (traditional village councils) is traditionally held by male kin, typically the maternal uncle (kñi) or, less commonly, the husband. Among the Garos, the Nokma, the formal head of the female lineage holds nominal oversight, but her husband (nokrom) typically exercises substantive control over land management, village administration, and

³ Source- North East Slow Food and Agrobiodiversity Society (NESFAS) publication 2020

external representation. Similarly, in Jaintia communities, women inherit property and lineage rights yet remain under the supervisory authority of maternal uncles and brothers, with little claim to spousal assets.

Thus, despite the central role of matrilineality in inheritance and descent, governance structures across these communities retain strong patriarchal features, restricting women’s meaningful engagement in public decision-making. For development initiatives and risk-mitigation efforts, this highlights the need for targeted gender interventions to promote genuine participation, equitable representation, and full integration of women into consultative and decision-making bodies.

Village administrative hierarchies are predominantly led by men, casting women mainly as moral influencers rather than decision-makers. Although women may offer insights and recommendations on various issues, final authority rests with men. Only in contemporary urban settings have women begun to attend and contribute to *dorbar* proceedings on a regular basis.

Moreover, negotiations between government entities and stakeholders on land use often exclude community members especially women leaving decision-making power concentrated among village authorities. Despite the matrilineal framework, Meghalaya shows gender disparities in key socioeconomic indicators, including higher poverty rates among women, lower literacy, higher unemployment, greater school dropout rates, and early marriage. In recent decades, however, women’s educational attainment has improved significantly, nearing parity with men. Notably, women in Meghalaya are largely protected from widespread issues faced elsewhere in India, such as dowry demands, sex-selective abortions, and neglect of girl children. (Source: “Matrilineality in Meghalaya.” (2023).⁴

4.4.7 Gender work participation rate

Female labour force participation rates (FLFPR) in Meghalaya are well above the national average, while male participation remains comparatively lower. According to the Census of India (2011), approximately 35% of rural women were engaged in the labour force. More recent data indicate a state-wide FLFPR of ~60.9% in 2022–23 (NITI Aayog), with rural participation rising sharply to ~76.9% in 2023–24 (IWWAGE, 2024), reflecting a robust post-COVID recovery consistent with national trends reported by the Periodic Labour Force Survey (PLFS) and the Directorate General of Employment.

The majority of women are employed in self-employment, agriculture, and informal sector enterprises (IWWAGE, 2024). Despite high participation rates, access to formal employment opportunities remains limited due to structural and socio-cultural barriers, including entrenched gender norms, occupational segregation, and restricted access to skill development and training.

Table 4-6: Gender Work Participation Rates in Meghalaya

District	Rural			Urban		
	Person	Male	Female	Person	Male	Female
Garo Hills	40.59	46.47	34.56	30.66	42.61	18.60
Khasi Hills	42.16	48.15	36.10	37.01	49.52	24.50
Jaintia Hills	39.13	45.42	32.89	37.58	43.10	32.46

⁴ Civildaily. <https://www.civildaily.com/news/matrilineality-in-meghalaya-khasis-jaintias-garos>)

Meghalaya	41.05	47.04	34.97	35.63	47.68	23.59		
<i>**Note: The rates are calculated by combining main workers (employed ≥183 days/year) and marginal workers (employed <183 days/year) as per Census 2011 classification of workforce participation.</i>								
Category	Garo hills		Khasi hills		Jaintia hills		Meghalaya	
	Male	Female	Male	Female	Male	Female	Male	Female
Cultivators	58.99	68.90	49.69	58.54	43.90	41.71	52.61	59.74
Agricultural Laborers	10.45	12.44	18.10	16.83	17.67	19.36	14.99	15.67
Household industry	1.58	12.50	1.03	1.45	0.93	1.68	1.24	1.85
Other workers	28.98	16.16	31.19	23.18	37.50	37.26	31.17	22.75
Total	100	100	100	100	100	100	100	100
Source: Census of India, 2011								

4.5 Land use Practices

4.5.1 Khasi Society

Each village in the Khasi Hills exercises jurisdiction over its own village land, within which rights of private ownership are formally recognized under customary law and practiced in accordance with established community norms. There are two main classes of land in Khasi Hills, namely (i) Ri Raid (ii) Ri Kynti. And under these, there are subclasses of land by different names in the various Himas.

1. Ri Raid constitute community lands set aside for collective use, where individuals do not possess proprietary, heritable, or transferable ownership rights, but may use and occupy the land on a continuing, usufruct basis for as long as such use is maintained.

2. Ri Kynti lands are privately owned customary lands belonging to an individual, family, clan, or group of persons, demarcated by boundary stones, over which the owners hold proprietary, heritable, and transferable rights of use, enjoyment, and disposal, subject to Khasi customary law and the regulatory authority of the Hima and the Autonomous District Council.

4.5.2 Jaintia Society

Land is primarily communally held, with inheritance through the female line, emphasizing clan and community stewardship over individual ownership. Land is managed at three levels—Elaka (chiefdom under Doloi), Raid (group of villages), and Shnong (village under Waheh Shnong headman). The Doloi, assisted by elders (Basan), oversees allocation and disputes.

4.5.3 Garo Society

The lands in Garo Hills consist of revenue areas and non-revenue areas. The revenue areas are the plain areas of Garo Hills, and the Non-revenue areas are the A. King (clan) lands of Garo Hills. The revenue areas

of plain areas are directly under the management and administration of the District Council in matters of settlement of land to any of the individuals for cultivation, etc.

The Hill areas of Garo Hills are the A. King lands, which belongs to the A. King Nokma (headman) of a particular clan. The entire A. King lands are managed by the A. King Nokma who is the guardian and custodian of a particular clan or motherhood. The District Council do not have direct control over the A. King lands. and cannot take any arbitrary decisions in matters of sale, mortgage, gift, transfer, etc. Land Classification

Table 4-7: land classification amongst Khasis, Garos and Jaintia tribes decides access, use, ownership, control and management.

KHASIS					
S.No	Type	Definition	Access and Use	Ownership	Control and management
1.	Ri Raid, or communal lands	Community entrusts Durbar Raid to manage on its behalf		Individual members get rights to use, after which land reverts to the raid	Durbar Raid
1.1	Ri Shnong	That land in the village which citizens can use for cultivation (cannot occupy, cannot transfer)	All members of the community have access to this type of land Community	Community land	Village Durbar
1.2	Ri Lyngdoh	Land which has been set aside for the support of Lyngdohs who perform religious rites and ceremonies	Members of the Lyngdoh clan in a village have access to this type of land	Lyngdoh clan, with a female head.	Maternal uncles of the Lyngdoh clan
1.3	Ri Bam Syiem	Land which has been set aside for the ruling chiefs	Used by the Syiems	Syiem clan of an area under a female head	Managed by maternal uncles of the Syiems of an area.

KHASIS					
S.No	Type	Definition	Access and Use	Ownership	Control and management
1.4	Ri Bamlang	Community land which has been set aside for the use by the community	Can be used by all	Community land	Managed by the Village Durbar
1.5	Ri Leh Mokutduma	Land acquired through litigation	Can be used by individual/ community	Community land	Managed by the raid
1.6	Ri Aiti Mon or Ri Nongmei Nongpa	Land that has been donated or gifted willingly by the owners for use by the public	Can be used by individual/ community	Community land	Managed by the Village Durbar/Clan
1.7	Ri Raphlang– Ri Bamduh	Barren land which anyone can use	Can be used by all	Community land	Managed by the village durbar
1.8	Ri Diengsai – Diengjin	Forests area that is covered with vegetation between the uplands and low lying areas of the lands	Can be used by all	Community land	Managed by the village durbar
1.9	Ri Samla	Land acquired by an unmarried person who has the right to dispose off as one likes	Used by all	Community	Reverts back to the village

KHASIS					
S.No	Type	Definition	Access and Use	Ownership	Control and management
1.10	Ri Umsnam	Land acquired through wars	Used by all	Community owned	Managed by the Village Council
2.	Ri Kynti, or private lands	Absolute property of the individual or the kur that owns it.	It can be utilised in any manner that the individual or the kur deems fit		
2.1	Ri Nongtymmen	Land that has been inherited from generations to generations.	Used by the descendants of one mother	By the youngest daughter.	Managed by the maternal uncle or brothers
2.2	Ri Maw	Land that has been acquired through purchase or through the right of apportionment.	Used by the members or descendants of one mother	Owned by the youngest daughter	Managed by the maternal uncle or brothers
2.3	Ri Seng and Ri Khain	Undivided family owned land	Used by members of one family or descendants of one mother	Owned by the youngest daughter	Managed by the maternal uncle or brothers
2.4	Ri Khurid	Land that has been purchased or bought over which the purchaser has the propriety, heritable and transferable rights over land.	Used by members of the one family	Owned by the female	Managed by the family

KHASHIS					
S.No	Type	Definition	Access and Use	Ownership	Control and management
2.5	Ri Bitor	Land that has been acquired on receipt of a ceremonial bottle of liquor	Used by members of one family or descendants of one mother	Owned by the youngest daughter	Managed by the maternal uncle or brothers
2.6	Ri Dakhol	Land that has been obtained by the right of occupation	Used by members of one family or decedents	Owned by the youngest daughter	Managed by the maternal uncle or brothers

JAINTIAS					
S.No	Type	Definition	Use	Ownership	Control and management
1.	Hali land	Comprised of permanently cultivated terraced wet rice land-irrigated by streams or rainfall	Used by the family	Private property owned by the youngest daughter and Community property owned by the Village Dorbar	For private, it is managed by the maternal uncle and for community, it is managed by the Dorbar.
2.	High Land	Lands found in hill region, these could be private Hali land or government wasteland. Private ones can be bought, sold or mortgaged at the will of the inheritors	Used by the family	Private property under the name of a female	Managed by the family, that is the maternal uncle
3.	Raj Lands	Property of the erstwhile syiems/rajas which became the property of the government which leased it to	Used by individual households	Government Land	By private individuals in terms of lease of 3 years.

JAINTIAS					
S.No	Type	Definition	Use	Ownership	Control and management
		private individuals in accordance with customary laws			
4.	Service Lands or Rek Lands	Land that was given rent free to Dolois, Pators Chiefs and other officials as remuneration for the services provided by them.	Used by Dolois, Pators and Chief	Government Land	Managed by Delois, Pators, and Chiefs.
5.	Village Puja Land	Consists of the lands held by the Lyngdohs or the Dolois who performs the pujas of the doloiships	Held by and cultivated by the headmen and the yield is utilized for meeting expenses connected with religious ceremony.	Owned by the Lyngdoh and Dolois	Managed by the Lyngdoh Dolois for worship.
6.	Private Land	Lands held by private individuals and can be transferred, mortgaged and sold or otherwise at the will of the owners.	Used by the individuals	Owned by female	Managed by the maternal uncle
7.	Patta Land	Encompasses lands that were allotted or transferred to individuals or institutions by the British during their administration, whose power has now been substituted by the Autonomous District Councils.	Used by the individuals	Owned by ADC	Managed by Institutions or Individuals only with respect to paddy fields.

GAROS					
S.No	Type	Definition	Use	Ownership	Control and management
1.	A-king Land	Clan owned land is the fundamental system of land ownership and management.	Can be used by all upon paying a nominal tribute.	Community land	Managed by the Nokma
2.	A-mate land	(a) Acquired by an individual by purchase or through gift and comes within an A'king Land. (b) Acquired by an individual through gift by the Nokma and can be independent of A'king land	Can be used by the members belonging to the same clan.	Private Property	(a) Managed by the nokma (b) Managed by the Mahari
3.	A-jinma or A-joma land	Land owned by the community. It is the common land of one motherhood.	Only for people belonging to the same clan.	Community Land	Managed by the Mahari
4.	A-jikse land	This is common for both the husband and the wife. This land comes into existence through the system of common inheritance and through unity by a bond of inter clan relationship.	Used by members of the two motherhoods of the husband and wife.	Private land	Through joint deliberation of the two motherhoods of the husband and wife.
5.	A-milam land	"no-man's land", used by the community but cannot be claimed by the Nokma	May be used by all members of the community	Community land	Referred to as 'cursed' land cannot be claimed by any Nokma

4.6 Administration in Sixth Schedule Area (KHADC, JHADC & GHADC)

The state has three Autonomous District Councils (ADCs) - Khasi Hills, Jaintia Hills, and Garo Hills each representing major tribal groups and their respective territories. These Councils exercise legislative, executive, and limited judicial powers over land, forests, and local governance. They uphold customary laws and traditional institutions, ensuring cultural preservation and community led administration. They

can make laws on land, forests, water use, and customary practices, subject to the Governor's assent. They play a key role in implementing Biodiversity Management Plans (BMPs), and community-based conservation initiatives like sacred groves and forest reserves. The district council can establish, construct, or manage primary schools, dispensaries, markets, ferries, fisheries, roads and so on in the district.

4.7 Protected Archaeological and Historic Sites

The Monolithic Garden (Moo long Syiem) near Jowai, Scott's Memorial in Cherrapunji, and the Monolithic Garden in Jowai are designated Monuments of National Importance under the Ancient Monuments and Archaeological Sites and Remains Act, 1958 (amended 2010) and fall within the project area. They are protected by a 100 m prohibited zone and a 200 m regulated buffer where construction and other disruptive activities are legally restricted. Key sites include the Stone Memorial of U-Mawthoh-dur in Bhoi Country, East Khasi Hills (within the indirect impact zone along Umsning–Jagi Road), and Scott's Memorial, Cherrapunji (within 500 m of the proposed Umtynagar–Sohra road alignment), requiring adherence to strict conservation protocols to safeguard their archaeological and cultural significance.

5 Environmental and Social Impact Assessment

5.1. Introduction and Objectives

The Meghalaya Logistics and Connectivity Improvement Project (MLCIP) aims to improve connectivity, trade efficiency, and logistics performance through integrated infrastructure development in Meghalaya. The project is implemented by MIDFC in collaboration with the Public Works Department (PWD), with a focus on sustainable and climate-resilient infrastructure development.

This Impact Assessment, prepared as part of the Environmental and Social Management Framework (ESMF), provides an analytical framework to identify, predict, and manage potential environmental and social impacts associated with project interventions, ensuring compliance with applicable regulations and the World Bank Environmental and Social Standards (ESS).

Preliminary screening and field assessments across selected road corridors indicate that environmental impacts are primarily associated with slope cutting, drainage alteration, and localized vegetation loss. Social impacts are expected to include temporary economic displacement, minor impacts on structures within the existing right-of-way, and community safety risks during construction. These findings have informed the development of mitigation measures and Environmental and Social Management Plan (ESMP) provisions under the ESMF.

In addition to direct construction-related impacts, the project may also generate indirect and induced impacts due to improved accessibility. These may include increased human activity in previously less accessible areas, potential pressure on community-managed lands, and localized land-use changes. While such impacts are expected to be context-specific and limited in scale, the ESMF incorporates mitigation measures such as alignment optimization within the existing right-of-way, avoidance of sensitive areas, coordination with local institutions, and post-construction monitoring to manage any emerging risks.

Where such impacts are identified as significant during implementation or operation, additional measures will be undertaken, including targeted environmental and social assessments, strengthening of site-specific management plans, enhanced stakeholder engagement, and coordination with relevant government agencies to implement appropriate regulatory and community-based controls.

5.2. Purpose of the Impact Assessment

The main purpose of the impact assessment is as follows

- Identify, predict, and evaluate potential environmental and social impacts resulting from upgradation of roads, bridges and road safety interventions.
- Provide a structured basis for decision-making on project design, site selection, and implementation sequencing. Ensure that adverse impacts are identified for each type of intervention, so that processes can be developed to minimize or mitigate them so that the positive benefits are maximized.
- The ESMF establishes standardized procedures, methodologies, and institutional arrangements that guide the Implementation Agency (IA) in developing site-specific Environmental and Social Management Plans (ESMPs) for individual road sub-projects once locations, designs, and potential environmental and social impacts are identified during project preparation and implementation. Each site-specific ESMP translates and operationalizes the ESMF's generic mitigation measures, monitoring requirements, and institutional responsibilities for the specific sub-project context,

ensuring consistent and proportionate application of World Bank Environmental and Social Standards (ESS) across all MLCIP supported activities.

- Integrate environmental and social considerations into the overall project design.

5.2.1. Scope of the Assessment

The Impact Assessment covers key project components, including road upgradation and rehabilitation of approximately **300 km of strategic corridors (including six bridges)** to improve connectivity across project areas.

The assessment identifies potential environmental and social impacts across project phases, including land loss, livelihood disruption, labour influx, and community impacts during pre-construction; and environmental disturbances such as dust, noise, erosion, and biodiversity impacts during construction and operation.

To provide a corridor-wise understanding of risks and impacts, Table 5-1 presents a summary of **social risks, impacts, and mitigation measures** for each sub-project. Detailed mitigation actions, implementation arrangements, and monitoring requirements will be elaborated in sub-project specific ESMPs. This is complemented by Tables 5-2 and 5-3, which provides an integrated **environmental and social impact and mitigation summary**, including indicative management measures.

Detailed mitigation actions, implementation arrangements, and monitoring requirements will be specified in sub-project specific Environmental and Social Management Plans (ESMPs), consistent with the ESMF, Resettlement Policy Framework (RPF), and Indigenous Peoples Policy Framework (IPPF).

Table 5-1: Social Risk, Impacts and Mitigation Summary

Sub-Project	Corridor of Impact (m)	Risk	Impact	Mitigation
RBB Road (18.27 km)	12 m	High	Land: 0.133 Ha private; Spoil Disposal Sites: 1.142 Ha (lease); Labour influx: 35. Trees: 70 (40 roadside; 30 private); 156 PAHs, 419 PAPs.	Land & FPIC: Compensation at replacement cost prior to possession in accordance with the Entitlement Matrix of the RPF, including assistance to non-titleholders and vulnerable groups, with provisions for gender-inclusive benefits. FPIC/consultations conducted in line with the IPPF, with documented agreements reflecting community consent and benefit-sharing measures. Trees: Compensation for private trees; statutory clearance and compensatory afforestation for roadside trees. Spoil Disposal: Formal agreements for spoil disposal sites; engineered measures including gabion

Sub-Project	Corridor of Impact (m)	Risk	Impact	Mitigation
				retaining structures, slope stabilization, plantation, and site levelling/restoration. Labour Influx & SEA/SH: Implementation of LMP; local hiring preference (~60%); worker Code of Conduct including SEA/SH provisions; awareness and supervision. Camps & OHS: ESMP-compliant labour camps with WASH facilities, waste management, and periodic monitoring.
AP Road (8 km)	12 m	Substantial	Land: No acquisition; Spoil Disposal Sites: 0.35 Ha (lease); Labour influx: 30; Trees: 14 (14 roadside); 5 PAHs, 20 PAPs.	Land & FPIC: Temporary land through lease agreements; consultations conducted in line with IPPF and documented agreements with communities. Trees: Statutory clearance and compensatory afforestation. Spoil Disposal: Formal agreements for spoil disposal sites; gabion protection, stabilization, plantation, and levelling. Labour Influx & SEA/SH: Implementation of LMP; local hiring; worker Code of Conduct including SEA/SH provisions. Camps & OHS: ESMP-compliant labour camps with WASH facilities, waste management, and monitoring.
RSN Road (20.564 km)	12 m	High	Land: 1.2459 Ha community; Spoil Disposal Sites: 0.55 Ha (lease); Labour influx: 40; Trees: 19 (19 roadside); 40 PAHs, 90 PAPs.	Land & FPIC: Compensation at replacement cost in accordance with the Entitlement Matrix of the RPF; FPIC conducted in line with the IPPF with documented agreements and community consent. Trees: Statutory clearance and compensatory afforestation. Spoil Disposal: Formal agreements; engineered disposal with gabions, slope stabilization, plantation, and restoration. Labour Influx &

Sub-Project	Corridor of Impact (m)	Risk	Impact	Mitigation
				SEA/SH: Implementation of LMP; worker Code of Conduct including SEA/SH provisions. Camps & OHS: ESMP-compliant labour camps.
SMR Road (36 km)	12 m	High	Land: 0.2712 Ha community; Spoil Disposal Sites: 0.97 Ha (lease). Labour influx: 50; Trees: 43 (33 roadside; 10 private); 48 PAHs, 144 PAPs.	Land & FPIC: Compensation at replacement cost in accordance with the Entitlement Matrix of the RPF; FPIC consultations conducted in line with IPPF with documented agreements. Trees: Compensation for private trees; statutory clearance and compensatory afforestation. Spoil Disposal: Formal agreements; gabion structures, slope stabilization, plantation, and levelling. Labour Influx & SEA/SH: Implementation of LMP; worker Code of Conduct including SEA/SH provisions. Camps & OHS: ESMP-compliant labour camps.
UJ Road (39.87 km)	12 m	High	Land: 0.6868 Ha (private + community); Spoil Disposal Sites: 0.53 Ha (lease); Labour influx: 60; Trees: 17 (6 roadside; 11 private); 22 PAHs, 163 PAPs.	Land & FPIC: Compensation at replacement cost in accordance with the Entitlement Matrix of the RPF; consultations conducted in line with IPPF with documented agreements. Trees: Compensation for private trees; statutory clearance and compensatory afforestation. Spoil Disposal: Formal agreements; slope protection, plantation, and restoration. Labour Influx & SEA/SH: Implementation of LMP; worker Code of Conduct including SEA/SH provisions. Camps & OHS: ESMP-compliant labour camps.
WMP Road (27 km)	12 m	Substantial	Land: No acquisition; Spoil Disposal Sites: 4.466 Ha (lease); Labour influx: 50;	Land & FPIC: Temporary land through lease agreements; consultations conducted in line with IPPF. Trees: Compensation for private trees; statutory

Sub-Project	Corridor of Impact (m)	Risk	Impact	Mitigation
			Trees: 30 (23 roadside; 7 private); 10 PAHs, 66 PAPs.	clearance and compensatory afforestation. Spoil Disposal: Formal agreements; gabion protection, plantation, and levelling. Labour Influx & SEA/SH: Implementation of LMP; worker Code of Conduct including SEA/SH provisions. Camps & OHS: ESMP-compliant labour camps.
DSSPS Road (58.1 km)	12 m	High	Land: 1.902 Ha community; Spoil Disposal Sites: 2.64 Ha (lease); Labour influx: 80; Trees: 32 (32 roadside); 37 PAHs, 176 PAPs.	Land & FPIC: Compensation at replacement cost in accordance with the Entitlement Matrix of the RPF; FPIC conducted in line with the IPPF with documented agreements. Trees: Statutory clearance and compensatory afforestation. Spoil Disposal: Formal agreements; gabions, slope stabilization, plantation, and restoration. Labour Influx & SEA/SH: Implementation of LMP; worker Code of Conduct including SEA/SH provisions. Camps & OHS: ESMP-compliant labour camps.
LPL Bridge (0.034 km)	50 m upstream side and downstream side of the bridge, 12 m approach road	Substantial	Land: 0.26 Ha community; Labour influx: 20; Trees: 4 (4 roadside)	Land & FPIC: Compensation at replacement cost in accordance with the Entitlement Matrix of the RPF; consultations conducted in line with IPPF. Trees: Statutory clearance and compensatory afforestation. Spoil Disposal: Formal agreements for localized disposal and restoration. Labour Influx & SEA/SH: Implementation of LMP; worker Code of Conduct including SEA/SH provisions. Camps & OHS: ESMP-compliant labour camps.
RRD 52/11 Bridge	50 m upstream side and downstream	Substantial	Land: 0.22 Ha community;	Land & FPIC: Compensation and assistance in accordance with the Entitlement Matrix of the RPF; consultations conducted in line

Sub-Project	Corridor of Impact (m)	Risk	Impact	Mitigation
(0.044 km)	side of the bridge, 12 m approach road		Labour influx: 20. Trees: 1 (1 roadside); 5 PAHs, 12 PAPs.	with IPPF. Trees: Statutory clearance. Spoil Disposal: Formal agreements and localized stabilization. Labour Influx & SEA/SH: Implementation of LMP; worker Code of Conduct including SEA/SH provisions. Camps & OHS: ESMP-compliant labour camps.
Dalu 2/1 Bridge (0.045 km)	50 m upstream side and downstream side of the bridge, 12 m approach road	Substantial	Land: 0.30 Ha community; Labour influx: 20; Trees: 3 (3 roadside)	Land & FPIC: Compensation in accordance with the Entitlement Matrix of the RPF; consultations conducted in line with IPPF. Trees: Statutory clearance. Spoil Disposal: Formal agreements and stabilization. Labour Influx & SEA/SH: Implementation of LMP; worker Code of Conduct including SEA/SH provisions. Camps & OHS: ESMP-compliant labour camps.
Dalu 21/3 Bridge (0.054 km)	50 m upstream side and downstream side of the bridge, 12 m approach road	Substantial	Land: 0.10 Ha community; Labour influx: 20; Trees: 2 (2 roadside)	Land & FPIC: Compensation in accordance with the Entitlement Matrix of the RPF; consultations conducted in line with IPPF. Trees: Statutory clearance. Spoil Disposal: Formal agreements and stabilization. Labour Influx & SEA/SH: Implementation of LMP; worker Code of Conduct including SEA/SH provisions. Camps & OHS: ESMP-compliant labour camps.
RMA Bridge (0.033 km)	50 m upstream side and downstream side of the bridge, 12 m approach road	Substantial	Land: 0.28 Ha community; Labour influx: 20; Trees: 8 (8 roadside)	Land & FPIC: Compensation in accordance with the Entitlement Matrix of the RPF; consultations conducted in line with IPPF. Trees: Statutory clearance. Spoil Disposal: Formal agreements and stabilization. Labour Influx & SEA/SH: Implementation of LMP; worker Code of Conduct including SEA/SH provisions. Camps & OHS: ESMP-compliant labour camps.

Sub-Project	Corridor of Impact (m)	Risk	Impact	Mitigation
AMPT 15/3 Bridge (0.054 km)	50 m upstream side and downstream side of the bridge, 12 m approach road	Substantial	Land: 0.45 Ha community; Labour influx: 20; Trees: 10 (10 roadside)	Land & FPIC: Compensation in accordance with the Entitlement Matrix of the RPF; consultations conducted in line with IPPF. Trees: Statutory clearance. Spoil Disposal: Formal agreements and stabilization. Labour Influx & SEA/SH: Implementation of LMP; worker Code of Conduct including SEA/SH provisions. Camps & OHS: ESMP-compliant labour camps.

The corridor of impact for road sub-projects is standardized at 12 m. For bridge sub-projects, the corridor of impact includes 50 m upstream and downstream of the bridge location, along with approach roads within a 12 m width. Labour influx estimates are based on DPR projections and may be refined during detailed design and contractor mobilization. All community land is held under traditional governance systems, including Village Councils and Elakas (in Jaintia Hills), as applicable.

5.3. Error! Reference source not found.Planning and Design Phase

This phase focuses on avoiding impacts by using GIS screening followed by on-ground verification and consultations to identify sensitive areas (forests, water bodies, habitations) and secure Free Prior and Informed Consent (FPIC) from community, where the three circumstances under the ESS7 are met. Finalizing the Right-of-Way with documented agreements and considering alternative routes for risk-prone zones helps prevent major issues early. Where applicable, sub-project specific environmental and social instruments, including Resettlement Action Plans (RAPs), Indigenous Peoples Plans (IPPs), Biodiversity Management Plans (BMPs), Labour Management measures, GBV/SEA/SH Action Plans, and other management plans, shall be prepared in accordance with the relevant framework instruments and ESS requirements.

5.4. Pre-Construction Phase

During this phase, it is essential to ensure that regulatory compliances are completed, land is secured before any physical works or contractor mobilization. Key actions to be completed include:

- Finalization and disclosure of sub-project documents, consultation with stakeholders and, clearance completed: ESIA/ESMPs, RAPs (with census, cut-off dates, replacement-cost valuation, livelihood restoration plans), IPDPs, and documented FPIC outcomes (per RPF, IPPF, and ESS7);
- Implementation of the Stakeholder Engagement Plan (SEP): ongoing consultations, local-language disclosures, and operational multi-tier GRM;
- Securing all statutory permits/clearances: environmental/forest, tree-felling, pollution control, quarry/borrow area licenses, and NOCs from KHADC/GHADC/JHADC (if applicable) and other local bodies;
- Obtaining labour-related licenses and insurance: contractor registration, labour license, ESI/Workmen's Compensation coverage;

- Selection and community-consented establishment of labour camps, stockyards, and batching plants;
- Recruitment and deployment of qualified PIU and contractor E&S staff (EHS officers, social/gender/labour/tribal/environmental/ biodiversity specialists);
- Submission, review, and approval of Contractor's ESMP (C-ESMP) integrating traffic management, mapping of stakeholders and consultation plans, labour influx, OHS, chance finds, code of conduct, and GBV/SEA action plans.

Only upon completion and verification of the above, will Notice to Proceed be issued, thereby preventing delays, speculation, grievances, or non-compliance during construction.

5.5. Construction Phase

This phase marks peak environmental and social risks, including air/water/noise/soil pollution, biodiversity disruption, traffic congestion, worker/community health & safety hazards, and risks from labor influx (e.g., GBV/SEAH, resource competition). Mitigation will be enforced via the approved Contractor's ESMP (C-ESMP), which integrates site-specific plans for labor management (per ESS2: worker contracts, OHS, child/forced labor prevention, fair wages, insurance, etc), community health & safety (per ESS4: traffic/road safety, emergency response, hazard controls), and GBV/SEAH. Additional C-ESMP provisions include: stakeholder consultation platforms (per SEP/ESS10: regular community forums, feedback loops, vulnerable group inclusion); dedicated GRM for workers/communities (anonymous, multi-tier, tracked resolution within 15 days); pollution controls (dust suppression, effluent treatment, noise barriers); waste/spill management; biodiversity measures (time-bound works near habitats, compensatory afforestation); camp hygiene/facilities; and chance finds procedures. Real-time geotagged monitoring, third-party audits (bi-annual), adaptive corrective actions, and PMU/PIU oversight will ensure compliance, with non-conformance penalties and suspension triggers to keep impacts within limits.

5.6. Operation Phase

Ongoing maintenance addresses erosion, pollution, noise, accidents, and waste. Solutions include proactive upkeep, regular environmental checks, enforcing safety rules, efficient waste handling, sustainable operations, and ongoing community involvement to ensure long-term benefits.

Table 5-2: Potential Environmental Issues and Mitigation Measures under each Phase

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
Planning and design						
P1	Identification of the Project Component (Roads/Bridges)	Sensitivity along the road and bridges needs to be identified.	Preliminary screening of the sensitivity needs to be completed.	Preliminary Checklist and GIS information.	MPWD	Completed Preliminary Screening, Checklist submitted

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
P2	Environmental and Social Impact Assessment and Management including Identification of sensitive environmental habitats	Environmental and Social risks and impacts identified, including assessment of critical habitat, flora, and fauna species	Applicable for all civil works programs. The Assessment process described in the ESMF including specialised studies on biodiversity, indigenous people	Baseline and project information and Environmental and Social experts	MPWD	ESIA is completed with ESMP and submitted along with the Biodiversity Management Plan if applicable.
Pre-construction						
PC 1	Consents/ Permits/ Approvals/ Compliances	Non-compliance to statutory and regulatory requirements	Applicable before construction begins	CTE, CTO, Labour License, Fire NOC, Tree Cutting Permission	Contractor / MSPCB/concerned authorities	Clearances obtained and maintained
PC 2	Contractor's ESMP (CESMP) Preparation and Implementation	Inadequate preparation and implementation leave environmental and social issues unaddressed	CESMP must align with project ESMP and the work plan and methodology being proposed. It has to be submitted with the Work Methodology and the same should not be approved	CESMP, TMP, LMP, OHS Plan	Contractor/MPWD	Approved CESMP including TMP, LMP.

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
			unless this is approved.			
PC 3	Supply of Construction Material	Use of unauthorized or unlicensed sources	Material sourcing must be legal and approved. Processes are detailed in ESMP.	EC, quarry approvals, challans/receipts	Contractor/SEIAA/Mining Dept	Material source approval and records maintained
PC 4	Water Sourcing	Over-extraction	Processes and mitigation measures in ESMP	Water permits, consumption records	Contractor/Water Resources Dept./Groundwater Authority	Permission for water use; Wastewater management measures
PC 5	Appointment of Environment, Social and Safety Officers	Inefficient supervision may lead to non-compliance	Required for the implementation of CESMP and OHS. Qualification, roles and responsibilities are detailed in the ESMF	CVs, OHS Plan	Contractor	Mobilization completed; Approved OHS Plan
PC 6	Identification of OHS Hazard and Risk Categorization	Risk of injury, illness, death	Applicable to all construction sites. A Hazard Identification and Risk Assessment need to be completed	Inspection checklist, hazard register	Contractor	OHS hazard register, checklist, and templates, inspection reports

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
			for all activities. The OHS Plan has to be submitted along with the Work Methodology			
PC 7	Other Construction Vehicles, Equipment and Machinery	Pollution from non-compliant vehicles	Vehicles and equipment must comply with PUC/fitness norms. Appropriate clauses are included in ESMP along with tools to enforce them	PUC certificates, inspection log	Contractor/Transport Dept	Valid records maintained
PC 8	Tree Cutting	Loss of biodiversity and green cover	Minimize tree cutting and follow Forest Dept. guidelines	Coordination with the Division office and Forest Department.	Contractor/Forest Dept/MPWD	Tree felling record, Forest Dept. NOC. Records of trees cut and saved
Construction						
C1	Crushers, Hot Mix Plants & Batching Plants	Dust, air pollution, noise, health hazards	Measures suggested in the Template ESMP need to be applied and reported back	Layout plans, NOCs, monitoring reports	Contractor/MSPCB/MPWD	Approved layout plan, Valid NOCs, Dust suppression records

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
C2	Operation of Borrow Areas	Soil erosion, vegetation loss, and safety hazards	Borrow areas require EC and a management plan. The process is defined in the ESMP	EC, lease agreement, closure plan	Contractor/SEIAA/PMU	EC copy, Approved restoration and closure plan
C3	Procurement of material from Quarries (Operation of Quarries follows regulatory processes)	Dust, noise, traffic, safety risks	Material from legally approved quarries. Processes have been defined in the ESMP	Quarry permits, haul road plans	Contractor/SEIAA/Mining Dept/PMU	Quarry permit, EC, Safety inspection reports, Dust control records
C4	Dismantling of Bridges/Culverts/Structures	Improper disposal, flooding, environmental damage	Material must be reused or disposed safely as defined in the ESMP.	Debris management plan, approved disposal site	Contractor/MPWD/Municipal authority/VC	Debris disposal/reuse records, Approved site restoration plan
C5	Bituminous Waste Disposal	Soil and water contamination	Waste to be collected, stored, and disposed safely as mentioned in the ESMP/Regulations	Waste storage plan, disposal approvals register and records.	Contractor/MSPCB/PMU	Records of waste reused/disposed; Approval for disposal site
C6	Storage of Oil, Fuel and Other substances	Oil/fuel spills, hazardous substances	Construction and storage areas must have containment	Spill kits, bunded areas, maintenance logs	Contractor/ MSPCB	Spill log, Waste oil disposal records,

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
						Inspection record
C7	Construction activities and operation of Machinery - Dust Generation	Dust from construction vehicles, sites	Dust suppression measures required	Water, PPE, sprinkling equipment	Contractor/MPWD/PMU	Air quality monitoring reports, Dust suppression log
C8	Operation of Plant and machinery: Emissions	Vehicle and machinery emissions	Vehicles maintained; fuel efficiency, emission controls	PUC, LPG for camps, dust extraction systems	Contractor/MPWD/PMU	Valid PUC certificates, Equipment maintenance log
C9	Wastewater, camp effluents from plants and machinery	Contamination of Surface/Ground Water	Wastewater treatment, sanitation facilities	Wastewater management, monitoring plan	Contractor/MPWD/PMU	Water quality monitoring report, Camp inspection records
C10	Water Requirement for Project	Over-extraction causing scarcity	Optimize water use, rainwater harvesting	Renewal of Water permits as required, consumption records, and reports Maintenance of Permit requirements	Contractor/Water Resources Dept./Groundwater authority	Water consumption log, Rainwater harvesting installation

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
C1 1	Coffer Dam for Bridge Work	Changes to water flow, habitat disturbance	Scheduling of construction activity, environmentally friendly materials, restore site before monsoon and after construction is over	Inspection checklist Guidance/ EMP for waterside activity / coffer dam in CESMP	Contractor/MPWD/ PMC/PWD	Worksite inspection record; Restoration completion record
C1 2	Noise from Vehicles, Plants, Equipment	Health and safety impacts	Monitor and control noise, restrict to daytime	Noise monitoring equipment, PPE	Contractor/ PMU	Noise level report; PPE usage record; Complaint register
C1 3	Blasting	Accidents, health hazards	Blasting plan, permissions required	Approved blasting plan, permits and experienced personnel.	Contractor/District authority/ PMU	Blasting management plan; Incident log
C1 4	Loss of Trees and Plantation Works	Permanent damage if trees do not survive, regulatory non-compliance	Compensatory plantation, limit clearing. PMC to keep an oversight and report.	Tree felling register, plantation record	Contractor/Forest Dept/ PMC/ PMU	Plantation records; Forest NOC
C1 5	Landside activities in forest /	Disturbance to terrestrial flora and fauna; potential	Applicable Mitigation measures to be implemented	Trained environmental personnel; biodiversity	Contractor (implementation); MPWD / PMC	Approved Biodiversity Management Plan; worker

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
	vegetated areas	wildlife injury; habitat degradation due to worker movement and resource extraction	in accordance with ESMF provisions on biodiversity conservation . A Biodiversity Management Plan (BMP) shall be prepared and implemented, as required	awareness materials; budgetary provision for BMP preparation and implementation	(supervision); PMU (oversight)	awareness and training records; wildlife sighting and incident logs maintained and reported
C16	Water side activities / in water activities	Disturbance to Aquatic flora and Fauna	Schedule work during Low-flow work, avoid the monsoon/ breeding season. The specific guidance in ESMP	Work timing records, inspection checklist	Contractor/MPWD/PMC/PMU	Work timing records; Site inspection checklist
C17	Occupational Health and Safety at Worksites	Injuries, accidents, health risks due to work and other hazards, e.g. operating traffic in case of highways	Implementation of the OHS plan to eliminate, reduce risk, provide appropriate PPE, first aid, and implementation of, emergency response, training and awareness of	OHS Plan, PPE, training log	Contractor	Approved OHS plan; Training records; Health inspection reports

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
			the workforce			
C2 1	Risk of Natural Hazards	Flood, earthquake	SDMA mitigation measures	Site assessment report	Contractor	Compliance with SDMA norms
C2 2	Hygiene	Unhygienic surroundings	Sanitation, drainage, potable water, and preventive care	Sanitation inspection, hygiene log	Contractor	Sanitation inspection record; Hygiene logbook
C2 8	Monitoring and Reporting	Non-compliance, environmental degradation	Monthly/quarterly monitoring	Monitoring plan, CESMP report	Contractor	ESMP compliance report; Monitoring data records
Operation						
O1	Debris and Waste from Clearing/Closure	Land/soil contamination, aesthetic degradation	Site restoration plan, debris clearance	Site restoration plan, geotagged photos	Maintenance Contractor	Site clearance restoration records; Closure NOC
O2	Soil Erosion due to Runoff	Loss of fertile soil, slope instability	Drainage, bioengineering, retaining walls	Slope inspection, erosion control measures	Contractor (during defect liability period/ long-term maintenance contract)/ MPWD	Erosion inspection reports; Drain maintenance log
O3	Water Pollution from Road Runoff	Surface/groundwater contamination	Silt traps, desilting, and awareness campaigns	Water monitoring plan	Contractor (during defect liability period/ long-term maintenance contract)/ MPWD	Water quality monitoring results; Drain cleaning records

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
O4	Dust Generation from Vehicular Movement	Air pollution, visibility reduction	Roadside plantation, smooth surfaces, speed control	Planting materials, signage	Contractor (during defect liability period/ long-term maintenance contract)/ MPWD	Air quality results; Plantation survival record
O5	Air Pollution from Vehicular Emissions	NOx, SO ₂ , CO, PM increase	Green buffers, driver awareness, and monitoring	Air monitoring equipment	Contractor (during defect liability period/ long-term maintenance contract)/ MPWD	Air quality results; Awareness records; Plantation survival record
O6	Noise Pollution from Traffic	Noise nuisance	Noise barriers, monitoring, "No Horn" zones	Noise monitoring equipment	Contractor (during defect liability period/ long-term maintenance contract)/ MPWD	Noise monitoring results; Maintenance records
O7	Road Safety and Accident Risks	Accidents, congestion	Signage, pedestrian crossings, awareness	Traffic signage, safety equipment	Contractor (during defect liability period/ long-term maintenance contract)/ MPWD	Accident records; Safety audit report; Awareness records
O8	Maintenance Waste from Roadside Activities	Soil/water contamination, visual pollution	Proper collection, authorized disposal, and recycling	Waste disposal plan, logs	Contractor (during defect liability period/ long-term maintenance contract)/ MPWD	Waste disposal records; Waste logbook
O9	Building & Station Operations	Waste, fire hazards, and sanitation issues	STP/septic maintenance, fire systems, and daily cleaning	Sanitation logs, fire inspection	Contractor (during defect liability period/ long-term maintenance contract)/ MPWD	Waste logs; Fire inspection report; Sanitation log

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
O10	Storage House Operation	Occupational hazards, fire/spills	Containment , firefighting, inspections, training	Inspection checklists, training logs	Concerned Agency	Inspection checklist; Emergency drill records
O11	Solid Waste Management	Environmental degradation	Segregation, authorized disposal, and record keeping	Waste segregation records	Ropeway Operator/Agency	Waste disposal receipts; Segregation records
O12	Sewage & Wastewater Management	Water pollution, health hazards	Sanitary tanks, soak pits, treated water reuse	Water quality monitoring plan	Concerned Agency	Water quality reports; Disposal records
O13	Energy Use & Efficiency (Street lighting)	High energy demand, carbon emissions	LED/solar systems, monitoring, audits	Energy audit reports, billing records	Concerned Agency	Energy bills; Audit reports
O14	Air & Noise Pollution from Vehicles	Localized pollution	Monitoring, maintenance , green belts	Air/noise monitoring equipment	Concerned Agency	Monitoring data; Maintenance logs
O15	Fire & Emergency Preparedness	Accidents, injuries, property damage	Fire systems, drills, emergency contacts	Fire safety equipment, training	Concerned Agency	Fire drill log; Equipment inspection report
O16	Maintenance Waste (Oils, Lubricants, Scrap)	Contamination	Collection, disposal through authorized aggregators	Waste disposal records, containers	Concerned Agency	Waste inventory; Disposal certificates

Table 5-3: : Potential Social Issues and Mitigation Measures under each Phase

Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
PLANNING AND DESIGN PHASE						
P1	Identification of the Project Component (Roads/Bridges)	Potential displacement of communities/vulnerable groups (e.g., low-income, migrants, women-headed households); conflicts over resource access; disproportionate impacts on women/elderly/disabled from route alignment; child/forced labor risks in early supply chains; exclusion of Indigenous Peoples (IP) from scoping; traffic/accident hazards to nearby communities; disease spread from anticipated labor influx; cultural heritage screening gaps leading to sacred site risks.	Preliminary screening of sensitivity completed; ESMF scoping for integrated social risks (ESS1), including baseline socio-economic surveys.	Preliminary Checklist, GIS information, social baseline data (e.g., census of affected households, vulnerability mapping), conflict analysis, IP presence survey.	MPWD	Completed Preliminary Screening Checklist submitted; social risk register initiated; no-go options for high-risk social areas identified.
P2	Identification of RoW,	Involuntary resettlement (physical/economic	ESMF assessment includes	Land records ⁶ , GIS maps,	MPWD/Consultants	RoW fixed; ESMF with standalone documents

⁶individual land records—primarily for Ri-Kynti (private/individual land)—are managed under a unique customary framework, where land ownership is rooted in tribal traditions rather than a centralized state-owned system. Verification involves a combination of customary proofs (clan/village endorsements) and any available government documentation. The process is decentralized, involving traditional institutions like the Doloi/Syiem/Nokma (tribal heads).

Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
	Land requirement and FPIC	displacement, loss of homes/farms/livelihoods); no FPIC leading to conflicts with IP or vulnerable groups; exclusion of women from land decisions; forced eviction risks ⁵ ; restricted access to common resources (e.g., grazing lands); gender disparities in compensation planning; early GBV risks from route-related influx.	land acquisition risks; scoping per RPF/IPPF is integrated into the early ES screening and scoping.	public consultation records, FPIC documentation, vulnerability assessment, and socio-economic baseline.		submitted; FPIC documentation submitted; displacement avoidance measures documented.
P3	Environmental and Social Impact Assessment and Management	Social risks/impacts on communities (e.g., health from habitat loss affecting traditional livelihoods, cultural ties to land); identification of vulnerable groups (e.g., migrants, disabled); potential GBV hotspots/influx from workers; occupational hazards for local hires; disease transmission risks; exclusion in ESIA consultations; cultural heritage chance finds; economic marginalization of IP.	Applicable for all civil works; ESIA/ESMP per ESMF, including social baselines and vulnerability studies. FPIC processes as part of ESS 7.	Baseline/project data, socio-economic surveys, IP mapping, gender analysis. FPIC documentation and evidence pack.	MPWD/Consultants	ESIA completed with ESMP submitted; social impact register and management plan included; RAP/IPDP scoping reports if applicable. FPIC documentation submitted with the FPIC evidence included in the document.

⁵ Land would be Community owned (Ri Raid – Khasi and Jaintia Hills, Aking Nokma – Garo Hills) or Individual Land (Ri Kynti – Khasi and Jaintia Hills).

Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
PRE-CONSTRUCTION PHASE						
PC 1	Land Procurement	Loss of land/assets/livelihoods (e.g., farming income for poor households); economic displacement/restricted land use; forced evictions; impacts on vulnerable groups (e.g., women-headed households, IP losing sacred lands); inadequate compensation gaps; transaction costs not covered.	Land acquisition and compensation/subsistence allowance as per RPF; ESMP, RAP and IPDP for site preparation risks.	RPF/RAP records, FPIC evidence-based documentation, grievance documentation, livelihood restoration baseline, and asset valuation reports.	MPWD	FPIC Documentation with evidence to be submitted and disclosed. Compensation records maintained; grievances resolved; RAP approved and disclosed; RP Agency reports to document R&R assistance and payments to all the affected parties. All documents about Land Procurement are to be disclosed by the PMU.
PC 2	Contractor's ESMP (CESMP) Preparation and Implementation	Social risks (e.g., labor exploitation/discrimination, community conflicts over camps); non-compliance with worker/community rights; supply-chain child/forced labor; gender disparities in CESMP planning; exclusion of vulnerable groups in consultations.	CESMP aligns with project ESMP; includes TMP/LMP/OHS; and the work plan and methodology being proposed. It has to be submitted with the work methodology and the	CESMP, TMP, LMP, OHS Plan, social risk assessment.	Contractor/ MPWD	Approved CESMP including TMP/LMP; social compliance checklist signed off; RAP/IPDP elements incorporated.

Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
			same should not be approved unless this is approved.			
PC 3	Identification of land construction camp/labour camp	Social tensions/disruption to communities (e.g., resource strain on water/camp to close to the settlements etc); GBV/SEAH risks from camps; strain on local services for vulnerable (e.g., women, migrants); exclusion of IP in site selection; security risks from untrained guards.	Site selection as per environmental and social guidelines; ESMP for camp management, Camp location and setup will be decided by the community through FPIC consultations which must include women and the youth.	Lease/NOC, site inspection, approval of the community through FPIC consultations, security training plan.	MPWD/Consultants	Approved site location; Lease/NOC copies; community/IP consent records;
PC 4	Appointment of Social and Labour specialist Officers	Inefficient social supervision leading to non-compliance (e.g., discrimination/grievances unaddressed for migrants/women); lack of gender/IP expertise;	Required for CESMP/OHS implementation per ESMF.	CVs, OHS Plan, social expertise qualifications (e.g., gender/tribal, labour specialists)	MPWD/Consultants/Contractors	Mobilization completed; Approved OHS Plan with social safeguard specialist's appointments; training logs for RAP/IPDP.

Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
PC 5	Preparation of RAP and IPDP	Involuntary displacement without adequate planning; loss of cultural/traditional livelihoods for IP; inequitable benefit-sharing; exclusion of vulnerable groups in plan development; long-term economic hardship from unaddressed restrictions.	RAP/IPDP stand-alone documents /ESIA per ESMF. FPIC consultations for the RAP/IPDP documents	Socio-economic census, IP consultations, valuation studies, grievance logs. FPIC consultations	MPWD/ Consultants	RAP/IPDP approved, disclosed, and consulted; livelihood restoration baselines established.
Implementation - Pre-construction						
PC 6	Mobilization and Grievance Mechanism Setup	Community conflicts from early mobilization; exclusion of vulnerable voices (e.g., disabled, women) in GRM;	GRM per ESMF, aligned with ESMP. Setting up of GRM focal persons at the Community level through Consultations.	Consultations with the IP community register, accessibility audits, training materials.	Contractor/ MPWD	MoMs of consultations with attendance sheets operational; awareness sessions conducted; 100% coverage for affected groups.
CONSTRUCTION						
C1	Dismantling of Bridges/ Culverts/ Structures	Community safety risks during dismantling (e.g., accidents to children/elderly); loss of access to resources/services; cultural heritage chance finds (e.g.,	Debris management per ESMP; safe disposal.	Debris management plan, approved disposal site, chance	Contractor/ MPWD/ Municipal authority/ Village Council	Debris disposal/reuse records; Approved site restoration plan; community access logs; chance find notifications.

Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
		sacred artifacts); displacement from temporary safety zones.		finds protocol.		
C2	Operation of labour camps, worker accommodation facilities, and associated camps	Risk of communicable disease transmission among workforce and adjacent communities, including sexually transmitted infections, water-borne diseases, and vector-borne illnesses. Migrant labourers, women, and Indigenous Peoples may face heightened vulnerability due to increased camp-community interactions and labour influx along project corridors.	ESMF and LMP provisions on Community Health and Safety (CHS), Occupational Health and Safety (OHS), Labour Influx Management, and Workers' Health Management Plans applicable to all labour camps and project-affected areas.	Health screening facilities; medical service agreements; trained health personnel; awareness-raising materials; vector control supplies; sanitation infrastructure; systems for health baseline data collection and monitoring.	Contractor/ CSC/ PMC/ MPWD	Documented pre-employment and periodic health screening records; medical check-up and emergency care service agreements; awareness session logs; maintained health baseline data; verified implementation of vector-control and sanitation plans; absence of community disease outbreaks linked to project activities; labour influx monitoring reports.
C3	Traffic management for construction and traffic operation	Road accidents/hazards; community displacement from traffic/safety zones; risks to vulnerable (e.g., children, disabled, IP near routes); noise/dust affecting health;	TMP/barricades per ESMP.	TMP, barricades, signage, accident logs, security protocols.		Safety signage installed; Community complaint register; Traffic control records; incident reports; vulnerable group protections.

Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
		security force excessive use.				
C4	Emergency Response in case of unplanned events and untoward incidents	Delayed response exacerbating social harm (e.g., injuries/fatalities in communities/IP areas); exclusion of vulnerable in drills; inadequate coordination for GBV/emergency health.	ERP as part of work plan/ESMP; drills required.	Emergency plan, drill reports, communication protocols, IP consultations.	Contractor/PMU/PMC	Approved ERP; Emergency Response Boards set up at camp sites, Emergency drill reports; Incident response records; community/IP feedback integrated.
C5	Risk of Natural Hazards	Community vulnerability to hazards (e.g., displacement/loss of shelter for poor/IP groups from floods/earthquakes); inequitable evacuation access for disabled/women.	SDMA mitigation per ESMF.	Site assessment reports, hazard mapping, vulnerability assessments.	Contractor	Compliance with SDMA norms; social vulnerability assessment completed; RAP addendum for hazards.
C6	GBV-SEAH Risks	Gender-based violence/sexual exploitation/abuse/harassment; risks to women/children/IP from labor influx; reprisal-free reporting gaps; cultural norms exacerbating exclusion.	Awareness/GRM and preventive measures as per ESMP and SEA/SH Action and Response Plan	CoC, training logs, GBV mechanism, gender audits.	Contractor	Signed CoC register; GBV training logs; GBV complaint records; zero tolerance reporting; external monitoring.

Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
C7	Chance Finds during the excavation	Discovery of cultural heritage tied to community/IP identity (e.g., sacred sites, artifacts); work stoppage delays causing livelihood losses; theft/exclusion in management.	Chance find protocol per ESMP.	Chance find protocol, notification logs, heritage experts.	Contractor	Chance find report; Notification records; work stoppage if applicable; community/IP involvement.
C8	Compliance to Labour Welfare Laws	Unsafe conditions/legal non-compliance leading to worker exploitation/discrimination (e.g., migrants, women); child/forced labour in chains; unequal pay/hours.	Labor compliance per ESMP and LMP.	Training records, compliance checklists, wage audits.	Contractor	Labour law compliance records; Training attendance; audit reports; remediation for violations.
C9	Labour Influx	Strain on local services (e.g., healthcare, water for vulnerable locals); social tensions/GBV; competition for jobs affecting women/youth/IP; disease/crime spread.	Local hiring per ESMP.	Labour license, local hire records, influx assessment, conflict logs.	Contractor	Labour registration; Local labour hiring records; conflict monitoring logs; GBV prevention measures.
C10	GRM	Community conflicts/lack of trust; exclusion of vulnerable voices (e.g., IP, disabled); inaccessible/reprisal-prone mechanisms; unaddressed displacement grievances.	GRM per SEP.	GRM register, resolution protocols, accessibility audits.	Contractor	GRM register; Grievance resolution records; 90% resolution rate; vulnerable group access metrics.

Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
C11	Monitoring and Reporting	Non-compliance with social standards (e.g., unaddressed grievances, labor violations, delays or gaps in RAP and IPDP implementation); exclusion in monitoring; cumulative risks overlooked.	Monthly/quarterly per ESMP, RAP, IPDP.	Monitoring plan, CESMP reports, social indicators, third-party audits.	Contractor	ESMP compliance report; Monitoring data records; social audit findings; RAP/IPDP progress reports.
OPERATION AND MANAGEMENT						
O1	Employment & Socio-Economic Benefits	Local economic impacts; unequal access to jobs/training for vulnerable (e.g., women, youth, IP); persistent displacement effects; limited benefit-sharing.	Local hiring/skill programs per ESMP.	Training records, employment documentation, IPDP monitoring.	Concerned Agency	Employment records; Training attendance; livelihood restoration verified.
O2	Long-term Monitoring and Residual Impacts	Ongoing restrictions on land use (e.g., inaccessible areas around roads/warehouses); residual economic/cultural losses for IP/vulnerable groups; deterioration of GRM access; security risks from operational guards.	Continuous ESMP monitoring per ESMF.	Annual audits, stakeholder feedback, residual impact assessments.	PMU/Concerned Agency	Annual social audit reports; GRM functionality confirmed; residual RAP/IPDP mitigations implemented.

5.7. Conclusion

Through phased impact avoidance, minimization, and management as detailed above, the MLCIP integrates environmental sustainability and social risk management into core project delivery. Coordinated implementation by MPWD, contractors, and regulatory authorities—supported by continuous monitoring, grievance redressal, and stakeholder participation—will ensure that enhanced logistics and connectivity contribute positively to Meghalaya's economic growth without compromising its unique ecological and cultural fabric.

5.8. Environmental and Social Management Plans (ESMP)

The Environmental and Social Management Plan (ESMP) provides a robust tool to manage and mitigate environmental and social risks throughout corridor and infrastructure development. Aligned with the ESIA, ESMF, national/state regulations, and World Bank ESS, it guides the preparation of site-specific ESMPs once sub-project locations are confirmed, ensuring tailored mitigation.

Each site-specific ESMP must cover project components, baselines, legal requirements, impacts, mitigation measures, responsibilities, monitoring, grievance redress, and dedicated budgets. For low-risk activities use the ESMF's generic ESMP for consistent safeguards.

The ESMP must be read with related instruments (LMP, ERP, GBV/SEAH Plan, SEP, IPDP and RAP) to deliver systematic mitigation, monitoring, and reporting, driving environmentally sustainable and socially inclusive development across Meghalaya.

Environmental and Social Monitoring Indicators

- ✓ Air quality (PM10, PM2.5, NO₂, SO₂)
- ✓ Water quality (pH, TSS, oil & grease)
- ✓ Noise levels at sensitive receptors
- ✓ Vegetation cover restored (ha)
- ✓ Waste disposal compliance
- ✓ Number of environmental violations/non-conformities
- ✓ Number of consultations held (disaggregated by gender)
- ✓ Percentage of local labour employed
- ✓ Total Workforce Composition: Total number of employees (direct, contracted, community, and primary supply workers), disaggregated by gender, domicile status, age (e.g., under 18, over 18), and worker category; maintained in records
- ✓ Licenses and Permits Compliance: Verification of all required labor licenses, work permits, and documentation.
- ✓ Insurance Coverage: Provision and tracking of health insurance, accident coverage, and social protections for all workers
- ✓ Wages and Benefits: Compliance with minimum wages per national/State law, regular payment schedules (e.g., via bank accounts to reduce risks), overtime rules, deductions, and benefits (e.g., rest periods, leave entitlements)
- ✓ Non-Discrimination and Equal Opportunity:

- ✓ Occupational Health and Safety (OHS) Performance
- ✓ Code of Conduct Adherence
- ✓ Number of grievances received/resolved (time-bound)

The Environmental and Social Management Plan (ESMP) measures presented below are indicative and will be tailored to the specific context of each sub-project, based on its risk classification, site sensitivities, and scale of impacts. Sub-project-specific ESMPs shall be prepared as part of the ESIA process, incorporating the mitigation hierarchy and proportionate measures corresponding to identified environmental and social risks.

Table 5-4: Environmental and Social Management Plan (Roads and Bridges)

S. No	Environmental/Social Aspect	Potential Impacts	Mitigation/Management Measures	Implementation/Responsibility	Completion Indicators	Supervision/Monitoring	Frequency
PRE-CONSTRUCTION							
1	Consents, Permits, Approvals & Compliances	Non-compliance leading to legal risks	Secure all statutory clearances (CTE, CTO, Labour License, Fire NOC, Tree Cutting Permission, etc.) and renew them promptly before expiry.	Contractor / MPWD	All permits obtained, submitted, and tracked	MPWD/ PMC / CSC	Obtain required permits prior to commencement of works; renew and update approvals as necessary ; and undertake quarterly reviews through a tracking system.
2	Land Procurement	Loss of land and livelihoods	Adhere to Resettlement Policy Framework (RPF) and Resettlement Action Plan (RAP); deliver	MPWD Division, Contractor & Authorities	Compensation records; grievances resolved	MPWD/ CSC / NGO	At each acquisition event and through consolidated monthly

S. No	Environmental/Social Aspect	Potential Impacts	Mitigation/Management Measures	Implementation/Responsibility	Completion Indicators	Supervision/Monitoring	Frequency
PRE-CONSTRUCTION							
			full compensation and resolve grievances.				RAP progress reports to the PMU and the World Bank.
3	Contractor ESMP (CESMP) Preparation & Implementation	Unaddressed E&S issues from inadequate planning	Contractor prepares CESMP aligned with project ESMP (including Traffic and Labour Management Plans) and secures MPWD approval.	Contractor	Approved CESMP with evidence of ongoing implementation	MPWD/ PMC / CSC	Approval once before construction; followed by monitoring monthly implementation
4	Site Selection for Material Storage, Construction & Labour Camps	Pollution and social tensions from poor locations	Select sites away from water bodies and wetlands; obtain leases/NOCs; restore land to original condition after use.	Contractor	Approved site plans; lease/NOC copies; restoration records	MPWD/ PMC / CSC	Once during selection; pre-mobilisation and handover surveys; monthly inspections
5	Construction Material Supply	Sourcing from illegal or unapproved vendors	Procure only from licensed quarries/vendors; maintain approvals and receipts.	Contractor	Environmental clearances, delivery challans, source approvals	MPWD/ CSC	Document checks per delivery; monthly procurement audits

S. N o	Environm ental/Soci al Aspect	Potentia l Impacts	Mitigation/ Managemen t Measures	Implementati on/Responsib ility	Completion Indicators	Supervision/ Monitoring	Frequenc y
PRE-CONSTRUCTION							
6	Water Sourcing	Overuse or pollution of surface/ groundw ater	Contractor arranges water supply; obtains permissions; minimizes wastage and pollution.	Contractor	Permission documents; usage logs; wastewater controls	MPWD/ PMC / CSC	Permissio n once; daily logs; monthly compliance checks
7	Wastewat er Discharge from Camps, Plants & Machinery	Contami nation of surface/ groundw ater	Implement effective wastewater treatment at camps and sites.	Contractor	Functional wastewater systems in place	MPWD/ CSC	Weekly system checks; monthly discharge sampling
8	Appointm ent of EHS Officers	Weak environ mental, health & safety oversigh t	Mobilize qualified Environment, Social and Safety Officers; prepare CESMP, OHS Plan, and Traffic Management Plan per World Bank guidelines.	Contractor	Officers deployed; approved plans	MPWD/ CSC	Once before constructi on; monthly staffing verificatio n
9	OHS Hazard Identificati on & Risk Assessme nt (HIRA)	Injuries, illnesses or fatalities	Develop HIRA with mitigations; conduct regular inspections; consult workers;	Contractor	Hazard register; inspection reports	MPWD/ CSC	HIRA once before start; monthly reviews; weekly inspectio ns

S. No	Environmental/Social Aspect	Potential Impacts	Mitigation/Management Measures	Implementation/Responsibility	Completion Indicators	Supervision/Monitoring	Frequency
PRE-CONSTRUCTION							
			review safety data sheets.				
10	Construction Vehicles, Equipment & Machinery	Emissions and safety hazards	Maintain valid fitness and Pollution Under Control (PUC) certificates; comply with MoRTH/GSR emission standards.	Contractor	Valid PUC/fitness records; inspection logs	MPWD/ PMC / CSC	On mobilization and monthly renewals; weekly inspections
11	Tree Cutting	Loss of greenery and biodiversity	Minimize felling; follow Forest Department protocols for cutting, disposal and compensatory planting.	Contractor	Tree-cutting register; records of trees preserved	MPWD/ CSC	Per event; immediate register updates; quarterly plantation monitoring
12	Joint Field Verification	Overlooked impacts or inadequate mitigation	Conduct joint MPWD-contractor site walks; document any changes and justifications.	Contractor / MPWD	Verification reports	MPWD	Monthly or as needed after complaints
13	Borrow Areas	Ecosystem damage from pits	Obtain Environmental Clearance; operate and rehabilitate per MoEF&CC/SEAC guidelines.	Contractor	EC; approved management & closure plans	MPWD/ CSC	EC/plan once before operations; weekly inspections; closure verification

S. N o	Environm ental/Soci al Aspect	Potentia l Impacts	Mitigation/ Managemen t Measures	Implementati on/Responsib ility	Completion Indicators	Supervision/ Monitoring	Frequenc y
PRE-CONSTRUCTION							
							n upon completi on
14	Material Transport ation Routes	Public inconven ience and safety risks	Use existing roads; secure transport authority approval; consult communities.	Contractor	Approved route plan; consultatio n records	MPWD/ CSC	Approval once; monthly route inspectio ns; notificatio ns as needed
15	Constructi on Camp Setup	Pollution , poor living conditio ns and wildlife risks	Obtain site approval; follow IFC/EBRD worker accommodat ion standards; provide sanitation, waste management , used oil recovery and access controls.	Contractor	Approved camp layout; sanitation records	MPWD/ CSC / PMU	Approval once; weekly inspectio ns; daily sanitation checks
16	Debris/Wa ste Disposal Sites	Pollution from imprope r dumping	Identify sites with local authorities; develop Debris Disposal Plan; secure NOCs/agree ments.	Contractor	Approved sites & plan; NOCs; waste records	MPWD/ CSC	Approval once; records per disposal; monthly site checks

S. N o	Environm ental/Soci al Aspect	Potentia l Impacts	Mitigation/ Managemen t Measures	Implementati on/Responsib ility	Completion Indicators	Supervision/ Monitoring	Frequenc y
PRE-CONSTRUCTION							
17	Relocation of Utilities & Common Property Resources	Disruption of public services	Coordinate with communities and agencies; relocate based on community preferences.	Contractor / MPWD Division	Relocation completion records	MPWD/ PMU / CSC	Per event; verification within one month post-relocation
18	Community Health & Safety at Work Zones	Risk of injuries or fatalities	Install 2m metal barricades; control access; provide safe excavation ramps; cap rebar; conduct daily inspections.	Contractor / MPWD Division	Inspection reports; incident logs	MPWD/ PMU / CSC	Daily safety and barricade checks; immediate incident reporting
19	Noise at Sensitive Receptors	Disturbance to residents, schools and hospitals	Perform noise modelling; implement targeted mitigations where significant impacts are predicted.	Design/ESIA Consultants	Modelling results in ESIA; monitoring reports	MPWD/ PMC	Once during design; monthly monitoring or per complaint
CONSTRUCTION							
1	Crushers, Hot-Mix & Batching Plants	Dust, noise, traffic and community concerns from	Map and engage stakeholders within 1 km; site plants = 1,000 m from settlements, forests or	Contractor	Stakeholder reports; meeting minutes; approved layouts; valid CTE/CTO;	MPWD/ PMC / CSC	Consents once before setup; monthly inspections and emissions

S. No	Environmental/Social Aspect	Potential Impacts	Mitigation/Management Measures	Implementation/Responsibility	Completion Indicators	Supervision/Monitoring	Frequency
PRE-CONSTRUCTION							
		operations	wildlife corridors; secure layouts, approvals and CTE/CTO from MSPCB; deploy dust suppression, noise controls and ongoing consultations.		suppression records		monitoring; daily suppression logs
2	Borrow Areas	Environmental degradation from improper operation or closure	Position areas = 300 m from settlements; install barricades and security; obtain EC, landowner agreements and approved restoration plans; follow EC and standard operating procedures.	Contractor	EC documents; agreements; approved closure plans	MPWD/ PMC / CSC	EC/plan once before start; weekly inspections; closure verification on completion
3	Quarries	Safety risks and environmental harm from poor	Source only from licensed quarries with valid EC and CTE/CTO; submit permits; avoid	Contractor	Quarry permits/EC; safety reports; maintenance and suppression logs	MPWD/ PMC / CSC	Approvals once, weekly transport/safety checks, and monthly

S. N o	Environm ental/Soci al Aspect	Potentia l Impacts	Mitigation/ Managemen t Measures	Implementati on/Responsib ility	Completion Indicators	Supervision/ Monitoring	Frequenc y
PRE-CONSTRUCTION							
		manage ment	quarries within 1,000 m of settlements; maintain haul roads and dust controls.				environm ental monitorin g
4	Dismantlin g Bridges, Culverts & Structures	Drainage obstructi on and pollution	Prevent watercourse blockage; segregate reusable materials; transport debris to approved sites; use silt fences; restore sites and maintain 3 m barricades.	Contractor	Disposal/re use records; restoration photos	MPWD/ PMC / CSC	Plan approval once; daily inspectio ns during activity; records per shipment
5	Bituminou s Waste Disposal	Hazardo us waste contami nation	Maximize recycling (DBM/BC layers); store in lined containers; dispose only at authorized landfills; track quantities and promote reuse per standards.	Contractor	Reuse/disp osal records; site details; photos	MPWD/ PMC / CSC	Records per event, weekly inspectio ns, and monthly recycling reviews
6	Soil Contamin ation	Soil and groundw	Site workshops/st orage = 500	Contractor	Spill logs; disposal and	MPWD/ PMC / CSC	Daily storage checks;

S. N o	Environm ental/Soci al Aspect	Potentia l Impacts	Mitigation/ Managemen t Measures	Implementati on/Responsib ility	Completion Indicators	Supervision/ Monitoring	Frequenc y
PRE-CONSTRUCTION							
	(Oil/Fuel Spills)	ater pollution	m from water bodies; install interceptors and bunding; maintain equipment; provide spill kits and proper used oil disposal.		inspection records, and photos		weekly inspectio ns; immediat e spill response
7	Air Pollution — Dust Generatio n	Health risks and commun ity nuisance	Cover loads; sprinkle water regularly; stabilize slopes quickly; enforce speed limits; supply PPE; monitor air quality and address complaints promptly.	Contractor	Monitoring reports; suppression /PPE logs; complaint records	MPWD/ PMC / CSC	Daily sprinkling ; monthly (or more frequent) monitorin g; ongoing complaint tracking
8	Vehicle & Equipmen t Emissions	Air quality and health impacts	Maintain PUC/fitness certificates; use LPG for cooking; equip plants with emission controls.	Contractor	Valid certificates; maintenanc e/emission records	MPWD/ PMC / CSC	Monthly PUC renewals; weekly maintena nce; quarterly testing
9	Surface/G roundwat er	Pollution from sites and camps	Clear debris promptly; ensure camp sanitation;	Contractor	Water quality reports;	MPWD/ PMC / CSC	Daily camp checks; monthly

S. No	Environmental/Social Aspect	Potential Impacts	Mitigation/Management Measures	Implementation/Responsibility	Completion Indicators	Supervision/Monitoring	Frequency
PRE-CONSTRUCTION							
	Contamination		restrict pollution; use biodegradable fluids and contain slurry.		disposal/camp records		sampling; checks per piling
10	Project Water Requirements	Resource scarcity from over-extraction	Use water efficiently; secure permissions; install rainwater harvesting; promote conservation awareness; log daily usage.	Contractor	Consumption logs; permissions; harvesting evidence	MPWD/ PMC / CSC	Daily logs; monthly inspections; permission once
11	Cofferdams for Dry Working	Altered flow, quality and habitat disruption	Choose low-impact designs; use reusable materials; treat discharges; restore sites fully.	Contractor	Inspection records; restoration proof	MPWD/ PMC / CSC	Design approval once, daily checks, verification on removal
12	Noise from Vehicles, Plants & Equipment	Disturbance to communities and wildlife	Limit to daytime; maintain silencers; avoid sensitive hours near schools/hospitals; install barriers and provide PPE.	Contractor	Noise reports; PPE/complaint records	MPWD/ PMC / CSC	Monthly monitoring; checks per complaint; daily hour enforcement

S. N o	Environm ental/Soci al Aspect	Potentia l Impacts	Mitigation/ Managemen t Measures	Implementati on/Responsib ility	Completion Indicators	Supervision/ Monitoring	Frequenc y
PRE-CONSTRUCTION							
13	Blasting Operations	Safety and health hazards	Notify stakeholders; secure permissions; follow the approved Blasting Management Plan and explosives laws.	Contractor	Approved plan; permissions ; incident photos	MPWD/ PMC / CSC	Plan once; records per blast; immediat e post- blast checks
14	Tree Loss & Compensa tory Plantation	Biodiver sity decline	Minimize clearing; use alternative fuels; site facilities in low- vegetation zones; implement compensator y planting.	Contractor	Felling/plan tation records	MPWD/ PMC / CSC	Per felling event, seasonal planting, quarterly survival checks
15	Terrestrial Flora & Fauna	Harm from worker activities	Train and monitor workers; ban hunting/fuel wood collection; sustain awareness programs.	Contractor	Training attendance; sighting logs	MPWD/ PMC / CSC	Orientati on on mobilizati on; quarterly refreshers ; ongoing logs
16	Aquatic Fauna Protection	Habitat and species disruptio n	Schedule in- stream works for dry/low- flow periods; avoid monsoon/br eeding seasons;	Contractor	Timing/insp ection records	MPWD/ PMC / CSC	Schedulin g per activity; daily inspectio ns during work

S. No	Environmental/Social Aspect	Potential Impacts	Mitigation/Management Measures	Implementation/Responsibility	Completion Indicators	Supervision/Monitoring	Frequency
PRE-CONSTRUCTION							
			secure wire ends.				
17	Occupational Health & Safety	Accidents and illnesses	Develop WB-aligned OHS plan; conduct screenings/checks; supply PPE/first aid; deliver EHS/HIV awareness; perform audits.	Contractor	Approved plan; training/PPE/health reports	MPWD/ PMC / CSC	Screenings pre-employment/bi-annual; daily toolbox talks; monthly audits
18	Community Health & Safety	Risks to the public and livestock	Site plants remotely; install signage, 3 m barricades, lighting and diversions; follow IRC/MoRTH guidelines; educate on road safety.	Contractor	Signage/traffic records; complaint logs	MPWD/ PMC / CSC	Signage before works; daily checks; weekly complaint reviews
19	Emergency Response System	Heightened incident impacts	Prepare and implement ERP; train staff; conduct drills and maintain channels.	Contractor	Approved ERP; drill/training reports	MPWD/ PMC / CSC	ERP once, semi-annual drills, annual training
20	Communicable Disease Management	Outbreaks from labour influx	Partner with health centers; screen workers; run awareness	Contractor	Screening/awareness records; agreements	MPWD/ PMC / CSC	Quarterly screenings/sessions; immediate

S. N o	Environm ental/Soci al Aspect	Potentia l Impacts	Mitigation/ Managemen t Measures	Implementati on/Responsib ility	Completion Indicators	Supervision/ Monitoring	Frequenc y
PRE-CONSTRUCTION							
			(including COVID protocols).				e case response
21	Natural Hazard Risks (Floods, Earthquakes)	Damage and safety threats	Assess sites; protect adjacent lands; adhere to SDMA mitigation standards.	Contractor	Hazard assessments; compliance records	MPWD/ PMC / CSC	Assessment once; post-event checks; annual reviews
22	Force Majeure Risks	Unexpected E&S consequences	Plan for fire/flood/drowning; establish response protocols.	Contractor	Preparedness plan; contact lists	MPWD/ PMC / CSC	Plan once; annual reviews; post-event assessments
23	Site Hygiene	Health risks from poor conditions	Supply water, drainage and toilets; provide preventive care; enforce standards.	Contractor	Inspection/hygiene logs	MPWD/ PMC / CSC	Daily checks; quarterly medical reviews
24	Traffic Management	Disruptions and safety issues	Develop and approve TMP; coordinate with police; install signage/barri cades; maintain diversions year-round.	Contractor	Approved TMP; checklists; incident photos	MPWD/ PMC / CSC	Approval before works; daily checks
25	GBV-SEAH Risks	Violence /exploita	Site camps remotely;	Contractor	CoC/trainin g/complain	MPWD/ PMC / CSC	CoC on mobilizati

S. N o	Environm ental/Soci al Aspect	Potentia l Impacts	Mitigation/ Managemen t Measures	Implementati on/Responsib ility	Completion Indicators	Supervision/ Monitoring	Frequenc y
PRE-CONSTRUCTION							
		tion from influx	enforce signed Code of Conduct; deliver awareness; establish confidential GRM and ICC per POSH Act.		t records; ICC minutes		on; periodic training; monthly ICC; 24-hr complaint response
26	Chance Archaeolo gical Finds	Loss of cultural heritage	Halt work; notify authorities; follow ESMF Chance Find Procedures.	Contractor	Notification /report records	MPWD/ PMC / CSC	Immediat e per discovery
27	Labour Welfare Law Complianc e	Unsafe work and low morale	Establish policies; train on rights; provide reporting channels; investigate violations.	Contractor	Compliance /training/in cident records	MPWD/ PMC / CSC	Ongoing register; per- incident reporting
28	Labour Influx Managem ent	Strain on local resource s	Upgrade infrastructur e; regulate influx; prioritize local hiring.	Contractor	License; local hiring percentage s	MPWD/ PMC / CSC	Valid license; monthly local hire reports
29	Grievance Redress Mechanis m	Unresolv ed conflicts eroding trust	Set up impartial, accessible GRM; publicize and support complainants .	Contractor	GRM register; resolution records	MPWD/ PMC / CSC	Active througho ut; regular log reviews

S. No	Environmental/Social Aspect	Potential Impacts	Mitigation/Management Measures	Implementation/Responsibility	Completion Indicators	Supervision/Monitoring	Frequency
PRE-CONSTRUCTION							
30	Monitoring & Reporting	Undetected non-compliance	Follow detailed monitoring plan; submit regular CESMP compliance reports with certified data.	Contractor	Monthly/quarterly reports; certified data	MPWD/ PMC / CSC	Per scheduled reporting cycle
Operation Phase							
1	Debris and waste from site closure, camps, disposal, and borrow areas	Soil contamination, visual degradation, and health risks	Develop and implement a Site Restoration Plan: remove temporary structures and waste; fill and seal pits/trenches; respread topsoil; plant native species for stabilization	Contractor	Site clearance records; closure No Objection Certificate (NOC); geotagged photos	MPWD	Once at closure, with verification during defects liability period
2	Soil erosion from runoff on slopes and embankments	Loss of topsoil, siltation, and slope instability	Regularly inspect slopes; apply bioengineering techniques (turfing, hydroseeding), stone pitching, or retaining walls/gabions as needed;	Contractor	Erosion inspection reports; records of measures implemented; drainage maintenance logs	MPWD	Quarterly inspections; monthly drainage maintenance and pre-monsoon checks

S. N o	Environm ental/Soci al Aspect	Potentia l Impacts	Mitigation/ Managemen t Measures	Implementati on/Responsib ility	Completion Indicators	Supervision/ Monitoring	Frequenc y
PRE-CONSTRUCTION							
			maintain proper drainage				
3	Water pollution from road runoff and drainage	Degradation of surface and groundwater; sediment and oil spills	Conduct regular water quality monitoring; install silt traps or sedimentation chambers if required; routinely clean roadside drains; raise public awareness against dumping	Contractor	Water quality test results; drain cleaning records	MPWD	Water quality monitoring twice yearly; monthly drain cleaning and pre-monsoon
4	Dust from vehicular movement	Air quality degradation and public nuisance	Sustain roadside plantations as natural dust barriers; keep road surfaces smooth; install signage to prevent speeding	Contractor	Air quality monitoring results; plantation survival records	MPWD	Air monitoring twice yearly; quarterly plantation checks; monthly road surface inspections
5	Air pollution from vehicle emissions	Elevated levels of NOx, SO ₂ , CO, and particulate	Monitor ambient air at sensitive locations; preserve green buffers;	Contractor	Air quality results; plantation survival records; awareness program	MPWD	Air monitoring twice yearly; quarterly plantation

S. N o	Environm ental/Soci al Aspect	Potentia l Impacts	Mitigation/ Managemen t Measures	Implementati on/Responsib ility	Completion Indicators	Supervision/ Monitoring	Frequenc y
PRE-CONSTRUCTION							
		matter; health risks	educate drivers on emission controls and vehicle maintenance		documenta tion		inspectio ns; annual awarenes s programs
6	Noise pollution from increased traffic	Disturba nce to resident s, schools, hospitals , and wildlife	Perform periodic noise monitoring; erect noise barriers and dense plantations near sensitive areas; enforce no- horn zones; maintain smooth road surfaces	Contractor	Noise monitoring results; road maintenanc e records	MPWD	Noise monitorin g twice yearly; monthly road surface maintena nce
7	Road safety and accident risks	Traffic congesti on, accident s, and pedestri an hazards	Install and maintain signage, reflectors, markings, lighting, speed controls, and pedestrian crossings; conduct community road safety awareness programs	Contractor	Accident records; safety audit reports; awareness program documenta tion	MPWD	Annual safety audits; quarterly signage/li ghting checks; annual awarenes s programs
8	Waste from	Soil/wat er	Collect and dispose of	Contractor	Waste disposal	MPWD	During every

S. N o	Environm ental/Soci al Aspect	Potentia l Impacts	Mitigation/ Managemen t Measures	Implementati on/Responsib ility	Completion Indicators	Supervision/ Monitoring	Frequenc y
PRE-CONSTRUCTION							
	roadside maintena nce, drain cleaning, and repairs	contami nation, visual pollution , and drain blockage s	waste at approved sites; ban dumping in drains or low areas; reuse or recycle materials like asphalt, concrete, and metal		logbook; certified disposal records		maintena nce activity; monthly and pre- monsoon drain waste disposal

6 Gender Action Plan

6.1 Introduction

The Public Works Department (PWD) of Meghalaya is central to improving road connectivity, a key driver of the state's social and economic development. Roads in Meghalaya not only link remote and urban areas but also provide communities with access to education, healthcare, markets, and employment. Considering the state's hilly terrain, scattered settlements, and socio-cultural context, road infrastructure plays a crucial role in shaping the daily lives of women, men, children, the elderly, and marginalized groups.

Although Meghalaya has a matrilineal social system, gender inequalities persist across various sectors. Women still face barriers in decision-making, technical employment, and access to resources. In rural and remote areas, inadequate connectivity limits women's mobility, restricts access to essential services, and increases exposure to health and safety risks. Additionally, women's perspectives are often underrepresented in infrastructure planning and project design. Recognizing these challenges, it is crucial to integrate gender considerations into the operations of Meghalaya PWD.

At the project sites, livelihood restoration activities will specifically address the needs of women. A Gender Action Plan (GAP) is developed as part of the Environmental and Social Management Framework (ESMF) to guide the analysis of gender issues during the preparation phase of sub-projects and inform the design of interventions.

At the sub-project level, gender analysis will be integrated into the social assessment in line with the MLCIP Gender Action Plan (GAP). It will combine gender-disaggregated quantitative indicators (e.g., access to employment, resources, services) with qualitative methods (FGDs, key-informant interviews) using primary gender questions and relevant secondary sources. Results will drive site-specific mitigation and inclusion measures, capacity building, grievance-redress provisions, and measurable monitoring indicators reported to project management.

The Gender Action Plan will enable systematic collection and analysis of sex-disaggregated data to identify gender-specific disparities, needs, constraints, and priorities. This analysis will assess potential gender-based inequities in project risks, benefit access, and economic and social opportunities. Informed by these findings, targeted gender interventions will be developed and integrated into the Detailed Project Report (DPR) to promote inclusive design, equitable benefit sharing, and gender-responsive implementation.

In order to mitigate risks of gender-based violence (GBV), sexual exploitation and abuse (SEA), and sexual harassment (SH) arising from labor influx and construction activities, the project has prepared a SEA/SH Action and Response Plan which includes mandatory codes of conduct for workers, periodic awareness and training sessions, a confidential and survivor-centered grievance redress mechanism, and clearly defined referral pathways to service providers.

6.2 Rational

Gender work participation rate: Women's participation in the workforce in Meghalaya is higher than the national average, whereas men's participation is seen to be lower than the national average. Based on the primary data, it was observed that a larger percentage of women are engaged in agricultural activities and small-scale trade. The Census of India, 2011 mirrors the findings of the primary data, which indicates that about 35% women in rural Meghalaya are in the labour force. Further, relatively more women in rural Meghalaya are marginal workers compared to their counterparts in the rest of the country. The all-India

figures of labour force participation are 53% and 30% respectively for men and women, which are lower than the state figures. Interestingly, Working Participation Rates (WPR) of women has declined in rural Meghalaya from 39% in 1991 to 35% in 2011. The information is comprehensively covered in Chapter 2 of the Baseline data under the ESMF document.

Gender differentiated work: Traditionally, women in Meghalaya engage in small-scale trade wherein they sell their produce in the local market and manage the income/profits accrued from the trade. Such practices are not prevalent in other areas of the Indian subcontinent, where visiting the market and especially selling produce in the market is the preserve of men. However, in most parts, women in Meghalaya, like their counterparts, engage in agricultural activities like sowing, weeding, harvesting and threshing while simultaneously looking after their families (cooking, cleaning, tending to the ill, caring for livestock, etc.).

6.3 Objective of the Gender Action Plan

- To integrate gender considerations across all phases of activities proposed under this project, including planning, design and implementation.
- To promote women's participation in employment during the implementation phase.
- To promote women's participation and involvement in Grievance Redressal Committees and stakeholder engagement consultations.
- To build and strengthen the institutional capacity of Meghalaya PWD for gender-sensitive planning, monitoring, and reporting.

6.4 Key Strategies

i. Gender-Responsive Planning and Design

- Integrate safety and accessibility features such as street lighting, footpaths, bus stops, and signage, considering the mobility needs of women.
- Conduct gender-sensitive consultations and social assessments before project finalization.

ii. Inclusive Employment and Capacity Building

- Encourage women's participation in construction, maintenance and other activities in the project.
- Develop targeted training and skill development programs for, contractors and workers.

iii. Community Engagement and Empowerment

- Engage women's groups, Self-Help Groups (SHGs), and women's wings in local institutions in road monitoring, maintenance, and related activities.

iv. Institutional Strengthening

- Building MPWD's internal capacity for gender mainstreaming through training and gender focal points.
- Establishing monitoring systems with gender-disaggregated indicators and regular reporting.

6.5 Expected Outcomes

- Greater involvement of women in consultations and employment opportunities.
- Development of safer, more accessible, and gender-responsive road infrastructure.

- Strengthened institutional accountability of PWD in advancing gender equity and workers safety.
- Support for inclusive economic growth by improving mobility, reducing travel time, and enhancing women's and vulnerable groups' access to markets, education, and health services.

6.6 Gender Action Plan (GAP)

The Gender Action Plan (GAP) establishes a comprehensive framework for integrating gender equality and social inclusion (GESI) throughout all stages of road sector projects. This plan is aligned with national gender policies, the Sustainable Development Goals (SDGs), and the World Bank's Environmental and Social Framework (ESF).

The GAP promotes gender-responsive, inclusive, and equitable project interventions—from employment and internship opportunities to stakeholder consultations. It prioritizes proactive strategies to bolster women's participation, fortify institutional capacities, and foster safe, inclusive work environments.

A. General Checklist for Gender Integration

- Identify principal gender-related barriers to participation in project activities
- Develop Terms of Reference (TOR) for gender or social development specialists to inform project implementation and monitoring.
- Undertake a thorough gender analysis during the social assessment phase, incorporating stakeholder mapping and socio-economic profiling disaggregated by gender, caste, ethnicity, age, and location.
- Assess potential gender-differentiated impacts of project activities and propose measures to optimize benefits while mitigating adverse effects.
- Engage relevant government agencies, NGOs, community-based organizations (CBOs), and women's groups to facilitate implementation, capacity building, and monitoring.
- Review applicable gender-related policies and legislation about labor, workplace safety, and community participation.
- Involve both men and women in project design through participatory consultations and Free, Prior, and Informed Consent (FPIC) processes for community-based activities.
- Incorporate gender insights into all project documentation, including objectives, scope, employment strategies, cost estimates, institutional arrangements, and TORs for implementation and monitoring.
- Formulate gender-disaggregated indicators and a monitoring framework to track participation, benefits, and adherence to workplace safety standards.

B. Core Requirements for Gender Mainstreaming

- Gather and analyze all project-related data disaggregated by gender, caste, ethnicity, location, and age.
- Examine divisions in labor, decision-making authority, and resource access to discern gender-differentiated impacts on participants.
- Evaluate policies, programs, institutional arrangements, human resource systems, and monitoring and evaluation (M&E) mechanisms through a gender lens.
- Guarantee that project-supported employment and stakeholder consultations are inclusive, safe, and accessible to women, vulnerable groups, and persons with disabilities.

Table 6-1: Opportunities for Women's Involvement Across Project Stages

Procedure / Steps	Process	Expected Outcome / Indicator
Identification of Gender-Specific Needs	Conduct targeted consultations and focus group discussions (FGDs) with women's groups, local communities, and stakeholders.	Clear understanding of barriers and priorities for women's participation; documented needs report.
Assessment of Participation Opportunities	Map areas where women can engage, including internships, employment, skill training, advisory roles, and decision-making.	Opportunities for women's involvement were identified and prioritized.
Integration into Project Plans	Incorporate consultation findings into project activities, internship programs, recruitment, FPIC exercises, and technical designs.	Gender-responsive plans implemented; number of women-targeted positions and internships included.
Implementation Support	Collaborate with self-help groups (SHGs), community-based organizations (CBOs), women's wings, local institutions, and contractors to mobilize women, provide training, and ensure safe workplaces.	Increased women's participation; workplace safety protocols in place; training sessions conducted; grievance mechanisms functional.
Monitoring and Evaluation	Track gender-disaggregated data on internships, employment, consultation participation, FPIC outcomes, and workplace safety compliance.	Regular reporting on indicators: % women in internships/jobs, number of women attending FPIC/consultations, workplace incidents recorded/resolved; mid-course adjustments made.

Table 6-2. Summary of the Gender Action Plan for MLCIP Project

Action	Responsible Entity	Timeline	Monitoring Indicators
Conduct gender analysis and socio-economic profiling of stakeholders	Social/Gender Specialist, PWD, Consultants	Project preparation phase	Completed gender analysis report; data disaggregated by gender, caste, ethnicity, age, and location
Integrate gender considerations into project design- Conduct joint walk-throughs with	PWD, Consultants	Feasibility & design phase	(i) % of participation of women community members; and (ii) no. of participation of women-focused/women-led

Action	Responsible Entity	Timeline	Monitoring Indicators
PWD representatives and community organizations before finalizing structural designs, TORs, and ESIA			organizations in joint walk throughs. Gender-sensitive project design approved; TORs include gender requirements
Develop an employment plan targeting women, SHGs and vulnerable groups	PWD, Contractors, Consultants	Pre-construction & ongoing during project	Number of women recruited for internships/jobs; % of total workforce represented by women
Conduct participatory stakeholder consultations and FPIC sessions	Gender Specialist, NGOs, CBOs	Planning & pre-construction phase	Number of consultations held; % of participants who are women; documented FPIC outcomes
Provide gender-sensitive training, mentorship, and capacity-building programs	PWD, Consultants	Throughout the project cycle	Number of participants trained (disaggregated by gender); training satisfaction feedback
Ensure workplace safety, including harassment prevention, safe transport, sanitation, and grievance mechanisms	PWD, Contractors, Labor Camp Managers	Ongoing during construction and operations	Workplace safety audits conducted; incidents reported/resolved; presence of safe facilities and grievance system
Monitor gender-disaggregated participation and benefits from project activities	PWD, Consultants	Quarterly/annual reporting	Quarterly/annual M&E reports; % of women benefiting from programs; trends in participation over time
Address gender-related grievances and barriers promptly	PWD, Contractors, Social/Gender Specialist	Ongoing	Number of grievances received and resolved; time taken for resolution; feedback from affected parties
Periodically review and update GAP actions based on findings	PWD, Social/Gender Specialist, Consultants	Annual or mid-project review	Updated GAP action plan; documented adjustments; incorporation of stakeholder feedback

Action	Responsible Entity	Timeline	Monitoring Indicators
Conduct social audits on all project sites.	PWD, Social/Gender Specialist, Consultants	Ongoing	% participation of women community members; no. of women-focused/women-led organizations, including SHGs, CBOs, NGOs participated.

By incorporating gender-responsive measures, the Gender Action Plan ensures that road projects in Meghalaya are not only technically robust and economically feasible but also socially inclusive and equitable. It establishes the PWD as a key driver in promoting gender equality and empowering communities throughout the state.

6.7 Implementation Arrangements

The responsibility for implementing and monitoring the Gender Action Plan (GAP) rests with the MPWD. At the Project Implementation Unit (PIU) level, the Social Development Specialist and the Gender Specialist will lead, facilitate, and oversee the preparation and execution of the Action Plan. Strong coordination will be ensured with relevant line departments—particularly the Social Welfare Department, the State Livelihood Mission, Autonomous Council Institutions, and the Rural Development Department—to align and integrate project activities with ongoing government programs aimed at advancing the socio-economic development of women.

6.8 Monitoring Gender Action Plan

Monitoring the Gender Action Plan is essential to ensure that gender commitments made during project design are effectively implemented on the ground. It requires systematic collection, analysis, and reporting of sex-disaggregated data and gender-sensitive indicators throughout the project cycle.

Table 6-3: Indicators, frequency, and agency recommended for monitoring

Aspects	Monitoring Indicators (Process and Outcome)	Frequency	Monitoring Responsibility
Economic	- Percentage of women among total project workforce, disaggregated by skilled, semi-skilled, and unskilled categories; - Data of average daily wages paid to women and men for comparable work (wage parity index) - Number of days women are engaged compared to men in similar roles. - Growth in women's income due to project participation. - Reduction in women's migration days (if they previously migrated for work).	Planning Stage: Baseline data collection Half-Yearly Monitoring Mid-Term Review (MTR) Final Impact Assessment	Contractors; CSC; PMC; MPWD

Aspects	Monitoring Indicators (Process and Outcome)	Frequency	Monitoring Responsibility
	- Number of women gaining new market-oriented and employable skills. - Number of women accessing government schemes, agricultural interventions, or entitlements. - Improvement in women's asset ownership (productive and household assets). - Percentage of women trained under the project, disaggregated by road safety training, livelihood enhancement training, and project-related technical or non-technical skills.		
Social	- Percentage of women participants in stakeholder consultations, including consultations with Indigenous Peoples and FPIC processes where applicable under ESS7; - Percentage of women beneficiaries reporting improved mobility, perceived safety, and access to essential services, measured through periodic beneficiary feedback surveys; - Number and percentage of GBV/SEA/SH-related grievances received, resolved, and resolved within the stipulated timeframe, disaggregated by complainant gender and grievance type; - Increase in women's participation and leadership in local institutions and decision-making processes (membership, management roles, committees, etc.). - Improvement in women's representation in consultations and project-related decision forums.	Planning Stage: Baseline data collection Half-Yearly Monitoring Mid-Term Review (MTR) Final Impact Assessment	Contractors; CSC; PMC; MPWD

Effective monitoring of the GAP ensures that the MLCIP is not only technically sound and economically viable but also inclusive, equitable, and transformative empowering women and marginalized groups across the state.

7 Institutional Arrangement for Implementation

The Meghalaya Infrastructure Development and Finance Corporation (MIDFC) serves as the state's nodal agency for planning, financing, and implementation oversight of major infrastructure and development projects across Meghalaya. Under the Meghalaya Logistics and Connectivity Improvement Project (MLCIP), MIDFC will act as the lead implementing agency and establish a Project Management Unit (PMU), headed by a Project Director, to provide overall project coordination and oversight. The Meghalaya Public Works Department (PWD) will be responsible for executing civil works related to climate-resilient roads and agri-logistics infrastructure. The Meghalaya Basin Management Authority (MBMA) shall be the responsible implementing agency for capacity building, assessing improvements in market access, and other relevant development objectives of this project. The Project Implementation Unit (PIU) under PWD shall be responsible for day-to-day execution of the Project, including DPR preparation, procurement management, contract administration, and supervision of construction activities through its divisions. The PWD (PIU) will also be responsible for the civil works for agri-logistics. The MBMA PIU shall be responsible for undertaking capacity building initiatives, and other initiatives related to agri-logistics under the MLCIP project. To ensure integrated implementation, key state departments - including Agriculture, Horticulture, and the Meghalaya Basin Management Authority (MBMA) - will nominate senior officers and staff to support MIDFC and the PWD in implementing their respective components.

The MIDFC will function as the central coordinating body providing strategic direction, policy alignment, and oversight for the Project's implementation. It will manage planning, budgeting, and inter-agency coordination between the Public Works Department (PWD) and other departments. The PMU will lead stakeholder engagement at the project level and serves as the primary interface with the World Bank. Key officials include the Commissioner-cum-Project Director, Additional Project Director (MIDFC), and specialized procurement and financial experts.

To support environmental and social risk management, the PMU shall establish a dedicated **Environmental and Social Management Unit (ESMU)** comprising an Environmental Specialist and a Social-cum-Tribal Specialist. Both positions shall be procured through a market-based recruitment process and stationed at the PMU (MIDFC) for the project duration. The ESMU shall be responsible for overall coordination, technical oversight, monitoring, and compliance of environmental and social risk management, including Indigenous Peoples and Gender requirements, across the Project. The ESMU shall ensure compliance with the Project's ESMF/RPF/LMP/SEP/IPPF and ESCP, undertake technical review of sub-project E&S instruments, consolidate monitoring and reporting, and coordinate with all implementing entities, including the PIU (PWD) and the RAP/IPDP implementation agency.

The establishment of the ESMU at the PMU level is intended to strengthen project-level oversight and coordination and shall operate in conjunction with a dedicated Environmental and Social (E&S) Cell within the PWD at the PIU level. Accordingly, preparation and implementation of environmental and social safeguards shall be undertaken by the PIU (PWD), under the overall oversight, coordination, and compliance responsibility of the PMU (MIDFC).

Environmental and social safeguard implementation shall be anchored within a dedicated Environmental and Social (E&S) Cell at the PWD (PIU) level, led by designated Environmental and Social Nodal Officers. The PWD -PIU shall be responsible for preparation, implementation, supervision, and field-level compliance of all safeguard instruments (ESMF/RPF/IPPF) including, Labour Management Plan (LMP), Stakeholder Engagement Plan (SEP), ESIAs, ESMPs, RAPs, and IPDPs and for Free Prior Informed Consent (FPIC), in accordance with guidance provided by the PMU (MIDFC). The PIU shall also coordinate with local institutions, including those operating under Sixth Schedule provisions, and shall report progress to the PMU.

7.1 Environmental and Social Management Structure

The E&S Nodal Officers (PWD-PIU) and the operational E&S experts shall report to the Additional Chief Engineer (EAP - PWD) and coordinate directly with the ESMU. The Chief Engineer (PWD) as the overall PIU head will ensure that the institutional integration of E&S requirements into engineering design and will coordinate with the PMU at the project level.

The E&S Cell housed with PWD – PIU, shall have resources both human and budget. A team of qualified thematic experts, including environmental, social, biodiversity, labour, land, gender, and tribal specialists will be mobilized. These experts shall provide technical inputs, monitoring support, and advisory services to facilitate effective implementation of safeguard measures. The thematic experts are deliberately constituted as dedicated, external specialists — either procured through competitive recruitment or deputed from relevant government departments with the requisite expertise — and are not expected to be drawn from PWD's existing engineering cadre for the MLCIP which is rated as High Risk on E&S and stakeholders.

All experts, irrespective of the mode of engagement, shall function under the supervision of the E&S Nodal Officers in carrying out safeguard responsibilities. The E&S Cell shall coordinate closely with the PMU-level ESMU to comply with the project's safeguard instruments.

The Environmental and Social (E&S) Cell at the PIU is currently under establishment. Recruitment of key specialists is underway and is expected to be completed prior to Board Approval. Adequate budgetary provisions for staffing, capacity building, and operational requirements of the E&S Cell have been included under the Project.

Institutional Mechanism for Direct Purchase of Land

The Project may adopt direct purchase of land through negotiated settlement in accordance with the RPF and ESS5 requirements. Direct purchase shall be undertaken through a structured institutional mechanism ensuring voluntariness, transparency, and proper documentation.

A Land Purchase Committee (LPC) shall be constituted at MIDFC, chaired by the Additional Project Director, with representation from relevant departments and technical experts. The LPC shall be responsible for negotiating with landowners (individual, clan, or community) for direct purchase of land based on informed consultations and mutually agreed terms.

The PIU (PWD E&S Cell) shall initiate the process by identifying land requirements, compiling ownership details (individual, clan, and community), and facilitating consultations with affected landowners and customary institutions.

Land valuation shall be determined based on applicable benchmarks, including circle rates and market assessments, and shall be reviewed and approved by the Revenue Department.

The LPC shall conduct negotiations and document proceedings, including agreements with landowners and consent of customary authorities (e.g., Headman, Nokma, Dorbar Shnong). In cases where agreement is not reached, additional consultations may be undertaken. If negotiations fail, land shall be acquired in accordance with applicable legal provisions.

The negotiated outcomes shall be submitted to the Project Director (PMU) for approval. Upon approval, funds shall be released by MIDFC to PWD for disbursement to landowners prior to taking physical possession of the land.

For community and clan-owned land, the negotiated amount shall be utilized for community development activities identified and approved by the community or clan, with a focus on inclusive benefits, including for women. Implementation of such activities shall be undertaken by PWD.

The Revenue Department shall register land transactions and update land records, as applicable.

The PIU (PWD) shall ensure that no civil works commence prior to completion of payment and formal transfer of land. The RAP/IPDP Implementation Agency shall support community consultations, documentation, and verification of payments.

The entire process shall be subject to monitoring, documentation, and grievance redress in accordance with the ESMF and RPF provisions.

7.2 Staffing and Mode of Engagement

The thematic experts for the E&S Cell of PWD-PIU shall be engaged through a combination of market-based procurement and government deputation, as follows:

- The Environmental Expert and Social Expert shall be procured from the market.
- The Land Expert shall be deputed at an appropriate senior level (e.g., Secretary level) from the Revenue Department, GoM or equivalent, to support land acquisition coordination.
- The Labour Expert shall be deputed from the Labour Department, GoM or engaged through suitable administrative arrangements for the project lifecycle.
- The Gender Expert shall be drawn from the Meghalaya Basin Development Authority (MBDA) or another relevant institution with gender expertise, and formally deputed or engaged for the project duration.
- The Biodiversity Expert shall be deputed from the Department of Forest and Environment, Government of Meghalaya, or engaged through appropriate administrative arrangements.
- The Tribal Expert shall be procured or deputed from the Department of Social Welfare with expertise on Schedule VI.

All experts, irrespective of mode of engagement, shall function under the supervision of the E&S Nodal Officers.

Project Management Consultant (PMC)

MIDFC will engage a Project Management Consultant (PMC) to provide technical, managerial, and environmental and social (E&S) support to the PMU and implementing agencies. The PMC will support overall project management, including review and quality assurance of DPRs and designs, procurement support, contract management, monitoring, and capacity building to ensure timely and compliant implementation of all project components.

The PMC will support environmental and social risk management by ensuring compliance with the ESMF, RPF, IPPF, SEP, LMP, and ESCP, including oversight of ESMPs, RAPs, IPDPs, FPIC processes, and SEA/SH risk mitigation measures, as well as stakeholder engagement and grievance redress. The PMC will also support project monitoring and reporting, including verification of progress and compliance with contractual, technical, and E&S requirements, and support the PMU in performance tracking and reporting.

The PMC will deploy a multidisciplinary team of experts, including an Environmental Expert, Social Expert, and Tribal Expert, along with other technical specialists, to support project implementation and ensure compliance with environmental and social requirements.

Construction Supervision Consultant (CSC)

MIDFC will engage a Construction Supervision Consultant (CSC) to oversee on-site construction to ensure adherence to technical, contractual, and safeguard standards. The CSC will monitor quality, safety, and environmental and social compliance, verify progress, support PIUs in documentation, and report any deviations to the PIU for corrective action. The CSC will provide day-to-day supervision of construction works through its Environmental Expert, Social Expert, Gender Expert, and Labour Expert to ensure contractor compliance with ESMPs, OHS, labour standards, SEA-SH/gender inclusion, and social safeguards.

The project implementation structure is shown in **Figure 7-1**

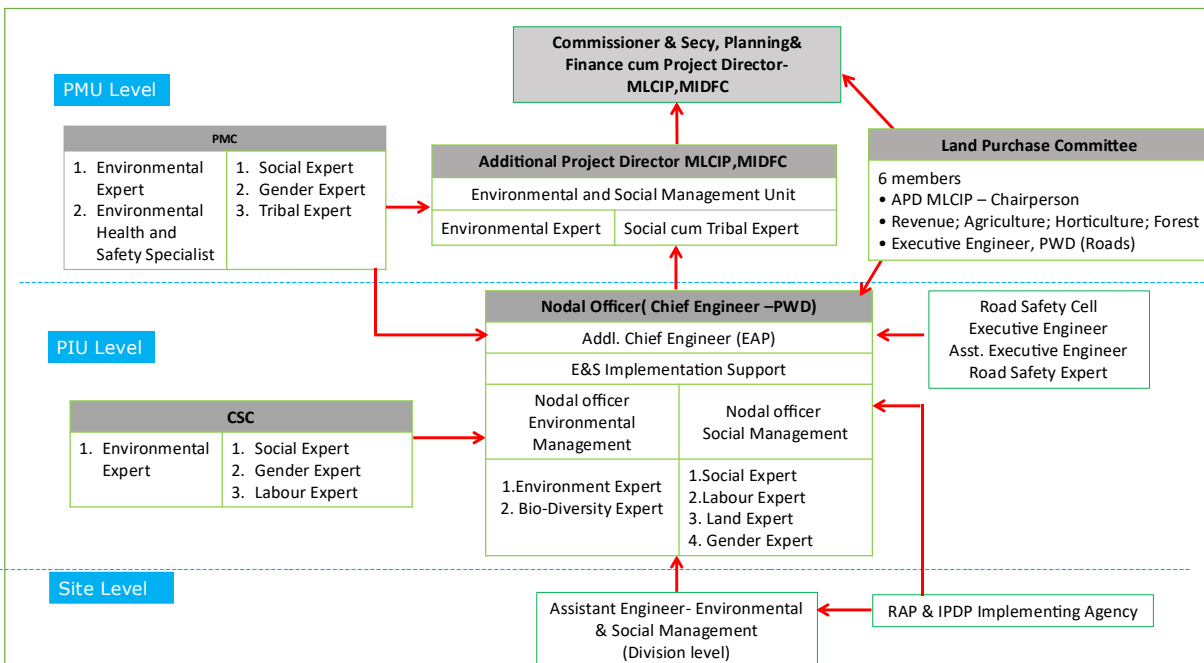


Figure 7-1: Project Implementation Organogram

Stage-wise E&S Functions

Preparatory Stage:

The ESMU shall coordinate the environmental and social screening of sub-projects, identification of risks and impacts, and review and clear the safeguard instruments. It shall ensure integration of mitigation measures into DPRs and bid documents and provide technical guidance for preparation of ESMPs, RAPs, and IPDPs, Gender Action Plan including on SEA-SH as required. The E&S Cell shall support field level coordination for preparation of the safeguard instruments, verification of data, FPIC, and other relevant activities.

Implementation Stage:

The ESMU shall provide oversight, review periodic reports, and ensure compliance with ESCP commitments.

The E&S Cell shall be responsible for implementation and supervision of environmental and social safeguard measures, including ESMPs, RAPs, IPDPs, FPICs, Land purchase, SEA-SH, Gender Action Plan, and other related activities. It shall monitor contractor and RAP/IPDP implementing agency, ensure effective implementation of stakeholder engagement processes and grievance redress mechanisms, and

maintain records of safeguard performance. At the field level, divisional staff, including Assistant Engineers, shall facilitate implementation through coordination with contractors and site supervision. The RAP/IPDP implementation agency shall work in close coordination with the E&S Cell and the respective PWD Division Offices to ensure seamless integration of safeguard measures with civil works. At the field level, the implementation agency shall operate in conjunction with divisional engineers and site staff to ensure that:

- delivery of compensation, assistance, and livelihood restoration measures is synchronized with construction timelines;
- site-specific safeguard measures are implemented in a timely and coordinated manner; and
- affected persons and communities are continuously engaged throughout the implementation process.

This coordination shall be operationalized through:

- regular joint site-level meetings involving the PIU, Division Offices, contractors, and the implementation agency;
- joint field verification of RAP and IPDP implementation prior to and during construction; and
- integrated progress tracking and reporting to identify gaps and ensure timely corrective actions.

No civil works shall commence in sections involving land acquisition or Indigenous Peoples impacts without prior verification by the PIU-level E&S Cell, based on inputs from the implementation agency, confirming that relevant safeguard requirements have been met.

Post-Implementation Stage:

The ESMU shall lead safeguard audits, citizen feedback, gender outcomes, evaluate compliance outcomes, and document lessons learned. The PMC will support documentation of outcomes as required. The E&S Cell shall support data collection, reporting, and follow-up actions.

PMC and CSC will provide technical and supervision support and do not substitute for institutional responsibilities of the PMU and PIU.

Functions and Responsibilities for Environmental and Social Management

The environmental and social management system is implemented through coordinated actions across PMU, PIU, and field levels, as outlined below:

Function	Description	Responsible Entity
E&S Policy Compliance and Oversight	Ensure overall compliance with ESMF, ESCP, and safeguard instruments; provide strategic direction and review safeguard documents; report to World Bank	PMU (ESMU)
Screening and Risk Identification including identification of land procurement requirements and	Conduct environmental and social screening and identify risks and applicable safeguard instruments	PIU (E&S Cell) with Divisional Offices; PMU (ESMU) provides oversight and technical guidance

Function	Description	Responsible Entity
potential use of direct purchase mechanisms.		
Identification of Land Procurement Method (including Direct Purchase)	Determine appropriate land procurement method (direct purchase, or acquisition) based on screening outcomes, ownership type, risk level, and applicability of ESS5	PMU (ESMU) with PIU (E&S Cell)
Preparation and Review of Safeguard Instruments	Prepare and review ESMPs, RAPs, and IPDPs and carry out FPIC	PMU (ESMU) with PIU (E&S Cell) support; Independent ESIA consultants for High-Risk projects
Due Diligence for Direct Purchase of Land	Undertake due diligence to confirm voluntariness for direct purchase, verification of ownership through available records and customary validation mechanisms, absence of coercion, fair valuation aligned with replacement value principles, and proper documentation of consultations and consent, including customary authorities where applicable	PMU (ESMU) with PIU (E&S Cell); independent verification/third-party support where required
Integration into DPRs and Procurement Documents	Ensure safeguard requirements are incorporated into DPRs and contracts	PMU (ESMU) with PIU support
Regulatory Compliance and Clearances	Facilitate statutory clearances and ensure regulatory compliance	PIU (PWD E&S Cell)
Implementation of Safeguard Measures	Implement ESMPs, RAPs, and IPDPs – FPIC, Gender Action Plan, preventive SEA-SH plan at sub project level	PIU (PWD E&S Cell), led by E&S Nodal Officers and PWD officers at the Divisional offices supported by implementing agency for RAP and IPDP
Facilitation and Documentation of Direct Purchase Transactions	Facilitate consultations with landowners (individual, clan, and community), ensure transparent negotiation process, document agreements, and secure approvals from customary institutions (Rangbah	Land Purchase Committee; coordinated by PIU (PWD E&S Cell) in consultations with customary institutions; oversight by PMU (ESMU)

Function	Description	Responsible Entity
	Shnong/Nokma/Waheh Shnong) prior to transfer	
Contractor Supervision and Compliance	Monitor contractor adherence to safeguard requirements; apply retention and sanctions for non - compliance.	PIU (PWD E&S Cell) and Divisional Offices; supported by CSC
Monitoring and Reporting	Track safeguard performance, consolidate periodic reports and ensure corrective actions	PMU (ESMU) with PIU support; CSC provides site-level data
Monitoring of Direct Purchase Compliance	Monitor compliance with ESS5 requirements including voluntariness, compensation benchmarks, payment prior to possession including verification that full payment is completed prior to transfer of possession, and documentation; maintain records for audit and reporting	PMU (ESMU) with PIU (E&S Cell); RAP/IPDP implementation Agency; Third Party Monitoring Agency
Stakeholder Engagement and Consultation	Conduct consultations, disclosure, and FPIC processes	PMU (ESMU) with PIU and CSC support
Grievance Redress Mechanism (GRM)	Operate two tier GRM; Tier I at site/division level (15-day resolution); Tier II at PMU level (15-day resolution); ESMU monitors timelines and public reporting	PIU & Division Level (Tier I); PMU/ESMU (Tier II oversight)
Grievance Handling for Land Transactions (including Direct Purchase)	Address grievances related to valuation, consent, coercion, ownership disputes, and payment delays arising from land procurement processes; ensure accessibility and time-bound resolution	PIU & Division Level (Tier I); PMU/ESMU (Tier II oversight)
Labour and Working Conditions Management	Ensure implementation of LMP and OHS measures	PIU (E&S Cell), supported by Labour Expert
Gender and SEA/SH Risk Management	Implement Gender Action Plan and SEA/SH Prevention and Response Plan measures	PIU (E&S Cell), supported by Gender Expert
Biodiversity Management	Implement biodiversity mitigation measures	PIU (E&S Cell), supported by Biodiversity Expert

Function	Description	Responsible Entity
RAP and IPDP Implementation	Implement RAP and IPDP measures; synchronize with construction timelines; ensure FPIC compliance; and oversee land procurement processes including direct purchase where applicable	RAP/IPDP Implementation Agency; coordinated by PIU (E&S Cell) and Officers at the Divisional Offices; oversight by PMU (ESMU)
Site-Level Coordination	Ensure alignment between safeguard implementation and civil works	PIU (E&S Cell), led by E&S Nodal Officers; supported by CSC at site level
Capacity Building and Training	Conduct safeguard training: induction, refreshers for engineers, toolbox talks for workers	PMU (ESMU) leads; PIU (E&S Cell) and CSC support
Documentation and Disclosure	Maintain records and ensure timely public disclosure	PMU (ESMU) with PIU (E&S Cell) and CSC support
Audit and Compliance Review	Conduct periodic third-party safeguard audits and evaluations; recommend systemic improvements	PMU (ESMU); Third-party auditor engaged by PMU

7.3 Details of the Roles and Responsibilities of Key Functionaries

The implementation of the Environmental and Social Management Framework (ESMF) under the Meghalaya Logistics and Connectivity Improvement Project (MLCIP) will be supported by a multi-disciplinary team across the Project Management Unit (PMU), Project Implementation Unit (PIU), and field divisions. The key responsibilities of staff and entities involved are summarized below:

Table 7-1: The Key Responsibilities of Staff and Entities

Designation	Institution / Entity	Roles & Responsibilities (including Environmental and Social)	Reporting / Coordination Line
Commissioner-cum-Project Director (PMU)	MIDFC	Provides overall leadership and governance; chairs Steering Committee; accountable for overall E&S compliance and ESCP adherence; primary interface with the World Bank; approves negotiated land transactions and authorizes release of funds for land procurement including direct purchase	Interfaces with World Bank; reports to the Chief Secretary
Additional Project Director (PMU)	MIDFC	Leads day-to-day project coordination and implementation oversight; oversees ESMU performance and safeguard reporting; chairs the Land Purchase Committee; ensures that negotiated land transactions are conducted transparently, voluntarily, and in accordance with RPF provisions and ESS5 requirements	Reports to Project Director; coordinates with PIU and PMC
Environmental Specialist (PMU–ESMU)	MIDFC	Leads environmental safeguard oversight and technical review; oversees ESMP implementation in coordination with CSC and PMC; supports contract management on ESHS non-conformances; validates environmental screening; reviews ESMPs; maintains ESHS monitoring and reporting systems	Reports to Additional Project Director; coordinates with PIU E&S Nodal Officers
Social-cum-Tribal Specialist (PMU–ESMU)	MIDFC	Leads social safeguard oversight including RAP, IPDP, GRM, Gender Action Plan, SEA/SH prevention, stakeholder engagement, and FPIC; oversees implementation and monitoring; coordinates with implementation agencies; undertakes due diligence for land procurement including direct purchase, ensuring	Reports to Additional Project Director; coordinates with PIU E&S Nodal Officers and RAP/IPDP implementation agency

Designation	Institution / Entity	Roles & Responsibilities (including Environmental and Social)	Reporting / Coordination Line
		voluntariness, absence of coercion, compliance with ESS5, and integration of customary consent processes; provides technical inputs to the Land Purchase Committee on social safeguards and customary considerations	
Nodal Officer (Chief Engineer)	PWD	Provides technical leadership and overall PIU governance; ensures integration of E&S requirements into engineering design and project oversight; coordinates with PMU	Coordinates with PMU
Additional Chief Engineer (EAP)	PWD	Manages PIU operations, contracts, and budgets; ensures safeguard implementation and contractor compliance; provides resources and authority to E&S Nodal Officers; coordinates with sector experts; ensures that land procurement processes, including direct purchase, are implemented in accordance with RPF provisions	Reports to Chief Engineer; coordinates with PMU
E&S Nodal Officer – Environmental Management	PWD (E&S Cell)	Leads environmental management at PIU level; ensures ESMP implementation; conducts inspections; monitors contractor performance; reviews environmental records; prepares periodic reports; ensures implementation of guidance from PMU environmental specialist. Reviews and validates environmental and social screening conducted at field level to ensure compliance with ESF requirements.	Reports to Additional Chief Engineer (EAP); coordinates with PMU (ESMU)
E&S Nodal Officer – Social Management	PWD (E&S Cell)	Leads social safeguard implementation including RAP, IPDP, GRM, and stakeholder engagement; coordinates screening and field data collection; supports land procurement processes including direct purchase; ensures documentation of consultations, consent, and grievance handling;	Reports to Additional Chief Engineer (EAP); coordinates with PMU (ESMU)

Designation	Institution / Entity	Roles & Responsibilities (including Environmental and Social)	Reporting / Coordination Line
		provides coordination support to the Land Purchase Committee and RAP/IPDP implementation agency. Reviews and validates social screening and field data to ensure alignment with ESF and project safeguard instruments.	
Environmental Expert (PIU)	PWD (E&S Cell)	Conducts field monitoring of ESMP implementation; verifies contractor compliance; maintains safeguard records; prepares monitoring inputs; supports environmental screening; coordinates with Division Offices for corrective action on non-compliance	Reports to E&S Nodal Officer (Environmental)
Social Expert (PIU)	PWD (E&S Cell)	Conducts field-level social monitoring and community engagement; supports RAP/IPDP implementation; conducts screening and baseline data collection; facilitates consultations and disclosure; maintains GRM records; supports direct purchase through facilitation of consultations, documentation of consent, and maintenance of transaction records; coordinates with RAP/IPDP implementation agency; flags non-compliances	Reports to E&S Nodal Officer (Social)
Biodiversity Expert	PIU / PWD (E&S Cell)	Provides technical oversight on biodiversity management; conducts ecological screening; monitors mitigation measures; supports statutory compliance; prepares biodiversity monitoring reports	Reports to E&S Nodal Officers; coordinates with Forest Department
Labour Expert	PIU / PWD (E&S Cell)	Ensures compliance with Labour Management Procedures and occupational health and safety (OHS) standards; monitors labour conditions and worker welfare; reviews contractor compliance; conducts worker consultations; prepares labour compliance reports	Reports to E&S Nodal Officers; coordinates with Labour Department

Designation	Institution / Entity	Roles & Responsibilities (including Environmental and Social)	Reporting / Coordination Line
Land Expert	PIU (PWD E&S Cell)	Supports land-related processes and alignment with RAP; supports due diligence for direct purchase including verification of ownership through available records and customary validation mechanisms; assists in valuation review and documentation of negotiated land transactions; facilitates resolution of land-related grievances; monitors land handover status	Reports to E&S Nodal Officers; coordinates with relevant authorities
Gender Expert	PIU / PWD (E&S Cell)	Supports implementation of Gender Action Plan and SEA/SH measures; monitors gender indicators; ensures women's participation in consultations and GRM; prepares gender monitoring reports	Reports to E&S Nodal Officers; coordinates with relevant institutions
Tribal Expert	PIU / PWD (E&S Cell)	Facilitates FPIC processes; supports IPDP implementation; ensures culturally appropriate consultations; maintains documentation; coordinates with customary institutions; ensures alignment with IPPF requirements	Reports to E&S Nodal Officers; coordinates with District Councils and tribal institutions
Environmental Expert (PMC)	PMC	Provides technical support on environmental planning, screening, ESMP preparation, monitoring systems, and capacity building	Reports to PMC Team Leader; supports PMU/PIU
EHS Specialist (PMC)	PMC	Supports development and strengthening of EHS systems including occupational health and safety (OHS); reviews CESMPs and contractor OHS plans; supports ESMP implementation, training, and monitoring systems; advises PMU and PIU on compliance gaps, corrective actions, and contractual remedies related to environmental, health, and safety performance	Reports to PMC Team Leader; supports PMU/PIU
Social Expert (PMC)	PMC	Supports RAP/IPDP planning, stakeholder engagement, and reporting	Reports to PMC Team Leader; supports PMU/PIU

Designation	Institution / Entity	Roles & Responsibilities (including Environmental and Social)	Reporting / Coordination Line
Gender Expert (PMC)	PMC	Supports gender integration and SEA/SH mitigation and monitoring	Reports to PMC Team Leader; supports PMU/PIU
Tribal Expert (PMC)	PMC	Supports IPDP implementation and culturally appropriate consultations	Reports to PMC Team Leader; supports PMU/PIU
Environmental Expert (CSC)	CSC / Supervision Consultant	Monitors ESMP implementation at site level; reports non-compliance; recommends corrective actions; ensures environmental and safety measures are implemented; coordinates with Labour Expert to ensure integration of environmental, health, and safety measures	Reports to Team Leader CSC; PIU
Social Expert (CSC)	CSC / Supervision Consultant	Monitors RAP/IPDP implementation and supports grievance resolution at site level	Reports to Team Leader CSC; PIU
Gender Expert (CSC)	CSC / Supervision Consultant	Monitors gender and SEA/SH mitigation measures at site level	Reports to Team Leader CSC; PIU
Labour Expert (CSC)	CSC / Supervision Consultant	Monitors labour compliance and occupational health and safety (OHS) conditions at site level; verifies implementation of Labour Management Procedures and worker welfare measures; supports site inspections, incident reporting, and corrective action tracking; reports non-compliance to PIU	Reports to Team Leader CSC; PIU
Road Safety Expert / Cell	PIU (PWD)	Ensures integration of road safety measures in design and construction; monitors compliance and reports issues for corrective action	Reports to Nodal Officer; coordinates with PMU
RAP/IPDP Implementation Agency	Engaged Agency	Implements RAP and IPDP activities; facilitates compensation and livelihood restoration; supports community engagement and grievance resolution; supports consultations for land procurement including direct purchase;	Coordinated by PIU (E&S Cell); oversight by PMU (ESMU)

Designation	Institution / Entity	Roles & Responsibilities (including Environmental and Social)	Reporting / Coordination Line
		facilitates and documents payment processes, verifies completion prior to transfer of possession, and maintains transaction records	
Division Engineer/ Executive Engineers	PWD	Reviews the screening inputs which shall be subject to technical review and validation by the PIU (E&S Cell). Supervises construction and field-level implementation; completes environmental and social screening, ESMP implementation, and GRM; supports identification of land requirements and facilitates coordination for land procurement including direct purchase;	Reports to PIU; coordinates with CSC

Under the institutional arrangement for MLCIP, strict enforcement mechanisms ensure accountability in environmental and social (E&S) compliance. A 1% retention from each contractor bill shall be applied for E&S non-compliance. The issue must be rectified within two billing cycles, failing which the retained amount shall be forfeited. Repeated non-compliance (more than five instances) may result in contract termination and encashment of the Environmental and Social Performance Guarantee by the PMU.

7.4 Grievance Redressal Mechanism

A Grievance Mechanism is a system that allows not only grievances, but also queries, suggestions, positive feedback, and concerns of project-affected parties related to the environmental and social performance of a project to be submitted and responded to in a timely manner. The project-level Grievance Redress Mechanism (GRM) will be harmonized with the State's centralized grievance redress system (CM Connect/1971), with provisions for escalation, tracking, and resolution through the state platform, as applicable.

The Project GRM shall support implementation of the ESMF and associated instruments, including the RPF, IPPF, SEP, and LMP. Appropriate procedures shall also be established for management of labour-related grievances and SEA/SH-related complaints in accordance with applicable protocols.

Description of Grievance Mechanism (GM)

Table 7-2: Table on the GM Steps

[Step]	Description of process (e.g.)	Timeframe	Responsibility
GM implementation structure	<i>At the project level, the PWD has the following two-tiered structure for grievance management:</i>	Continuous, reported Quarterly	Designated GRM officer at the PMU, PIU GRC- Tier I and

[Step]	Description of process (e.g.)	Timeframe	Responsibility
	Tier I: Project/Site-Level Grievance Redress The Tier I Grievance Redress Cell (GRC) shall function at the project or site level and shall be chaired by the Village Head or a representative nominated by the Village Council. The GRC shall include the Resident Engineer of the Construction Supervision Consultant (CSC), Environmental and Social Experts of the CSC, a representative of the Contractor, and Environmental and Social Officers from the Divisional Project Implementation Unit (DPIU). Upon receipt of a grievance, the Tier I GRC shall review the complaint, conduct consultations with the complainant and relevant stakeholders as necessary, and propose appropriate corrective or remedial actions. The Tier I GRC shall endeavour to resolve the grievance within fifteen (15) days from the date of registration. If the grievance is resolved to the satisfaction of the complainant, the case shall be closed and documented accordingly. Tier II: State/PMU-Level Grievance Redress If a grievance cannot be resolved at the project/site level within the stipulated timeframe, or if the complainant is not satisfied with the proposed resolution, the grievance shall be escalated to the Tier II State/PMU-Level Grievance Redress Cell. The Tier II GRC shall be chaired by the Secretary, Department of Planning, and shall include the Chief Engineer, the Project Director (PMU), the Social Development Expert and the Environmental Expert of the PIU/PMU as members. The Tier II GRC shall review the		PMU GRC– Tier II

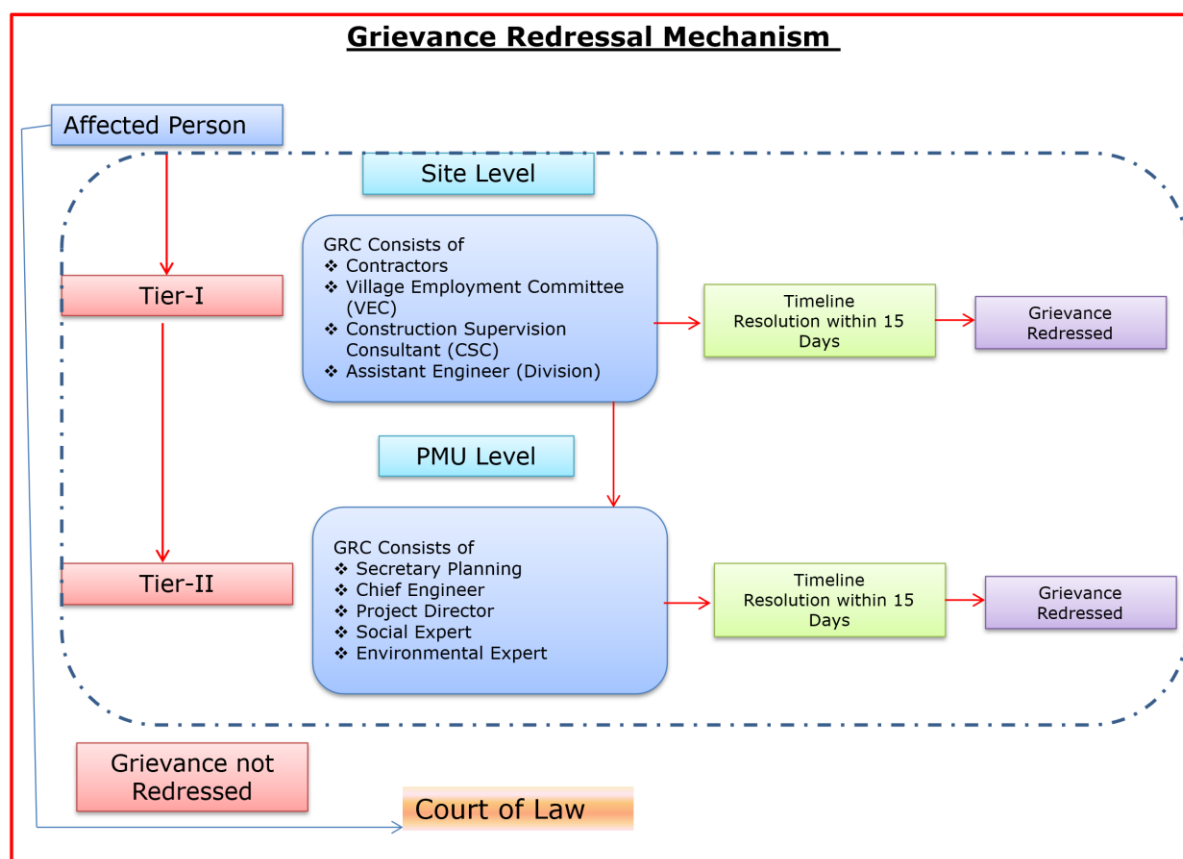
[Step]	Description of process (e.g.)	Timeframe	Responsibility
	grievance, seek additional information or conduct hearings as required, and issue its decision or recommendations within fifteen (15) days of receiving the escalated grievance. The outcome shall be communicated formally to the complainant. Complaints can also be filed through the CM Connect Centre's Toll-Free Helpline, WhatsApp Helpline and Email, wherein complaints are re-directed to the concerned officials in the PWD (Grievance officer in PMU, GRC Tier I and II) for redressal. Additionally, a toll-free no. will be set up for the PWD.		
Grievance uptake	Grievances can be submitted via the following channels • Toll-free telephone hotline: 1971/1800-345-651 operated by Meghalaya CM Connect Centre • WhatsApp helpline: 94363-94363 operated by Meghalaya CM Connect Centre • PWD telephone helpline: 0364-3572466 • E-mail to esmlcip@gmail.com and cmconnect1971@outlook.com operated by Meghalaya CM Connect Centre • MIDFC website: http://megpwd.gov.in/contacts.html • In-person at project sites, DPIU offices, or the PMU • Grievance Redress Cell (GRC) at the site/project and state level • Grievance or suggestion boxes located at the construction sites	Upon receipt of complaint	Designated GRM officer at the PMU, PIU GRC- Tier I and PMU GRC– Tier II

[Step]	Description of process (e.g.)	Timeframe	Responsibility
	• Social media (Facebook) • Toll-free no. to be setup for PWD		
Sorting, processing	Any complaint related to the project received through the Meghalaya CM Connect Centre (Helpline, WhatsApp or email) is forwarded to the concerned department— in this case the PWD (designated GRM officer at the PMU, Tier I and II GRC); logged in the Public Grievance Redressal and Monitoring System; the complaints are categorized based on the intent: (a) grievance/complaint- service delivery failure; delay, denial or poor quality (b) service request- request for repair, inspection or action (c) information/query- clarification on the project/scheme, eligibility, procedures (d) suggestion/ feedback. PWD complaints can be related to road damages, poor construction quality, construction delays, safety hazards, drainage issues, land/ RoW related, drainage issues, contractor behaviour, etc.	Upon receipt of complaint	Designated GRM officer at the PMU, GRC- Tier I and II
Acknowledgement and follow-up	Receipt of the grievance by the Meghalaya CM Connect Centre (Helpline, WhatsApp or email) is acknowledged to the complainant by assigning a unique reference number. Similarly, for grievances received directly by GRC- Tier I and II, the GRC will formally acknowledge to the complainant through SMS or a letter.	Within 2 days of receipt	Designated GRM officer at the PMU, GRC- Tier I and II

[Step]	Description of process (e.g.)	Timeframe	Responsibility
Verification, investigation, action	Investigation of the complaint is led by the GRC/ officials of the PWD. A proposed resolution is formulated by Tier 1 GRC/ officials of the PWD and communicated to the complainant by Meghalaya CM Connect Centre (Helpline, WhatsApp or email).	Within 15 working days	GRC Tier I composed of Village Head or representative nominated by the Village Council (chairperson), Resident Engineer of CSC, Environmental and Social Experts of CSC, Contractor, and Environmental and Social Officers from the Divisional Project Implementation Unit (DPIU) GRC Tier II composed of Secretary, Department of Planning, Chief Engineer, the Project Director (PMU), the Social Development Expert and the Environmental Expert of the PIU/PMU as members.
Monitoring and evaluation	Data on project-related complaints received and resolved through multiple channels will be collated in the project MIS and reported to the World Bank every quarter through the quarterly progress report (QPR).	Continuous; reported quarterly	PMU, PIU, GRM Officer

[Step]	Description of process (e.g.)	Timeframe	Responsibility
Provision of feedback	Feedback from complainants regarding their satisfaction with complaint resolution is collected by the Tier I and II GRCs and the Meghalaya CM Connect Centre (Helpline, WhatsApp or email), respectively after resolution of the complaints.	Within 3 days of resolution	GRC Tier I and Tier II, Meghalaya CM Connect Centre
Training	Training needs for staff/consultants in the PIU, Contractors and Supervision Consultants are: - Grievance management and documentation - Stakeholder engagement and documentation - Gender sensitization and handling of grievances related to SEA/SH including maintaining confidentiality	Every 6 months	PMU, PIU
If relevant, payment of reparations following complaint resolution	Payment of reparations following complaint resolution will be documented and signed by both parties on receipt of the amount. [Note: Payment of reparation related to employee accidents and fatalities will be undertaken as per the requirements of the Employee Compensation Act, 1923/ Labor Code.]	As per legal requirements	PMU, PIU

[Step]	Description of process (e.g.)	Timeframe	Responsibility
Appeals process	If the complainants are not satisfied with the proposed resolution of the complaint, they can escalate the complaint to the Tier II GRC. The complainants are also free to approach the court of law at any time of their own will at any stage, and accessing the country's legal system can run parallel to accessing the GM and is not dependent on the negative outcome of the GM. Once all possible means to resolve the complaint have been proposed and if the complainant is still not satisfied, then they should be advised of their right to legal recourse.	Within 15 days of escalation	GRC Tier II (PMU level)



To ensure that affected tribal communities can voice concerns and grievances and have them addressed taking into consideration their socio-economic and cultural attributes, a member of the ST community/ village council (tribal traditional institution) will be represented in the GRC at Tier 1 (Project sites) and 2

level (PMU). Further, the Meghalaya CM Connect Centre Helpline no. provides multi-lingual support (English, Khasi, Garo, Pnar, and Hindi) and is supported by 470 village volunteers to ensure last-mile connectivity. The call centre providing backend support to Meghalaya CM Connect Centre has 25 trained agents and operates from 8 AM to 8 PM.

The grievance mechanism for workers will be setup by the contractors prior to convening of civil works. The grievance mechanism process has been described in detail in the Labor Management Procedures.

Recourse for Sexual Exploitation Abuse/ Sexual Harassment (SEA/SH): The MIDFC and PWD has setup an Internal Complaints Committee (ICC) for addressing any SEA/SH-related complaints at the workplace. The committee is constituted as per the requirements of the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 (POSH Act). The MIDFC and PWD has in place necessary mechanisms and procedures following a survivor-centered approach that prioritizes survivors' dignity, confidential reporting with safe and ethical documentation of SEA/SH issues. The ICC is also mandated to handle SEA/SH related complaints from community members, if the worker is directly or indirectly employed by the contractor or project. Additionally, SEA/SH referral pathways will be established (details specified in the Project level SEA/SH Prevention and Response Plan) and communicated to all the staff, supervision consultants, including contractors and sub-contractors. Further, all contractors will be mandated to setup an Internal Complaints Committee as per the POSH Act. The contractors will also prepare and implement the workers' code of conduct to be always adhered by the workers.

8 Capacity Development and Training

Training and capacity building on environmental and social (E&S) issues under the Meghalaya Logistics and Connectivity Improvement Project (MLCIP) will be undertaken by the implementing agency, the Meghalaya Public Works Department (MPWD). MPWD has prior experience implementing World Bank–supported projects, including the Meghalaya Integrated Transport Project (MITP), which provides a foundational understanding of Bank safeguard requirements. However, as MITP was implemented under the earlier Safeguards Policies, targeted reorientation and capacity building on the World Bank’s Environmental and Social Framework (ESF) and its operational requirements will be required.

The training programs will include an orientation on the project concept and components for all project stakeholders, trainings on climate-resilient infrastructure design, road safety, and logistics efficiency for greater connectivity and market access, targeting community institutions, and stakeholders to ensure inclusive planning and their active participation in implementation, apart from overall awareness and training on the ESMF of the project to be able to fully manage the E&S risks under the project. Several capacity-building approaches will be adopted by MPWD for improving the E&S performance, including institutional strengthening, workshops, village/community meetings, as well as group discussions with targeted stakeholders.

Capacity-building activities under the Project shall also support implementation of the RPF, IPPF, SEP, LMP, and other associated environmental and social instruments through targeted training on land acquisition, stakeholder engagement, labour management, Indigenous Peoples engagement, GBV/SEA/SH risk mitigation, and grievance management.

The capacity building support proposed to be provided to various project stakeholders will include, but not be limited to, the following E&S-related key areas:

- Overall Orientation on the Project objectives and activities.
- Training of the key staff of PMU, PIU and E&S Cell on the World Bank ESF, the project ESMF and the E&S requirements for the project and their role in ESMP implementation.
- Orientation training of officials of MPWD, MIDFC, on the ESMF, the E&S documents prepared and their implementation responsibilities.
- Training of implementing agencies on monitoring and reporting responsibilities.
- Training of field staff of departments and CSOs/NGOs/Technical agencies engaged by the project on E&S compliance in road and bridge works.
- Trainings of field staff and contractor personnel on fair working conditions for workers, including Occupational Health and Safety (OHS) related risk management and incident reporting.
- Orientation of field staff of departments and CSOs/NGOs/Technical agencies/Representatives of Village Councils on inclusive participation of women and vulnerable and marginalized groups in project activities and their representation in decision-making bodies.

8.1 Suggested Topics:

- E&S Risk and Management Measures.
- Compliance to the Labour Regulations.
- Living and Working Conditions

- Occupational Health and Safety
- Pollution Prevention and Management, Monitoring and Reporting
- Community Health and Safety
- Implementation of the Biodiversity Management
- Stakeholder Engagement, participatory planning and implementation
- Grievance Mechanisms
- Sexual Exploitation and Abuse/Sexual Harassment
- Land Acquisition including compensation, resettlement and rehabilitation process
- Using Technology for E&S Monitoring and Reporting
- Social Inclusion
- Financial Literacy and Market Access for SHGs
- Going beyond E&S Risk Management to E&S Performance Enhancement.

These topics form the core curriculum for all training modules, ensuring full compliance with World Bank ESF standards and the project's ESMF. Delivery will incorporate practical case studies, field-based simulations, and interactive tools to strengthen understanding and support direct application during planning, implementation, and monitoring.

The capacity building strategy of the project will have the following elements:

- **Training of Direct Workers:** Before the effectiveness of the project, the PMU and PIU staff associated with the preparation and implementation of the ESMF and other E&S instruments would be trained on the ESF and project-related E&S requirements at Administrative Staff College of India (ASCI), Hyderabad or reputed state-based institutions and NGOs. This will focus on activities to be taken during different stages of the operation.
- **Training of Indirect Workers:** Since the Environmental Expert and the Social Expert of the PMU are trained experts in their own discipline, they do not need to undergo basic training on E&S risk management, but would need specialized training, especially related to climate-resilient infrastructure, biodiversity management, bio-engineering in hilly terrains, road safety, and logistics integration, for which appropriate training institutions such as Wildlife Institute of India / National Environmental Engineering Institute / National Safety Council etc. would be identified and participants sent for training under the project.
- **Training of Division/ District Workers:** The Divisional staff (AEs of different divisions), other than the Nodal E&S Officer, would be trained on the ESMP implementation, project GRM, monitoring and reporting requirements, and other mitigation measures proposed by the different project E&S instruments. Such trainings will be carried out by the E&S Nodal Officers and the Environmental and Social Experts at the PMU.
- **Training of Contractor Staff:** All the Key personnel of the Contractors will need to undergo training on the ESMP, the E&S precautions and diligence to be taken, app-based real-time reporting of E&S issues, the key actions related to E&S management under the project, the contractual obligations of the contractor related to works and labour management, including the Code of Conduct.

- **Refresher & Specialised Training:** Comprehensive refresher training on PPE compliance, hazard recognition, emergency preparedness, and safety measures specific to road and bridge construction in hilly regions. Additionally, interactive training will focus on prevention, response protocols, survivor-centered reporting, and establishment of Internal Complaints Committees (ICCs) in accordance with the POSH Act.
- **Self-Help Groups Training:** Dedicated workshops for Self-Help Groups (SHGs) will focus on leadership development, financial literacy related to project participation and employment opportunities within the project, grievance redressal mechanisms, and the use of digital monitoring tools. Training will include role-playing for effective stakeholder engagement, bylaw drafting for equitable access, and community-based monitoring of connectivity improvements. These sessions will be facilitated by NGOs with proven SHG experience in Meghalaya, such as Pla Tangka Cooperative Society (PTCS), the Meghalaya Institute of Governance (MIG), or other reputed organizations, to empower women-led SHGs as active stakeholders in sustainable connectivity and project oversight.

The stakeholder-wise and phase-wise key topics and issues to be taken up as part of capacity building support under MPWD are presented in the table below:

Table 8-1: E&S Capacity Development Plan

Project Stage	Community Representatives	Staff of Support Organizations (NGOs/CSOs)	Project (MPWD) Functionaries
Pre-planning	Social mobilization through Dorbar Shnong, Nokmas, VCs Understanding project objectives & benefits Inclusion of women, IPs, and vulnerable households Awareness on GRM design & access mechanisms	ESMF orientation & participatory planning approach Data collection & simplifying logistics info for community use GRM support at the village/district level	ESMF roles and responsibilities Screening of E&S risks & sensitivities Introduction to E&S instruments (ESCP, SEP, RPF, LMP, BMP etc.)
Planning & Design	Engagement in Village and Inter-Village Plans Dissemination of logistics connectivity improvements SEA/SH prevention & escalation guidance GRM linkage with State-level GRC	Support in preparing gender-responsive byelaws for market/logistics use Facilitation of equitable inclusion in planning.	ESIA support and documentation SEA/SH protocols and ICC formation (POSH Act compliance) RAP implementation roles and relocation of assistance Biodiversity & hill-ecosystem considerations in design

Project Stage	Community Representatives	Staff of Support Organizations (NGOs/CSOs)	Project Functionaries (MPWD)
Construction & Implementation	Conduct stakeholder meetings, ensuring full participation Support for conflict resolution and inter-village coordination Community-based monitoring of works Reporting safety and E&S issues to authorities	OHS, CHS & compliance monitoring Support in community consultations during construction	ESMP implementation oversight Contractor compliance (labour, OHS, CoC, waste mgmt. etc.) Road safety risk mitigation GRM case resolution & documentation
Monitoring	Community performance tracking & social audits Documentation of benefits, issues, and lessons	Support digital MIS reporting & transparency in results	Monitoring & reporting through app-based tools Closure audits and knowledge transfer to GoM institutions

E&S capacity development calendar is prepared below:

Table 8-2: E&S capacity development calendar

Training Themes & Core Focus Areas	Target Stakeholders	Delivery Mode	Responsible Agencies
YEAR 1			
Project Orientation: ESF/ESMF roles & responsibilities	PMU, PIU (MPWD)	Workshop	ASCI + PMU E&S Cell
Participatory & Inclusive Planning; Stakeholder Engagement, inclusion of women and vulnerable groups	Community Reps (Dorbar Shnongs, Nokmas, VCs), NGOs/CSOs	Site/Village level Workshops	MIG / CEE
E&S Risk Assessment, ESMP	PMU/PIU, Divisional Engineers	Hands-on Training	ASCI / Specialists

Training Themes & Core Focus Areas	Target Stakeholders	Delivery Mode	Responsible Agencies
Documentation & Reporting			
GRM Operation & SEA/SH Prevention, ICC Setup	PMU/PIU; Community Representatives	Demonstration and Training	PMU E&S Cell / PRADAN/MIG
RPF, RAP Implementation, PAP Support & Land Compliance	PMU and District Authorities	Focus Sessions	PMU E&S Cell/MIG
Climate-Resilient infrastructure Design & Bio-engineering	Engineers & Technical Staff	Technical Training	NEERI / TERI SAS
Orientation Workshop: ESF, OHS, SEA/SH, GRM, Biodiversity	All Stakeholders	Short Refresher Courses	PMU and All Experts
YEAR 2			
Biodiversity Conservation & Habitat Management (BMP)	PMU/PIU, E&S Cell	Field Workshop	Wildlife Institute of India
OHS & Labor Management, Incident Reporting, CoC	Contractors, Safety Officers, PIU site engineers	On-site Demonstrations	National Safety Council
Pollution Prevention and management, Waste reuse and Management	Contractors & PIU Staff	Site Audits and Training	NEERI
Digital Monitoring & Real-Time Reporting Tools	PIU and Contractor E&S Teams	Practical Training	PMU/Tech Agency

Training Themes & Core Focus Areas	Target Stakeholders	Delivery Mode	Responsible Agencies
Refresher: ESF, OHS, SEA/SH, GRM, Biodiversity	All Stakeholders	Short Refresher Courses	PMU and All Experts
YEAR 3			
OHS & Labor Management, Incident Reporting, CoC	Contractors, Safety Officers, PIU site engineers	On-site Demonstrations	National Safety Council
Community Health & Safety, Traffic & Emergency Response	Contractors and Community Representatives	Workshop & Awareness Campaigns	MPWD and Road Safety Expert
Conflict Resolution & Community Monitoring	Community Reps, NGOs	Training and demonstration	MIG / CEE
Refresher: ESF, OHS, SEA/SH, GRM, Biodiversity	All Stakeholders	Short Refresher Courses	PMU and All Experts

List of Agencies Recommended for On-boarding for Capacity Development on E&S

1. Administrative Staff College of India, Telangana – WB-approved courses on E&S management
2. National Safety Council – OHS training for construction in hilly areas
3. Wildlife Institute of India (WII), Dehradun – Biodiversity and habitat management
4. National Environmental Engineering Research Institute (NEERI), Nagpur – Pollution control and engineering
5. Centre for Environmental Education (CEE), Ahmedabad – Stakeholder engagement and inclusion
6. PRADAN (Professional Assistance for Development Action), Delhi – SHG empowerment and gender training
7. TERI School of Advanced Studies, New Delhi – ESG and resource efficiency
8. Indian Institute of Management Ahmedabad (IIMA) – Project management and ESF compliance
Meghalaya Institute of Governance (MIG), Meghalaya – Stakeholder Engagement and gender training.

9 Monitoring and Reporting Framework

To ensure that the Environmental & Social (E&S) risks are managed effectively, Monitoring, Reporting, and Review functions need to function effectively. The Monitoring & Evaluation (M&E) framework of the ESMF is designed to assess the progress and achievements made in line with the identified risks and mitigation measures. The M&E will enable decision-makers to review the E&S performance and take up course corrections through a feedback loop. The instruments which would be used for monitoring and reporting are:

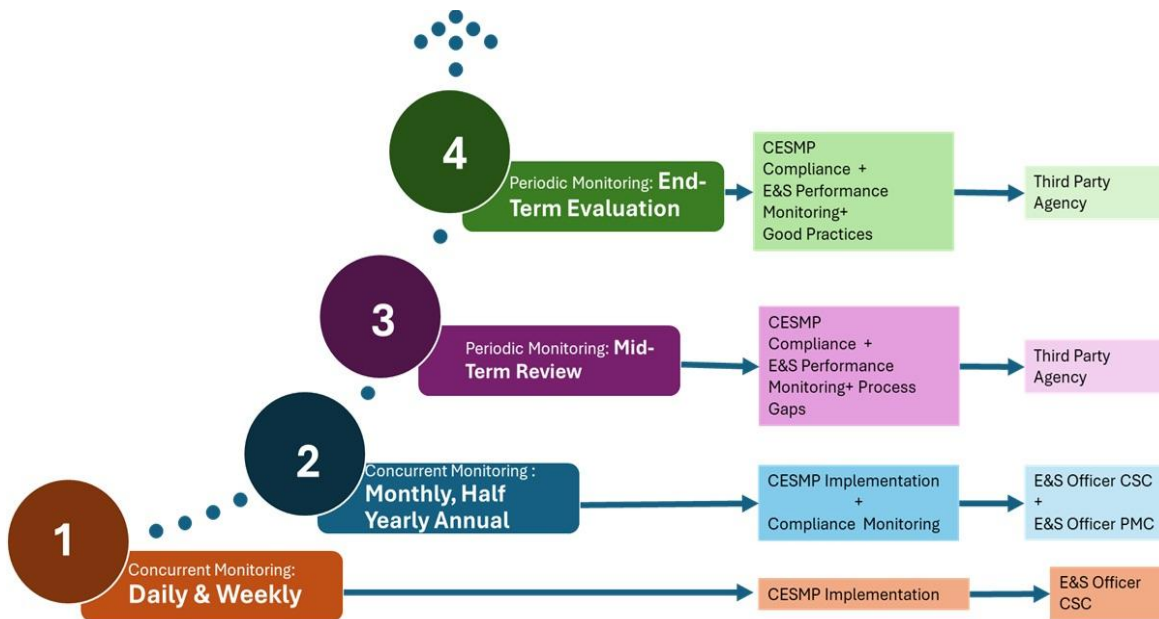
- The project Environmental and Social Commitment Plan (ESCP) will provide all the categories, timelines and responsibilities of reporting.
- As per Environmental and Social Incident Response Toolkit (ESIRT) guidelines of the World Bank, within 24 hours of incident reporting followed by a root cause analysis and a corrective action plan.
- In addition, an E&S mid-term and end-term evaluation is recommended to capture key challenges, key lessons, good practices, stories of change etc.- inputs on which will be provided in the Project Operations Manual.

9.1 Reporting Framework

Effective monitoring and supervision would require regular reporting of the implementation of the E&S Management measures by the contractor. The E&S Non-conformance / non-performance needs to be flagged and followed up on regularly so that performance improves. Repeated non-conformance / non-performance needs to be brought to the notice of decision makers for contractual action and management decision. These aspects will be monitored and reported through the Concurrent Monitoring and Reporting.

The more strategic aspects of E&S Performance Monitoring, Gap Analysis, and documentation of good and bad practices, which would guide the management to have a review and provide direction, will be done through the Periodic Monitoring. The Mid-Term and End-Term audits will be carried out through specialised Third-Party Agencies to be hired under the project. The findings and recommendations of these studies, along with the analysis of the concurrent monitoring, will be used by the Officers of the E&S Cell to brief the Management during the review. The schematic representation of the reporting framework is presented below in **Figure 9-1**

Figure 9-1: E&S Performance Monitoring Framework



The Safeguards Officers of the Consultants will coordinate with the E&S Nodal officer at the PIU for the Monthly reporting. The reporting protocol and the primary focus areas of each of these are presented below:

9.2 Concurrent Monitoring & Reporting

The concurrent monitoring and reporting are primarily to monitor and track the implementation of the ESMP's. The analysis of the information gathered will help in the periodic monitoring and reporting.

- Daily reporting:** Contractor's E&S Officer shall report on the performance of the CESMP during the construction. These will essentially include the progress and performance of the different elements of the ESMP. The Environmental and Social Expert of the CSC and the PMC will work with the Contractor to ensure that these deficiencies are brought to compliance. The system will also be able to track non-compliances which are open for an extended period and will report the same back to Management for contractual action. The officers of the E&S Cell will also receive notification of the critical elements which need attention. Similarly, the daily activities of R&R will be reported by the AE of the respective Division (E&S Designated Officer) and will be collated by the Social Expert of the E&S Cell.
- Weekly Reporting:** The E&S Officer, CSC or the officials of PMC, PMU on the site will visit each site and provide their observations on ESMP Implementation in real-time on an app discussed earlier. The monitoring indicators mentioned in the Template ESMP of the ESMF and the ESMP in the ESIA will be used for Daily and Weekly Reporting.
- Monthly Report:** The E&S Officer of the CSC shall also carry out monthly monitoring for each of the contract packages and report the findings through the app. The Monthly Monitoring will, in addition to ESMP compliance, report the compliance monitoring. The aspect for reporting is presented in the table below. The E&S Officer of the Contractor will also compile the E&S Observations and report the same as per the contractual requirements.

- **Six Monthly / Annual Report:** The Six Monthly/ Annual report should highlight a) status of the implementation of the ESMP, b) Status of implementation of RAP c) Key areas of concern which have been identified in the Monthly report d) trend analysis of the non-conformances e) training carried out, f) outstanding areas of concern/ non-compliance/non-conformance, g) Accident and incident reports, h) KPI for OHS implementation e.g. including number of , training, Toolbox talks, non-compliances, near -miss reported etc f) areas where additional support is required. This report will be compiled and submitted to the Bank before the mission or within 15 days of the closure of six months from the date of effectiveness.

The reporting would be through a real-time reporting system to be developed under this project. This will be an app-based geotagged system which will help in easy monitoring and tracking of the non- compliance or non-conformance.

9.3 Periodic Reporting

These would be specialized reports carried out by the third-party agencies. These will provide the strategic insights and would help monitor the E&S Performance.

- **Mid Term Audit:** The Audit will review the E&S performance and ensure that the E&S measures suggested in the CESMP are implemented. It will primarily assess the compliance of the measures suggested in the different safeguards' documents prepared. A mid-term audit shall be carried out after the implementation 1.5 years but 2.5 years before the date of effectiveness. This Audit will also help in ascertaining that the E&S Process in the project is active and effective in mitigating risks. It would also help to identify issues especially the recurrent ones in the process, good practices, and required actions by analysing the records generated during the concurrent monitoring. The consultants will also undertake a site visit to at least 50% of the contract packages, hold meaningful consultations with different stakeholders. The findings of the Report will be presented to the Management. The reports will be shared with the Divisions. The key issues will also be presented in the refresher training. The E&S Cell will also help the division to draw up an Action Plan and help them implement the same so that systemic issues can be ironed out.
- **End Term Audit:** The end-term evaluation of the ESMP implementation will identify issues, good practices, and make recommendations for strengthening E&S management of the PWD, in future operations. The end-term evaluation will be undertaken at the end of the 3.5-year of implementation period or when the sub-project civil construction is nearing completion, whichever is earlier. The audit will review the implementation status of recommendations /mitigation measures and activities proposed in the ESMF/ESMP: i) assess the major environmental non-compliances and suggest a corrective action to bring them to compliance, ii) identifies deviations in implementing environmental measures, if any, iv) positive measures taken, v) suggestions for further improvement of social and environmental management practices, vi) to identify constraints, if any, in ensuring compliance to the measures outlined in the ESMP. The suggested areas to be covered during mid and end-term audits and the ToR is presented in are provided in in **Annexure IX (A)**

These audit reports will be shared with all implementing agencies, including the World Bank. In addition, the following reporting will also be carried out as per the bank's requirement:

- Incident reporting within 24 hours (See **Annexure IX (B)** on ESIRT)
- Environmental and Social (ES) Metrics for Progress Reports for Contractor is provided below as **Annexure IX (C)**

9.4 Responsibilities for reporting

The key environmental and social aspects that have significance for the project in roads and bridges components will be monitored periodically internally by the PMU and PIU. It will help the project identify compliance with national / state benchmarks/safeguards measures identified in the ESMF.

Table 9-1: Distribution of responsibility

Type of Monitoring	Contractor's Monitoring	District level Monitoring		PIU/PMU Monitoring	
Responsibility	Contractors E&S Personnel	E&S Nodal Officer, E&S Officers (CSC/PMC)	EEs, SEs, Non-E&S Specialists	E&S Specialist PIU	Non-E&S Members
Frequency	Daily	Weekly (minimum)		Monthly (one site minimum)	
Areas to be Covered: ESMP	ESMP Implementation, OHS Issues on Site, CHS Issues, Labour Conditions	ESMP non-conformance, OHS Noncompliance, CHS non-compliances, Labour Working Conditions, Contractor Camps	OHS risk, CHS risk	ESMP violations, OHS and CHS violations, Labour Working conditions Violations	OHS and CHS risks
Areas to be Covered ESMF		Safety Process non-conformance, ESMP process, Non-conformance Implementation of Specialized Plan		Safety Process violations, ESMP process violations, Implementation of Specialized Plan	
Reports	Dashboard for E&S Nodal Officer of District	Dashboard of E&S Specialist of PIU		Dashboard of Additional Project Director/ Project Director	

E&S Officer at the PIU would be responsible for monitoring the implementation of the process. Deviation in the process would be made known to the Additional Chief Engineer (EAP) and then onward to the Nodal Officer/ Chief Engineer PWD for immediate action. Designated E&S Officers and the CSC/PMC E&S specialist, who would also travel to the site regularly, will also review the project activities.

9.5 Mechanisms for reporting

Monitoring will be technology-driven so that real-time information is available to, District/ division PIUs and the PMU/ PIU. An app-based E&S Monitoring and Evaluation system will be used for the project. The Monitoring Indicators developed in the ESMP will be tracked through these monitoring tools. These would

be made compatible for the different staff and stakeholders to report. Thus, the Monitoring and Reporting system would source information not only from the Environmental and Social Professional in the team i.e. Contractor, CSC, PMC and E&S Cell but also from the other members of the team including PWD officials.

9.6 Management Review

The ESMF shall be subject to periodic management review as part of the Project's environmental and social management framework. Monitoring, supervision, and audit findings shall be reviewed by the Project Director and the Environmental and Social Management Unit (ESMU) during periodic review meetings to assess implementation performance, emerging environmental and social risks, compliance status, corrective actions, and opportunities for continuous improvement.

Management reviews shall also consider implementation performance under associated environmental and social instruments, including the RPF, IPPF, SEP, and sub-project specific management plans. Based on the findings of monitoring and audits, corrective measures and implementation improvements shall be identified and integrated into project management processes, as appropriate. Where necessary, revisions to the ESMF and associated procedures may be undertaken in consultation with the World Bank and disclosed in accordance with applicable requirements.

Lessons learned, implementation experience, and updated procedures shall be communicated to relevant stakeholders through consultations, capacity-building programmes, and review workshops during project implementation.

10 Environmental and Social Management Framework (ESMF) Budget

The implementation of the Environmental and Social Management Framework (ESMF) requires adequate financial resources to ensure effective integration of environmental and social safeguards throughout the project life cycle. The budget outlined herein provides an estimate of the costs associated with implementing, monitoring, and capacity-building activities necessary to achieve compliance with national regulations and World Bank Environmental and Social Standards (ESSs).

10.1 ESMF Budget

The Environmental and Social Management Framework (ESMF) Budget for the Meghalaya Logistics and Connectivity Improvement Project (MLCIP), amounting to approximately INR **17,08,41,615** ensures adequate financial and institutional resources for effective safeguard implementation. It supports recruitment of Environmental, Social, Labour, Gender and Biodiversity Specialists at the PMU and PIU levels, alongside capacity-building programs to strengthen institutional performance. The budget covers training, stakeholder awareness, and information dissemination to enhance transparency and community engagement. It also allocates funds for systematic monitoring, third-party audits, and maintenance of a digital Environmental and Social Information Management System (ESIMS). Specialized studies addressing biodiversity, climate risks, and Indigenous communities are included to guide adaptive management. Operational expenses of the E&S Cell at the PMU sustain coordination and supervision across all implementing agencies. Collectively, the ESMF budget provides a robust financial framework to ensure compliance, accountability, and sustainable infrastructure development in Meghalaya's logistics and agrologists sectors.

The Environmental and Social Management Framework (ESMF) Budget is designed to ensure that adequate resources are available for the effective implementation of environmental and social safeguards throughout the project cycle. The budget covers six major categories: (i) Human Resources for the Environmental and Social (E&S) Cell and specialized staff; (ii) Capacity Development and Training programs for project staff, contractors, and communities; (iii) Information, Education, and Communication (IEC) materials; (iv) Implementation costs for safeguard instruments including the Resettlement Action Plan (RAP), Stakeholder Engagement Plan (SEP), and Indigenous Peoples Planning Framework (IPPF); (v) Monitoring, Reporting, and Compliance Audits; and (vi) Contingency provisions for unforeseen circumstances.

Table 10.1 below provides a summary of budget allocations by major head. The detailed line-item budget, including unit costs, quantities, cost assumptions, and ESS requirements, is provided in **Annexure XIII**.

Table 10-1: ESMF Budget

SI No	Budget Head	Total Amount in INR
A	Human Resource (PMU + PIU)	3,40,80,000
B	Training and Capacity Building (Specialized Trainings and Refresher Trainings)	75,40,000
C	Information and Awareness (GRM Awareness, GBV, SEA/SH Awareness)	52,30,000
D	SEP Implementation	2,32,00,000
E	IPPF Implementation	1,52,90,000
F	LMP Implementation	5,00,000
G	RAP/IPDP Implementation Agency	83,67,975
H	App Based Field Reporting (Development + Maintenance)	15,56,000
I	Audit (Mid Term and End Term)	60,00,000
J	Biodiversity Management Plan	50,00,000
K	Contingency	1,06,76,397.50
	Total (A – K)	11,74,40,372.50
L	R&R Budget including Land**	5,34,01,242
	Grand Total	17,08,41,615

****Note:** The R&R budget, including land costs, is indicative and subject to revision during implementation. The final cost will depend on the mode of land procurement—whether through statutory acquisition in accordance with applicable laws or through direct purchase/negotiated settlement—as well as updated valuation and site-specific requirements

ANNEXURES

ANNEXURE I: Proposed List of Roads prioritized under Meghalaya Logistics and Connectivity Project

SI No	Division	Name of Road	Length (Km)
1.	Khliehriat	Upgradation of Dkhiah - Sutnga - Saipung - Pala upto Semmasi Road	58.1
2.	Mawsynram	Upgradation of Weiloi - Mawsynram Road upto Phlangwanbroi	27.858
3.	Umsning	Upgradation of Umsning - Jagi Road (Remaining Portion from 40.13 - 80.00 Km) i/c Major bridge	37.48
4.	Sohra	Upgradation of Umtyngar - Sohra Road upto 8th Km of Mawsmmai-Shella	42
5.	NEC Tura	Upgradation of Rongsai - Borjhora - Bajengdoba (RBB) Road from single to intermediate lane.	18.27
6.	Williamnagar	Improvement and Widening of Rongrenggre - Simsanggre - Nengkhra (RSN) Road (L = 22.00 Km) including Conversion of weak bridges to Permanent RCC bridges.	20.564
7.	Resubelpara	Strengthening and Improvement of Songsak - Mendipathar Road (MDR) including reconstruction of weak CD Works and Bridges	36
8.	Ampati	Improvement of Ampati to Purakhasia Road	8
9.	Kharkutta	Improvement of Rongjeng - Mangsang Adokgre (RMA) road from 23rd to 44th Km including construction of a major Bridge at Eldek A'kong and Bridge No. 1/6	22
10.	Barengapara	Improvement of Adugre to Purakhasia Road	20
	Total Length		290.272 KM

Proposed List of Bridges prioritized under MLCIP

SI No	Division	Name of Bridge	Length (m)
1	NH Bypass	Laitkor - Pomlakrai - Laitlyngkot Road	34
2	Barengapara	Parallel Road (Br. No. 2/1)	45
3	Barengapara	Parallel Road (Br. No. 21/3)	54
4	Williamnagar	Rongram – Rongrenggre – Darugre Road (Br. No. 52/11)	44
5	Resubelpara	Rongjeng – Mangsang – Adokgre (Br. No. 54/3)	33
6	NEC Division	AMPT Road (15/3)	54
	Total		264 M

ANNEXURE II: Environmental and Social Safeguards Requirements Across Sub-Project Development Cycle

SI no	Project cycle	E&S requirements	Responsibilities
1	Concept stage	Defines broad scope of E&S Finalizes Terms of Reference for E&S Assessments and mobilizes independent consultants Free Prior Informed Consent – step 1 Output – Inception report (methodology, secondary data analysis, workplan, mobilization of resources, timeline)	Govt of Meghalaya
2	Feasibility – Financial, Technical, Economic analysis	Screening and Scoping use standardized checklists and GIS-based to identify ecological sensitivity, physical cultural resources, land availability and tenure issues, involuntary resettlement triggers, indigenous peoples, and climate vulnerability. Free Prior Informed Consent – step 2 and 3 Establish level of risks Map and quantify physical and social parameters	PWD/Consultants

		Map stakeholders Analysis of Alternative Identify and summaries applicable laws and policies and World Bank's ESF Cost estimates of the adverse impacts and mitigation measures Output – Screening and scoping report.	
3	Detailed Project Report	Free Prior Informed Consent – Step 4, 5 and 6 E&S assessment to inform the technical design Finalize applicable Laws and policies and World Bank's ESS standards and develop project level Frameworks (ESMF/RPF/IPPF/SEP/LMP) including budget and disclose Stakeholder Consultation Sub-project level outputs – ESIA/ESMPs/Critical Habitat Plans/RAPs/IPDPs/EHS plans	PWD
4	Implementation	Free Prior Informed Consent – continuous through the implementation period Prior to mobilization of contractors, implement RAP/IPDP and certify availability of encumbrance free land Prepare site specific ESMP/CHS/EHS/Chance find plans and implement them. Stakeholder Engagement Monitoring and supervising Output – monthly progress report	PWD/Contractors

ANNEXURE III: ENVIRONMENTAL AND SOCIAL SCREENING CHECKLIST FOR ASSESSMENT OF RISK LEVEL OF PROJECTS

Identification of Sub Project location

1	Date of Screening	
2	District	
3	Name of the division	
4	Name of subproject road/bridge/buildings/others	
5	Provide details of the categorization of the sub-project as per PWD norms	
6	Physical features	Provide details of the physical status of the sub-project (length, width, typology, etc)
7	Use of the sub-project	Quantify the use of the sub-project by different modes of transport and/or people for buildings (such as traffic,
8	GPS Coordinates	X: Y:
9	Ownership of land	If no, specify the ownership
10	Scheduled Tribes	Provide details of sub-project location in Scheduled VI and V and predominantly tribals
11	Schedule Area: Requirement of Village Council	Yes /No
12	Highest Flood Level (HFL)	
13	Provide rational for selecting the proposed location	
14	Provide summary of alternate location considered	

Note: Sub project map using Survey of India and google earth to consider 500-meter buffer from the location of the sub-project should be prepared. It should depict the drainage channels, biodiversity hot

spots, natural habitats, protected areas, agriculture land, landslides, land slips, marshy areas, surface water bodies, physical features, settlements and others.

Statutory Clearance requirements and No- Objection Certificates.

Sl no.	Agencies	Yes	No	Details
1	Forest			
2	Water resources – irrigation, ground water			
3	Pollution control board			
4	Others as applicable			
5	NOC for water withdrawal from surface water source			
6	Mining Permit (for dredging)			
7	NOC for transportation and storage of diesel, oil and lubricants, etc. Required			
8	NOC for establishment of labour camp			
9	Others (specify)			

Environmental Screening.

Baseline Environmental Conditions	Yes	No	Detailed information
Is the project site located on or adjacent to any of the following (Provide information for all sites and alignment of the project components/subcomponents, associated activities)			Distance in Km(Depicted on a survey of India sheet and google earth satellite imagery)
Habitat Types (modified, natural or critical Habitat)			Within 0.5 km. Mention name and distance of the nearest habitat
Critically Vulnerable, Eco- sensitive Areas			Within 0.5 km. Mention name and distance of the nearest eco sensitive area
Cultural Heritage site, Protected monuments			Within 0.5 km. Mention name and distance of the nearest sites

Natural Forests / Protected Areas Is the sub project in an eco- sensitive or adjoining an eco-sensitive area? If Yes, provide details.			Within 0.5 km. Mention name and distance Km of the nearest natural/protected area
Any other Wetlands/ other important area?			Within 0.5 km. Mention name and distance Km of the nearest site
Any Natural Habitat areas, areas with natural features?			Within 0.5 km. Mention name and distance Km of the nearest area
Any other Sensitive Environmental Components?			Religious, heritage historic sites and cultural properties Archaeological monuments/sites Scenic areas Hill resorts/Mountains/ Hills Health resorts Biosphere reserves/ Wetland/ Beel National Park and Wildlife sanctuaries and reserves Natural lakes, Swamps Seismic zones Areas of scientific and geological interests Defense installations, especially those of security importance and sensitive to pollution Border areas (international) Tiger reserves/Elephant reserve Habitat for migratory birds Lakes, Reservoirs, Dams Streams/Rivers/

Baseline Environmental Conditions	Yes	No	Detailed information
			If Yes, Mention name and Distance Km Which is the nearest
Any Residences, schools, hospitals, sensitive receptors?			If Yes, mention name and distance (Km). List the sensitive receptor nearest to sub-project.
Any culturally – socially important paths,			If Yes, mention name and distance (Km) of the nearest sites?

Baseline Environmental Conditions	Yes	No	Detailed information
areas/religious occupancies, burial grounds, tourist or pilgrim congregation areas, borders?			
Any Drinking water source, upstream and downstream uses of rivers, etc.?			If Yes, mention name and distance (Km) of the nearest to site
Any Low-lying areas prone to flooding Influence?			Provide details about area surrounding the sub-project
Any areas affected by other disasters?			Provide any other disaster (erosion)
Is the site in Critical / Over Exploited condition?			
Is the area disaster-prone? If yes; list all disaster zone categories applicable			List Flood/ erosion/ earth quake/ fire/cloudburst for the year prior to the screening
Describe the soil and vegetation on site			Provide details
Is the site area and condition suitable for proposed development?			Provide details
Describe existing pollution or degradation in the site(s)			Provide details
Any existing 'Associated Facilities' within 1km radius of the project? If yes, please furnish the details			Provide details
Does the area have any existing component leading to Green House Gases			Provide details
Does the Area have any component leading to climate change?			Provide details
Any other remarks on baseline condition?			
Impact on land, Geology and Soils			
Impact on Surrounding Environmental Conditions including Occupation on Low lying lands/flood plains			

Baseline Environmental Conditions	Yes	No	Detailed information
Substantial removal of Top Soil (sqm of area)			
Any degradation of land / eco-systems expected?			
Loss or impacts on Cultural/heritage properties			
Does the sub-project activity involve cutting and filling/ blasting?			
Will the sub-project cause physical changes in the area (e.g., changes to the topography) due to earth filling, excavation, earthwork or any other activity?			

Baseline Environmental Conditions	s		tailed information
Will the project involve any quarrying?			
Does the project involve any land reclamation? If yes, please provide the following details Activity for which land to be reclaimed Area of land to be reclaimed (Hectares)			
Will the project / any of its component contaminate or pollute the Land?			
Will the project contribute to any long- term significant adverse (negative), large scale, irreversible, sensitive impact at a regional scale or area broader than the project sites?			
Impacts on Water, Air, Soil and Noise Environment (Quantity or Quality):			
Will the activities proposed at the site(s) impact water quality (surface or underground) and water resource availability and use? Will this sub- project involve the dredging of water bodies, canals, etc.			
Impacts on Water Resources			
Pollution of Water bodies/ground water nearby or downstream			

Will the project affect the River /cannel flow pattern, stream pattern or any other irrigation canal?			Please indicate during construction – cofferdam etc.
Will the project result in stagnation of water flow or pondage or weed growth			
In case the approach road passes through a flood plain of a river following details are required: Detailed micro-drainage Flood passages Flood periodicity in the area			
Will any equipment causing air pollution be used? What kind of equipment be used?			
Will the equipment cause any noise pollution? What kind of equipment be used?			
Will there be any risk of pollution due to waste water/ solid waste/ hazardous waste?			

Note: Provide estimate on the proposed resources required in terms of area/quantity/ unit Land Area proposed to be used to be specific to location (in acre/ sq km/ sq m). During construction, temporary use for camp area, storage, haul road, and estimated energy consumption which could cover source wise the fossil fuel, electricity requirements. Also, estimated usage of water quantity from ground water and surface water and estimate usage of different material such as steel, cement, sand, mud, etc.

Impacts on Biodiversity and Host Communities

Activity	Yes	No	Details
Does the site preparation require cutting of trees? If yes, please furnish the following details of how many trees are to be cut? Species of the trees			
Are there any protected/endangered species? If yes, provide details			
Will the sub- project result in Health & Safety Risks in the neighborhood including the release of toxic gases, accident risks			
Potential risk of habitat fragmentation due to the clearing activities? (e.g. Hindrance to the local biodiversity like disturbing the migratory path of animals/ birds/aquatic fauna, etc.)			

Potential Noise and Light Pollution or disturbance to surrounding habitats/communities			
Potential disruption to common property, accessibility, traffic disruptions, conflicts or disruption to the local community within the subproject area?			
Does the proposed project site involve any breeding or nesting ground? If yes, provide the following details -Name of the Organism -Type of Habitat - Period of the year in which the activity take place			

Impacts due to Storage and Wastes with respect to pollution and hazard

Activity	Yes	No	Details
Will the sub-project or its components cause any impact due to storage of materials, wastes or pollution due to releases during various project activities			
Will it use or store dangerous substances (e.g., large quantities of hazardous chemicals/ materials like Chlorine, Diesel, Petroleum products; any other?			
Will it produce solid or liquid wastes; including construction/demolition wastes (including dredging, de-weeding wastes, muck/silt, dust); polluted liquids?			
Will it cause or increase air pollution or odor nuisance?			

Activity	Yes	No	Details
Will it generate or increase noise levels which will impact surrounding biodiversity or communities?			
Will it generate or increase visual blight or light pollution?			
Will it cause water pollution of waterbodies/			

groundwater?			
Will it involve dangerous construction activities which may be a safety concern to workers/ host communities?			
Is there a potential for release of toxic gases or accident risks (e.g. potential fire outbreaks)			
Describe any other features of the sub-project that could influence the ambient environment			
Were the probable environmental impacts discussed with stakeholders?			

Suggest Enhancement Measures

Activity	Yes	No	Details
Energy conservation measures/ energy recovery options incorporated in subproject design			
Considered waste minimization or waste reuse/recycle options			
Rainwater harvesting, water recycling and other water resource enhancement measures			
Considerations for extreme events, drought, flood, other natural disasters			
NOC for water withdrawal from surface water source			
Mining Permit (for dredging)			
NOC for transportation and storage of diesel, oil and lubricants, etc. required			
NOC for establishment of labour camp			
Others (Mention)			

Social Screening

Impact on Assets and People	Yes	No	Details
Location of sub-project			
Is the project location in scheduled area?			
Is the project located in close proximity (within 1 km) of settlements with predominantly has scheduled tribe?			
Does the project require private land that belongs to the Tribals?			
Does the private land belong to tribal (individual or group)?			
Is the sub-project located in settlement where majority belong to Scheduled Caste?			
Is the sub-project located in settlement where majority belong to Other Backward Caste?			
Is the sub-project located in settlement where majority belong to General Population?			
Is the sub-project located within tea estate?			
Land Ownership			
Does the project require Government land? And which Department is the owner of the land?			
Will the existing land uses within the 1km radius of the project area be affected?			
Will the sub-project in the hills affect land beyond 1 km radius on valley or hill side of the sub-project? (specify)			
Land requirement for the sub-project (in ha estimate)			
Private			
Government			

Village Council Land			
Community			
Forest			
Others (specify)			
Land Use Pattern			
Cropping pattern on the land that may be affected			
Shifting Cultivation			
Total number of Fruit trees likely to be affected and type of fruit trees.			
Total number of other trees and type of usage the trees.			
Area of Grazing land (Ha)			
Area of Loss of access to forest produce (NTFP) (Ha)			
Impact on Assets and People	Yes	No	Details
Others (specify)			
Structures			
Number and type (Kuchha, Semi-pucca, Pucca) of unauthorized structures including its usage, required permanently for the sub-project?			
Number and type (Kuchha, Semi-pucca, Pucca) of unauthorized structures including its usage, required temporarily for the sub-project?			
Number and type (Kuchha, Semi-pucca, Pucca) of private structures including its usage, required permanently for the sub-project?			
Number and type (Kuchha, Semi-pucca, Pucca) of private structures including its usage, required temporarily for the sub-project?			

Affected Household			
Total number of Affected Household			
Total Title Holders (residential and commercial)			
Total Non-titleholders (Encroacher residential and commercial)			
Total Non-titleholders (Squatter- residential and commercial)			
No. of boat operators/country boatmen ferrying passengers across the river to be affected			
No. of fisherman living on the proposed area to be affected			
Common Property			
Total number of common properties and type to be Affected			
Drinking Water			
Electrical Poles			
Burial ground			
Temple/ Church land			
School/Anganwadi			
Is the project likely to restrict access to community resources (e.g. temporary or permanent restriction of access to public water source, access to school,)			
Community Centres			
Other (specify)			
Cultural Heritage			
Historical site(s) affected near (provide distance) the project site?			

Archaeological heritage site(s) affected near (provide distance) the project site?			
Impact on Assets and People	Yes	No	Details
Graves or sacred groves affected near (provide distance) the project site?			
Other Specify			
Grievance Management			
Is there any dispute on Land?			
Is there any functional grievance mechanism for tribals			
Is there any functional grievance mechanism?			
Is there any other conflict between groups in the settlements in close proximity to the sub-project?			
Community Health and Safety			
Are there any prevalent incidents of communicable disease and water borne disease?			
Do people migrate for seasonal work (distance of migration)			
Do people migrate for long duration outside the state?			
Are there any cases of missing children, youth and women?			
Collate secondary data on crime rate and type of crime.			
Would elements of project construction pose potential safety risks to local communities, commuters or pedestrians in the project area?			

Are there any GBV prevention and response actors (NGOs, government notified shelter homes, police stations, community groups, etc.) in project area of influence?			
<i>Labour requirement and facilities</i>			
Are there local contractors who implement similar works? (collate information from MPWD(R))			
What types of workers are expected to be involved – unskilled skilled, semi-skilled In total how many workers? (collate information from MPWD(R))			
Are there skilled and semi-skilled labour available in the neighborhood?			
Has there been any incident of contractor providing accommodation to labour near the settlements for any works implemented previously?			
Other issues			
Is the project site in a populated area and/or with high vehicular traffic volume?			
Impact on Assets and People	Yes	No	Details
Is there sufficient street-lighting for monitoring public spaces in the project location?			
Given the characteristics of the local community, are there any adverse impacts that may be anticipated?			

Beneficiaries		
Population proposed to be benefitted by the proposed project	Approx. no.:	

No. of Females proposed to be benefitted by the proposed project	Approx. no.:	
Vulnerable households /population to be benefitted	Approx. no.:	
No. of Families to be benefitted	Approx. no.:	
What is the current mode of information dissemination in the area with respect to flooding of bridges/connectivity, relief, etc.		
How do the communities want to be engaged Consultations regularly Advertisements Over phone/email Through village level workers Through Gaon bura		
What is the level of frequency of such meetings/consultations desired by the community?		
What is the type of information that they are desiring or are likely to request?		
Who are the stakeholders normally involved in during relief due flooding of bridges/connectivity (e.g. Gaon Bura, block administration, Asha workers)		

ANNEXURE IV: Environment and Social risk categorization to determine detailed impact assessment and identify mitigation plans.

Project Category	☐ Low ☐ Moderate ☐ Substantial ☐ High (assign weights to all the parameters to arrive at a weighted average for determining risk level)
Key Reasons	
Mitigation Plan Required	Environment and Social Impact Assessment (ESIA), Environment and Social Management Plan (ESMP), including for SEA-SH and community health and safety due to labour influx Bio-Diversity Management Plan Resettlement Action Plan (RAP) Tribal Development Plan
Risk related to	
Eco – System (flooding, landslides)	Low, Moderate, Substantial or High
Biodiverse areas including protected/reserved	Low, Moderate, Substantial or High
Pollution – Air, noise, water, waste generation including hazardous	Low, Moderate, Substantial or High
Fragmentation of habitats	
Trees	Low, Moderate, Substantial or High
Land	Low, Moderate, Substantial or High
Tribal	Low, Moderate, Substantial or High
Labour Influx	Low, Moderate, Substantial or High
Cultural Heritage	Low, Moderate, Substantial or High
GBV/SEAH	Low, Moderate, Substantial or High
Worker-community interaction	Low, Moderate, Substantial or High
Indigenous Peoples sensitivities	Low, Moderate, Substantial or High
Road safety/community safety	Low, Moderate, Substantial or High
Occupational Health and Safety to Labour	Low, Moderate, Substantial or High

Status	Agency / Official	Name, Signature with Date and Seal
Prepared by		
Checked and Categorized as (low, moderate, substantial, high) by		

The screening sheet must be completed for each subproject. The DPR consultant should analyse and prepare a screening and scoping report along with the following enclosures:

Provide maps with the geographical location of the project; and a scaled map (on 1:10,000 scale or depicting greater details for the site and its immediate surrounding areas up to a minimum of 5 kms) clearly showing the project area and project sites with land use, existing buildings, infrastructure, vegetation, adjacent land use, utility lines, access roads and any planned construction, and any other information to describe the project, locations and possible impact as required. Land details for the project sites, location, survey numbers, extent available and required, land use classification, current use of the site, land ownership, alienation /acquisition status, as required, along with a certificate giving availability of sites required for the project.

ANNEXURE V: Biodiversity Management Framework (BMF) — MLCIP

Background of the Project

Baseline Conditions

Meghalaya is a bio-diversity rich state situated in the North East India Bio-geographic zone. It represents a transition zone between the Indian, Indo-Malayan, Indo-Chinese bio-geographic regions. The state forms part of the Indo-Burma biodiversity hotspot and is recognized as an important area for biodiversity conservation due to its high species diversity and significant levels of endemism. The vegetation of Meghalaya is primarily characterized by tropical and subtropical forests, including moist evergreen, semi-evergreen, and subtropical pine forests, along with unique ecosystems such as sacred groves

Flora

Its location, physiographical features, altitudinal variation, abundant rainfall, healthy climate and fertile soils favours high species diversity and supports different types of forests. The undulating hilly terrain, where the plateau is dissected by rain-fed rivers, streams and deep ravines, waterfalls and hills help support thus rich vegetation. The forests are also home to rare and endemic plants and animals. The vegetation is primarily composed of tropical and subtropical forest types, including moist evergreen, semi-evergreen, and subtropical pine forests.

Meghalaya, part of the Indo-Burma hotspot, supports approximately 4,243 flowering-plant species (1,449 genera and 216 families) distributed across the Khasi, Jaintia and Garo Hills. Vegetation ranges from tropical/subtropical broadleaf forests to montane temperate woodlands and grasslands, hosting high endemism and phylogenetic diversity. Notable groups of conservation and project relevance include orchids (110 genera and 439 taxa), gymnosperms and tree ferns (e.g., *Podocarpus neriifolia*, *Cyathea gigantea*), and carnivorous plants such as the endemic tropical pitcher plant *Nepenthes khasiana*, *Drosera* spp. (commonly known as sundews). Many of these taxa are confined to sacred groves, riparian strips and high-altitude grasslands and are highly sensitive to habitat loss, fragmentation and overcollection. Given that the MLCIP corridor intersects such sensitive landscapes, targeted botanical surveys, avoidance of critical habitats, and site-specific mitigation measures (including buffering, translocation only as a last resort, community engagement) are required to minimize potential biodiversity impacts.

The important tree species of Meghalaya include : Sal/Sakhu (*Shorea robusta*), Dieng ngai, Nahar (*Mesua ferrea*), Box myrtle/Dieng Sohphi (*Myrica esculenta*), Wild Himalayan Cherries (*Prunus cerasoides*), Dieng ling (*Betula alnoides*), Teak/Segun (*Tectona grandis*), Pine/ Khasi Pine(*Pinus kesiya*), Ajhow/Jarul/Sida (*Lagerstroemia speciosa*), Champ, Sopa, Titachap (*Michelia* spp), Semul (*Bombax ceiba*), Hollock (*Terminalia myriocarpa*), Gamari (State Tree- *Gmelina arborea*), Hiraru/ Moroi/ Mog/ Kako/ Sundi /Saw/ Harish (*Albizia Spp*), Poma (*Toona ciliata*), Bahera/Bhomda (*Terminalia* spp.), Makrisal/Nagaplu (*Schima wallichii*), Hingori (*Castanopsis indica*), Jamun (*Syzigium jambosa*), Sam/Champ/Kathal (*Artocarpus* sp.), Oak (*Quercus* spp) Chuma/ Dieng Dkhar bti (*Chukrasia tabularis*).

Endangered Plant Species

Meghalaya's Khasi and Jaintia Hills are rich in endemic and rare plant species, including Lipstick Plant (*Aeschynanthes parasiticus*), *Aeschynanthes superba*, Dieng-soh-sim-um/Phlleng-tham (*Callicarpa psilocalyx*), *Camellia caduca*, Khasi papeda (*Citrus latipes*), Chinese Holly (*Ilex embelioides*), Khasi Balsam (*Impatiens khasiana*), Smooth balsam (*Impatiens laevigata*), Spicewood/spicebush/Benjamin bush (*Lindera latifolia*), *Paramignya micrantha*, *Rubus khasianus*, and *Tectona grandis*. *Nepenthes khasiana*, a notable endemic pitcher plant, is protected under CITES Appendix I and Schedule VI of the Wildlife (Protection) Act, 1972.

Endemic Species

Climatic factors including high rainfall and moderate temperature have significantly contributed to high species richness and endemism of the region. Moreover, the geographic location of the region in the confluence of three biogeographic realms (Indian, Indo-Malayan, and Indo-Chinese) has probably led to the organization of taxa and the floral endemism. The list and description of threatened and endemic plant species recorded in Meghalaya are presented in **Annexure 4**.

Fauna

Meghalaya's vertebrate fauna comprises approximately 451 genera and 1,112 species across five classes: mammals, birds, reptiles, amphibians, and fishes. Diversity of mammals in Meghalaya is well represented with about 139 species and sub-species

Primates

Meghalaya has about 7 species of primates. An overview of selected primate species found in northeastern India, particularly Meghalaya are :

- **Western Hoolock Gibbon** (*Hoolock hoolock*): Classified as Endangered (EN) on the IUCN Red List and protected under Schedule I of the Wildlife (Protection) Act, 1972, and Appendix I of CITES. Its distribution spans eastern Bangladesh, northeastern India (including Meghalaya), and northwestern Myanmar. Major threats include rapid habitat loss, fragmentation, and hunting.
- **Bengal Slow Loris** (*Nycticebus bengalensis*): Listed as Vulnerable on the IUCN Red List and protected under Schedule I of the Wildlife (Protection) Act, 1972 and Appendix I of CITES. It is one of the few nocturnal primate in the region. Found across several South and Southeast Asian countries, it is present in protected areas and reserved forests in Meghalaya, though little is known about its behaviour and ecology.
- **Capped Langur** (*Trachypithecus pileatus*): Also listed as Vulnerable on the IUCN Red List and protected under Schedule I of the Wildlife (Protection) Act, 1972, as well as Appendix I of CITES. Its distribution range includes northeastern India and northwestern Myanmar, particularly in the highlands and various hill regions of India.

All three species are highly dependent on forested habitats and face significant threats from habitat loss due to tree felling and fragmentation, which adversely impact their arboreal lifestyles.

The state of Meghalaya has four more primates belonging to macaque group – Northern pig tailed macaque (*Macaca leonina*), Rhesus macaque (*Macaca mulatta*), Assamese macaque (*Macaca assamensis*), and stumped tail macaque (*Macaca arctoides*). Among these the stump-tailed Macaca is the rarest but is still seen in Narpuh, Nokrek and Balpakram areas. Profiles of important endangered primate species of Meghalaya are provided in **Annexure 5**

Carnivores

The state of Meghalaya has presence of three of the six largest cats recorded in India - the Tiger (*Panthera tigris*), Leopard (*Panthera pardus*), and the Clouded Leopard (*Neofelis nebulosa*). However, the Status of Tigers Co-predators & Prey in India, 2022, does not indicate that there are any tiger population in Meghalaya. The Clouded Leopard, which is the state animal of Meghalaya is known to occur in forested landscape across the state, particularly in protected areas.

The state is also home to three species of bears, the Asiatic black bear (*Ursus thibetanus*), Malayan sun bear (*Helarctos malayanus*) and the sloth bear (*Melursus ursinus*).

- **Clouded Leopard**: (*Neofelis nebulosa*): The clouded leopard is a medium-sized, arboreal cat distinguished by its unique dark, cloud-like markings on fur ranging from pale yellow to rich brown. It has the longest canine teeth among felines, short legs, broad paws for climbing, and a long tail for balance. Primarily nocturnal, clouded leopards inhabit dense forests, grasslands,

and scrublands. In India, they are found in Northeast India, Sikkim, northern West Bengal, and specifically in Meghalaya's Balpakram-Baghmara landscape and Nongkhylllem Wildlife sanctuary.

The red panda (*Ailurus fulgens fulgens*) (Garo : Mitchebel, Khasi :Dkhan-bah) is confined to Nokrek and Balpakram in the Garo Hills and the adjacent forests of the West Khasi Hills. It is also found in farther east in Trongpleng in the Mawsynram area of the East Khasi Hills district. Red Panda is protected under Schedule I of the Indian Wildlife (Protection) Act, 1972 and listed in Appendix I of CITES and categorised as Endangered, on the IUCN Red List.

Smaller carnivores recorded from Meghalaya include Asiatic Jackal (*Canis aureus*), Bengal fox (*Vulpes bengalensis*), the Dhole or Indian Wild dog or Red dog (*Cuon alpinus*), Yellow throated Marten (*Martes flavigula flavigula*), Yellow bellied weasel (*Mustela kathiah*), Burmese Ferret Badger (*Melogale personata nipalensis*), Hog-badger (*Arctonyx collaris*), Common Otter (*Lutra lutra monticola*), Smooth-coated Indian Otter (*Lutragale perspicillata*), Oriental small-clawed Otter (*Aonyx cinereus*), Large Indian Civet (*Viverra zibetha zibetha*), Small Indian Civet (*Viverricula indica*), Common Palm Civet (*Paradoxurus hermaphroditus*), Masked Palm Civet (*Paguma larvata neglecta*), Binturong (*Arctictis binturong*), Small Indian mongoose (*Herpestes auropunctatus*), Indian Grey Mongoose (*Herpestes edwardsii*) and Crab eating mongoose (*Herpestes urva*)

Pangolins

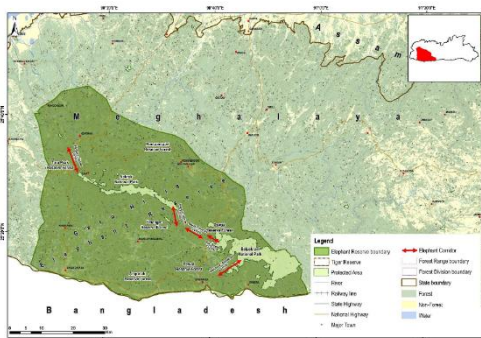
Meghalaya has Chinese Pangolin (*Manis pentadactyla*) but they are not widespread. It is listed under Endangered category according to IUCN Red List and is also a Schedule I animal of the Indian Wildlife (Protection) Act 1972. It is also listed in Appendix I of CITES.

Elephants

Meghalaya has a dense forest cover and supports the second-largest Asian elephant population in the region, estimated at 677 (SE =47). Elephants are mainly found in the Garo Hills, Khasi Hills, and to a lesser extent in southern Jaintia Hills, with the South Garo Hills hosting the largest share. The Garo Hills Elephant Reserve is the only notified elephant reserve in the state. It shares an international boundary with Bangladesh, and forms part of a transboundary landscape that facilitates seasonal movement and migration of elephants.

Garo Hills Elephant Reserve

Garo Hills Elephant Reserve was notified on 31/10/2001 by the Meghalaya Forest & Environment Department and covers an area of 500 sq Km. The Reserve forest and Protected Areas of Balpakram National Park, Siju Wildlife Sanctuary, Rawak and Emangre Reserve Forest Nokrek National Park, Deghmere, Angratoli, Rongranggiri and Tura Peak Reserve Forest along with all the clan/community land connecting them are part of the Elephant reserve. The Forest type within the reserve as per the FSI Forest Type (2009)) includes, Cachar tropical evergreen forest, pioneer euphorbiaceous scrub, Assam alluvial plains semi-evergreen forest, secondary moist bamboo brakes, Khasi hill Sal and East Himalayan moist mixed deciduous forest. Several elephant corridors have been identified within the reserve, which are used for the movement and seasonal migration of elephants across the landscape.



Elephant corridors

Elephant migration routes in Meghalaya connect forests across the Garo, Khasi, and Jaintia Hills, linking habitats with Assam and Bangladesh and maintaining ecological connectivity for this Schedule I species.

The different elephant corridors in the different regions of the state are:

- Garo Hills, key corridors include:
 - Rewak- Emangre Corridor (Emangre Reserve Forest to Nokrek National Park. Length = 6.90 km, Width = 1.57 km,
 - Nokrek- Emangre Corridor (Emangre Reserve Forest with Nokrek National Park.) Length = 16.2 km, width = 1.57 km
 - Siju–Rewak (Balpakram National Park to Rewak Reserve) Length = 3.78 km, width = 1.38 km
 - Nokrek–Imangre–Simsang (Nokrek National Park to Simsang valley) Length = 16.2 km, width = 1.57 km,
 - Baghmara–Khakija–Balpakram (toward Bangladesh) Length = 9.27 km, width = 2.30 km.
 - Ranggira- Nokrek Corridor (connects Ranggira, Sanchangiri and Galwang Reserve Forest to Nokrek National Park) Length = 8 km, width = 1.5 km
- Khasi Hills, major routes are:
 - Umsning–Nongpoh–Khanapara (toward Assam's Kaziranga–Karbi Anglong landscape),
 - Mawphlang–Mawsynram–Shella (extending to Bangladesh),
 - Nongkhyllem–Jorabat (linking to Assam's Amchang–Killing forests).
- Jaintia Hills
 - Saipung–Tyrshi–Narpuh (connects Saipung Reserve Forest and Narpuh Wildlife Sanctuary) Length = 11 km, width = 4-5 km
 - Amlarem–Borhill–Sutnga corridors connect Narpuh Reserve Forests with the Barail Hills (Assam) and Patharia Hills (Bangladesh),

In addition to these corridors of national importance, some local corridors have been identified by the State Forest Department and are being identified during the ESIA. These corridors support seasonal movement of elephants, help reduce human–elephant conflict, and reinforcing conservation efforts in Meghalaya.

Aves

Meghalaya lies in the Eastern Himalayas (Endemic Bird Area 130) (Statterfield et al. 1998). The region is important for many globally threatened, near threatened and restricted range bird species. Five restricted range species from this EBA have been reported from the state. These include Grey Sibia (*Heterophasia gracilis*, IUCN-Least Concern (LC)), Dark-rumped Swift (*Apus acuticauda*, IUCN-Near Threatened (NT)), Tawny-breasted Wren Babbler (*Spelaornis longicaudatus*, IUCN-NT), White-naped Yuhina (*Yuhina bakeri*, IUCN -Least Concern), Black-browed Leaf- Warbler (*Phylloscopus cantator*, IUCN -LC). Meghalaya, part of the Indo-Burma biodiversity hotspot, supports diverse habitats—subtropical forests, wetlands, grasslands, and rivers—that are vital for resident and over 150 migratory bird species. Key migratory species include Bar-headed Goose (*Anser indicus*, IUCN -LC), Eurasian Wigeon (*Mareca Penelope*, IUCN -LC), Common Teal (*Anas crecca*, IUCN-LC), Oriental Honey

Buzzard (*Pernis ptilorhynchus* IUCN -LC), and Pacific Swallow (*Hirundo tahitica*, IUCN -LC). Migratory birds use Meghalaya as a stopover or wintering ground along the East Asian–Australasian and Central Asian Flyways, with major corridors in the Garo Hills (e.g. Simsang, Ganol, Bokabil wetlands), Khasi Hills (e.g. Umiam, Umsning reservoirs), and Jaintia Hills (small riverine wetlands). Wetlands, reservoirs, and forested ridgelines are particularly sensitive, while agricultural margins provide important feeding grounds.

Reptiles

Meghalaya is greatly influence by the Indo-Chinese elements when it comes to reptiles. The diversity of reptiles comprises approximately 12 species of turtles and tortoises, 26 species of lizards and 56 species of snakes.

The turtle and tortoise fauna include:

- **Assam roofed turtle** (*Pangshura sylhetensis*) is listed as Critically Endangered on the IUCN Red List and protected under Schedule I f the Wildlife (Protection) Act, 1972 and Appendix I of CITES. First reported from the Khasi Hills, it inhabits foothill areas near the Brahmaputra valley in Bangladesh and India, with records from several protected areas in Assam, Mizoram, and Arunachal Pradesh. There are currently no confirmed recent records from Meghalaya.
- **Asian Giant Tortoise** (*Manouria emys*): is classified as Critically Endangered n the IUCN Red List and protected under Schedule I of the Wildlife (Protection) Act, 1972, and listed in Appendix II of CITES. The species occurs across South and Southeast Asia, including northeastern India. In Meghalaya, the species has been reported in Nongkhyllem Wildlife Sanctuary and Balpakram National Park. *Manouria emys* is restricted to evergreen forests at elevations up to approximately 1,000 metres, prefers moist environments near water, and frequently burrows in damp soil.

The localities in which these turtles and tortoises are found include Balpakram NP (South Garo Hills), Shillong (East Khasi Hills), Tura (West Garo Hills)

Most of the turtles and tortoises in Meghalaya are threatened with 5 species listed under the Endangered, 1 species Near Threatened, 4 species Vulnerable and 2 species Least Concern categories (IUCN Category 2014). Details of important threatened turtle and tortoise species recorded in Meghalaya are presented in **Annexure 6**.

26 species of lizards have so far been recorded from the state. All the 3 species of monitor lizard found in the state are protected under Schedule I (Part II) of the Wildlife (Protection) Act, 1972. The Tokay Gecko (*Gekko gekko*) is one of the largest Geckos alive today and is also found in the state. Another rare lizard is the *Calotes maria* found only in Mizoram and Meghalaya.

Amphibians

Meghalaya with about 33 species. *Bufoides meghalayanus* and *Philautus shillongensis* are two frog species that are endemic, rare and threatened, found in Meghalaya. The very rare and elusive frogs found in the state are *Philautus cherrapunjiae*, *Rana mawlyndipi*, *Rana mawphlangensis*, *Hyla annectans* and *Microhyla berdmorei* etc.

Pisces

Meghalaya exhibits a twin drainage system namely the Brahmaputra river basin in the North and Barak river basin in the South. Because of the topography of the region and its water shed pattern the state of Meghalaya is rich in fish diversity with about 152 species reported so far. *Neolissochilus hexagonolepis* and *Tor* spp. are the important sport fishes inhabiting the fast flowing rivers and streams of the state.

Molluscs

A total of 223 species of land and freshwater molluscs spread over 67 genera and 28 families are known from Meghalaya. Fresh water molluscs are represented by 35 species, 15 genera and 10 families. The genus *Paludomus* is abundantly represented in the hill streams and two of the species, namely *Paludomus regulate* and *P. stephanus* are endemic to Meghalaya. Of the species endemic to the state, include five species each belonging to the genus *Alycaeus* and *Diplommata*, two of *Cyclophorus*, one each of *Pupina* and *Gastroptychia*, three of *Macrochlamys*, two of *Oxytes*, one each of *Khasiella*, *Kaliella*, *Taphrospira*, *Amphidromus* and *Lamellaxis*.

Protected Area Network

National Parks and Wild Life sanctuaries

Meghalaya's Protected Area (PA) network forms the cornerstone of biodiversity conservation in the State, encompassing National Parks, Wildlife Sanctuaries, Biosphere Reserves, and Community Conservation Areas. As of 2024, Meghalaya has seven legally designated Protected Areas covering approximately 1,133.9 km², around 5.06% of the State's geographical area (Meghalaya Biodiversity Board, 2024). The PA system safeguards diverse ecological zones ranging from tropical evergreen and semi-evergreen forests in the Garo Hills to montane subtropical forests in the Khasi and Jaintia Hills.

Meghalaya has two national parks: Balpakram National Park and Nokrek National Park. Balpakram is known for its "land of spirits" folklore and unique forest-covered canyon, while Nokrek, a UNESCO Biosphere Reserve, is a core area for biodiversity in the Garo Hills. There are four wildlife Sanctuaries and two Elephant reserves are present in this state.

Protected Area	Category	District(s)	Approx. Area (sq. km)	Key Ecological Features
Balpakram National Park	National Park	South Garo Hills	352	High biodiversity, karst features, endemic flora and fauna
Nokrek National Park	National Park	East/West/ South Garo Hills	47.48	Citrus gene sanctuary, rich faunal diversity
Nokrek Biosphere Reserve	Biosphere Reserve	Garo Hills	820	Buffer around Nokrek NP, core area for conservation
Nongkhyllem Wildlife Sanctuary	Wildlife Sanctuary	Ri-Bhoi	29	Subtropical broadleaf forest, elephant corridor
Siju Wildlife Sanctuary	Wildlife Sanctuary	South Garo Hills	5.18	Cave ecosystems, bat colonies, limestone formations
Baghmara Pitcher Plant Sanctuary	Wildlife Sanctuary	South Garo Hills	0.02	Unique <i>Nepenthes khasiana</i> (pitcher plant) habitat
Narpuh Wildlife Sanctuary	Wildlife Sanctuary	East Jaintia Hills	59.9	Moist evergreen forest, critical for elephants and primates

Source: ENVIS Meghalaya

Note: None of the present project roads are passing through the Designated protected area, however to be rechecked for ropeways

Biosphere Reserve

The Nokrek Biosphere Reserve is a part of the Meghalaya Plateau (average altitude: 600 metres). The entire area is mountainous and Nokrek is the highest peak of the Garo hills, rising up 1,412 metres. The biosphere reserve contains major rivers and streams (Ganol, Dareng and Simsang rivers) that form a perennial catchment system. The Simsang originates in the north of the Biosphere Reserve. The tropical climate is characterized by high humidity, monsoon rains (April–October) and high temperatures, which presents ideal circumstances for the growth of rich vegetation, and unique and varied biodiversity. Evergreen and semi-evergreen deciduous forests dominate the landscape: 90% of the Nokrek Biosphere Reserve is covered by evergreen forest. Some patches of bamboo forest can also be found in the lower altitudes, and a remarkable variety of endemic *Citrus* spp. e.g. *Citrus indica* (Indian wild orange). Representative species of the reserve include *Bombax ceiba* (Cotton tree), *Sterculia villosa* (Hairy Sterculia) and *Cassia fistula* (Golden shower tree). Highly vulnerable and threatened fauna species in Nokrek include the Slow Loris, *Petaurista philippensis* (Giant flying squirrel) and *Macaca leonina* (Pig-tailed macaque). The reserve is also a habitat for endangered animals, such as tigers, leopards, elephants and Hoolock gibbons; the latter are the most endangered apes in India and therefore receive special protection.

Community Reserve

Community and Conservation Reserves in Meghalaya serve as ecological buffers and corridors linking larger protected areas, supporting landscape-level conservation. Introduced under the Wildlife (Protection) Amendment Act, 2002, they recognize the role of local communities in biodiversity protection while allowing subsistence use. As of October 2025, 182 Community Reserves are notified. Under the Sixth Schedule, over 88% of forests are managed by ADCs and communities, and any diversion for non-forest purposes requires compliance with the Forest (Conservation) Act, 1980.

Sacred Groves

The age old traditions of all three tribes of Meghalaya, namely the Khasis, Jaintias and the Garos, have saved the patches of forests in pristine conditions till date. These sacred groves chiefly fall in the subtropical zone represent the tropical broad-leaved hill forests (as described by Champion & Seth 1968) of the region. These groves harbour a plant wealth incomparable with any other forest types of the region. Many of the endangered species are presently confined to the sacred groves.

International Bird Areas

Meghalaya has two national parks and five wildlife sanctuaries. Not all protected areas of Meghalaya fulfil the IBA criteria. A total of 9 IBA sites have been identified in the State.

- **Balpakram Complex:** The Balpakram Complex comprises Balpakram National Park, Siju Wildlife Sanctuary, and Baghmara Reserve Forest, interconnected by community forests. This area is notable for its high bird diversity, with around 320 species recorded. It marks the westernmost range of the endangered White-winged Wood Duck and lies within the migration route of the Amur Falcons. Critically endangered vultures, such as the Slender-billed and White-rumped Vultures, were observed here until the late 1990s, with only occasional sightings since then.
- **Mawphlang Sacred Grove:** This Important Bird Area (IBA) is located near Mawphlang village in East Khasi Hills district, approximately 25 km from Shillong. The terrain is undulating and supports well-preserved subtropical forest. The grove is notable during spring when rhododendron species are in bloom. It also supports diverse birdlife and acts as an important refuge for endemic and forest-dependent species.

- **Nokrek Natinal Park:** Located in the Garo Hills, Nokrek National Park forms the core of the Nokrek Biosphere Reserve and is a key biodiversity area in Meghalaya. The park supports tropical evergreen and semi-evergreen forests and is known for its rich assemblage of flora, including wild citrus species. It is an important habitat for several threatened species such as the western hoolock gibbon and clouded leopard, and also qualifies as an Important Bird Area due to its diverse avifauna.
- **Nongkhyllem Wildlife Sanctuary:** Situated in Ri-Bhoi district, Nongkhyllem Wildlife Sanctuary is one of the most important lowland forest habitats in the state. It comprises tropical and subtropical broadleaf forests interspersed with grasslands and wetlands. The sanctuary supports a high diversity of bird species, including several rare and migratory birds, and serves as a critical refuge for mammals such as elephants, leopards, and primates.
- **Narpuh Reserve Forests:** The Narpuh Reserve Forests, located in the Jaintia Hills, are characterized by rugged terrain, limestone formations, and extensive cave systems. These forests form part of an important ecological corridor and support diverse habitats, including moist deciduous and semi-evergreen forests. The area is significant for both biodiversity conservation and hydrological functions, and is known to support several endemic and cave-associated species.
- **Riat Khwan Umiam:** The Riat Khwan–Umiam landscape, located around the Umiam reservoir in the Khasi Hills, comprises a mosaic of forest patches, wetlands, and water bodies. This area is particularly important for birdlife, serving as a habitat for both resident and migratory species. The reservoir and surrounding habitats also play a key role in maintaining regional hydrology and supporting aquatic biodiversity.
- **Saipung:** Saipung, located in the East Jaintia Hills, is characterized by subtropical forests, riverine systems, and limestone-rich terrain. The area supports diverse flora and fauna and is ecologically linked to adjoining forest tracts in Meghalaya and Assam. Its varied habitats make it important for bird conservation, particularly for species dependent on forest and wetland ecosystems.
- **Upper Shillong:** Upper Shillong, situated near Shillong, consists of forested uplands and grassland patches. Despite proximity to urban areas, it supports significant bird diversity and functions as an important green space. The area is also ecologically important for maintaining local climate regulation and supporting remnant forest biodiversity.
- **Cherrapunjii: Cliffs, Gorges and Sacred Groves:** Cherrapunji (Sohra) is characterized by dramatic cliffs, deep gorges, and extensive karst landscapes. The region includes numerous sacred groves that preserve patches of primary forest and harbour high levels of endemic biodiversity. The combination of high rainfall, unique geomorphology, and traditional conservation practices makes this landscape particularly important for both biodiversity and ecological processes.

Detailed ecological information on selected Important Bird Areas (IBAs) of Meghalaya is presented in **Annexure 7**.

Biodiversity Management Framework

Given the rich biodiversity in the state and that the linear infrastructure development can have adverse impacts on the development. It is important to identify the biodiversity near the project activities; understand the impacts it is likely to have. Following an assessment design alternative needs to be considered and if require mitigations developed.

To achieve this objective a systematic process must be adopted by MIDFC, the PMU and executed by PIU-PWD, the executing agency. This framework details out the methodology which will be adopted in MLCIP. It has already been tested in priority

Screening of the Infrastructure

The screening is carried out in two stages:

- **Preliminary Environmental and Social Screening** by the Assistant Engineers. During the process the officers of the respective PWD division collaborates with the Divisional Forest Office to understand the involvement of any forest land including the notified “community forest”. This provides an initial understanding of the involvement of environmental sensitivities including the presence of Forest Land, Animal Corridors etc. This coincides with the Feasibility Stage of the Project
- **Detailed Environmental and Social Screening:** The ESIA consultant is onboarded at the DPR stage along with the appointment of the DPR consultant. The preliminary work of the environmental consultant is to undertake a Detailed environmental and Social Screening. The findings of this detailed screening is shared with the DPR consultant through a common workshop wherein the DPR consultants share the findings of the LIDAR surveys, and this information is ground truth by the Divisional Engineers of the PWD. Since the environmental sensitivities are streamlined at the beginning of the design process, the alternatives in the design can be worked upon.

Baseline Surveys

Since for each of the sub project road and EIS is being carried out, ecological surveys are an integral part of the baseline studies. Primary data collection and surveys include the following.

Sl. No.	Biodiversity survey	Methods	Indicators
1	Vegetation	Nested quadrat method	Species richness, density, diversity indices and dominance
2	Mammal (diurnal and nocturnal)	Visual encounter and sign surveys using line transect method	Species richness and diversity and encounter rate
3	Avifauna	Line transects	Species richness and diversity and encounter rate
4	Reptiles and amphibians	Visual encounter (transect survey)	Species richness and diversity and encounter rate
5	Butterfly	Transect survey	Species richness and diversity and encounter rate
6	Aquatic fauna	Transect/Netting survey/Rod-line methods	Species richness and diversity and encounter rate

Literature Review

Given the ecological sensitivity of Meghalaya and that areas outside the protected area networks also have biodiversity a literature-based survey is carried out. These include:

Critical Habitat Screening

The project roads were screened using the IBAT tool. The terrestrial and freshwater species of flora and fauna within 10 km of the proposed corridor are identified from the IBAT using the kml file of the alignment. The species which are Critically Endangered, Endangered and Near Threatened, for their presence in the project area based on their distribution, habitat, occurrence etc. Information from various literature, journals, research papers websites (IUCN, Birdlife International, bird) etc. These are however, made proportionate to the type of activities, probable impacts etc to complete the screening. Species which are not meeting these criteria or unrelated to the project activities are screened out. The remaining if any are taken for further assessment during detailed ecological surveys.

Review of Other Literature

Literature review is an important part of the ecological assessment. Literature published by MoEF&CC, Zoological Survey of India, Wildlife Institute of India, Wildlife Trust of India, IUCN, different journal, research papers are used to triangulate and authenticate the information collected by the above sources.

Verification by Specialized Agency

PWD, Government of Meghalaya is also in touch with the Forest Department, Meghalaya Bio-diversity Board, Meghalaya Basin Management Authority to verify the different level of information available with them. The Kml files, list of villages are provided to these agencies to provide information which it possesses on biodiversity.

- **Forest Department, Government of Meghalaya:** The department screens the roads for protected areas including community reserve forests. The proximity of the forest areas and the map depicting that is provided to the PWD for further action (if required).
- **Meghalaya Biodiversity Board:** The Bio-diversity Board is mandated to develop the People's Bio-diversity register under the Biodiversity Act 2002. This is a community led participatory mechanism to register the bio-diversity present. The Board has initiated the process but many places are still uncovered. The PWD, GoME has also approached the Meghalaya Biodiversity Board for sharing the details of the diversity which have been included in the people's register.

Bio-diversity Assessment

All this information will be collated during the ESIA study and design alternatives if required will be worked out. These will be further used to the impact on different project activities on the key species. Mitigation measures will be developed in case impacts are identified. The board impacts and their mitigations are discussed below but these will be further refined with site specific designs, management plans and measures in the DPR and ESIA.

Biodiversity Management Plan in MLCIP

In the case of MLCIP, a preliminary screening and detailed screening has been completed for the approx. 300 km subproject roads, that are included as priority roads. In fact, the detailed ESIA and the designs are completed for all these roads.

Outcome of the Screening

The preliminary screening carried out for approx 300 km of roads under consideration by the PWD divisions. During the process the respective engineers of the divisions held consultation with their counterparts DFO's. The survey indicated that there was community owned forest, but it was not clear if these were notified Community Forest under the legal provisions.

The detailed screening for the 294 km of Priority roads was thereafter initiated with the help of the ESIA consultants. It was thereafter identified that two roads i.e. SM Road (chainage 0+000 and 3+500), RSN Road (chainage 0+000 and 5+600) would pass through reserve forest areas. The Forest Department thereafter confirmed the legal boundaries of the reserve forest and other protected areas (maps provided in Annexure 9). This indicated that none of the corridors would pass through protected

areas other than the ones mentioned above. The Forest Department also confirmed the presence of non-notified elephant corridors in RBB and Adukgre-Purakhasia subprojects. These were not corridors of national importance and thus were not listed in the literature surveyed.

A detailed biodiversity study was carried out by the ESIA study which also included ecological baseline surveys. Meghalaya Biodiversity Board has also developed people's bio-diversity register in some of the villages. PWD has already approached the Board to understand any additional information it might have. A Critical Habitat Screening of the Critical Endangered, Endangered and Near Threatened species which was identified through the IBAT Screening.

Possible Issues and Impacts

Impact on Endangered Plants

Project activities may cause direct and indirect impacts on endangered and endemic plant species through vegetation clearance, habitat fragmentation, disturbance to sacred groves and riparian habitats, and increased human interference. Sensitive species, particularly orchids, medicinal plants, and other habitat-specific flora, may be vulnerable to construction-related disturbances and changes in local environmental conditions. Appropriate mitigation measures, including avoidance of sensitive habitats, minimization of vegetation clearing, and restoration of affected areas, will be necessary to reduce impacts.

Impacts on Primates

Arboreal animals, particularly primates such as gibbons, macaques, lorises, and lemurs, are significantly impacted by linear infrastructures like roads and railways, which disrupt the forest canopy and fragment their habitat. Due to their adaptations for life in the trees—including specialised locomotion like brachiation—they are reluctant and physically limited in crossing open ground. This forces them to face unnatural and dangerous situations, such as increased risk of predation and vehicle collisions, ultimately resulting in habitat fragmentation.

Impacts on Elephants

The elephant moves across the different part of the forest in search of food. The remain in one part of the forest and move to the other parts of the forest and allow this part to regenerate. This movement are usually seasonal in search of food and water but there are records of movement during other seasons as well.

Highways with moderate traffic volume (less than 8,000 vehicles per day) were near-total barriers to wildlife passage. Theoretical models infer that highways with 4,000–10,000 average annual daily traffic present substantial barriers to wildlife passage that repel animals away from highways; at 10,000 average annual daily traffic and above, highways become impermeable barriers.⁷⁷ The highways under consideration have traffic in the range of 2500-300 PCU per day and is projected to be in the range of 4500-5000 PCU per day in 2045. The low volume of traffic even at the end of the projected life indicates that the barrier effect is not serious. However, mitigation measures are required to be implemented to be maintained habitat connectivity.

Impact on Aquatic Fauna

The aquatic fauna, including fishes, amphibians, freshwater molluscs, and other aquatic organisms, may be affected by construction activities through increased sedimentation, alteration of drainage patterns, contamination of water bodies, and disturbance to aquatic habitats. Temporary impacts on breeding and feeding grounds may occur, particularly in streams and wetlands located near construction areas. Proper sediment control, wastewater management, and protection of natural drainage systems will be necessary to minimize impacts on aquatic biodiversity.

⁷⁷ HANDBOOK TO MITIGATE THE IMPACTS OF ROADS AND RAILWAYS ON ASIAN ELEPHANTS, IUCN, 2024

Development Proposal

In-Situ Conservation of Endangered Plants

The presence of endangered plant species and that they are also available outside the Protected area network requires additional protection during the preparation and construction. During the preparation a detailed ecological survey will be carried out, transect surveys and quadrant surveys would be carried out to identify the species present. During the preconstruction stage the Bio-diversity expert in the team need to carry out a reconnaissance survey of the corridor to identify presence of these species. In case such species are spotted the following are best practices⁸ for preserving natural or existing vegetation:

- Do not nail boards to trees during building operations.
- Do not cut tree roots inside the tree drip line.
- Use bamboo barriers to prevent equipment from approaching protected areas and also protect the plants based on the requirement. The schematic for protection of endangered and endemic plants is presented in Annexure 1. The design of the bamboo fences is presented in Annexure 2.
- Keep equipment, construction materials, topsoil and fill dirt outside the limit of preserved areas.
- Keep the duff layer (partially decomposed organic matter), native topsoil and natural vegetation undisturbed to the maximum extent practicable
- During final site cleanup, remove barriers from around preserved areas and trees

These conservation areas need maintenance, and the workers need to take care. The duty of care for workers is described below:

- Ensure that erosion and sediment control practices are in place. A monitoring format for inspection and verification of protected endangered flora locations is provided in **Annexure 3**.
- Inspect fencing and signs to ensure they are secure and undamaged.
- Do not dump/ stock in these protected areas.

Habitat Management for Arboreal Species

Habitat Fragmentation for arboreal species would be result from the development of the highways. A strategic approach would follow the mitigation hierarchy. Using this framework as a guidance the following would be built in the design:

- In case of corridors in the designated forest areas, the RoW may be limited to existing configuration and prevent a gap in canopy.
- Due Diligence of the tree felling requirement should be carried out at the time of implementation. Only trees which are necessary for the executions of the project will be felled.
- In case additional land is required for the development of the road there are risk of habitat fragmentation. The canopy bridges can be used for mitigation of the impacts. The different types of canopy bridges, their applicability, and associated advantages and limitations are described in **Annexure 8**.

⁸ <https://www.epa.gov/system/files/documents/2021-11/bmp-preserving-natural-or-existing-vegetation.pdf>

The types of canopy bridge and the pros and cons are presented below

Bridge type	Context / Use case Scenario	Pros	Cons
Natural Canopy Bridge (NCB)	• Can used to connect shorter distances between forest gaps • Use of natural materials maintains the natural canopy connectivity. • Better camouflage the animal species and reduce stress	• Habituation period for NCB is short due to the use of natural bridge materials.	• Duration of constructing a NCB can be longer than SACB and ACB • Plantation must be an integral component and the trees to mature. • Strength of NCB is less reliable than a well-constructed SACB and ACB
Semi artificial Canopy Bridge (SACB)	SACB is utilised when using natural materials (e.g. climbers enhance etc.) the quality of the artificially built bridge	• Artificial material provides better durability and strength to the bridge while the natural material • Reduce the habituation period by providing a familiar substrate to the animals	• Establishment cost is relatively higher than NCB • The bridge may not be durable
Artificial Canopy Bridge (ACB)	• Constructed where forest gaps are large and availability of	• Duration of the bridge shorter than NCB,	• Habituation period is longer in ACB • Establishment cost is

Bridge type	Context / Use case Scenario	Pros	Cons
	natural canopy is less • Bridges with greater strength and durability to prevent crossing accidents • Preferred when canopy regrowth cannot occur in an area after the construction of a linear infrastructure.	• Design is not too complex	relatively higher. • More chances of making human error while constructing the bridge

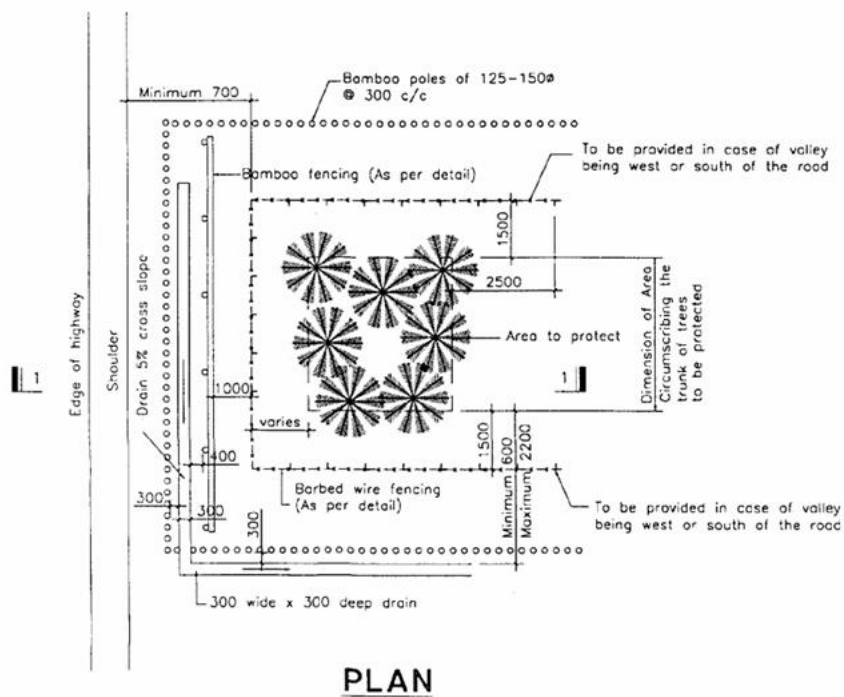
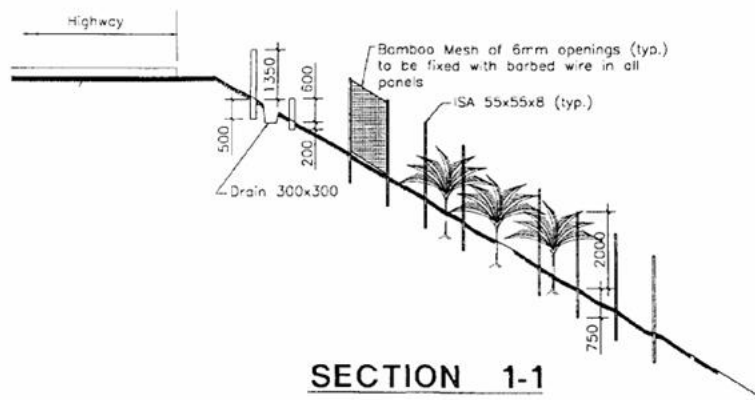
Management of the Elephant Crossing

The measures recommended for animal crossing are usually underpasses or overpasses including bridges. However, in the case of MLICP the road corridors under consideration have very low traffic volume in that case it was thus decided that at grade crossing will still be maintained. However, there would be need to reduce the speed and also measures taken to ensure that there is less disturbance to the in this area. The following measures have been proposed:

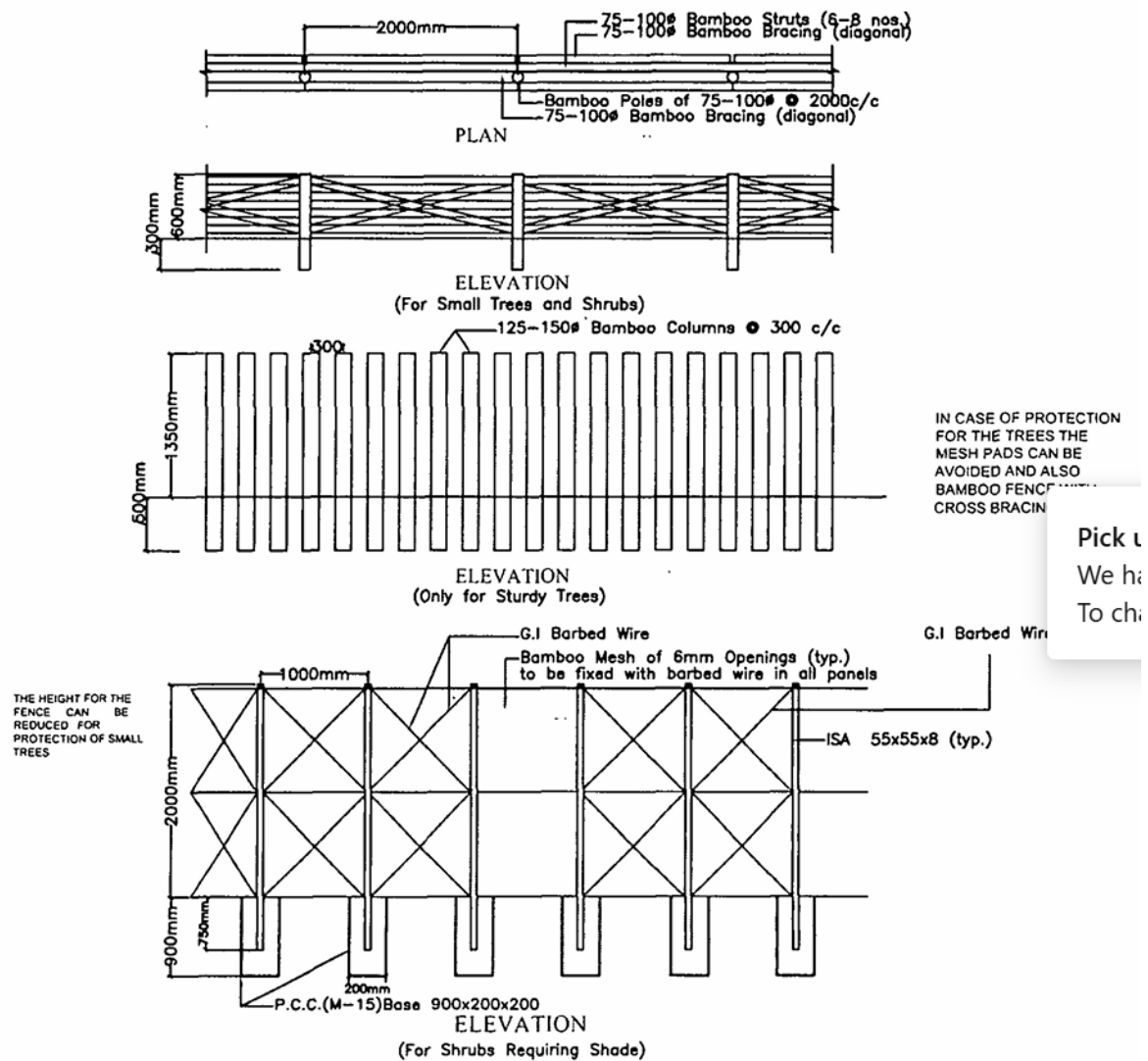
1. **Restriction of carriageway width:** The carriageway width in these areas will be maintained to its original width, i.e. no expansion would be undertaken. The reduction of carriageway with would reduce the speed of the vehicle. Thus, no additional land other than the existing metalled road will be required.
2. **Reduction of the speed:** to reduce the speed of traffic in the forest area traffic calming measures have been considered. Rumble strips followed by raised speed table would be used to reduce the speed of traffic. The raised table top crossings at both end of the corridor will have cobbled stones/paver block to increase roughness of the road. The design speed with this corridor will be maintained at 20 KMPH. The design of the road infrastructure would be carried out as per the specification in the IRC. A typical design of the tabletop crossing is included in Annexure 10.
3. **Habitat Development:** To guide elephant to the respective location's plantation program would be undertaken 500 mm on either side of the corridor. This will act as a natural fence for the animals and will direct them to the corridor. The species to be planted the design of this natural barrier will be developed in consultation with the forest department.
4. **Road Surface:** In case of corridors with more than 1 km it is important to check the speed of vehicle inside the corridor and also remind the drivers about the continuation of the corridor. In such cases the road surface would be differentiated either by the roughness or using different colours. This would alter drivers to reduce the speed within this range.

5. **Signage:** There would be signages on the approach to the corridor to intimate traffic about the corridor. In addition to speed restriction, animal crossing signage of the intimation of the elephant corridor would also be posted.
6. **Elephant movement:** To detect elephant movement or presence of elephant near the carriageway, IR detection camera will be installed. Once detected these will intimate the authorities to restrict movement of traffic and allow the herd to pass through.
7. **Surveillance on the corridor:** In addition to elephants smaller animal also cross the road and meets accident while crossing over. To identify errant drivers' surveillance cameras will be installed on this corridor.

Annexure I: Schematic for Protection of Endangered and Endemic Plant



Annexure 2: Schematic for the Bamboo Fences



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Annexure 3: MONITORING SHEET FOR SPECIFIC ENDANGERED FLORA LOCATIONS TO BE PROTECTED

Period of Verification: _____ To: _____

Sl. N o.	Chainage (Km)	Species to be Protected	No. of Plants	Description of Area Being Protected (including condition of plants)	No. of Bamboo Poles (1st Row)	No. Damaged (1st Row)	No. of Bamboo Poles (2nd Row)	No. Damaged (2nd Row)	No. of Horizontal Poles	No. of Damaged (Horizontal Poles)	No. of MS Angles (50×50 ×8 mm)	No. of Bamboo Mats	Length of Ditch (m)	Length of Ditch Cleared (m)	Quantity of Material Removed from Ditch (m ³)	Recent Photograph Attached (Yes/No)
1																
2																
3																
4																

Certification

Certified that the above information has been collected from on-site observations.

Contractor's Representative**Engineer's Environmental Specialist**

Name & Signature: _____

Name & Signature: _____

Date: _____

Date: _____

Annexure 4: Threatened and Endemic Species

<i>Aeschynanthus superba</i> Wall. ex DC. (Gesneriaceae)	
An epi- or lithophytic species with long, branched stem. Leaves 15 x 5 cm., entire, petiole 1.2 cm. Peduncles 1 – 1.5 cm, terminal and on short axillary spur, stout. Bracts upto 2.5 cm., ovate, deciduous, rose-red. Inflorescence sub-umbelled. Sepals thin, caducous. Corolla tubular, curved, mouth slightly oblique. Filaments exerted, minutely glandular hairy.	
Distribution : North-east India (Meghalaya upto 2000 m). Status : Endangered	
<i>Balanophora dioica</i> R.Br. ex Royle (Balanophoraceae)	
Very variable root parasite. Rootstalks tuberculous. Shoots 3.5 – 7 cm, stout, covered with glabrous, imbricate scales. Flowers in a fleshy clubshaped usually unisexual receptacle. Perianth surrounded by fleshy, linear, truncate reddish bracts. Heads ovoid. Perianth segments white, generally 4, ovate, reflexed when open, Anther one, sessile, domeshaped. Female flowers closely packed, stigma protruded, white. Distribution : Tropical and Sub-tropical belt of North-east India, Meghalaya (1000 – 2000m), Myanmar.	
Habitat : Usually in evergreen forests of tropical and subtropical zone. Status : Near Endemic and Rare	
<i>Citrus latipes</i> (Swingle) Tanaka (Rutaceae)	
Local names : Khasi – Soh- kymphor	
A tree more than 15m in height, mostly furrowed at the base. Spines small and ascending. Leaflets 2.5 – 8 x 2.5 – 6 cm,, ovate- elliptic to lanceolate, petiole winged, wings of the same size or even larger than the leaflet. Entire or minutely crenulate, glabrous, coreaceous, punctate with oil glands. Flowers axillary, solitary or in few flowered cymes, white or light purplish, upto 2.5 cm in diameter, pedicels 6 cm long. Calyx small, 4-5 sepals. Petals 4. Stamens 20-25. Fruit 7	

10 cm in diameter, punctate with large oil glands, pulp colourless, juice very acidic.	
Distribution : Mikir Hills, gregarious in Khasi Hills. Status : Endemic.	
<i>Citrus indica</i> Tanaka (Rutaceae) Local names : Khasi – Soh-manong ; Garo – Narang	
A shrub with straight, ascending spines. Leaflets light green, 8- 15 x 5 – 8 cm, elliptic- ovate to oblong-lanceolate, crenulate-serrate, with translucent dots at the sinuses, petiole without wings. Flowers white, usually tinged with red, sweet scented, solitary or up to 10 in a raceme, often unisexual. Petals linear- oblanceolate, gland- dotted. Stamens 20-40, filaments reddish. Fruit 8 – 12 x 5 – 7 cm, obovoid-oblong, often mamillate at the apex, yellow when ripe, aromatic, with thick spongy rind and colourless vesicles.	
Distribution : Assam, along the edge of marshes and streams, up to about 1400m. Status : Endemic	
<i>Dendrobium williamsonii</i> Day & Reichb. f. (Orchidaceae)	
Epiphytic herb. Leaves and sheaths puberulous, leaves oblong or lanceolate. Flowers 1-2 on a short bracteate peduncle. Sepals lanceolate, acuminate, dorsal ovate acute. Petals oblanceolate, mentum funnel shaped, side lobes of lip rounded, midlobe orbicular, ciliate. Disc obscurely 3-ridged. Flowers yellowish, lip dashed with red within.	
Distribution : Assam, Khasi Hills. Habitat : Epiphyte Status: Endemic to north- east India, Endangered	
<i>Monotropa uniflora</i> L. (Ericaceae)	

A glabrous saprophytic herb. Stem single flowered, covered with scales upto 2 cm, ovate – lanceolate. Flowers nodding. Calyx lobes 4, resembling scales. Corolla lobes 5-6, ultimately deciduous, hardly saccate at the base, Stamens 10-12, anthers peltate, horizontal. Ovary 5-celled, ovules many on axile placenta. Capsule globose, 5-celled, 5-valved.. Distribution : Temperate Himalayas, Khasi Hills, upto 6000 ft. Habitat : Mostly present in the Pine forests. Status : Rare and endemic	
<i>Nepenthes khasiana</i> Hook.f. (Nepenthaceae) Local names : Khasi – Tiew-rakot; Garo – Memang kokshi	
A scandent shrub. Dioecious, climbing by leaves. Leaves alternate, an expanded lamina with tendril terminated by a pendant, coloured cylindrical pitcher with a recurved fluted rim and operculum. Inflorescence raceme or panicle. Flowers actinomorphic. Tepals 3 – 4, in 2 whorls, nectariferous. Male flowers: stamens 2 – 24, filaments connate, anthers bilocular. Female flowers : carpels 3 – 4, ovary superior, ovules many, style 1, stigma discoid. Fruits elongated, leathery capsule. Seeds numerous, filiform.	
Distribution : Endemic to Meghalaya. Habitat : Forest margins surrounded by grasslands. Status : Critically endangered and endemic, confined to a few pockets of its natural habitat in Meghalaya	
<i>Osbeckia capitata</i> Benth. (Melastomataceae)	
A lax branched perennial shrub. Leaves ovate acute from a broad cordate base, subsessile, flowers capitate, mauve in colour, calyx segments lanceolate rounded, ciliate on the back, not persistent. Anthers with a beak more than half their own length. Ovary with bristles on its apex. Fruit ovoid.	
Distribution : Bhutan, North-east, Meghalaya (upto 1800m). Habitat : Forest edges Status : Near endemic (North-east).	
<i>Panax pseudoginseng</i> Wall. (Araliaceae)	

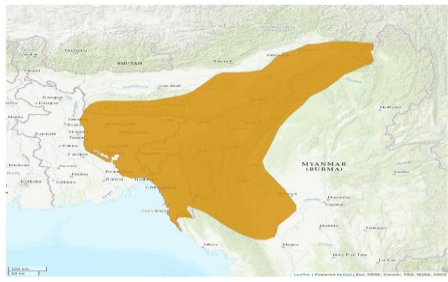
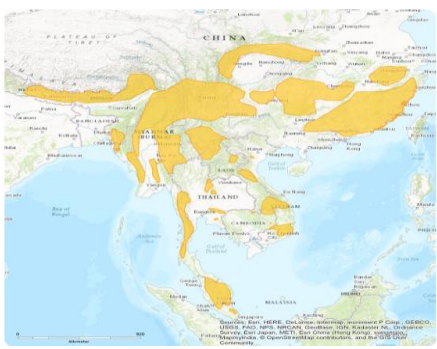
Herb with a horizontal root stalk. Stem 12 – 35 cm, erect, glabrous, terminated by a whorl of leaves. Leaflets 3 to 5, 5 12 x 2 – 4 cm, acuminate, caudate, tapering at base, serrate or bi-serrate, with scattered bristles. Petiole 5 - 12 cm, Inflorescence simole or with 2-5 umbellate heads. Bracteoles upto 0.6 cm, lanceolate. Flowers monoecious. Fruits red or black and red.	
Distribution : North-east, Meghalaya Habitat : Evergreen forests. Status : Vulnerable	
<i>Taxus wallichiana</i> Zucc. (Taxaceae)	
A small tree, dioecious, 6 m high. Stem fluted; bark thin, reddish brown; branchlets spreading. Leaves linear, 2-3.8 x 0.3 cm, coriaceous, flattened, arranged in two vertical opposite rows, dark grey glossy green above, paler beneath. Cones axillary, sessile, male and female cone on separate trees. Male cone solitary, axillary, sub-globose, bracts empty; stamens 10. Female cone solitary, few imbricate scales around an erect ovule; ovule surrounded at base by membranous cup shaped disc. Disc in fruit bright red, succulent, enlarged; 7-8 mm. Seeds olive green.	
Distribution : Myanmar, South West China, Vietnam. Himalayas, Meghalaya, Naga hills, Manipur. Habitat : In temperate moist and riverine forests. Status : Globally the species has been cateorized under 'Least Concern', but it is very sparse in Meghalaya. It is basically a Himalayan element and its occurrence at lower altitude (up	

Source; <https://digitalrepository.wii.gov.in/server/api/core/bitstreams/d3f43819-0a31-4f95-abfa-d574d9dcf71c/content>

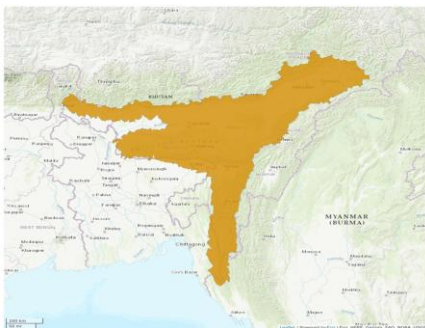
Annexure 5 : Endangered Primates of Meghalaya

Western Hoolock Gibbon (<i>Hoolock hoolock</i>):	
The hoolock gibbon is classified as Endangered (EN) on the IUCN Red List, listed on Appendix I of CITES and is a Schedule I animal in the Wildlife (Protection) Act, 1972. This species is found in eastern Bangladesh, northeastern India (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura), and northwestern Myanmar (west of the Chindwin River). The distribution in India is restricted to points south of the Brahmaputra and east of the Dibang (Dingba Qu) Rivers (Choudhury 2001). In Meghalaya the main spanholds however are in Jaintia Hills, Ri-Bhoi, West Khasi Hills, East Garo Hills and South Garo Hills. Rapid loss of habitat, habitat fragmentation and hunting are the major threats to the Hoolock gibbons across their entire distribution range in India. Once common in the plains of Arunachal Pradesh (north easternmost India) before that habitat was cultivated for agriculture and tea are not so any more.	 Source: https://commons.wikimedia.org/wiki/Category:Hoolock_hoolock  Source: IUCN
Bengal Slow Loris (<i>Nycticebus bengalensis</i>)	
The Bengal Slow Loris is listed under Vulnerable category by IUCN. It is a Schedule I animal of the Indian Wildlife (Protection) Act 1972, and is also in Appendix I of CITES. This is the only nocturnal primate in the North Eastern states and is the largest of the slow loris species This species occurs in Bangladesh, Cambodia West of the Mekong River, China (southern and western Yunnan and	 Source: https://www.encyclopedia.it/Prim.asp?Famiglia=Lorisidae

possibly in southwestern Guangxi), north-eastern India (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura), Lao PDR, Myanmar (including the Mergui Archipelago), Thailand north of the Isthmus of Kra, and Viet Nam. . Little is known about its behaviour or ecology, and less information is available on its distribution and population status in Meghalaya. The species has been recorded in Balpakram and Nokrek national parks, Nongkhyllem and Siju Wildlife sanctuaries, and some key reserved forests including Baghmara RF(South Garo Hills District). The know localites of the species are Nokrek NP, Balpakram NP, Baghmara RF, Nongkhyllem WS, Narpuh RF, Angratoli RF, Darugiri RF, Sibbari-Jacksongram Community Forest, Dambuk Adingre Community Forest, Siju Dobakol caves, Siju Forest Complex, Matcha Nokpante Community Forest. Both these above species being arboreal species felling of trees affects their habitats.	 Source: IUCN
Capped Langur (<i>Trachypithecus pileatus</i>)	
The Capped langur is listed under Vulnerable category by IUCN. It is a Schedule I animal of the Indian Wildlife (Protection) Act 1972 and is also in Appendix I of CITES. The species occurs in northeastern India (Arunachal Pradesh, Assam, Meghalaya, and Nagaland) and northwestern Myanmar. Widely distributed in the highlands south and east of the Brahmaputra and west of the Chindwin; in Myanmar. In India, the Karbi Anglong, Khasi, Garo, Naga, and Jaintia Hills, along with the Karbi Plateau in Assam.	 Source; https://neprimateconservancy.org/capped-langur/

	 Source: IUCN
Clouded Leopard: (<i>Neofelis nebulosa</i>)	
The clouded leopard is a medium-sized cat. It has a distinctive dark cloud-like markings on its coat, the color of the fur varies from pale yellow -rich brown, the darker cloud-like markings makes it distinctive. The clouded leopard has the longest canine teeth of any living feline. It also has relatively short legs and broad paws that help it in climbing trees and creeping through the thick forests. The clouded leopard also possesses an exceptionally long tail for balancing. n: Clouded leopards inhabit dense evergreen and deciduous forests as well as grasslands and scrubland habitats. They are mainly arboreal and hunt during the night. In India, the clouded leopard is found in Northeast India, Sikkim, and the northern part of West Bengal. In Meghalaya, the Clouded Leopard has been recorded in the Balpakram-Baghmara landscape and Nongkhylllem National Park. the Pormawlai Biodiversity Management Committee (BMC) has launched a project on clouded leopard conservation	 Source: https://en.wikipedia.org/wiki/Clouded_leopard 

Annexure 6: Turtles in Meghalaya

Assam roofed turtle (<i>Pangshura sylhetensis</i>)	
Listed as Critically Endangered by IUCN, protected under Schedule I and Appendix I of CITES was first reported from the Khasi Hills. <i>Pangshura sylhetensis</i> is known from foothill areas adjoining the Brahmaputra valley of Bangladesh and India. <i>Pangshura sylhetensis</i> has been recorded from Kaziranga National Park, Manas Tiger Reserve, Nameri Wildlife Sanctuary, and Dibru-Saikhowa Wildlife Sanctuary (Assam), Ngengpui Wildlife Sanctuary (Mizoram), and Pakhui, India (Hanfee 1999, Choudhury et al. 2000, Praschag and Fachbach 2001), none of these are located in the state. <i>Pangshura sylhetensis</i> is confined to relatively small, clear, fast-flowing streams and may seasonally use nearby waterbodies with less or no current. Females utilise different parts of the waterbodies than males and juveniles. Juveniles, males and small females can be found in shallow sections of rivers without strong current, whereas adult females occur exclusively in deeper river channels and pools of rivers. This species basks exclusively on emergent rocks or logs, often in groups of up to a dozen individuals of both sexes. The animals are primarily herbivorous but take some animal prey	 https://en.wikipedia.org/wiki/Assam_roofed_turtle#/media/File:Pangshura_sylhetensis_IMG_3322_02.jpg  Source : IUCN
Asian Giant Tortoise (<i>Manouria emys</i>)	

): is listed as Critically Endangered by the IUCN and protected under Schedule I and Appendix I of CITES. It occurs from Bangladesh and northeastern India through mid-elevation hilly areas of Myanmar, and western and southern Thailand through Malaysia and Indonesia (including Sumatra and Borneo). Its presence in Brunei is uncertain. Records from Lao PDR, VietNam and southern China likely. Certain reports indicates its occurrence in Nongkhylllem Wildlife Sanctuary of Ri-Bhoi and Balpakram National Park of South Garo Hills districts of Meghalaya. *Manouria emys* exclusively inhabits evergreen forest, from lowland regions up to altitudes of about 1,000 m (typically 600-1,500 m). The animals appreciate moisture and are typically found near water and frequently burrow in damp soil

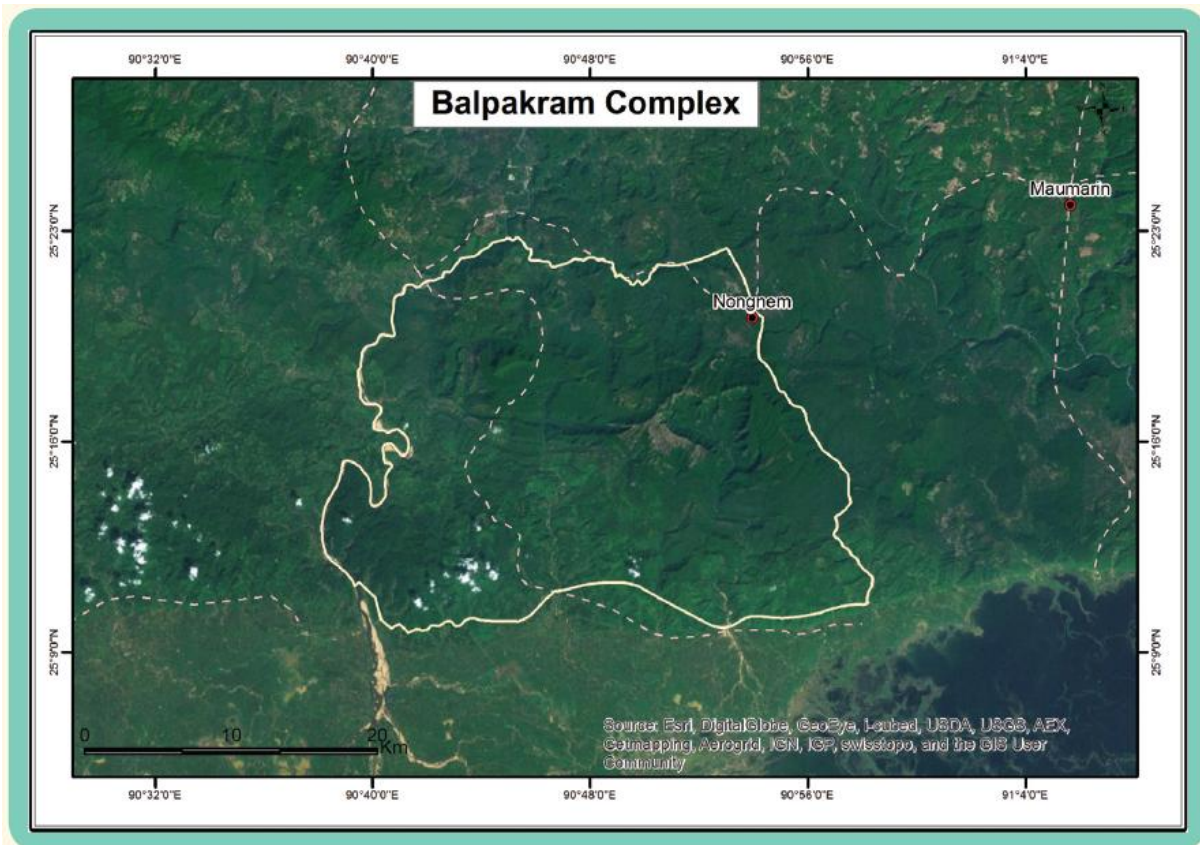


Source : IUCN

Annexure 7: Important Bird Areas

Balpakram Complex: This site includes the Balpakram National Park (22,000 ha) and Siju Wildlife Sanctuary (518 ha), and the reserve forest is Baghmara (4,429 ha). The community forest that links Baghmara and Balpakram is also included. The first two are contiguous, while the reserve forest is linked to the complex through community-owned forests. Balpakram Complex is extremely rich in avian diversity, with about 320 species identified till now. It is the westernmost known distributional limit of the White-winged Wood Duck (*Asarcornis scutulata*) (EN) in its global range and is in the flight pat of the Amur Falcons (*Falco amurensis*). The Critically Endangered Slender-billed Vulture (*Gyps tenuirostris*) and White-rumped Vulture (*G. bengalensis*) were seen until the late 1990s. Subsequently only an occasional bird was seen.

The following are some of the species of Balpakram Complex: Mountain Bamboo-partridge (*Bambusicola fytchii*), White-cheeked Partridge (*Arborophila atrogularis*), Kaleej Pheasant (*Lophura leucomelanos*), Grey Peacock-pheasant (*Polyplectron bicalcaratum*), Grey-headed Parakeet (*Psittacula finschii*), Striated Bulbul (*Pycnonotus striatus*), White-throated Bulbul (*Alphoixus flaveolus*), Himalayan Black Bulbul (*Hypsipetes leucocephalus*), Blue-throated Barbet (*Megalaima asiatica*), Bay Woodpecker (*Blythipicus pyrrhotis*), Short-billed Minivet (*Pericrocotus brevirostris*), Orange-bellied Leafbird (*Chloropsis hardwickii*), Slaty-backed Forktail (*Enicurus schistaceus*), Slaty-bellied Tesia (*Tesia olivea*), Grey-bellied Tesia /Yellow-browed Tesia (*T. cyaniventer*), Streaked Spiderhunter (*Arachnothera magna*), Maroon Oriole (*Oriolus traillii*), Grey Treepie (*Dendrocitta formosa*), Nepal House-martin (*Delichon nipalense*), Pale-headed Woodpecker (*Gecinulus grantia*), Black-backed Forktail (*Enicurus immaculatus*), Lesser Necklaced Laughingthrush (*Leucodioptron monileger*), Greater Necklaced Laughingthrush (*Garrulax pectoralis*) and Sultan Tit (*Melanochlora sultanea*). Other interesting birds recorded are Collared Scops-owl Otus lettia, Violet Cuckoo (*Chrysococcyx xanthorhynchus*), and Thick-billed Green-pigeon (*Treron curvirostra*). The area supports diverse fauna and is an important refuge for Asian Elephant (*Elephas maximus*) and Tiger (*Panthera tigris*). Seven species of primates are present, namely Assamese Macaque, Rhesus Macaque, Stump-tailed macaque, Pig-tailed Macaque, Capped Langur, Hoolock Gibbon, and Bengal Slow Loris. Carnivores include Wild Dog, Asiatic Black Bear, Sun Bear, Leopard, Clouded Leopard etc. There are recent records of endangered Hispid Hare (*Caprolagus hispidus*) in the southern part of this complex and Small toothed Palm Civet (*Arctogalidia trivirgata*) from Balpakram. The IBA overlaps with the with the Baghmara-Balpakram and the Siju-Rewak elephant corridors



Annexure 8 : Canopy Bridge

Linear infrastructures fragment forest habitats by breaking the canopy cover, which especially affects arboreal animals like gibbons, guenons, macaques, lorises, and lemurs. Adapted for life in trees, these primates use climbing, leaping, brachiating, and clinging to move; gibbons are "true brachiators," relying on specialized anatomy to swing through branches. It's unnatural and risky for them to descend and cross open ground due to increased predation and vehicle collision risks. Such habitat fragmentation poses serious challenges for their movement and survival.

There are different methods which have been used to prevent break in the canopy. There are different types of canopy bridges which are in use. e. Canopy bridges are bridges or connections through high rise trees either done naturally or by engineering methods to mimic the nature so that tree-dwelling animals can cross forest/canopy gaps to meet their different purposes including dispersal, foraging (access to resources), mating etc. The different type of canopy bridges are as follows:

Natural Canopy Bridge (NCB)

These bridges are made out of naturally occurring components or materials such as natural single bamboo pole bridge more than the semi-artificial ladder-rope bridge made of nylon and wood. Of the two designs, the species was clearly observed using the natural single bamboo pole bridge more than the semi-artificial ladder-rope bridge. Familiarity with the substrates used could be one of the plausible reasons. Their behaviour such as running, especially in the juveniles – alluding to their level of caution – was also found dependent on the extent of canopy cover (more urgent under open canopy). Preserving the natural canopy cover during road/linear infrastructure design and construction is recommended wherever possible. Alternatively, building single (or network of multiple) pole(s) across canopy gaps using bamboo has been found to be effective,

To preserve the natural habitats of these animals. Plantation with species known to serve as food sources and sleeping trees of these arboreal animals is essential Over period of time these trees will grow and provide a natural canopy for movement

Semi-Artificial Canopy Bridge (SACB)

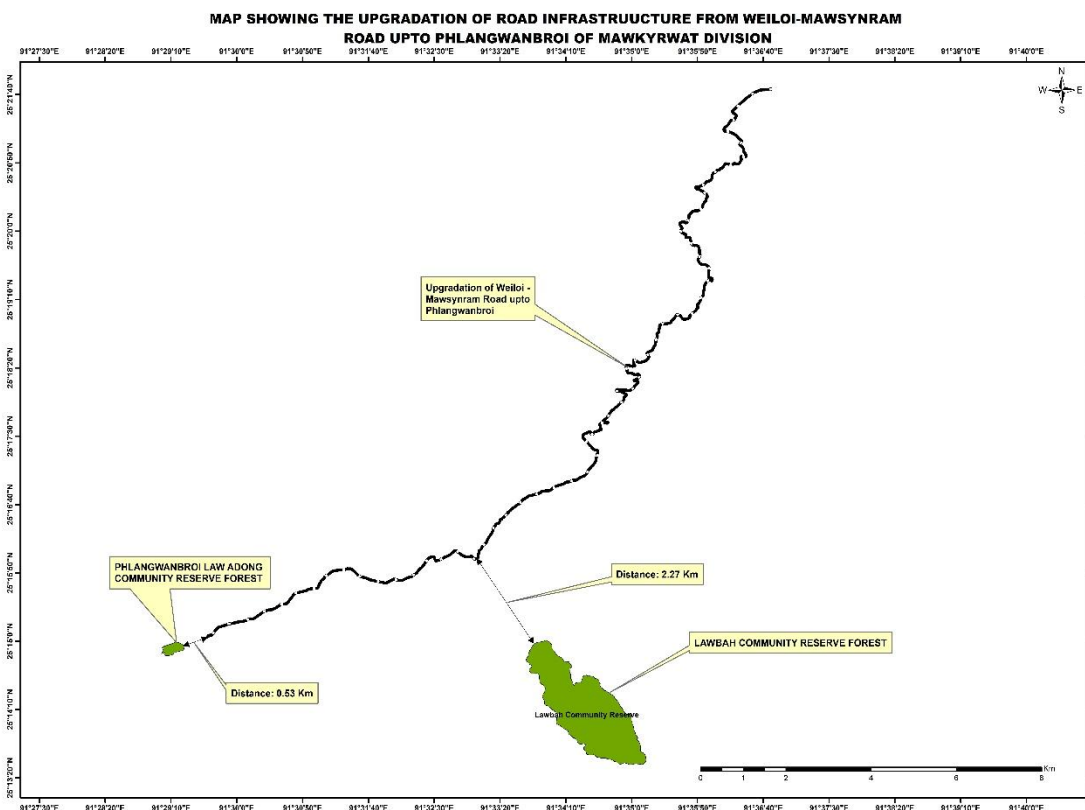
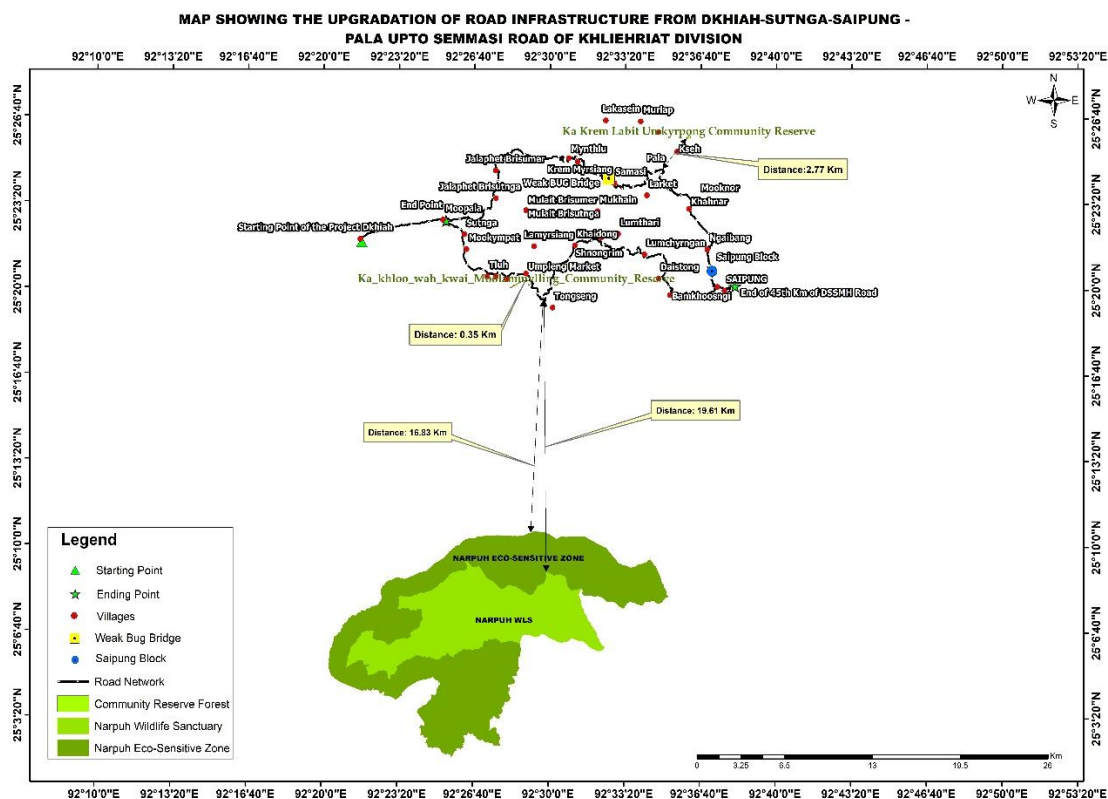
Semi-artificial canopy bridges (SACB) are made using a combination of natural and man-made materials or components such as a rope-ladder made using wood and nylon rope. it is secured to trees using nylon hitch. Some species adapt to it fast and use the bridge after seven days of its installation). Its construction period is also short and gives its short habituation period it can be used effectively.

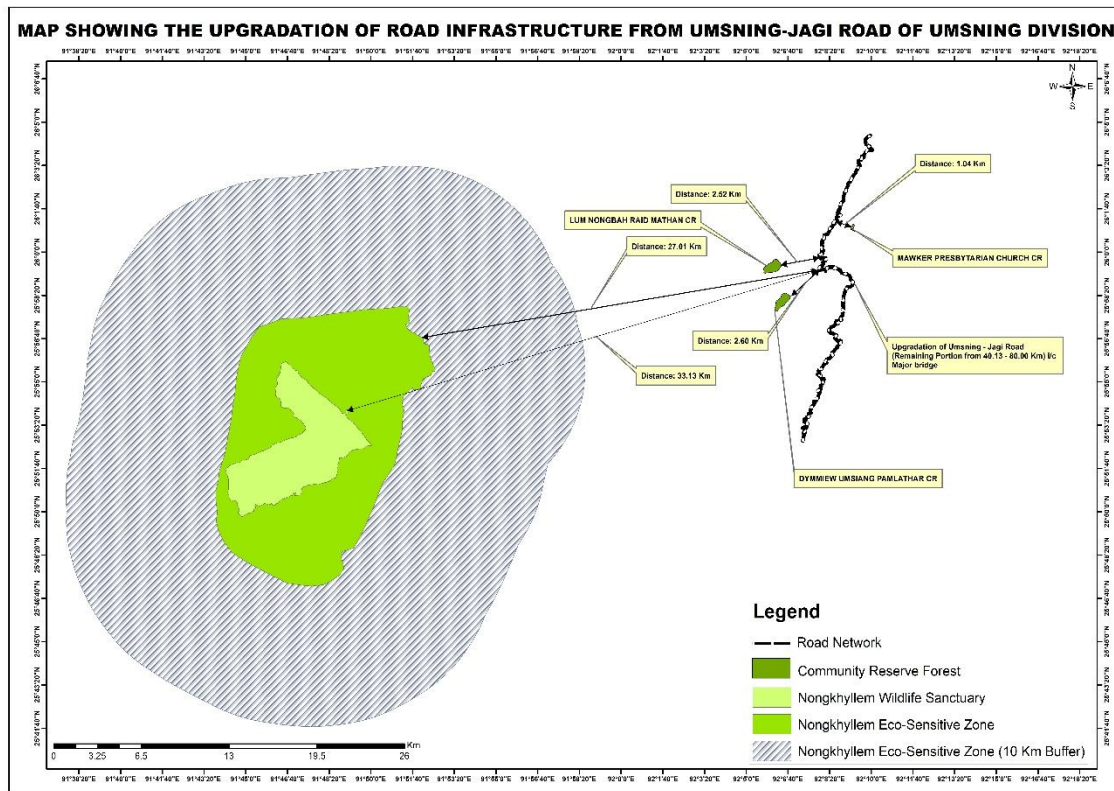
Artificial Canopy Bridge (ACB)

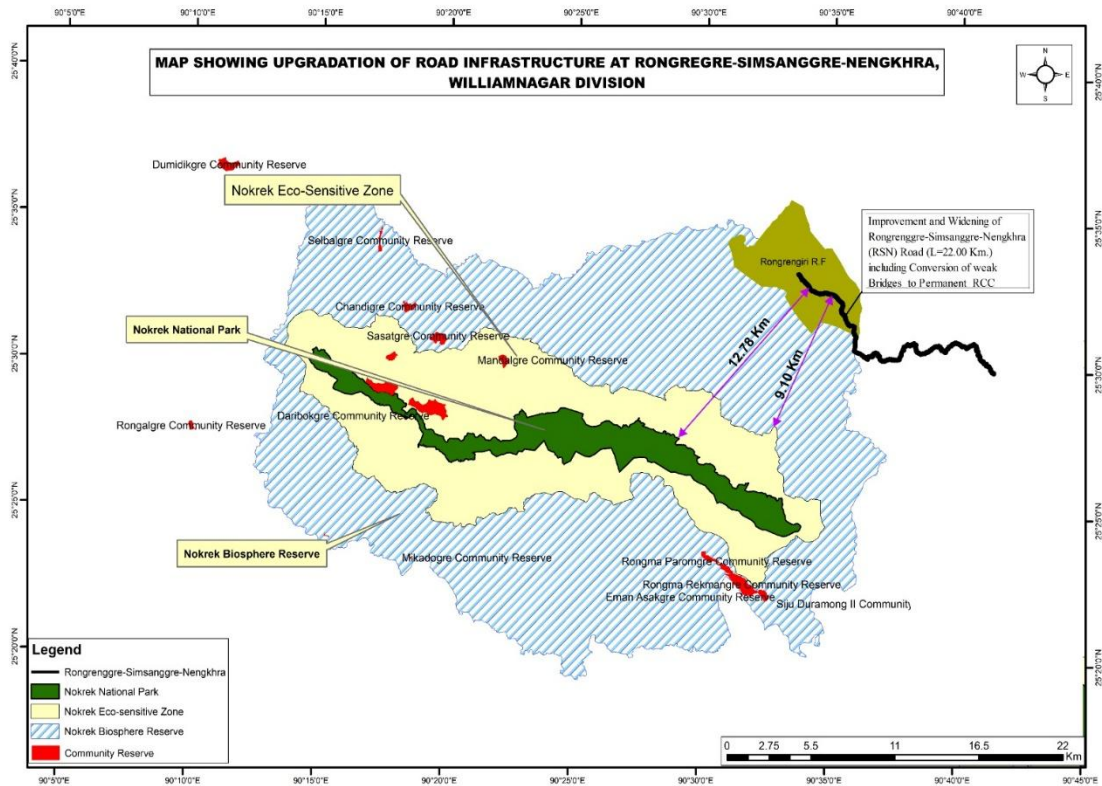
These bridges are made using artificial or man-made materials/ components such as water-pipe , mountaineering grade ropes, wood and cable, PVC conduit pipe, pressure pipe, galvanised wire and turnbuckles , fire hose pipes, synthetic polypropylene rope etc. Habituation period for ACBs are slightly longer as compared to both NCB and SACB. ACBs have been found to be successful for other primate and non-primate arboreal species

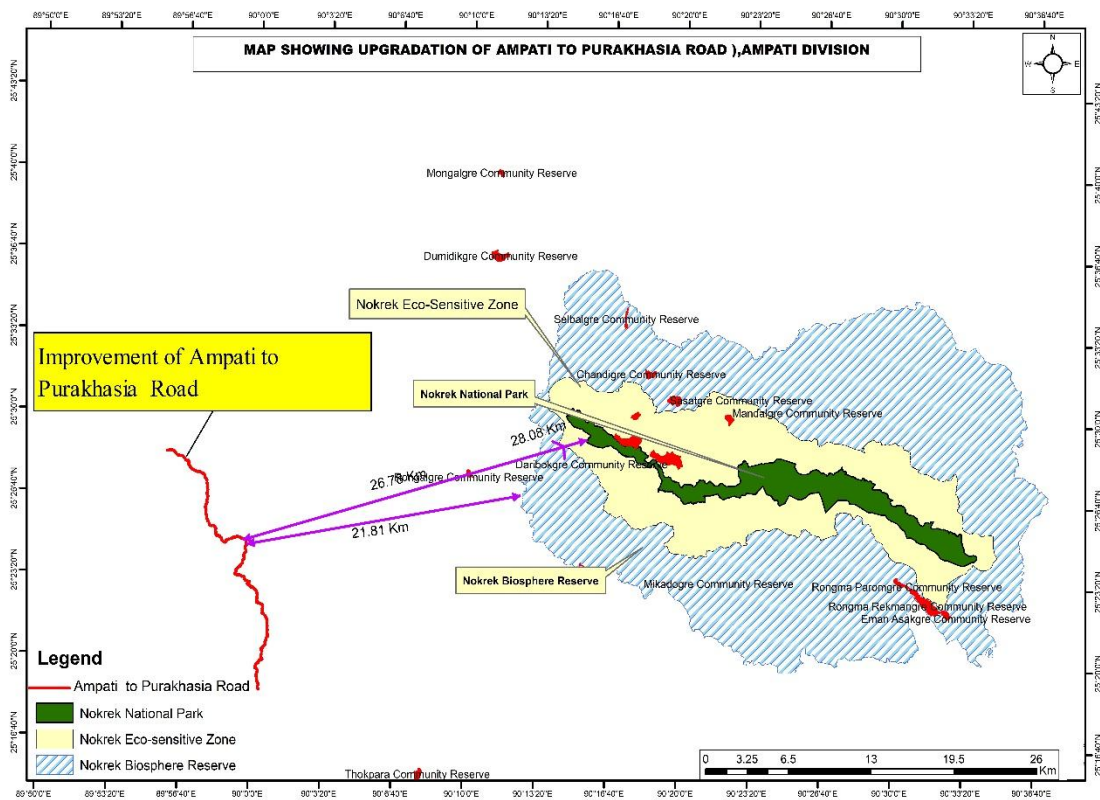
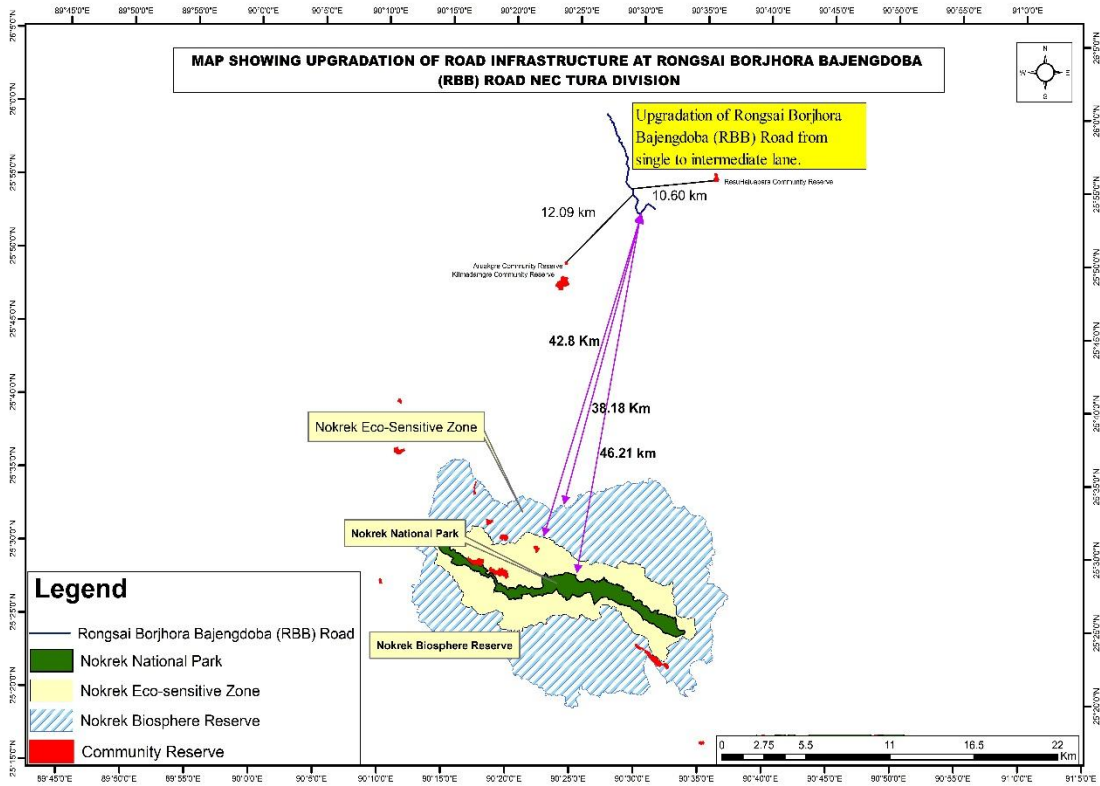


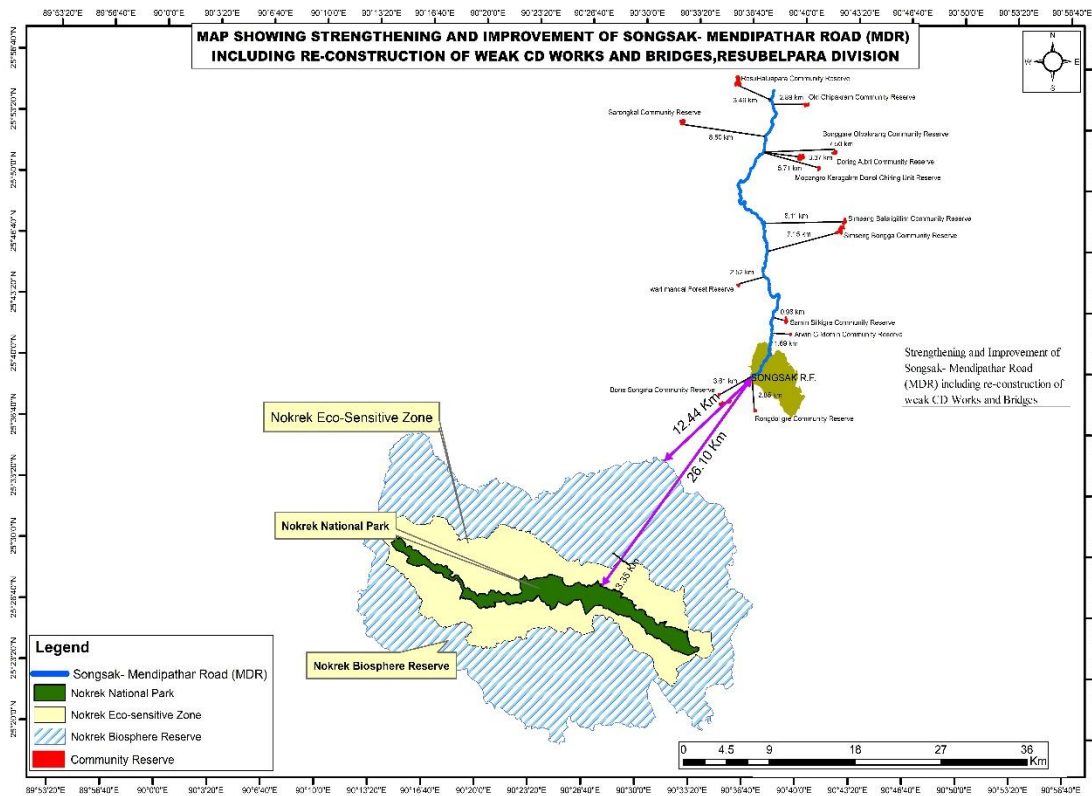
Annexure 9 – Protected Area and Forest Boundary Maps



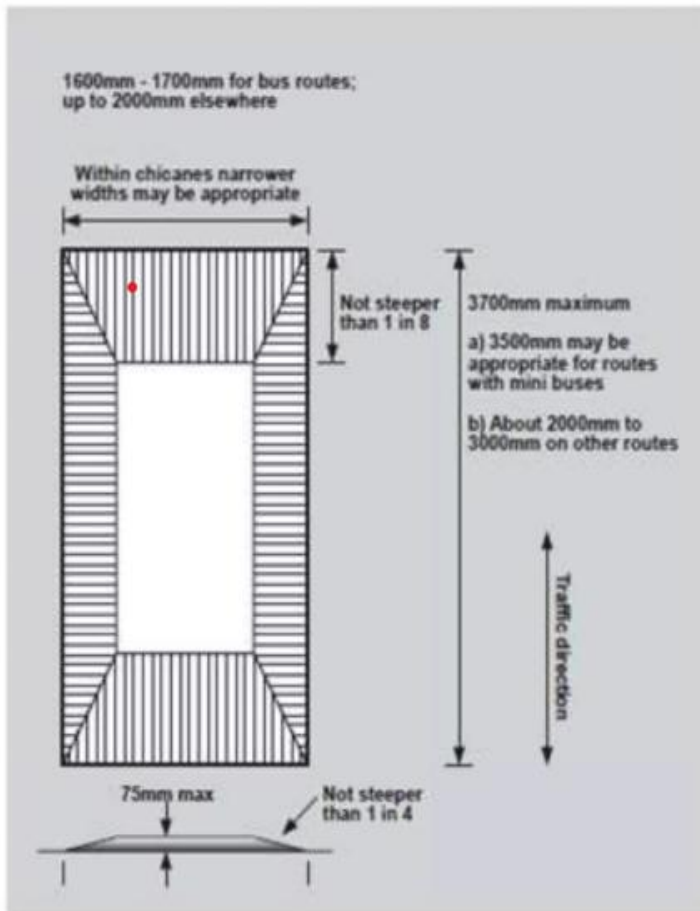








Annexure 10 – Typical Design of Tabletop Crossing and Traffic Calming Measures



ANNEXURE VI: BIODIVERSITY MANAGEMENT PLAN (BMP) – TERMS OF REFERENCE

Project: Meghalaya Logistic & Connectivity Improvement Project (MLCIP)

Components: Roads, Bridges, Agro-Logistics Infrastructure (Warehouse), Ropeway Systems

1. OBJECTIVE

The objective of the Biodiversity Management Plan (BMP) is to ensure that all project activities avoid, minimize, or mitigate adverse impacts on natural habitats, key biodiversity areas (including Important Bird and Biodiversity Areas IBAs), forests, wetlands, species of conservation concern, and ecosystem services along the project corridors in Meghalaya.

The BMP will operationalize requirements under:

- ✧ World Bank ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- ✧ Government of India & Meghalaya Biodiversity, Forest and Wildlife Regulations
- ✧ IBAT / Bird Life International data on Key Biodiversity Areas & IBAs
- ✧ Project ESIA/ESMP and Corridor-specific Biodiversity Screening Report

2. SCOPE OF WORK

The Contractor / Consultant shall prepare, implement, and monitor a BMP covering the following:

2.1 Baseline Biodiversity Screening

Using IBAT/BirdLife IBA dataset, Forest Department data and primary field verification, the Contractor shall:

Identify the presence and proximity of:

- ✧ IBAs, KBAs, Protected Areas, community forests, sacred groves
- ✧ Elephant corridors, wildlife movement routes
- ✧ Riparian habitats, wetlands, and springs
- ✧ Rare, threatened, endangered (RTE) flora and fauna
- ✧ Map ecologically sensitive receptors within:
- ✧ 500 m of open road works

2.2 Impact Assessment

The ESIA Consultant shall evaluate potential impacts from:

- ✧ Earthworks, quarrying, spoil disposal, and vegetation clearance
- ✧ Bridge foundation, river training
- ✧ Worker camps, traffic movement, noise, and lighting
- ✧ Access road creation and vehicle-wash wastewater discharge

2.3 Mitigation & Management Measures

The BMP shall include:

- ✧ Habitat Avoidance Plan
- ✧ Vegetation Clearance Register & Permit Compliance
- ✧ Species Protection Measures (nesting birds, herpetofauna, pollinators)
- ✧ Elephant Corridor Protocol
- ✧ River/stream protection and turbidity control
- ✧ No-go periods during bird breeding seasons (site-specific)

-
- ✧ Bird flight diverters and anti-collision markers
 - ✧ Emergency rescue protocol

2.4 Restoration & Offset Planning

The BMP shall include:

- ✧ Re-vegetation using native species
- ✧ Riverbank stabilization
- ✧ Assisted natural regeneration near community forests
- ✧ Offsets (only if residual impact remains)

2.5 Monitoring Plan

The BMP shall include:

- ✧ Vegetation clearance monitoring
- ✧ Bird and wildlife sightings log
- ✧ Water quality monitoring at bridge sites
- ✧ Contractor monthly compliance reporting

3. DELIVERABLES

The ESIA Consultant shall provide the following:

- ✓ D1. Biodiversity Screening Report (BSR)
- ✓ D2. Detailed Biodiversity Management Plan (BMP)
- ✓ D3. Biodiversity Restoration Plan (BRP)
- ✓ D4. Site-specific Checklists before each construction stage
- ✓ D5. Monthly Biodiversity Compliance Reports
- ✓ D6. Training Plan & Records for all workers

This BMP must be approved by the Supervision Consultant & PIU Environmental Specialist prior to commencement of site works.

Biodiversity Management Plan (BMP) (Table of Contents) (Roads & Bridges)

Executive Summary

1. Introduction
2. Policy, Legal and Institutional Framework
3. Project Description
4. Ecological Baseline
5. Biodiversity Screening and Risk Categorization
6. Critical Habitat Assessment (ESS6)
7. Elephant Corridor Assessment
8. Impact Assessment
9. Mitigation Strategy
10. Elephant Corridor Management Plan

-
11. Restoration and Habitat Enhancement
 12. Monitoring, Evaluation and Adaptive Management
 13. Institutional Capacity and Training
 14. Stakeholder Engagement and Disclosure
 15. Budget and Resource Allocation
 16. Compliance, Enforcement and Reporting
 17. Conclusions and Commitments

Annexures

ANNEXURE VII: BIODIVERSITY PROTECTION MEASURES TO BE INCLUDED IN THE CONTRACT

1 Prohibited Activities

- ✧ Clearing vegetation beyond demarcated limits
- ✧ Extraction of fuelwood, hunting, trapping, and fishing
- ✧ Damage to nests, burrows, beehives, and roosting sites
- ✧ Disposal of spoil in forest areas or water bodies

2 Mandatory Requirements

- ✧ Use of native species for all plantations
- ✧ Wildlife-friendly worksite management
- ✧ Noise restrictions near IBAs/elephant routes
- ✧ Work-hour restrictions: 6 AM–6 PM near sensitive forest edges
- ✧ Dust suppression near forest patches
- ✧ Spill prevention plans

3. REPORTING AND AUDIT REQUIREMENTS

- ✧ Weekly internal monitoring by Contractor
- ✧ Monthly compliance reports
- ✧ Quarterly biodiversity audits by the Supervision Consultant
- ✧ Six-monthly reports to PIU/World Bank
- ✧ Serious non-compliance may result in:
 - ✧ Suspension of works
 - ✧ Withholding of payments
 - ✧ Replacement of Contractor's Biodiversity Officer

4. TRAINING & CAPACITY BUILDING

The Contractor shall conduct mandatory training for:

- ✧ Wildlife interaction protocols
- ✧ Elephant encounter safety
- ✧ Vegetation clearance methods

-
- ✧ Spill and waste management
 - ✧ Minimum training frequency: quarterly.

ANNEXURE VIII: CONTRACT CLAUSES (TO BE DIRECTLY INSERTED INTO BID DOCUMENTS)

Clause 1: Preparation of BMP

“The Contractor shall prepare and implement a site-specific Biodiversity Management Plan (BMP) in accordance with this ToR, ESS6, ESMP and statutory requirements. No mobilization or site clearing shall commence until the BMP is approved by the Engineer.”

Clause 2: Appointment of Biodiversity Expert

“The Contractor shall appoint a qualified Biodiversity/Environmental Expert (minimum 5 years ecological experience) before mobilization.”

Clause 3: Vegetation Clearance Restriction

“No vegetation clearance is permitted without prior written approval from the Engineer based on the certified Vegetation Clearance Register.”

Clause 4: Wildlife Protection

“The Contractor shall ensure zero harm to wildlife, including birds, herpetofauna, mammals and pollinators. Workers must not disturb nests, dens, roosts, or wildlife movement.”

Clause 5: Ropeway Bird Diverters

“All ropeway alignments intersecting known bird-movement paths or located within 5 km of an IBA must install bird diverters as specified.”

Clause 6: Penalty for Non-Compliance

“Any breach of biodiversity safeguards shall attract penalties up to 1% of Contract Value per event, including suspension of works.”

ANNEXURE IX: Occupational Health & Safety Framework

1. Introduction

The Meghalaya Logistics and Corridor Improvement Project (MLCIP), located in steep, high rainfall, and geologically sensitive terrain, demands robust occupational health and safety (OHS) measures.

This OHS Framework, grounded in comprehensive Hazard Identification and Risk Assessment (HIRA), fully complies with Indian legislation, IFC EHS Guidelines, relevant IS codes, and ISO 45001:2018. It prioritizes preventive and mitigative controls, permit-to-work systems, Safe Work Method Statements, emergency preparedness, contractor management, and worker welfare to address risks in construction, ropeway operations, warehousing, traffic management, and environmental protection.

2. Key OHS Standards and Legal Applicability

2.1 Legal and Regulatory Framework

The MLCIP shall comply with all relevant provisions of the Government of India's consolidated labour codes, which subsume and modernize the following legacy enactments, alongside other applicable national regulations:

- Occupational Safety, Health and Working Conditions Code, 2020 (subsuming the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996, the Factories Act, 1948 applicable to warehouses and processing units and the Contract Labour (Regulation and Abolition) Act, 1970)
- Code on Social Security, 2020 (subsuming the Employees' Compensation Act, 1923 formerly the Workmen's Compensation Act, 1923 and the Building and Other Construction Workers' Welfare Cess Act, 1996)
- Central Motor Vehicles Rules, 1989
- Indian Electricity Rules, 1956

In eco-sensitive zones, forest and wildlife protection advisories will be observed. The framework further incorporates internationally recognized practices.

2.2 General Safety Obligations:

Contractors shall implement HIRA, JSA, SWMS, permit-to-work systems (for work at height, electrical tasks, confined spaces, hot work, etc.), lifting plans, traffic management plans, and comprehensive emergency response procedures.

All workers must receive site-specific OHS induction, appropriate PPE, task-specific training, and medical fitness certification for high-risk tasks. Dedicated safety officers shall be deployed at each site, conducting monthly audits and quarterly reviews, with enforceable contractual safety clauses. High-risk activities shall not commence without a valid permit and direct supervision.

3. MLCIP Occupational Health and Safety Policy:

The MLCIP is committed to delivering infrastructure without accidents or occupational illnesses through systematic hazard identification, risk elimination/substitution, continuous monitoring, engineered safeguards, safety-by-design principles, worker health protection, and strict contractor accountability.

3.1 Core Commitments:

- Zero fatalities, serious injuries, and occupational illnesses
- Integration of safety into engineering design
- Provision of safe, ergonomic workplaces
- Regular OHS training and medical surveillance
- Full contractor compliance and accountability
- Constant emergency preparedness across all facilities
- Cultivation of a strong safety culture and worker wellbeing

3.2 Guiding Principles

- Safety is the primary consideration in all decisions
- Every worker retains the right to refuse unsafe work
- 100 % compliance with PPE and permit requirements
- Preventive risk management through HIRA
- Transparent incident reporting and investigation
- Comprehensive protection of worker health and welfare

4. OHS Governance Structure

4.1 Responsibility Matrix

Role	OHS Responsibility
Chief Engineer cum Nodal Officer (PWD)	OHS oversight, safety budget approval, contractor safety enforcement
Environmental & Social Cell Head, PIU, PWD	Integration of OHS with environmental and community safety mechanisms
Environmental and Social Cell, PWD	HIRA implementation, permit validation, JSA reviews, incident reporting
Site Safety Supervisors (Contractor)	Daily safety monitoring, toolbox talks, PPE checks
EPC Contractors	Deploy safety teams, implement HIRA and SWMS, incident notification
Workers	Adhere to PPE, safety instructions, refuse unsafe activities

4.2 Review and Decision Forums

- Monthly Safety Compliance Review (SCR)
- Quarterly HIRA Revision
- Incident Investigation Committee (IIC) activated per incident
- Annual OHS Framework Review (OFR)

4.3 Safety Budget Lines

MLCIP ensures funding for:

- PPE kits
- Fall protection systems
- Emergency medical units
- Fire suppression in warehouses
- Structural tower safety systems
- Lifting equipment testing
- HIRA review workshops
- Weather safety systems

5. Safety Framework

5.1 Step-wise Implementation

The Hazard Identification and Risk Assessment (HIRA) methodology involves a systematic, step-wise implementation to ensure comprehensive safety management:

- Hazard Identification: Proactively identifying potential hazards across all project activities and environments.
- Risk Assessment: Evaluating the identified hazards to determine their potential severity and likelihood of occurrence.
- Control Definition: Developing and implementing appropriate control measures to eliminate or reduce risks to an acceptable level.
- Permit Linking: Associating specific high-risk activities with required permits to ensure necessary precautions are in place before work commences.
- Residual Risk Scoring: Re-evaluating the risk level after control measures have been implemented to ensure it is acceptable.
- Review and Update: Regularly reviewing and updating the HIRA process based on new information, incidents, or changes in project scope.

5.2 Risk Rating Criteria

The following criteria are used for rating Severity and Likelihood:

Severity	Description
1	Minor injury
2	Medical treatment
3	Lost time injury
4	Permanent disablement
5	Fatality

Likelihood	Frequency
1	Rare
2	Unlikely
3	Possible
4	Likely
5	Almost Certain

5.3 Risk Matrix

The Risk Score is calculated as: Risk Score = Severity × Likelihood

Risk Level	Score Range	Action
Low	1-5	Standard control
Medium	6-10	Supervisor approval
High	11-16	Permit required
Extreme	17-25	Stop work unless redesigned

6. Hazard Identification and Risk Control

6.1 Road Construction Risk

Major hazards associated with road construction include:

- Hill slope collapse
- Heavy vehicle rollover on bends
- Excavator-induced ground failure
- Blasting-induced vibration
- Worker slips due to algae/rain
- Powerline contact
- Asphalt burns
- Noise and dust exposure

Hazard Identification & Risk Analysis Table – Road Construction

Hazard	Cause	Impact	S	L	R	Controls	Permit
Slope collapse	Excavation during rain	Fatality/burial	5	4	20	Excavation bans during heavy rain, slope benching, retaining walls	Height/Excavation
Vehicle rollover	Sharp bends	Fatality/operator injury	5	3	15	Trained operators, speed limit 15–30 km/h, wheel chocks	No
Blasting	Quarry cutting	Hearing loss/injury	4	3	12	Controlled blasting, vibration monitoring, and siren alerts	Blasting
Asphalt burns	Hot mix handling	Severe burns	3	4	12	Gloves, safety boots, barricaded area	No

6.2 Bridge Construction Risk

Hazards in bridge construction include:

- Working at heights
- Girder collapse
- Crane failure

- Piling collapse
- River flash floods
- Welding hazards
- Rebar cuts
- Scaffolding failure

Hazard Identification & Risk Analysis Table – Bridge Construction

Hazard	Cause	Impact	S	L	R	Controls	Permit
Height fall	Pier work	Fatality	5	4	20	Lifeline, double-lanyard harness, netting	Height
Crane failure	Overload	Structural collapse	5	3	15	Load test, certified cranes, trained rigger	Lifting
Flood surge	Monsoon rivers	Drowning/impact	5	4	20	Early warning, evacuation routes	No
Welding sparks	Hot metal work	Burns/fire	3	4	12	Shields, fire watch, extinguishers	Hot work

- Electrical failure
- Height fall during tower assembly
- Rescue failure during emergency movement

Hazard Identification & Risk Analysis Table – Ropeway

Hazard	Cause	Impact	S	L	R	Control	Permit
Tower collapse	Poor foundation	Fatality/mass injury	5	3	15	IS compliance, geotech test	Tower Permit
Rope snap	Load > capacity	Fatality/goods impact	5	2	10	Daily rope inspection	No
Goods fall	Improper sling	Severe injury	4	3	12	Certified slings, trained loaders	Lifting
Rescue failure	No trained team	Fatality	5	3	15	Dedicated ropeway rescue team	Ropeway Rescue

6.3.2 Warehouse, Logistics Hub Risk

Hazards in warehousing operations:

- Confined space entry
- Forklift collision
- Racking collapse
- Fire risk
- Electrical shock

- Manual handling injury

Hazard Identification & Risk Analysis Table – Warehouse

Hazard	Cause	Impact	S	L	R	Controls	Permit
Confined entry	O2 drop	Asphyxiation/fatality	5	3	15	Gas monitor, ventilation	Confined Space
Fire	Stored materials	Fatality/site loss	4	3	12	Fire hydrants, smoke alarms	No
Gas leak	Ware house storage	Toxic exposure	5	2	10	Leak detection, respirators	No

7. Safe Work Method Statements (SWMS)

Mandatory SWMS shall be created for the following activities:

- Hill excavation
- Asphalt mixing
- Scaffolding erection
- Crane lifting
- Piling operations
- Ropeway tower installation
- Confined space cold chamber entry
- Material storage and racking
- Electrical installations
- Ropeway emergency rescue
- Traffic management

All SWMS must include the following components:

- Step-by-step hazards
- Required PPE
- Supervisor validation
- Weather ban rules
- Emergency actions

8. Contractor Safety Management Plan

8.1 Pre-Mobilization Compliance Checklist

Contractors must provide the following mandatory documentation before mobilization:

Requirement	Mandatory Documentation
Risk Register	Site-wise risk assessment
SWMS / JSA	Task-wise safe methods
Lifting Plans	Crane load and rigging

Requirement	Mandatory Documentation
Permits	Height, Hot Work, Confined Space, Electrical, Ropeway rescue
Equipment certification	Crane, slings, harness, scaffolds
Insurance	Worker compensation
Medical fitness	Height/ropeway/cold storage personnel

8.2 Contractor Safety Clauses

Contractors shall ensure the following:

- Compliance with BOCW Act & IS codes
- Deployment of a qualified Safety Officer
- Incident reporting within 2 hours
- Subscription to monthly audits
- Weather ban adherence
- PPE issuance logs and wear compliance
- Annual ropeway and rack structural audit
- Fire safety equipment in warehouses
- First-Aid centre at every site
- Rescue teams for ropeway operations
- Road Traffic Marshals deployment

9. Worker Occupational Health & Well-being Plan

Meghalaya project conditions can induce health risks such as:

- Extreme cold in warehouse chambers
- High humidity
- Remote uphill fatigue
- Constant rainfall
- Dust inhalation
- Noise exposure
- Back strain

Controls for these risks are as follows:

Risk Type	Health Control Measure
Dust	N95 masks, water spraying
Noise	Ear muffs if >85 dB
Cold entry	10-min exposure limit + warm PPE
Fatigue	Rest every 2 hours

Risk Type	Health Control Measure
Manual handling	Lifting limits and training
Temperature shock	Staged acclimatization

Medical surveillance will be conducted every 6 months for high-risk workers.

10. Traffic Safety and OHS Plan

10.1 Hill Road Traffic Hazards

Hazards specific to hill road traffic include:

- Blind bends
- Rollover risk
- Slippery roads
- Fog
- Night driving risks
- Landslides
- Wildlife movement
- Mixing of public + project traffic

10.2 Traffic Control Measures

The following traffic control measures will be implemented:

- Speed limits are strictly enforced
- Retro-reflective signage
- One-way diversion where applicable
- No night work during fog/heavy rain
- Traffic marshals at haul points
- Convoy movement in remote hills

10.3 Vehicle Safety Standards

All vehicles must meet the following safety standards:

- Valid fitness and PUC certificates
- Trained hill-route drivers
- Anti-skid tires
- ABS preferred
- Reversing alarm mandatory
- First-aid kit and fire extinguisher onboard

11. Emergency Response Framework

11.1 Major Foreseeable Emergencies

The project must be prepared for the following major foreseeable emergencies:

Emergency	Relevance
Landslide	Road and tower erection
Flood	Bridge workers
Tower collapse	Ropeway
Fire	Construction Plants & Warehouses
Chemical leak	Road , Bridge and Warehouses

11.2 Emergency Controls

Effective emergency controls include:

- Site emergency route maps
- Mock drills quarterly
- Tower collapse rescue ropeway team
- River flood evacuation plans
- Warehouse fire response plan

The response time target for first-aid is under 4 minutes.

12. Incident Reporting & Investigation

All incidents will be classified as:

- Near Miss
- First-Aid
- LTI (Lost Time Injury)
- Major
- Fatal

Key reporting and investigation timelines are:

- Report within 2 hours
- Root Cause Analysis (RCA) within 5 days
- Corrective and Preventive Action (CAPA) plan within 10 days

12.1 Safety Monitoring & KPI Dashboard

Performance will be monitored using the following indicators:

Indicator	Target
Fatality	0
LTIFR (Lost Time Injury Frequency Rate)	<1.0
Permit compliance	100%
PPE compliance	>98%

14. Review & Continuous Improvement:

The Hazard Identification & Risk Analysis process under OHS Framework will be reviewed and improved through:

- Revision every 3 months or after a major incident.
- Integration of weather risk live monitoring.
- Feedback loop from contractor audits.
- Improvement suggestions logged into the Safety Register.

The OHS Framework establishes a robust, structured safety ecosystem for all MLCIP infrastructure projects, from hill roads and bridges to ropeway-based agro-logistics facilities. Built on systematic Hazard Identification and Risk Assessment, permit-to-work controls, comprehensive worker welfare measures, and emergency preparedness, the framework proactively prevents risks, enforces contractor accountability, and safeguards against occupational illnesses across Meghalaya's challenging terrain, delivering sustainable development without compromise to worker safety.

ANNEXURE X: Guidelines on Development, Management and Restoration of Labour Camp

INTRODUCTION

1. The scope of this guideline pertains to the siting, development, management and restoration of construction and labour camps to avoid or mitigate impacts on the environment. The area requirement for the construction camp shall depend upon the size of contract, number of labourers employed and the extent of machinery deployed. The following sections describe the siting, construction, maintenance, provision of facilities in the camps and finally rehabilitation of the construction and labour camps. These are described in three stages, pre-construction, construction and post-construction stage. The issues related to construction camps are similar in the case of road construction and hence have been taken together.

PRE-CONSTRUCTION STAGE

1. Identification of site for construction and labour camps is the first task. The Contractor shall identify the site for construction camp in consultation with the individual owners in case of private lands and the concerned department in case of Government lands. The suitable sites shall be selected and finalized in consultation with customary Village Councils (Nokma/ Waheh Chnong/ Rangbah Shnong). **Table 1-1** gives the lands that could be avoided for construction camps and conversely those that could be preferred.

Table 1-1: Selection Criterion for Construction Camps.

Avoid the following ...	Prefer the following ...
• Lands close to habitations. • Irrigated agricultural lands. • Lands belonging to small farmers. • Lands under village forests. Lands within 100m of community water bodies and water sources as rivers. • Lands within 100m of watercourses. • 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.	• Waste lands. • Waste Lands belonging to owners who look upon the temporary use as a source of income. • Community lands or government land not used for beneficial purposes. • Private non-irrigated lands where the owner is willing. • Lands with an existing access road.

2. The contractor will work out arrangements for setting up his facilities during the duration of construction with the land owner having got permission from the respective Village Council. These arrangements shall be in the form of written agreement between the contractor and the land owner (private/government) that would specify:

- Geo-tagged photograph of the proposed camp site in original condition;
- activities to be carried out in the site;
- environmental mitigation measures to be

Arrangements with Land owners...
The Contractor shall submit to R&BD (Panchayat) the following: • Written No Object Certification from respective land owner/Cultivator
• Extent of land required and duration of the agreement • Photograph of site in original condition • Details of site after redevelopment

undertaken to prevent land, air, water and noise pollution;

d) detailed layout plan for development of the construction and labour camp that shall indicate the various structures to be constructed in the camp including temporary, drainage and

other facilities (**Figure 1-1** gives a layout plan for a construction camp); and

e) Restoration plan of camp site as per the requirements of the land owner.

3. The General arrangements of the camp are provided to guide the Contractor. The actual design will be verified by the CSC to enable redressal of grievances at a later stage of the project.

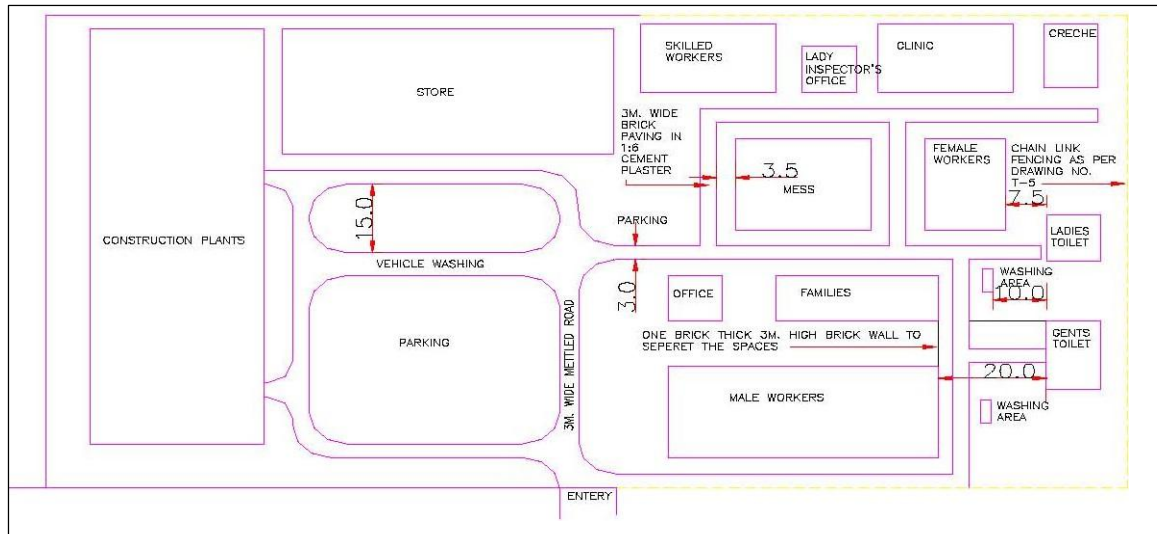


Figure 1-1: Layout Plan for Construction Camp

2.2 Setting up of labour camp

4. The contractor shall provide, free of cost in the camp site, temporary living accommodation to all the migrant workers employed by him for complete construction/maintenance works. A minimum area of 6 sq.mts per person shall be provided. The rooms of labour shall be well lighted and ventilated. The facilities to be provided for the labour are discussed below:

Drinking Water

5. Towards the provision and storage of drinking water at the construction camp, the contractor shall ensure the following provisions

- The contractor shall provide for a continuous and sufficient supply of potable water in the camps, in earthen pots or any other suitable containers.
- The contractor shall identify suitable community water sources for drinking. Only in the event of non- availability of other sources of potable water, the Contractor shall obtain water from an unprotected source only after the testing for its potability. Where water has to be drawn from an existing open well, the well shall be properly chlorinated before water is drawn from it for drinking. All such wells shall be entirely closed in and be provided with dust proof trap door.
- Every water supply or storage shall be at a distance of not less than 15m from any wastewater / sewage drain or other source of pollution. Water sources within 15m proximity of toilet, drain or any source of pollution will not be used as a source of drinking water in the project.
- A pump shall be fitted to covered well used as drinking water source; the trap door shall be kept locked and opened only for cleaning or inspection, which shall be done at least once a month.

Washing and Bathing Facilities

6. In every site, adequate and suitable facilities for washing clothes and utensils shall be provided and maintained for the use of contract labor employed therein. Separate and adequate bathing shall be provided for the use of male and female workers. Such facilities shall be conveniently accessible and shall be kept in clean and hygienic conditions.

Toilets Facilities

7. Sanitary arrangements, latrines and urinals shall be provided in every work place separately for male and female workers. The arrangements shall include:

- A latrine for every 15 females or part thereof (where female workers are employed).
- A latrine for every 10 males.
- Every latrine shall be under cover and so partitioned as to secure privacy, and shall have a proper door and fastenings.
- Where workers of both sexes are employed, there shall be displayed outside each block of latrine and urinal, a notice in the language understood by the majority of the workers "For Men Only" or "For Women Only" as the case may be.
- The latrines and urinals shall be adequately lighted and shall be maintained in a clean sanitary condition at all times and should have a proper drainage system;
- Water shall be provided in or near the latrines and urinals by storage in suitable containers.

Waste Disposal

- Disposal of sanitary wastes and excreta shall be into septic tanks.
- Kitchen waste water shall be disposed into soak pits/kitchen sump located preferably at least 15 meters from any water body. Sump capacity should be at least 1.3 times the maximum volume of wastewater discharged per day. The bottom of the pit should be filled with coarse gravel and the sides shored up with board, etc. to prevent erosion and collapse of the pit. New soak pits shall be made ready as soon as the earlier one is filled.
- Solid wastes generated in the kitchen shall be reused if recyclable or disposed off in land fill sites.

Medical and First Aid Facilities

8. Medical facilities shall be provided to the labour at the construction camp. Visits of doctor shall be arranged twice a month wherein routine check-ups would be conducted for women and children. A separate room for medical check-ups and keeping of first aid facilities should be built. The site medical room should display awareness posters on safety facilitation hygiene and HIV/AIDS awareness.

- First Aid Box will be provided at every construction campsite and under the charge of a responsible person who shall always be readily available during working hours. He shall be adequately trained in administering first aid-treatment. Formal arrangement shall be prescribed to carry injured person or person suddenly taken ill to the nearest hospital. The first aid box shall contain the following.
 - 6 small sterilized dressings
 - 3 medium size sterilized dressings
 - 3 large size sterilized dressings
 - 3 large sterilized burns dressings
 - 1 (30 ml) bottle containing 2 % alcoholic solution of iodine
 - 1 (30 ml) bottle containing salvolatile
 - 1 snakebite lancet
 - 1 (30 gms) bottle of potassium permanganate crystals
 - 1 pair scissors
 - Ointment for burns
 - A bottle of suitable surgical antiseptic solution

In case, the number of labour exceeds 50, the items in the first aid box shall be doubled.

Provision of Shelter during Rest

9. The work place shall provide four suitable sheds, two for meals and two for rest (separately for men and women). The height of the shelter shall not be less than 3.0m from the floor level to the lowest part of the roof. These shall be kept clean.

Crèches

10. In case 30 or more women workers are employed, there shall be a room of reasonable size for use of children under the age of six years. The room should have adequate light and realisation. A caretaker is to be appointed to look after the children. The use of the room shall be restricted to children, their mothers and the caretaker.

Storage of Construction Material in Construction Camps

11. For storage of Petrol/Oil/Lubricants, brick on edge flooring or sand flooring will be provided at the storage places of Petrol/Oil/Lubricants to avoid soil and water contamination due to spillage. These should be kept away from labour residential areas. The storage of cement shall be at Damp-proof flooring, as per IS codes. All materials shall be stored in a barricaded area. In case of electrical equipment, danger signs shall be

posted. The batch mix plant is to be located away from the residential area and not in the wind direction. Separate parking areas for vehicles and also workshop areas need to be provided.

Firefighting arrangement

The following precautions need to be taken:

- Demarcation of area susceptible to fires with cautionary signage;
- Portable fire extinguishers and/or sand baskets shall be provided at easily accessible locations in the event of fire;
- Contractor shall educate the workers on usage of this equipment.

Interactions with host communities

12. To ensure that there is no conflict of the migrant labor with the host communities, the contractor shall issue identity cards to labourers and residents of construction camps.

CONSTRUCTION STAGE

13. Construction camps shall be maintained free from litter and in hygienic condition. It should be kept free from spillage of oil, grease or bitumen. Any spillage should be cleaned immediately to avoid pollution of soil, water stored or adjacent water bodies. The following precautions need to be taken in construction camps.

- Measures to ensure that no leaching of oil and grease into water bodies or underground water takes place.
- Wastewater should not be disposed into water bodies.

-
- Regular collection of solid wastes should be undertaken and should be disposed off safely.
 - All consumables as the first aid equipment, cleaning equipment for maintaining hygiene and sanitation should be recouped immediately.
 - The debris/scrap generated during construction should be kept in a designated and barricaded area.

14. The Engineer –in-charge will monitor the cleanliness of construction campsites and ensure that the sites are properly maintained throughout the period of the contract.

POST CONSTRUCTION STAGE

15. At the completion of construction, all construction camp facilities shall be dismantled and removed from the site. The site shall be restored to a condition in no way inferior to the condition prior to commencement of the works. Various activities to be carried out for site rehabilitation include:

- Oil and fuel contaminated soil shall be removed and transported and buried in waste disposal areas.
 - Soak pits, septic tanks shall be covered and effectively sealed off.
 - Debris (rejected material) should be disposed off suitably (Refer **OM-6** on “Waste Management and Debris Disposal”).
 - Ramps created should be levelled.
 - Underground water tank in a barren/non-agricultural land can be covered. However, in an agricultural land, the tank shall be removed.
 - If the construction camp site is on an agricultural land, top soil can be spread so as to aid faster rejuvenation.
 - Proper documentation of rehabilitation site is necessary. This shall include the following:
 - Photograph of rehabilitated site;
-
- Land owner consent letter for satisfaction in measures taken for rehabilitation of site;
 - Undertaking from contractor; and
 - Certification from the Engineer-in-charge.

16. In cases, where the construction camps site is located on a private land holding, the contractor would still have to restore the campsite as per this guideline. Also, he would have to obtain a certificate for satisfaction from the landowner.

Format: Construction Camp and Storage Area

Construction Stage: Report - Date_____ Month_____ Year_____

(Site Layout of Construction camp and working drawings of dwelling units with allied facilities to be attached with format)
Format to be submitted at least 3 weeks before the establishing camps

Location of Camp (km_____)

Sl. No	Item	Unit	Details	Remarks
1	Detail of item camp			
A	Size of Camp	Mxm		
B	Area of Camp	sq.m		
C	Distance from Nearest Settlement			
D	Distance from Nearest Water Source	Type/Size/Capacity/Present Use/Ownership		
E	Date of camp being operational dd/mm/yy			
F	Present land use			
G	No other trees with girth > 0.3m.			
H	Details of Storage area(Availability of impervious surface)	m xm		
I	Availability of separate waste disposal from storage area	Cum		
2	Details of top soil stacking			
A	Quantity of top soil removed	Cum		
B	Detail of storage of topsoil	Describe stacking arrangement		
3	Details of workforce			
A	Total No of Labourers	nos		
B	Total no of Male Workers	nos		
C	No of Male Workers below 18 years of age	nos		
D	Total No of Female Workers	nos		
E	No of Female workers below 18 years of age	nos		
F	No of children	nos		
4	Details of dwelling units			
A	No of dwellings/huts	nos		
B	Minimum Size of Dwelling	m xm		
C	No of openings per dwelling	nos		
D	Minimum size of opening	m xm		
E	Walls	specifications		
F	Roofing	specifications		

G	Flooring	specifications		
H	Drinking Water Tank	specifications		
I	Capacity of Drinking water Tank	cum		
J	Size of Drinking Water Tank	m xmxm		
K	Total no of WC	nos		
L	No of Wcs for female workers	nos		
M	Minimum Size of WC	mxm		
N	Total No of Bathrooms for female workers	nos		
O	Size of septic tank for WC/Baths	mxmxm		
P	Capacity of Water Tank for WCs/ Bathrooms and general purpose			
Q	Fencing around camp	Y/N		
5	Details of facilities			
A	Availability of security guard 24 hrs a day	Yes/No		
B	Details of First Aid Facility	Yes/No		
C	Availability of Day Care Centre	Yes/No		
D	Availability of dust bins (capacity 60 ltr)	nos		

Certified that the furnished information is correct the quality of work is as per god practice and all relevant information as required is attached

Contractor

Engineer-In-Charge

FORMAT: REPORTING FOR BORROW AREAS

Construction Stage Report: Date ____ Month _____ Year _____ Site Layout of Borrow Area and Proposed Borrow Area Redevelopment Plan to be attached with format. Format to be submitted before target date as (decided by R&BD, Panchayat) for establishing Borrow Areas Borrow Area No. BA_

Location of Borrow Area (Km _____)

Sl. No	Item	Unit	Details	Remarks, if any
1	Details of Borrow Area			
A	Date of Borrow Area becoming operational dd/mm/yy			
B	Current Land use			
C	Distance from Nearest Settlement	Km		
D	No of settlements within 200m of Haul Road	No.		
E	No of settlements within 500m of Borrow Area	No.		
F	Total Capacity	cum		
G	No of Trees with girth more than 0.3 m	No.		
H	Length of Haul Road	km		
I	Width of Haul road	m		
J	Type of Haul Road	metal/dirt		
K	Size of Borrow Area	Sq. km.		
L	Area of Borrow Area	km x km		
M	Quantity Available	cum		
N	Distance of Nearest Water Source	Type/Size/Capacity/Present Use/Ownership		
O	Quantity of top soil removed	cum		
P	Detail of storage of topsoil			
Q	Daily/occasional use of the Borrow Area by the community, if any	-		
R	Probable reuse of Borrow pit-ask community	-		
S	Drainage channels/slope/characteristics of the area	-		
2	Enhancement Elements			
A	Quantity of top soil removed	sq.m		
B	Detail of storage of topsoil	sq.m		
C	Adjoining land use/Natural elements			
D	Near by catchment for storing water			

E	Erosion Control Programme			
F	Preventive measures for			
I	Leaching			
li	Mosquito Breeding			
lii	Water run-off/contamination			
lv	Any other environmental degradation			
3	Details of workforce			
A	Total No of Labourers	No.		
B	Total no of Male Workers	No.		
C	No of Male Workers below 18 years of age	No.		
D	Total No of Female Workers	No.		
E	No of Female workers below 18 years of age	No.		
4	Details of redevelopment, Plan to be enclosed			

Certified that the furnished information is correct the quality of work is as per good practice and all relevant information as required is attached

Contractor

Engineer-In-Charge

FORMAT: TREE FELLING

Sr. No.	Links	Physical Target				Completion Target		Reason for Delay if any
		Total	Target	Target Achieved	% of task completed	Target Date	Date of Completion if task completed	
		Unit						
1		nos						
2		nos						
3		nos						
4		nos						

Contractor

Engineer-In-Charge

ANNEXURE XI: Terms of Reference (TOR) Contractor Occupational Health and Safety (OHS) Plan – MLCIP

(With Integrated HIRA and Hill Logistics/Connectivity Considerations)

Objective

Develop and implement a site-specific OHS Plan for MLCIP road, bridge, and agro-logistics infrastructure to achieve zero fatalities, prevent injuries, protect health, and ensure safe operations in hilly, rain-prone terrain through HIRA-based risk controls.

Scope of Work

Prepare and maintain a comprehensive Hazard Identification & Risk Analysis register for all activities and locations, including hill roads, heavy equipment, excavations, working at heights, lifting, confined spaces, electrical works, warehouses, ropeways, and logistics hubs.

Develop a Contractor OHS Plan compliant with Indian regulations, relevant IS standards, IFC/World Bank EHS Guidelines, and Meghalaya-specific terrain risks.

Key Deliverables

- Hazard Identification & Risk Analysis Register (severity, likelihood, rating, controls, residual risk).
- Self-Work Method Statement (SWMS)/Job Safety Analysis (JSA) for all high-risk tasks.
- Permit-to-Work system (height, hot work, lifting, confined space, electrical).
- Equipment certification and inspection logs.
- Hill Route Traffic and Haul Road Safety Plan (marshalling, speed limits, weather bans).
- Ropeway OHS Plan (tower erection, rope inspection, emergency rescue).
- Warehouse Safety Plan (fire, racking, gas/oxygen monitoring, ventilation).
- Emergency Response and Evacuation Plan (landslide, flood, fire, chemical, collapse).
- OHS induction/training records.
- Medical fitness programme for high-risk workers.
- Incident/near-miss reporting with Root Cause Analysis (RCA) and Corrective & Preventing Action (CAPA).

Methodology

- Apply Hierarchy of Controls (Elimination → Substitution → Engineering → Administrative → PPE).
- Conduct baseline Hazard Identification & Risk Analysis before mobilization; update quarterly or post-incident.
- Use data-driven monitoring and periodic risk reviews.
- OHS Staffing and Responsibilities
- Deploy one Project Safety Officer and adequate Site Safety Supervisors.
- Provide 24/7 oversight during critical operations, monsoon, and ropeway works.
- Ensure subcontractor OHS compliance.

Monitoring and Reporting

- Report incidents within 2 hours; complete RCA within 5 days; implement CAPA within 10 days.
- Submit monthly Safety Performance Audit reports.
- Conduct quarterly HIRA revisions and Safety Compliance Review meetings.
- Maintain KPIs: Zero fatalities, LTIFR < 1.0, PPE/permit compliance > 98%.

Meghalaya-Specific Controls

- Weather-based shutdowns (rain, fog, landslide, flood).
- Convoy systems, reversing alarms, anti-skid tyres, trained hill drivers.
- Wildlife movement advisories at forest sites.
- Fatigue and hypothermia/heat-stress management.

Compliance and Obligations

- OHS Plan shall be contract-binding, documented, auditable, and approved by PWD/PIU.
- No high-risk work without valid permit and supervisor clearance.
- Maintain insurance and health surveillance for all workers.

Approval Process

Submission → PIU Safety Cell review → Revisions (if required) → Final approval → Implementation → Monthly/quarterly monitoring.

ANNEXURE XII: Contractor Compliance Checklists on OHS plan — MLCIP

Pre-Mobilization Compliance Checklist

Item	Status (✓ / X /N/A)	Remarks / Corrective Action
OHS Plan submitted & approved		
Hazard Identification & Risk Analysis / Risk Register submitted		
SWMS submitted for high-risk works		
Safety personnel list & qualifications		
Insurance & compensation docs		
Equipment & test certificates		
Permit templates ready		
Emergency Response Plan		
Traffic Management Plan		
Forest/Wildlife clearances		

HIRA / SWMS Compliance Checklist

Item	Status	Remarks
HIRA accessible on site		
SWMS available for excavation, lifting, height, hot work, confined space		
SWMS signed by supervisor & workers		
Residual risk recorded & controls implemented		
HIRA reviewed after changes / monthly		

Permit to Work (PTW) Checklist

Permit Type	Issued (Y/N)	Permit No.	Validity	Supervisor Approval
-------------	--------------	------------	----------	---------------------

Height Work Permit				
Confined Space Permit				
Hot Work Permit				
Electrical Permit/LOTO				
Lifting Permit				
Excavation Permit				
Ropeway Rescue Drill Permit				

Ropeway-Specific Compliance Checklist

Item	Status	Remarks
Foundation & geotech test reports		
Tower bolts & anchor checks		
Cable NDT & inspection logs		
Manufacturer maintenance followed		
Carrier load tests		
Rescue team trained		
Exclusion zones enforced		

Warehouse Compliance Checklist

Item	Status	Remarks
Racking load labels		
Fire system tested		
Forklift operators certified		
Chamber confined-space permit system		
Gas leak detectors tested		
Electrical earthing checked		

Monthly Contractor Compliance Audit

Area of Audit	Compliant (Y/N/Partial)	Major Non-Conformances	Responsibility (Role/Agency)	Verification Evidence	Audit Remarks
Pre-mobilization documents				Approved OHS Plan, HIRA, Insurance, TMP, SWMS	
Site induction & training compliance				Attendance, inductions, medical fitness, toolbox	
HIRA & SWMS implementation				Accessible risk register, signed SWMS, residual controls	
Permit-to-Work (PTW) compliance				Height, hot work, lifting, electrical/LOTO, confined space	
PPE & worker welfare				Helmet, boots, harness, hi-vis, rest, water, sanitation	

Plant & equipment safety				Certifications, brake tests, SWL tags, earthing, service logs	
Lifting & rigging controls				Approved lift plan, riggers certified, exclusion zones	
Hill road traffic management				TMP signage, marshals, speed & driver fitness	
Emergency preparedness & drills				Mock drills, rescue/first-aid readiness	
Environmental & wildlife safeguards				Erosion/dust controls, fuel bunding, wildlife signage	

Audit Conducted By: _____

Audit Month/Year: _____

Date of Audit: _____

Contractor Representative (Sign/Date)	Project Safety Officer (Sign/Date)	PWD/PIU Approval (Sign/Date)

Overall Compliance Score (%): _____

CAPA or HIRA Revision Required: Yes / No

Next Audit Cycle Date: _____

ANNEXURE XIII: BUDGET BREAKUP

Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	Unit	Unit Cost	Unit Cost Description	Total Amount
A	HUMAN RESOURCE							
A.1.1	PMU Specialist	Environmental Safeguards Specialist		Refer to ESCP A.a			Included in Project Budget	
A.1.2		Social Safeguards Specialist		Refer to ESCP A.a				
A.2.1	PIU Specialist	Environmental Safeguards Specialist		Refer to ESCP A.a	1200	8000	20 Days a month *5 Year	96,00,000.00
A.2.2		Social Safeguards Specialist		Refer to ESCP A.a	1200	8000	20 Days a month *5 Year	96,00,000.00
A.2.3		Gender Specialist		Refer to ESCP A.d	260	6000	10 Days a month *1 Year + 5 days a month for 28 months	15,60,000.00
A.2.4		Biodiversity Specialist		Refer to ESCP A.d	120	8000	60 Days Year 1 + 60 Days next 2 Years	9,60,000.00
A.2.5		Labour Specialist		Refer to ESCP A.d	260	6000	10 Days a month *1 Year + 5 days a	15,60,000.00

Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	Unit	Unit Cost	Unit Cost Description	Total Amount
							month for 28 months	
A.2.6		Land Expert		Refer to ESCP A.d	480	6000	20 Days a month *2 Year	28,80,000.00
A.2.7	Support Staff	Field /documentation assistants		Refer to ESCP A.a	2880	1500		43,20,000.00
A.2.7		E &S MIS/Reporting staff		ESCP C&D	1800	2000		36,00,000.00
	Sub-Total (A)							3,40,80,000.00
B.	TRAINING & CAPACITY BUILDING							
B.1.1	Training of Direct Workers	ESF/ESMF/SEP/IPPF/ RPF Orientation : MPWD, DoA & MBMA	15 @HQ and 2 each @29 divisions, 5@HQ and 10 DAOs, 10 Officials@MBMA	Refer to ESCP B.b and ESMF 12.1	108	2,824.07	venue: Conference Hall, kit+refreshment+se tup	3,05,000.00
B2.1	Training of Indirect Workers	Env Safeguards Expert & Social Safeguards Expert + Nodal Officers	1 Env Safegaurds Specialist+ 1 Social cum Tribal Expert + 2 Nodal officer	Refer to ESCP B.b and ESMF 12.1	4	350000	2 ExternalTraining	14,00,000.00

Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	Unit	Unit Cost	Unit Cost Description	Total Amount
B.3.1	Training of Division/ District workers	Orientation of ESMF/SEP/RPF/IPPF and ESMP	29 EEs+ 7 Ses + 12 DAOs+5 MBMA Officials	Refer to ESCP B.b and ESMF 12.1	80	2,500.00	venue: Conference Hall, kit+refreshment+se tup	2,00,000.00
B.4.1	Training of Contractor Staff	Orientation of ESMF/SEP/RPF/IPPF and ESMP	60 E&S Officers	Refer to ESCP B.b and ESMF 12.1	60	1000	venue: Conference Hall, kit+refreshment+se tup	60000
B.5.1	Refresher Training	Annual for 3 years	29 EEs+ 7 Ses + 12 DAOs+5 MBMA Officials	Refer to ESCP B.b and ESMF 12.1	240	2,500.00	venue: Conference Hall, kit+refreshment+se tup	6,00,000.00
B.6.1	Specialised Training	OHS Training by National Safety Council	29 Division @2 years	Refer ESCP 2.2 and ESMF 6.3	82	2,439.02	Trainer Fee+ Airfare+Lodging Boarding + Cost of Training	2,00,000.00
B.6.2		GBV, SEA/SH Workshop	60 E&S Officers 29 EEs+ 7 Ses + 12 DAOs+5 MBMA Officials	Refer to ESCP B.c and ESMF 12.1	125	2,440.00	venue: Conference Hall, kit+refreshment+se tup	3,05,000.00
B.6.3	Specialised Training	SHG Training Workshop	5 SHGs @ 23 Projects	Refer to ESCP B.c and ESMF 12.1	2500	1008	venue: Conference Hall, kit+refreshment+se tup	2520000

Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	Unit	Unit Cost	Unit Cost Description	Total Amount
		Workzone/traffic safety training	MIDFC+PWD+CSC+PMC+Contractor+Police+Educational institution + Community	Refer to ESCP B.c and ESMF 12.1	780	2500	venue: Conference Hall, kit+refreshment+setup	1950000
	Sub-Total B							55,90,000.00
C.	INFORMATION AWARENESS							
C.1.1	Awareness Program	GBV/SEA/HIV-AIDS/EHS : IEC Material Preparation and Display	IEC material:	ESCP 6.1 ESMF 6.4	100	10000	Poster & Brochures	10,00,000.00
C.1.3			FGD with Communities	ESCP 6.1 ESMF 6.4	90	5000	refreshment+miscellaneous expenses	4,50,000.00
C.2.1	GRM	Boards/ Poster			80	1000		80,000.00
C.2.2		Dashboard				500000		500000
								20,30,000.00

Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	Unit	Unit Cost	Unit Cost Description	Total Amount
C.3	GBV , SEA/SH Program							
C.3.1		GBV		Refer ESCP 4.3 ESMF ____	1550000	1	Radio Jingle + Video Snippet+broadcast	15,50,000.00
C.3.2		SEA/SH		Refer ESCP 4.3 ESMF ____	1550000	1	Radio Jingle + Video Snippet+broadcast	15,50,000.00
C.3.3		IEC material for MPWD, DoA, MBDA, Contractors		Refer ESCP 4.3 ESMF ____	200	500	booklet	1,00,000.00
								32,00,000.00
	Sub-Total C							52,30,000.00
D	IMPLEMENTATION AND REPORTING							
D.1.1	App based Field Reporting	App Development	App Development (on Kobo)	Refer to ESCP C & D and ESMF 13.3	500000	1		500000

Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	Unit	Unit Cost	Unit Cost Description	Total Amount
D.1.2			App maintainenece Fee	Refer to ESCP C & D and ESMF 13.3	22000	48		1056000
								1556000
D.3.1	RAP Implemen tation	RAP Implementation Agency		Refer ESCP 5.1 a and 5.1b ESMF Chapter 9 and 6.1	8367975	1		8367975
D.4.1	LMP	Labour Compliance Tracking		Refer ESCP 2.1 and ESMF Chapter 8	500000	1		500000
D.5.1	IPPF implemen tation			Refer ESCP and IPPF ch -7	15290000	1		15290000
D.6.1	SEP implemen tation			Refer ESCP and SEP	23200000	1		23200000
	Sub-Total D							48913975

Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	Unit	Unit Cost	Unit Cost Description	Total Amount
E	STUDIES & IMPLEMENTATION SUPPORT							
E.1.1	Audits	Mid Term Audit		Refer ESMF 13.2 (reflected in ESCP)	3000000	1	Lumpsum	3000000
E.1.2		End Term Audit		Refer ESMF 13.2 (reflected in ESCP)	3000000	1	Lumpsum	3000000
								6000000
E.3	SPECIAL SED STUDIES							
E.3.1	Biodiversity Management Plan			Refer ESCP 6.1 and ESMF 6.5	5000000	1	Lumpsum	5000000
	Sub-Total E							50,00,000.00
F	OPERATIONAL EXPENSES : E&S CELL PMU							

Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	Unit	Unit Cost	Unit Cost Description	Total Amount
F.1.1	Vehicle and Transport	Vehicle for Env and Social Specialist of PMU, MIDFC and PIU, MPWD	(@40000/per person/month)		From project Budget			0
F.1.2	Field Expenses	For Env and Social Specialist of PMU, MIDFC and PIU, MPWD			From project Budget			0
	Sub-Total F							0
	Total Budget							10,48,13,975.00
	Contingency							1,04,81,397.50
								11,52,95,372.50

R & R budget for priority subprojects

Sl. No.		Name of Road	Requirement of Land	R&R Cost of Land	Vulnerability Allowance	Cost of (fruit-bearing)/ Areca Nut	One-time assistance for displaced artisan / small traders / small shops	Total (INR)
1		<i>MLCIP - Upgradation of Rongsai Borjhora Bajengdoba (RBB) Road from single to intermediate lane</i>	0.133 ha (Pvt)	2,82,296	26,00,000	1,47,000	5,10,000	35,39,296
2		<i>MLCIP - Improvement of Ampati to Purakhasia Road (AP) from 19+000 to 26+770 Km</i>	00	00	1,00,000	-	-	1,00,000
3		<i>MLCIP - Improvement and Widening of Rongrenggre-Simsanggre-Nengkhra (RSN) Road</i>	1.2459 ha (community)	25,14,510	8,00,000	-	1,40,000	34,54,510

Sl. No.		Name of Road	Requirement of Land	R&R Cost of Land	Vulnerability Allowance	Cost of (fruit-bearing)/ Areca Nut	One-time assistance for displaced artisan / small traders / small shops	Total (INR)
4		<i>MLCIP - Strengthening and Improvement of Songsak- Mendipathar Road (SMR) including re-construction of weak CD Works and Bridges</i>	0.27ha(Community)	5,45,400	11,50,000	49000	1,20,000	18,64,400
5		<i>MLCIP - Upgradation of Dkhiah - Sutnga - Saipung - Pala upto Semmasi (DSSPS) Road from single to intermediate lane</i>	1.902 ha.	2,36,56,000	12,50,000	--	--	2,49,06,000
6		<i>MLCIP - Upgradation of Weiloi - Mawsynram Road upto Phlangwanbroi (WMP) Road from single to intermediate lane</i>	No Land Required	--	3,00,000	14,000	-	3,14,000
7		<i>MLCIP - Upgradation of Umsning - Jagi (UJ) Road</i>	0.6868 ha.	1,88,13,036	4,00,000	--	10,000	1,92,23,036

Sl. No.		Name of Road	Requirement of Land	R&R Cost of Land	Vulnerability Allowance	Cost of (fruit-bearing)/ Areca Nut	One-time assistance for displaced artisan / small traders / small shops	Total (INR)
		<i>from single to intermediate lane</i>						