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**DRAFT**

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT**

**ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

**For**

**Upgradation of Weilo - Mawsynram Road upto Phlangwanbroi for Meghalaya Logistics and Connectivity Improvement Project (MLCIP),  
funded by the World Bank**

**Submitted To**



**Meghalaya Infrastructure Development Finance Corporation (MIDFC) Ltd.  
House No. L/A-56, Lower Nongrim Hills, Top Floor,  
Meghalaya Basin Development Authority (MBDA) Building,  
Shillong East Khasi Hills, Meghalaya-793003**

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**Document Information**

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This document includes ESIA Report of 26.420 km length of Weilo - Mawsynram Road upto Phlangwanbroi Road in East Khasi Hills District.

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## ACRONYMS

ASI	:	Archaeological Survey of India
BIS	:	Bureau of Indian Standards
BMC	:	Biodiversity Management Committee
CESMP	:	Contractor's Environmental and Social Management Plan
CGWB	:	Central Ground Water Board
Col	:	Corridor of Impact
CPR	:	Common Property Resources
CTE/CTO	:	Consent To Establish/Consent to Operate
CW	:	Carriageway
DG	:	Diesel Generator
DPR	:	Detailed Project Report
E&S	:	Environment and Social Cell
EHS	:	Environment Health and Safety
EIA	:	Environmental Impact Assessment
ESF	:	Environmental and Social Framework
ESIA	:	Environmental and Social Impact Assessment
ESMP	:	Environmental and Social Management Plan
ESRS	:	Environmental and Social Review Summary
ESS	:	Environmental and Social Standards
ESZ	:	Eco-Sensitive Zone
FPIC	:	Free, Prior, and Informed Consent
GBV	:	Gender-Based Violence
GIS	:	Geographic Information System
GoM	:	Government of Meghalaya
GRM	:	Grievance Redress Mechanism

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HIV	:	Human Immunodeficiency Virus
IBA	:	Important Bird Area
IBAT	:	Integrated Biodiversity Assessment Tool
IDP	:	Internally Displaced Persons
IEC	:	Information, Education, and Communication
IFC	:	International Finance Corporation
IRC	:	Indian Road Congress
ISFR	:	India State of Forest Report
IUCN	:	The International Union for Conservation of Nature
KBA	:	Key Biodiversity Area
LHS	:	Left Hand Side
LULC	:	Land Use Land Cover
MDF	:	Moderately Dense Forest
MDR/ SH	:	Major District Roads/State Highways
MoEF&CC	:	Ministry of Environment, Forest and Climate Change
MLCIP	:	Meghalaya Logistics and Connectivity Improvement Project
MSPCB	:	Meghalaya State Pollution Control Board
MSDMA	:	Meghalaya State Disaster Management Authority
NABET	:	National Accreditation Board for Education and Training
NATMO	:	National Atlas and Thematic Mapping Organization
NBSAP	:	National Biodiversity Strategy and Action Plan
NGO	:	Non-Governmental Organization
NH	:	National Highway
NOC	:	No Objection Certificate
NO <sub>x</sub>	:	Oxides of Nitrogen
NTFP	:	Non-timber forest product

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OF	:	Open Forest
OHS	:	Occupational Health and Safety
OIP	:	Other Interested Parties
PAP	:	Project Affected Person
PBR	:	People's Biodiversity Register
PESO	:	Petroleum and Explosives Safety Organization
PIA	:	Project Influence Area
PID	:	Project Information Document
PM	:	Particulate Matter
POSH	:	Prevention of Sexual Harassment
PPE	:	Personal Protective Equipment
PROW	:	Proposed Right of Way
PUC	:	Pollution Under Control
PWD	:	Public Works Department
R&R	:	Resettlement and Rehabilitation
RAP	:	Resettlement Action Plans
RF	:	Reserve Forest
RFCTLARR	:	Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013
RHS	:	Right Hand Side
RoW	:	Right of Way
SBB	:	State Biodiversity Board
SEA	:	Sexual Exploitation and Abuse
SEIAA	:	State Environment Impact Assessment Authority
SEP	:	Stakeholder Engagement Plan
SH	:	Sexual Harassment
SIA	:	Social Impact Assessment

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SOP	:	Standard Operating Procedures
ST	:	Scheduled Tribes
SC	:	Scheduled Caste
OBC	:	Other Backward Caste
GC	:	General Caste
TSG	:	Technical Support Group
VDF	:	Very Dense Forest
WB	:	World Bank
WHO	:	World Health Organization
WMP	:	Weiloi - Mawsynram Road upto Phlangwanbroi
WPA, 1972	:	Wildlife Protection Act, 1972
WPA, 2022	:	Wild Life (Protection) Amendment Act, 2022

## 1. INTRODUCTION

### 1.1 BACKGROUND

The Meghalaya Logistics and Connectivity Improvement Project (MLCIP), with a total investment of USD 300 million comprising USD 240 million from the World Bank and USD 60 million from the Government of Meghalaya (hereinafter refer to as the state government) aims to: a) enhance connectivity to key growth centers along identified road corridors; b) improved rural and district-level logistics infrastructure and services; c) provide greater market access and reduced average cost/time for select agriculture and horticulture products; and, d) strengthen institutional capacity for efficient, climate-resilient transport and logistics, West and East Meghalaya. The following are the key components of the project:

**Table 1.1: Components of MLCIP**

Components	Sub-components
Component 1: Climate-Resilient Roads and Road Safety	Sub-component 1.1: Rehabilitating Critical State Roads Sub-component 1.2: Promoting Road Safety Measures Sub-component 1.3: Implementing Policy and Regulatory Reforms
Component 2: Logistics Infrastructure and Services.	Sub-component 2.1: Developing key Logistics Infrastructure



	and Services for Selected Commodities
	Sub-component 2.2: Supporting Integrated Policy Reforms
Component 3: Institutional Strengthening and Capacity Building	<p>Sub-component 3.1: Strengthening Road and Logistics Management Capacity in the State</p> <p>Sub-component 3.2: Leveraging and Promoting Private Sector Participation in the sector</p> <p>Sub-component 3.3: Promoting Employment Opportunities for Women and Local Communities</p>
Component 4: Contingent Emergency Response Component (CERC).	Sub-component 3.1: Providing funding support for immediate response to crises or emergencies.

This ESIA, covers one of the critical state roads under Sub-component 1.1: Rehabilitating Critical State Roads which covers: (a) the construction/upgradation of about 600 kms of state roads (state highways, major district roads, feeder roads and bridges); and (b) incorporate climate-resilience and green road technologies in design and construction/upgradation of identified road corridors including improvement of drainage and slope protection works, and resurfacing of damaged road sections, preferably through locally available materials to improve all-weather connectivity between the hinterland and the 'Hashtag' corridors, national highways, and major markets. The selection of roads will be guided by an assessment of connectivity needs to economic and social infrastructure, significant production and consumption centers in the state, local markets, hinterland, and other key interstate and international road/rail/inland water transport networks, and potential social impacts, including the possibility and scale of land requirement. Performance-Based Maintenance Contracts (PBMC) will be introduced to incorporate climate resilience within contractors' specifications, ensuring sustainable maintenance. The planned civil works aim to improve all-weather accessibility, enhance the usage of alternative technologies and locally available materials, and increase resilience to climate change.

The rehabilitation of the state roads will be carried out in phases. The total of 672.499 km is divided into the East and West regions of 335.049 km and 337.45 km, respectively. In the first phase, a total of 172.87 kilometers (km) will be undertaken in East Meghalaya, followed by the remaining 162.179 km in the following phases. Details of proposed road corridors in East and West Meghalaya under MLCIP is given in Table 1.2.

**Table 1.2: Details of Proposed Road Corridors in East and West Meghalaya under MLCIP**

Sl. No.	Name of the Corridors and Proposed Upgradation/Improvement	Length (Km)	Districts	Start point Coordinate	End Point Coordinate
<b>Phase I</b>					
<b>East Meghalaya</b>					
1.	Upgradation of Dkhiah - Sutnga - Saipung - Pala upto Semmasi Road (Corridor 1)	64 Km	East Jaintia Hills	25° 21.818'N 92° 21.693'E	25° 22.638'N 92° 25.413'E

Sl. No.	Name of the Corridors and Proposed Upgradation/ Improvement	Length (Km)	Districts	Start point Coordinate	End Point Coordinate
2.	Upgradation of Weiloi - Mawsynram Road upto Phlangwanbroi (Corridor 8)	27 Km	East Khasi Hills	25° 21.733'N 91° 36.781'E	25° 15.037'N 91° 29.637'E
3.	Upgradation of Umtyngar - Sohra Road upto 8th Km of Mawsmat-Shella (Corridor 3)	42 Km	East Khasi Hills	25° 27.668'N 91° 49.619'E	25° 10.173'N 91° 44.580'E
4.	Upgradation of Umsning – Jagi Road i/c Major bridge (Corridor 10)	39.87 Km	Ri Bhoi	25° 52.710'N 92° 7.267'E	26° 4.494'N 92° 9.971'E
<b>West Meghalaya</b>					
1.	Improvement and Widening of Rongrenggre-Simsanggre-Nengkhra (RSN) Road including Conversion of weak Bridges to Permanent RCC bridges. (Corridor 1)	22.00	East Garo Hill	25°33'14.741"N 90°33'40.282"E	25°29'59.132"N 90°41'24.083"E
2.	Improvement of Rongjeng – Mangsang Adokgre (RMA) road from 23 <sup>rd</sup> to 44 <sup>th</sup> Km including construction of a major Bridge at Eldek Akong and Bridge No. 1/6 (Corridor 2)	22.00	East Garo Hill & North Garo Hill	25°38'59.682"N 90°48'18.153"E	25°49'55.694"N 90°58'26.225"E
3.	Upgradation of Rongsai Boijhora Bajengdoba (RBB) Road from single to intermediate lane. (Corridor 3)	18.27	North Garo Hill	25°53'29.623"N 90°31'1.151"E	25°59'55.422"N 90°27'9.353"E
4.	Strengthening and Improvement of Songsak- Mendipathar Road (MDR) including re-construction of weak CD Works and Bridges (Corridor 6)	36.00	East Garo Hill & North Garo Hill	25°39'22.25"N 90°36'55.292"E	25°55'15.35"N 90°38'1.223"E
5.	Improvement of Ampati to Purakhasia Road (Corridor 8)	8.00	South West Garo Hill	25°18'39.796"N 90° 0'24.283"E	25°28'21.622"N 89°55'55.496"E

Sl. No.	Name of the Corridors and Proposed Upgradation/ Improvement	Length (Km)	Districts	Start point Coordinate	End Point Coordinate
6.	Improvement of Adugre to Purakhasia Road(Corridor 9)	20.00	South West Garo Hill & West Garo	25°26'23.546"N 90°12'30.772"E	25°18'5.031"N 90° 0'20.042"E

**Next Phases**

**East Meghalaya**

1.	Upgradation of Lakadong – Mooriap upto Semmasi Road (Corridor 2)	20 Km	East Jaintia Hills and West Jaintia Hills	25° 29.647'N 92° 33.091'E	25° 24.253'N 92° 32.662'E
2.	Conversion Of 17 Weak Bridges Under Pynursla Division To Permanent R.C.C. Bridges (Corridor 4)	--	East Khasi Hills	--	--
3.	Reconstruction of a weak bridge into permanent RCC Bridge on Nongstoin-Maweit Road at 10th Km (Corridor 5)	39 m	West Khasi Hills	--	--
4.	Construction of Umpling Bridge including approaches (Inside Shillong City) (Corridor 6)	80m & 60m	East Khasi Hills	--	--
5.	Upgradation of Weilo - Mawkyrwat upto Keniong including replacement of SPT Bridges into permanent RCC Bridge(Corridor 7)	50 Km	East Khasi Hills and South West Khasi Hills	25° 21.791'N 91° 36.792'E	25° 17.692'N 91° 21.889'E
6.	Upgradation including construction of road from Kongong (NH-06) to Shkentalang (NH-206) passing by the side of Phe and Rynji Falls (Corridor 9)	27 Km	East Jaintia Hills and West Jaintia Hills	--	--
7.	Construction of Umdang- Amarsang-Maheshkola Road (Corridor 11)	65 Km	West Khasi Hills and South West Khasi Hills	25° 33.231'N 90° 57.403'E	25° 11.265'N 90° 58.333'E

**West Meghalaya**

Sl. No.	Name of the Corridors and Proposed Upgradation/ Improvement	Length (Km)	Districts	Start point Coordinate	End Point Coordinate
1.	Improvement of Gasuapara Chokpot Road including construction of bridges (Corridor 7)	19.00	South Garo Hill	25°11'50.072"N 90°20'42.662"E	25°16'34.853"N 90°25'43.081"E
2.	Improvement and Upgradation of 12th Mile of TD Road to Chokpot including reconstruction of weak bridges (Corridor 4)	38.40	South Garo Hill	25°14'1.671"N 90°29'2.102"E	25°22'57.301"N 90°18'46.243"E
3.	Strengthening and Improvement of Resu- Dekachang - Anogre via Gabil Road (MDR) including conversion of weak bridges into RCC bridges (Corridor 5)	44.48	East Garo Hill, North Garo Hill & West Garo Hill	25°53'55.733"N 90°36'52.522"E	25°43'11.452"N 90°22'43.204"E
4.	Construction of road from Shallang to Siju including construction of a major Bridge over Simsang River (Corridor 10)	51.00	West Khasi Hill & South Garo Hill	25°31'46.513"N 90°51'41.363"E	25°21'33.755"N 90°39'32.895"E
5.	Construction of Baghmara Gittinggre Road to Chokpot C & RD Block via Mindikgre (Corridor 11)	20.30	South Garo Hill	25°15'18.402"N 90°33'54.544"E	25°18'36.602"N 90°26'25.763"E
6.	Construction of Mangsang to Mawshynrut (Riangdo) Road (Corridor 12)	38.00	West Khasi Hill	25°39'58.203"N 90°55'12.412"E	25°38'49.143"N 91° 3'14.026"E

## 1.2 UTILITY DETAILS

A total of 720 nos. of electric poles are identified along the WMP road corridor for shifting. Of these, 512 poles are on the LHS and 208 on the RHS. Details of utilities are given in Annexure 5.2.

## 1.3 SCOPE FOR CONDUCTING THE ESIA STUDY

The Environmental and Social Impact Assessment (ESIA) study has been undertaken to integrate environmental and social considerations into the project planning and design process, thereby

ensuring that the proposed road improvement options are environmentally sustainable and socially responsible. An Environmental and Social Screening of the Weilo - Mawsynram Road upto Phlangwanbroi (WMP) road was conducted to define the broad scope of the ESIA.

Based on this assessment, the scope of the ESIA study was defined, and the following activities were undertaken for the detailed assessment.

- **Collection of project information:** Gather details on proposed project components, site visits and activities from the DPR for each stage of the project cycle (Design, Pre-construction, Construction, and Operation & Maintenance), including location, project design, processes and materials to be used, and expected waste generation.
- **Literature review and data compilation:** Review relevant literature and collect secondary data pertaining to the study area.
- **Baseline environmental and social assessment:** Conduct environmental monitoring and socio-economic surveys to establish the baseline conditions of the study area.
- **Identification of potential impacts:** Assess probable adverse environmental and social (E&S) risks and impacts arising from the construction and operation of the proposed improvement works.
- **Stakeholder identification and consultation:** Identify stakeholders, including affected parties, institutions, and groups with an interest or stake in the project corridors, with particular focus on disadvantaged and vulnerable groups. Conduct consultations to elicit concerns, suggestions, and support.
- **Preliminary climate and cumulative impact assessment:** Conduct an initial evaluation of potential climate change impacts and induced cumulative impacts associated with the project.
- **Environmental and Social Management Plan (ESMP) preparation:** Develop an ESMP outlining measures to improve environmental quality and social conditions, specifying responsibilities for mitigation, associated costs, and timelines for implementation across the project cycle.
- **Monitoring framework:** Identify critical environmental and social parameters to be monitored during and after the implementation of the sub-project.

The study commenced with screening and scoping, during which key environmental and social issues were identified through field surveys, stakeholder engagement, and preliminary impact analysis. This was followed by a detailed impact assessment, utilizing baseline data to evaluate potential environmental and social effects, propose appropriate mitigation measures, and develop management plans. Throughout the process, continuous public consultation ensured that stakeholder feedback informed the assessment, resulting in refined reports, regulatory approvals, and the establishment of a framework for ongoing monitoring during sub-project implementation.

## 1.4 APPROACH AND METHODOLOGY

The approach and methodology included impact identification through surveys, baseline data collection, impact assessment, and mitigation planning. The following table summarizes the approach adopted for undertaking the ESIA study.

Sl. No.	Stages	Activities Done
1.	Screening and Scoping	Identified key issues through primary and secondary surveys, assessed stakeholders, and analyzed potential impacts considered in the Environmental and Social Impact Assessment, following the Free, Prior, and Informed Consent (FPIC) process to ensure meaningful participation and consent of Indigenous Peoples and affected communities.
2.	Public Consultation for Scoping Report	Identified key issues to understand stakeholder concerns and inform sub-project design and build awareness on the project including the Free, Prior, and Informed Consent (FPIC) process. This involved engaging with Indigenous Peoples and affected communities through meaningful consultations in a transparent and participatory manner in order to make them aware of the project activities.. An attendance sheet was maintained to record the presence of villagers who participated in the consultation meeting including geo tagged photographs as evidence of the same. These were the first rounds of consultations for FPIC.
3.	Baseline Data Collection	Gathered and reviewed primary and secondary data on environmental and social conditions in and around the sub-project area, including air quality, water resources, biodiversity, cultural heritage, and socio-economic factors.
4.	Impact Assessment	Using baseline data, the WMP Project road potential impacts on the environment and local communities were assessed, including direct and indirect effects, as well as short-term and long-term impacts. A targeted assessment was carried as a part of ESIA since the sub-project area falls under a Schedule VI region with the presence of tribal communities. The Second round of FPIC consultations were undertaken as part of the impact assessment to ensure meaningful engagement with Indigenous Peoples (IP) to further discuss the project design, benefits and impacts, and to provide the communities' priorities and inputs to drafting of the mitigation plans and measures. During this consultation, IPs' written consent to proceed with the Project has been recorded through a resolution and countersigned by the participants, with attendance sheets, photos, etc. and attached as Annexure 7.3.
5.	Mitigation and Management Measures	Based on the impact assessment, measures were proposed to mitigate or minimize adverse environmental and social impacts while enhancing positive outcomes. These included exploring Project road design alternatives to reduce Involuntary resettlement and environmental degradation. These measures have been integrated in the draft Environmental and Social Management Plan, Resettlement Action Plan, Indigenous People's Development Plan, Labor Management Procedures, Stakeholder Engagement Plan and SEA/SH Action Plan, , among others.
6.	Draft ESIA Report	A draft report summarizing the findings of the Environmental and Social Impact Assessment (ESIA) has been prepared.
7.	Public Disclosure of ESIA	Public Consultations informed each stage of the ESIA development. In accordance with both GoM and WB requirements, the draft ESIA report and mitigation plans (ESMPs, RAP, IPDP) has been prepared for disclosure and public consultation. Stakeholders, including local communities, NGOs, government agencies, and experts, will be invited to provide feedback and the final report will be revised based on the feedback received.  In addition, No Objection Certificates (NOCs) will be obtained from the village-level traditional institutions to ensure community consent and administrative approval before proceeding with the project in the proposed area.
8.	Final ESIA Report	The draft ESIA report and mitigation plans (ESMPs, RAP, IPDP) will be finalized by incorporating feedback from the public consultation. Comments received will be addressed, and the assessment or proposed measures/plans will be revised as necessary.
9.	Approval and Implementation	The final ESIA report along with mitigation plans will be submitted to the MPWD and the World Bank.

Sl. No.	Stages	Activities Done
10.	Monitoring	Monitoring of ESIA implementation and management of risks throughout the project implementation

Methodology adopted for the Environmental and Social Impact Assessment was in accordance with the requirements of the World Bank ESF (ESSs), EIA Notifications of Ministry of Environment, Forest and Climate Change (MOEFCC), Indian Roads Congress and MoRTH Guidelines, and other national guidelines. The methodology adopted for the ESIA is as follows.

- a. **Baseline Information:** Key attributes of the sub-project area, including socio-economic data, land, physiography, drainage, geology, hydrogeology, land use, flora, fauna, forest / vegetation cover, climate, hazards, and vulnerability, were collected through both primary and secondary data sources. Primary data were gathered along the project corridor and within the direct impact area 500 m from the proposed RoW for sensitive environmental features and 12 m from the proposed RoW for social analysis. Secondary data were collected for a 10 km radius buffer surrounding the project road.
- b. To assess the baseline environment and social conditions, the data has been accessed from authentic and verifiable sources as given in Table 1.3 for collecting the primary data through consultation, field survey and secondary data. A due attempt has been made to source and access only the latest available data from authentic and verifiable sources.

**Table 1.3: Source and methodology for primary and secondary data collection**

Parameters	Secondary Source
	Environment
Air	<p>Primary survey Primary monitoring</p> <p>Secondary Source Central pollution control Board (CPCB, <a href="https://cpcb.nic.in/">https://cpcb.nic.in/</a>) / Meghalaya State Pollution Control Board (MSPCB, <a href="https://megspcb.gov.in/">https://megspcb.gov.in/</a>)</p>
Water	<p>Primary survey Primary monitoring</p> <p>Secondary Source 1. District Survey Report, East Khasi Hills District, 2024 (<a href="https://eastkhasihills.gov.in/event/district-survey-report/">https://eastkhasihills.gov.in/event/district-survey-report/</a>) 2. CGWB Data 2024 (<a href="https://www.cgwb.gov.in/old_website/AQM/NAQUIM_REPORT/Meghalaya/East%20Khasi%20hills_report.pdf">https://www.cgwb.gov.in/old_website/AQM/NAQUIM_REPORT/Meghalaya/East%20Khasi%20hills_report.pdf</a>)</p>
Noise	<p>Primary survey Primary monitoring</p> <p>Secondary Source CPCB (<a href="https://cpcb.nic.in/regulation-control/">https://cpcb.nic.in/regulation-control/</a>)</p>
Soil	<p>Primary survey Primary monitoring</p> <p>Secondary Source 1. District Irrigation Plan 2016-2020 (<a href="https://pmksy.gov.in/mis/Uploads/2017/20170331050603829-1.pdf">https://pmksy.gov.in/mis/Uploads/2017/20170331050603829-1.pdf</a>) 2. Mapping India's Climate Vulnerability A District Level Assessment (2021) (<a href="https://www.ceew.in/sites/default/files/ceew-study-on-climate-change-vulnerability-index-and-district-level-risk-assessment.pdf">https://www.ceew.in/sites/default/files/ceew-study-on-climate-change-vulnerability-index-and-district-level-risk-assessment.pdf</a>)</p>
Biodiversity	<p>Primary survey 1. Field observation 2. Vegetation assessment was conducted using Nested Quadrature method 3. Faunal assessment was conducted using Visual encounters, sign survey, line transect, and netting survey method</p>



Parameters	Secondary Source
	<p>4.LULC analysis through ground truthing</p> <p><b>Secondary Source</b></p> <p>1.Desktop study/secondary data collection - Govt. notified acts, peer review published scientific articles, Govt. reports,</p> <p>2.Online open-source biodiversity databases such as Meghalaya Biodiversity Portal (<a href="https://megbiodiversity.nic.in/">https://megbiodiversity.nic.in/</a>), PARIVESH Portal (MoEF&amp;CC) (<a href="https://parivesh.nic.in/">https://parivesh.nic.in/</a>), Global Forest Watch (<a href="https://www.globalforestwatch.org/">https://www.globalforestwatch.org/</a>), IUCN Red List of Threatened Species (<a href="https://www.iucnredlist.org/">https://www.iucnredlist.org/</a>)</p> <p>3.Stakeholder consultation</p>
Hazards and Vulnerability	<p><b>Primary survey</b></p> <p>Field observation and Consultation with concerned departments and local community</p> <p><b>Secondary Source</b></p> <p>1. District Disaster Management Plan for East Khasi Hills, 2024 (<a href="https://msdma.gov.in/ddmp/DDMP-Shillong.pdf">https://msdma.gov.in/ddmp/DDMP-Shillong.pdf</a>)</p> <p>2. Meghalaya State Disaster Management Authority (MSDMA) (<a href="https://msdma.gov.in/">https://msdma.gov.in/</a>)</p>
Natural Environment	<p><b>Secondary Source</b></p> <p>1. Customized Rainfall Information System, Hydromet Division, IMD (<a href="https://hydro.imd.gov.in/">https://hydro.imd.gov.in/</a>)</p> <p>2. District Census Handbook, East Khasi Hills (<a href="https://eastkhasihills.gov.in/demography/">https://eastkhasihills.gov.in/demography/</a>)</p> <p>3. Geological Survey of India (<a href="https://www.gsi.gov.in/webcenter/portal/OCBIS">https://www.gsi.gov.in/webcenter/portal/OCBIS</a>)</p> <p>4. District Irrigation Plan 2016-2020 (<a href="https://pmksy.gov.in/mis/Uploads/2017/20170331050603829-1.pdf">https://pmksy.gov.in/mis/Uploads/2017/20170331050603829-1.pdf</a>)</p> <p>5. Consultant's Analysis, Source IMD Gridded Data (<a href="https://www.imdpune.gov.in/cmpg/Griddata/Rainfall_25_NetCDF.html">https://www.imdpune.gov.in/cmpg/Griddata/Rainfall_25_NetCDF.html</a>)</p> <p>6. State Action Plan on Climate Change (SAPCC), Meghalaya (<a href="https://moef.gov.in/uploads/2017/08/Meghalaya.pdf">https://moef.gov.in/uploads/2017/08/Meghalaya.pdf</a>)</p> <p>7. Statistical Handbook, Meghalaya 2023 (<a href="https://des.megplanning.gov.in/documents/SHB2023-as-on-02-05-24.pdf">https://des.megplanning.gov.in/documents/SHB2023-as-on-02-05-24.pdf</a>)</p>
Climate	<p><b>Secondary Source</b></p> <p>India Meteorological Department – Shillong Climatological Normals, (1991–2020) (<a href="https://dsp.imdpune.gov.in/home_normals.php#">https://dsp.imdpune.gov.in/home_normals.php#</a>)</p>
	<b>Land and Livelihood Impact</b>
Land, Livelihood and Common Property Resources	<p><b>Primary survey</b></p> <p>1.Census/Household Survey (PAH: 10)</p> <p>2.Focus Group Discussions (3)</p> <p>3.Key Informants Interviews (10)</p> <p>4.Field Observations</p>

Parameters	Secondary Source
	<b>Secondary Source</b> Census 2011 ( <a href="https://www.census2011.co.in/">https://www.census2011.co.in/</a> )
	<b>Other Socio-Economic Parameters</b>
Ethnicity	<b>Primary survey</b> Consultation  <b>Secondary Source</b> Census 2011 ( <a href="https://www.census2011.co.in/">https://www.census2011.co.in/</a> )
Gender	<b>Primary survey</b> Focus Group Discussions Interviews  <b>Secondary Source</b> Workforce Participation Rate as per Census 2011 ( <a href="https://www.census2011.co.in/">https://www.census2011.co.in/</a> ) National Family Health Survey- 5 ( <a href="https://mohfw.gov.in">https://mohfw.gov.in</a> › files › NFHS-5_Phase-II_0)
Prevalence of GBV	<b>Primary survey</b> Focus Group Discussions with women group  <b>Secondary Source</b> Police records National Crime Records Bureau (NCRB) ( <a href="https://ncrb.gov.in">https://ncrb.gov.in</a> )

## 1.5 STRUCTURE OF THE ESIA REPORT

This Environmental and Social Impact Assessment (ESIA) report has been structured into ten chapters including this introduction chapter as follows.

CHAPTER	DESCRIPTION
Chapter 1	INTRODUCTION, provides Background for the project, project roads, approach and methodology of the ESIA study
Chapter 2	LEGAL AND INSTITUTIONAL FRAMEWORK describes the state and central governments with their specific roles along with applicable acts and laws and comparison between the existing legislations and WB policy. As part of the targeted assessment for indigenous/tribal communities, this chapter includes the legal and institutional framework applicable to indigenous/tribal communities.
Chapter 3	PROJECT ROAD DESCRIPTION – In this chapter, project stretch details are described from an environmental and social perspective with salient features such as RoW, cross sections, traffic projections, corridor characteristics, settlements, and resource requirements etc.
Chapter 4	BASELINE ENVIRONMENT chapter describes the existing baseline environmental conditions and collection of secondary information regarding physical, biological and socio-economic conditions of the study area and environmental quality of the study area – monitoring of air, noise, soil, surface and ground water. As part of the targeted assessment, Baseline data focuses on the demographic, social, cultural, and political characteristics of the indigenous/tribal communities; the land and territories that they have traditionally owned or customarily used or occupied; and the natural resources on which they depend.
Chapter 5	ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS – Describes the potential risks and impacts on valued environmental and social components during various project phases including pre-construction, construction and operational phases. As part of targeted assessment for indigenous tribal communities, RAP, IPDP and ESMP includes the measures necessary to avoid adverse impacts, or if such measures are not feasible, measures to minimize, mitigate, or compensate for such impacts, and to ensure that the indigenous/tribal communities receive culturally appropriate benefits under the project, thus overall resulting in community-led development and decision-making in the project-affected tribal areas. This is based on meaningful consultation tailored to indigenous/tribal communities and, where relevant, on Free, Prior, and Informed Consent (FPIC).
Chapter 6	ANALYSIS OF ALTERNATIVES, with project and without project scenario. The mitigation hierarchy approach guided the impact assessment and analysis of alternatives— to explore alternative routes and designs to minimize adverse impacts. Additionally, potential mitigation measures were identified to reduce or eliminate negative effects and enhance positive outcome.
Chapter 7	STAKEHOLDER CONSULTATION AND INFORMATION DISCLOSURE describes the various stakeholders and outcome of the stakeholder consultation. As part of targeted assessment for indigenous/tribal communities, the chapter includes the identification of project-affected parties and the elaboration of a culturally appropriate process (FPIC) for involving and consulting with the indigenous/tribal communities in their vernacular medium at each stage of project preparation and implementation;
Chapter 8	ENVIRONMENTAL AND SOCIAL MONITORING & REPORTING PROGRAMME This chapter includes reporting, monitoring and institutional framework of the project.
Chapter 9	GRIEVANCE REDRESSAL MECHANISM
Chapter 10	CONCLUSION AND RECOMMENDATIONS

## 2. LEGAL AND INSTITUTIONAL FRAMEWORK

This chapter presents a review of all relevant acts, rules, and policies applicable to the proposed road development project.

## **2.1 APPLICABLE ENVIRONMENTAL AND SOCIAL REGULATIONS/ ACTS/ POLICIES AT NATIONAL AND STATE LEVEL**

To define the scope of the environmental and social assessment for the proposed road improvement works, relevant laws, legislation, and policies at both national and state levels were reviewed. The findings are summarized in Table 2.1, which also includes a review of the legal and institutional framework applicable to indigenous and tribal communities as part of a targeted assessment

**Table 2.1: Applicable Environmental and Social Regulations/ACTs/Policies**

Sl. No.	Relevant Acts and Policies	Mandate of the Act/ Policy	Reason for applicability/ Non-applicability	Regulatory Clearance Requirement	Authority
<b>ENVIRONMENTAL REGULATIONS</b>					
1	Environment Protection Act/ Rules 1986	The Environment Protection Act, 1986 (the "Environment Act") provides for the protection and improvement of the environment. Under the Environment Act, the Central Government issues notifications for the protection of ecologically sensitive areas or issues guidelines for matters under the Environment Act	The various environmental quality standards notified under this act apply to MPWD works.	--	Meghalaya State Pollution Control Board (MSPCB)
2	EIA Notification 14th Sep 2006 and 17 March 2025	Borrowing of minerals (earth, sand, aggregates, etc.) will require prior environment clearance under mining category	Borrowing of minerals (earth, sand, aggregates, etc.) for embankment, bridge, approach road construction	Environmental Clearance through Contractor	SEIAA Meghalaya
3	Air (Prevention and Control of Pollution) Act, 1981, 1987	To provide for the prevention, control and abatement of air pollution, and for the establishment of Boards to carry out these purposes.	Air pollution from proposed Batching Plant or Hot mix plants and DG set during construction stage	Consent to Establish before Construction and Consent to Operate (Before Operation) through Contractor	Meghalaya State Pollution Control Board (MSPCB)
4.	Water Prevention and Control of Pollution) Act,	To provide for the prevention and control of water pollution and the maintaining or restoring of	Water pollution during the construction stage from labour camp	Consent to Establish before Construction and Consent to Operate (Before Operation)	Meghalaya State Pollution Control

Sl. No.	Relevant Acts and Policies	Mandate of the Act/ Policy	Reason for applicability/ Non-applicability	Regulatory Clearance Requirement	Authority
	1974, 1988	wholesomeness of water.		through Contractor	Board (MSPCB)
5.	Noise Pollution (Regulation and Control Act) 2000 and amendment till date	The ambient noise standards for day and night across various land use categories were notified by the MoEF&CC under the Noise Pollution (Regulation and Control) Rules, 2000, based on recommendations of the CPCB	Noise emission from proposed activities during construction stage like operation of DG sets, equipment and concrete mixers should be within applicable standards	regulatory clearance not required but noise monitoring results should be below applicable standard as per CPCB .	MSPCB
6	Hazardous & Other Wastes (Management and Trans-boundary Movement) Rules, 2016 and March, 2024	Protection against improper handling, storage and disposal of hazardous waste. The rules prescribe the management requirement of hazardous wastes from its generation to final disposal.	Hazardous waste generation from proposed activities like generation of paints waste, used oil/waste oil, bitumen waste, etc.	Contractor to obtain authorization for storage, transport, and disposal of hazardous and other wastes	MSPCB
7	Construction and Demolition Waste Management Rules, 2016	To manage the demolition and construction waste and prevent environmental degradation	Construction and demolition waste will be generated from proposed activities	Permission will be required by Contractor.	Village Council, Municipal Boards
8	Solid Waste management Rules, 2016 and amended	To manage solid waste or semi-solid domestic waste, sanitary waste	Solid Waste will be generated from proposed activities due to influx of labour	Permission will be required Contractor needs to submit plan for reuse or safe disposal	Village Council, Municipal Boards

Sl. No.	Relevant Acts and Policies	Mandate of the Act/ Policy	Reason for applicability/ Non-applicability	Regulatory Clearance Requirement	Authority
	thereof				
9	Vehicle Act 1988 Central Motor Vehicle Rules 1989	To minimize the road accidents, penalizing the guilty, provision of compensation to victim and family and check vehicular air and noise pollution.	Transportation of manpower and material will involve vehicular movement. Vehicles must have valid Pollution Under Control (PUC) certificates, Insurance, Fitness Certificate. Driver should have valid Driving License.	PUC and fitness certificates, Insurance. Driving License, Fitness Certificate	State Transport Authorities approved PUC certificate providers
10	The Gas Cylinder Rules 2016	To regulate the storage of gas / possession of gas cylinder more than the exempted quantity.	Gas cylinders may be used during welding and other electromechanical work. Storage within threshold quantity and as per capability analysis. Handling with defined safe practices	Yes, Permission will be required by the Contractor if the storage of gas / possession of gas cylinder is more than the exempted quantity (i.e. more than 25 cylinders of total weight exceeding 200 kg for flammable non-toxic gases).	Petroleum and Explosives Safety Organization (PESO)
11	The Mines and Minerals (Development and Regulation) Act, 1957	For development and regulation of mines and minerals in a sustainable manner. The rules regulate the mining of mineral and dealerships for mining and trading.	The construction of works will require stones, aggregates, sand, earth, etc.	Mining Permit from regional mine office. The EC is also required for some minor minerals.	Mines and Mineral Department

Sl. No.	Relevant Acts and Policies	Mandate of the Act/ Policy	Reason for applicability/ Non-applicability	Regulatory Clearance Requirement	Authority
12	The Forest (Conservation) Act, 1980 and Amendments and The Forest (conservation) Rules 1981 and Amendments	To help conserve the country's forests. It strictly restricts and regulates the de-reservation of forests or use of forest land for non-forest purposes without the prior approval of the Government. To this end the Act lays down the pre-requisites for the diversion of forest land for non-forest purposes	No forest area diversion involved in the project	No	State Forest Department, MoEF&CC
13	National Forest Policy 1988	It articulates the twin objectives of ecological stability and social justice; recognizes people's dependence and their symbiotic relation with forest, emphasizes protection of people's rights over forest resource and offers space for participation of forest dependent communities in the conservation, protection and management of state-owned forests.	Provisions of this act will not be applicable since road will not adversely affect any forest.	No	State Forest Department, MoEF&CC
14	Meghalaya Forest Regulation (Application and Amendment) Act,	The Act provides a comprehensive legal framework for conservation and sustainable use of bio-resources, reflects a strict regime	Provisions of this act will not be applicable since road will not adversely affect any biological diversity	No	Meghalaya State Biodiversity Board



Sl. No.	Relevant Acts and Policies	Mandate of the Act/ Policy	Reason for applicability/ Non-applicability	Regulatory Clearance Requirement	Authority
	1973	for access, control and benefit sharing. It restricts access and use of biological resources by outsiders and creates decentralized institutional structures (State Biodiversity Boards -SBB and GP level Biodiversity Management Committees) for conservation of biological diversity.			
15	Meghalaya Forest Regulation (Application and Amendment) Act, 1973	Conservation of forest and controlled felling of trees and forest produce	Provisions of this act will not be applicable since the road does not have communities dependent on forest produce.	No	State Forest Department
16	Meghalaya Biodiversity Rules, 2010	Conservation of biological diversity, sustainable use of its components and fair and equitable sharing of benefits arising out of the use of biological resources	Provisions of this act will not be applicable since road will not adversely affect any biological diversity	No	Meghalaya State Biodiversity Board
17	Wildlife protection Act 1972, 2022	Protection of wildlife in the state of Meghalaya	Wildlife impact is not anticipated in this project.	No	State Forest Department
18	Eco-sensitive Zone	The activities in areas around	No ESZ falls within 10 km of the project	No	MoEF&CC

Sl. No.	Relevant Acts and Policies	Mandate of the Act/ Policy	Reason for applicability/ Non-applicability	Regulatory Clearance Requirement	Authority
	Notifications 2015	Wildlife Sanctuaries and National Parks are regulated from the perspective of conservation of wildlife	road as per the Map provided by Forest Department.		
19	State Compensatory Afforestation Fund Management and Planning Authority Forest (Conservation) Amendment Rules, 2014	It seeks to establish the National Compensatory Afforestation Fund under the Public Account of India, and a State Compensatory Afforestation Fund under the Public Account of each state.  The collected funds will be utilized for afforestation, regeneration of forest ecosystem, wildlife protection and infrastructure development.	No forest area diversion involved in the project	No	State Forest Department
20	Meghalaya State Compensatory Afforestation Fund Management and Planning Authority (MSCAFMPA). This body was constituted in alignment with the Compensatory Afforestation Fund	To constitute a Fund for the purpose of Compensatory Afforestation to be raised against the Forest Area diverted for non-forest use under the provisions of Section 4(1) of the Forest (Conservation) Act, 1980	No forest area diversion involved in the project	No	State Forest Department

Sl. No.	Relevant Acts and Policies	Mandate of the Act/ Policy	Reason for applicability/ Non-applicability	Regulatory Clearance Requirement	Authority
	Act, 2016				
21	Meghalaya Tree (Preservation) Act, 1976, and the Meghalaya Tree Felling (Non-Forest Areas) Rules, 2006	Conservation of forest and controlled felling of trees	Approx. 35 nos of tree are falling within the ROW.	Permission for felling of trees	State Forest Department
22	Disaster Management Act, 2005	The purpose is to have an effective management of disasters and for matters connected therewith or incidental thereto	The project area falls under the seismic (earthquake prone) zone V and hence construction activities/ interventions will be under purview of this act	No. Contractor should be aware of Guidelines/SOPs/Advisory of MSDMA	Meghalaya State Disaster Management Authority (MSDMA)/MPWD
23	Meghalaya Disaster Management Rules, 2008	The rule is to provide measures' to be adopted for prevention and mitigation of disaster; mitigation measure to be integrated with development plans and projects; build capacity and preparedness measure; and specify roles and responsibilities to each dept. in relation to adopted measure	During implementation, setting of labour camps and capacity building of contractor staff	No Contractor should be aware of Guidelines/SOPs/Advisory of MSDMA	Meghalaya State Disaster Management Authority (MSDMA)/MPWD

Sl. No.	Relevant Acts and Policies	Mandate of the Act/ Policy	Reason for applicability/ Non-applicability	Regulatory Clearance Requirement	Authority
24	Energy Conservation Act, 2001	The objective is for efficient use of energy and its conservation and for matters connected therewith or incidental thereto	Project activities involves use of energy efficient equipment, energy conservation buildings, etc.	No	Bureau of Energy Efficiency (BEE)/ Meghalaya State Designated Agency (MSDA)
25	Plastic waste management Rules, 2016	The Plastic Waste Management Rules, 2016 provide a framework for the effective management of plastic waste. They aim to minimize the adverse environmental impact of plastic waste and promote sustainable practices for its handling and disposal.	Plastic waste generation from proposed activities. Safe disposal as per Rules	No.  Properly segregate plastic waste at source and hand it over to authorized waste collectors, local bodies, or MSPCB authorized agencies/Recyclers	Village Council/ Municipal Authority/MSPCB
26	E-Waste Management Rules, 2016 and amended thereof	Protection of environment against improper handling storage and disposal of hazardous waste.	E-waste generation from replacement of instrumentation. Safe disposal as per Rules	No.  Proper segregation and handing over of e-waste to the MSPCB authorized agencies/Recyclers	MSPCB
27	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	This international convention, to which India is a signatory category, lists the endangered flora and fauna and regulates trade of these species	Project Intervention does not involve any trade of Endangered species	No	Meghalaya Forest Department and Wildlife Crime Control Bureau, MoEF&CC

Sl. No.	Relevant Acts and Policies	Mandate of the Act/ Policy	Reason for applicability/ Non-applicability	Regulatory Clearance Requirement	Authority
28	Petroleum Act, 1934, Petroleum Rules, 2002 (under the Petroleum Act, 1934)	Regulates the storage, transport, handling, and use of petroleum and diesel. Requires licenses for storage of petroleum products beyond prescribed limits.	Storage of High Speed Diesel (HSD) at construction sites (above threshold limits of 2,500 liters underground or 1,000 liters aboveground in drums/tanks) requires license/approval.	License for storage from PESO (Petroleum and Explosives Safety Organization); NOC from District Authority/Fire Department.	PESO, Nagpur (through Regional Office) & District Magistrate/Chief Controller of Explosives.
29	Ground Water Regulation (Central Ground Water Authority – CGWA Guidelines, 2017, adopted by States)	Governs the extraction of groundwater for industrial, infrastructure, or commercial use. Requires NOC/permission prior to abstraction.	Applicable (if groundwater extraction proposed)  Groundwater extraction for construction, camp use, or dust suppression requires prior permission.	NOC for groundwater abstraction.	CGWA or State Ground Water Authority (if notified).
30	The Meghalaya Water Act, 2011	State-level mandate for use of surface water from rivers, streams, ponds, lakes, etc. for non-domestic/commercial purposes.	Construction water requirements may involve use of surface water from nearby streams/rivers with state approval.	Permission/Allocation order for surface water abstraction.	Water Resources/Irrigation Department, Government of Meghalaya.
<b>SOCIAL REGULATIONS</b>					
1	The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act,	The Act ensures transparent land acquisition with fair compensation, rehabilitation, and resettlement. It sets minimum compensation norms, R&R entitlements, and facilities for the displaced, allowing states to	Yes, as the area falls under 6th schedule,  A review of the legal and institutional framework applicable to indigenous/tribal communities.	No	Revenue Department, Government of Meghalaya, Khasi Hills Autonomous District Council

Sl. No.	Relevant Acts and Policies	Mandate of the Act/ Policy	Reason for applicability/ Non-applicability	Regulatory Clearance Requirement	Authority
	2013	enhance benefits.  The Act also includes special provisions to protect the interests of Scheduled Castes and Scheduled Tribes.			The Sixth Schedule establishes the ADC or VC as institutional mechanisms for governing these areas.
2	Meghalaya Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Rules, 2017	Aim to provide a fair, transparent, and participatory process for land acquisition while ensuring adequate compensation and rehabilitation for affected families. These rules align with the broader objectives of the RFCTLARR Act to minimize the adverse impact of land acquisition and promote the welfare of those affected by it.	Impact on private Assets and properties	Ensure fair compensation and Guarantee transparency in the acquisition process.	Revenue Department/ District Administration, Village Council
3	Notification Land Acquisition through Direct Purchase by way of negotiated settlements for all departments in the state of Meghalaya, March, 2022	It recommends land purchase through negotiation (and mutual consent) as the best approach by paying the landowners an incentive of 25%, inclusive of R&R benefits on the compensation calculated as per the provisions of Section 26 to 30 and First Schedule of the RFCTLARR	Direct Negotiated settlement can be faster method of land acquisition	No	MPWD, Revenue Department/ District Administration, Village Council

Sl. No.	Relevant Acts and Policies	Mandate of the Act/ Policy	Reason for applicability/ Non-applicability	Regulatory Clearance Requirement	Authority
		Act.			
4	Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014 & Meghalaya Street Vendors (Protection of Livelihood and Regulation of Street Vending) Rules, 2016	It regulates street vending and protects the rights of street vendors by legalizing their right; protects them from sudden eviction or relocation; spells their rights and obligations.	Applicable to all Project road corridors in case of economic displacement and relocation of street vendors.	No	District Administration/ District Municipal Authority, Village Councils under the Autonomous District Councils
5	Rights of Persons with Disabilities Act, 2016	Ensures that the Persons with Disability (PWD) enjoy the right to equality, life with dignity, and respect for his or her own integrity equally with others.	For the entire project road corridor where PWD are present and affected, and for designing the project in an inclusive manner.	No	Department of Social Welfare, Government of Meghalaya
6	Right to Information Act, 2005	The Act provides for setting out the practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of	All documents pertaining to the project would be disclosed to public.	No	Public Information Officer (PIO)

Sl. No.	Relevant Acts and Policies	Mandate of the Act/ Policy	Reason for applicability/ Non-applicability	Regulatory Clearance Requirement	Authority
		every public authority, the constitution of a Central Information Commission and State Information Commissions and for matters connected therewith or incidental thereto.			
7	Article 244(2) & 275(1) of the Constitution of India - The Sixth Schedule	Article 244(2) establishes Autonomous District Councils (ADCs) in tribal areas, granting them legislative and administrative powers, empowering them to legislate on land, resources, and local governance. Article 275(1) provides financial grants for the welfare and development of Scheduled Tribes and Scheduled Areas	Applicable in designated tribal areas under the Sixth Schedule	No	Government of India, Autonomous District Councils
<b>LABOUR LAWS APPLICABLE TO ESTABLISHMENTS ENGAGED IN BUILDING AND OTHER CONSTRUCTION WORK</b>					
1	Building and Other Construction Workers (Regulation of	It regulates the employment and conditions of service of building and other construction workers and	Applicable for all building or other constructions works under the project that employs 10 or more workers.	Establishment Registration is required	Labour Commissioner, Meghalaya



Sl. No.	Relevant Acts and Policies	Mandate of the Act/ Policy	Reason for applicability/ Non-applicability	Regulatory Clearance Requirement	Authority
	Employment and Conditions of Service) Act, 1996	provides for their safety, health and welfare.			
2	Workmen Compensation Act, 1923	It provides for payment of compensation by employers to their employees for injury by accident i.e., personal injury or occupational disease.	Construction workers will be involved in the Project road corridors	Workmen compensation Insurance Policy	Commissioner for Workmen's Compensation
3	ESI Act, 1948 (Employees State Insurance Act, 1948)	Employees State Insurance Act provides for health care and hospitalization benefits for construction work force	Construction workers will be involved in the Project Road corridors	Insurance Policy.	Commissioner for Workmen's Compensation
4	Inter-state Migrant Workers Act, 1979	It protects workers whose services are requisitioned outside their native states in India. A contractor who employs or who employed five or more Inter-State migrant workmen need to obtain registration under this act	Construction workers will be involved in the Project Road corridors	Registration/Labour license	Labour Commissioner, Meghalaya
5	The Child Labour	It prohibits employment of	There should not be any child labour (less than	No	Labour Commissioner,

Sl. No.	Relevant Acts and Policies	Mandate of the Act/ Policy	Reason for applicability/ Non-applicability	Regulatory Clearance Requirement	Authority
	(Prohibition & Regulation) Amendment Act, 2016	children in specified hazardous occupations and processes and regulates the working conditions in others.	14 years) in any project activity and adolescents (above 14 and less than 18 years) in any hazardous activity.		Meghalaya/ Department of Social Welfare, Government of Meghalaya
6	Sexual Harassment of Women at the Workplace (Prevention, Prohibition and Redressal) Act, 2013 (POSH Act)	It mandates every organization having more than ten employees to constitute an Internal Complaints Committee (ICC) in the prescribed manner to receive and address the complaints of any sort of sexual harassment from women in a time-bound and extremely confidential manner	Applicable to all implementing agencies	No	District Officer  (District Magistrate or Additional District Magistrate)
7	Contract Labour (Regulation & Abolition) Act 1970	To provide proper and habitable working conditions. To regulate the functioning of the advisory boards. To lay down the rules and regulations regarding the registration procedure of the establishments employing	Applicable to all implementing agencies	Labour License Required	Labour Commissioner, Meghalaya

Sl. No.	Relevant Acts and Policies	Mandate of the Act/ Policy	Reason for applicability/ Non-applicability	Regulatory Clearance Requirement	Authority
		contract labour			
8	Payment of Wages Act, 1936 and the Minimum Wages Act, 1948	Lays down as to by what date, wages are to be paid, when it will be paid and what deductions be made from the wages of the workers, if any.	Applicable to all implementing agencies	No	Labour Commissioner, Meghalaya
9	Payment of Gratuity Act, 1972  The payment of gratuity rules Meghalaya 1972	Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation, if an employee has completed 5 years of service with employer	Applicable to all implementing agencies	No	Labour Commissioner, Meghalaya
10	Employees Provident Fund and Miscellaneous Provision Act, 1952	Provides for monthly contributions by the employer and as well as by workers with a provision as return of pension of a lump sum (principal and interest accrued) at the end of his/her service term).	Applicable to all implementing agencies	No	Labour Commissioner, Meghalaya
11	Maternity Benefit Act, 1951	Provides for maternity leave for women, during pregnancy	Applicable to all implementing agencies	No	Labour Commissioner, Meghalaya

Sl. No.	Relevant Acts and Policies	Mandate of the Act/ Policy	Reason for applicability/ Non-applicability	Regulatory Clearance Requirement	Authority
	Meghalaya Maternity benefit Rules 1965	and after giving birth and some other benefits to women employees, in case of medical recommendation of bed rest or miscarriage etc.			
12	Payment of Bonus Act, 1965 The Payment of Bonus Rules Meghalaya 1975	Provides payments of annual bonus subject to a minimum of 8.33% of wages and maximum of 20% of wages.	Applicable to all implementing agencies	No	Labour Commissioner, Meghalaya
13	The Bonded Labour (Abolition) Act 1976 Bonded Labour System (Abolition) Rules 1976	An Act to provide for the abolition of bonded labour system, with a view to prevent economic and physical exploitation of the weaker sections of the people and for all matters connected there with or incidental thereto	Applicable to all implementing agencies	No	Labour Commissioner, Meghalaya
14	The Trade Union Act, 1926	Lays down the procedure for registration of trade union of workers and employers. The trade unions registered under the Act have been given certain immunities for civil	Applicable to all implementing agencies	No	Labour Commissioner, Meghalaya

Sl. No.	Relevant Acts and Policies	Mandate of the Act/ Policy	Reason for applicability/ Non-applicability	Regulatory Clearance Requirement	Authority
		and criminal liabilities.			
15	Schedule Caste and Schedule Tribe (Prevention of Atrocities Act 1989)	Atrocity with SC and ST community is defined as an offense punishable under Section 3 of the Act	Project Area is protected under Sixth Schedule of the Constitution	No	Social Welfare Department, Meghalaya
17	Meghalaya Right to Public Services Act, 2020	Ensures timely delivery of notified public services to citizens by government departments, enhancing transparency, accountability, and efficiency in governance.	Applicable to all government departments and public service providers in Meghalaya	No	Meghalaya State Public Services Delivery Commission (MSPSDC)

## 2.2 IRC AND MORTH CODES APPLICABLE TO THE PROJECT

All road works in India must comply with the IRC, MoRTH guidelines and BIS Codes. Key relevant IRC codes that may directly or indirectly influence the environmental and social management during the design, construction and operational phases are given in **Annexure 2.1**.

Relevance of WB E&S Standards Applicability of ESS1 to 10 is given in Table 2.2.

Table 2.2: Relevance of ESS 1 to 10

WB E&S Standards	ESS Description and Objectives	Relevance and Significance to the Project	Applicability	Responsibility
<b>ESS 1 – Assessment and Management of Environmental and Social Risks and Impacts</b>	<i>ESS1 outlines the Borrower's duties for evaluating, handling, and tracking environmental and social risks and impacts at each phase of a project</i>  <i>Involves Preparation of ESA, ESIA, ESMF, RAP.</i>	Project may involve potential environmental and social risks due to construction activities under the project.	Yes	ESIA/DPR/MPWD
<b>ESS 2 – Labour and Working Conditions</b>	<i>ESS2 highlights the vital role of job creation and income generation in reducing poverty and fostering inclusive economic growth. Borrowers can improve project outcomes by ensuring fair treatment of workers and providing safe, healthy working conditions.</i>  <i>Objectives include promotion of health, safety, equal opportunity at work and to protect vulnerable workers. Aims to prevent forced and child labour and to provide workers with accessible means to raise workplace concerns.</i>	All project construction activities must guarantee the elimination of child labor and forced labor, while ensuring the implementation of operational health and safety standards, as well as a grievance redressal mechanism for the welfare of workers.	Yes	ESIA/MPWD/Contractor/CSC
<b>ESS 3 – Resource Efficiency, Pollution Prevention and Management</b>	<i>ESS3 acknowledges that economic activity and urbanization contribute to pollution and resource depletion, which can harm people, ecosystems, and the environment locally, regionally, and globally.</i>  <i>Objectives include promotion of sustainable use of resources, minimize project-related pollution and emissions, minimize generation of hazardous and non-hazardous waste and manage the risks and</i>	Construction and Demolition activities and provision of support facilities require waste and pollution management during construction and operations; prevention of risks due to chemicals and hazardous material use. Efficient use of raw material resources Energy, Air, Water, reuse of wastes and	Yes	ESIA/MPWD/Contractor/CSC

WB E&S Standards	ESS Description and Objectives	Relevance and Significance to the Project	Applicability	Responsibility
	<i>impacts associated with pesticide use</i>	ensuring circularity etc. are important for overall sustainability.		
<b>ESS 4 – Community Health and Safety</b>	<p><i>ESS4 acknowledges that project activities, equipment, and infrastructure can heighten community exposure to risks and impacts.</i></p> <p><i>The major objective is to anticipate and avoid adverse impacts on the health and safety of project-affected communities during the project life cycle.</i></p>	It is of paramount importance to prioritize community health and safety through the careful design of infrastructure, products, and associated services in road construction projects involving extensive civil works.	Yes	ESIA/DPR/MPWD/Contractor/CSC
<b>ESS 5 – Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement</b>	<p><i>ESS5 acknowledges that land acquisition and land use restrictions for projects can negatively affect communities, causing physical and economic displacement. "Involuntary resettlement" occurs when affected individuals or communities cannot refuse these actions.</i></p> <p><i>Major objective is to avoid or minimize involuntary resettlement. Other objectives include avoiding forced evictions, mitigate unavoidable adverse social and economic impacts from land acquisition and improve the living conditions of vulnerable persons.</i></p>	Land acquisition might be required as part of the project for road expansion and it is necessary to prioritize the protection of people's rights, ensuring a fair and transparent procedure. Respecting landowners' rights fosters community trust, reduces conflicts, and supports social equity. A rights-based approach guarantees that affected individuals are treated justly and project proceeds smoothly.	Yes	ESIA/DPR/MPWD /RP Implementation Agency
<b>ESS 6 – Biodiversity Conservation, and Sustainable Management of Living Natural Resources</b>	<p><i>ESS6 acknowledges that safeguarding and conserving biodiversity, along with the sustainable management of living natural resources, are essential for achieving sustainable development.</i></p> <p><i>The objectives include protection and conservation of biodiversity and habitats, ensure cautionary approach in project design and implementation which</i></p>	The assessment and mitigation of impacts and risks to biodiversity and living natural resources, arising from both the implementation and operation phases, are crucial for linear projects that traverse extensive and diverse land areas.	Yes	ESIA/DPR/MPWD/Contractor/CSC

WB E&S Standards	ESS Description and Objectives	Relevance and Significance to the Project	Applicability	Responsibility
	<i>impact biodiversity and promote the sustainable management of living natural resources.</i>			
<b>ESS 7 – Indigenous Peoples</b>	<p><i>ESS7 recognizes that Indigenous Peoples are often disadvantaged by traditional models of development and supports poverty reduction and sustainable development by ensuring that projects enable Indigenous Peoples and communities to participate in and benefit from development, while safeguarding their cultural identities and well-being</i></p> <p><i>The major objectives include ensuring that the development process fully respects the human rights, dignity, aspirations, identity, culture, and natural resource-based livelihoods of Indigenous Peoples, while avoiding any adverse impacts on them.</i></p>	<p>The socio-economic assessment and the integration of a management plan for the affected Indigenous communities are essential, given the context through which the project road passes.</p>	<b>Yes</b>	ESIA/DPR/MPWD/CSC/Contractor
<b>ESS 8 – Cultural Heritage</b>	<p><i>ESS8 acknowledges that cultural heritage serves as a link between the past, present, and future, encompassing both tangible and intangible forms. ESS8 outlines measures aimed at protecting cultural heritage throughout the entire project lifecycle.</i></p> <p><i>Its objectives are to protect cultural heritage from adverse impacts of project activities and to address cultural heritage as an integral aspect of sustainable development.</i></p>	<p>Impacts and risks on cultural heritage during the construction and operation periods should be considered to preserve and protect valuable historical, cultural, and archaeological sites. These elements are vital for maintaining cultural identity, community values, and social cohesion. Neglecting to address potential risks can lead to irreversible damage, loss of heritage, and conflicts with local communities, thereby undermining the sustainability and social acceptance of the project.</p>	<b>Yes</b>	ESIA/DPR/MPWD/Contractor/CSC



WB E&S Standards	ESS Description and Objectives	Relevance and Significance to the Project	Applicability	Responsibility
ESS 9 – Financial Intermediaries	<p>ESS9 highlights the importance of strong domestic capital markets and access to finance for economic development, growth, and poverty reduction. The Bank is committed to supporting sustainable financial sector development and strengthening the role of domestic markets.</p> <p>The major objective is to outline how the FI will assess and manage the environmental and social risks and impacts linked to the subprojects it finances.</p>	ESS9 would not be specifically required because there are no third-party financial intermediaries involved.	No	
ESS 10 – Stakeholder Engagement and Information Disclosure	<p>ESS10 emphasizes the importance of open, transparent engagement between the borrower and project stakeholders as a key element of good practice.</p> <p>Objectives include creating a systematic approach for identifying stakeholders and fostering constructive relationships with them, to assess the level of stakeholder interest and support and to ensure the timely, clear, accessible, and appropriate disclosure of relevant project information on environmental and social risks and impacts to stakeholders.</p>	Effective stakeholder engagement enhances environmental and social sustainability, improves project acceptance, and contributes to successful project design and implementation.	Yes	ESIA/DPR/MPWD/Contractor/CSC

## 2.5 LAND REVENUE GOVERNANCE AND ADMINISTRATION IN KHADC

The Khasi Hills Autonomous District Council (KHADC), constituted under the Sixth Schedule of the Constitution of India, is empowered under Paragraph 8 of the Sixth Schedule, to assess and collect land revenue and levy taxes within its jurisdiction. Under Paragraph 3 of the Sixth Schedule, the Council also holds legislative authority over specified matters, including land allotment and land use. The jurisdiction of KHADC encompasses the entire East Khasi Hills District.

Traditional Systems of land management in East Khasi Hills is presented in Table 2.3.

Table 2:3: Traditional Systems of land management in East Khasi Hills

Khasi Classification of Land
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Khasi Classification of Land	
RI KYNTI, OR PRIVATE LANDS	RI RAID OR COMMUNAL LANDS
Property of the individual or the <i>kur</i> that owns it	Community entrusts Durbar Raid to manage on its behalf
<ol style="list-style-type: none"> <li>1. <b>Ri Nongtymmen:</b> Inherited from generations to generations.</li> <li>2. <b>Ri Dakhol:</b> Obtained by the right of occupation.</li> <li>3. <b>Ri Bitor:</b> Acquired on receipt of a ceremonial bottle of liquor.</li> <li>4. <b>Ri Khurid:</b> Purchased or bought.</li> <li>5. <b>Ri Seng and Ri Khain:</b> Undivided family owned land.</li> <li>6. <b>Ri Maw:</b> Acquired through purchase or through the right of apportionment.</li> </ol>	<ol style="list-style-type: none"> <li>1. <b>Ri Samla:</b> Land acquired by an unmarried person.</li> <li>2. <b>Ri Shnong:</b> Land villagers can use for cultivation.</li> <li>3. <b>Ri Lyngdoh:</b> Land set aside for religious leaders.</li> <li>4. <b>Ri Bam Syiem:</b> Land set aside for ruling chiefs.</li> <li>5. <b>Ri Bamlang:</b> Land set aside for community use.</li> <li>6. <b>Ri Leh Mokutduma:</b> Land acquired through litigation.</li> <li>7. <b>Ri Aiti Mon or Ri Nongmei Nongpa:</b> Land donated or gifted for public use.</li> <li>8. <b>Ri Raphlang-Ri Bamduh:</b> Barren land which anyone can use.</li> <li>9. <b>Ri Diengsai-Diengin:</b> Forests area between the uplands and low lying areas.</li> </ol>

Source: Land Tenure and Property System in Khasi Society: By Aldila Mawlong <http://www.ijrar.org/>

Autonomous District Councils and their role in land tenure management is presented in Table 2-3.

**Table 2-4: Autonomous District Councils and their role in land tenure management**

<i>Sixth Schedule Established Autonomous District Councils</i>			
Unit	Governing Unit	Head	Broad Roles
Executive unit of ADC	Executive Committee	Chief Executive Member	Implement the policies and schemes of the ADC including development works; give consent for land acquisition; sanction land records (where relevant)
Legislative unit of ADC	Legislative Body	Chairman	Enact laws relating to the subjects listed in the sixth schedule, including land revenue and inheritance.
Judicial unit of ADC	Courts, including Village Courts, Subordinate District Council Courts	(Respective) Judges	Settle disputes involving one or more parties who are tribals.

Source: mbma.org.in/project\_doc/

The sub-project falls in Khasi Hills Autonomous District Council (KHADC).. Their role in Land tenure management is given in **Table 2.5**.

**Table 2-5: Customary Institutions and role in land tenure management**

<i>Traditional/ Customary Institutions of governance in Meghalaya</i>			
Unit	Governing Unit	Head	Broad Roles
<i>Khasis (Syiemship)</i>			
Hima (Province or a Princely state)	Dorbar Syiem (Council of the Syiem)	Syiem (Chief)	Administration of Hima, including markets and their taxation; Issuance of pattas, where available; settlement of disputes
Raid (Group of Shnongs)	Dorbar Raid (Council of the Raid)	Lyngdoh (Priest) or Basan	Administration of <i>raid</i> lands, mostly religious in nature
Shnong (Village)	Dorbar Shnong (Village Council)	Rangbah Shnong (Village Headman)	Administration of the village; witness to land transactions; mediation of disputes; aiding organisation of social and religious functions

Source: mbma.org.in/project\_doc/

The traditional land tenure management systems practiced by the Khasis are summarized in **Table 2.6**.

**Table 2-6: Traditional systems for Land Tenure Management amongst Khasis**

<i>Category</i>	<i>Khasis</i>
Basis of classification	Purpose or ownership of land
Type of land	2 types of ownership (Ri Kynti or private land ; Ri Raid or communal lands) 15 sub- categories of ownership or use (Refer to Table 2.3)
Control and Management	Ri Kynti = Family-managed private land (individual or kur

Category	Khasis
	ownership).  Ri Raid = Clan- or community-managed communal land (under Durbar Raid authority)
Inheritance	Women inherit and own property <sup>1</sup> : The ancestral property and other inheritable forms of property like self-acquired (if not alienated), are inherited by the daughters. Khatduh (youngest daughter) gets a major share of the property, though it is incumbent upon her to maintain other members of the family if they so need <sup>2</sup>
Records	The Khasis do not have any formal land records. There could be boundary marks for demarcating villages or parcels of land holdings. Hima Myllem (in case of Shillong) has pattas which they issue to the landowners on request as evidence ownership of land. The Hima also maintains a record of such pattas. Sometimes, documents could be issued by the village dorbar ( <i>dulir</i> ) which is also recognised by people as a form of land record as is the practice in this project area. Nature and form of <i>dulir</i> varies as it is not standardised by any authority
Systems for sale/purchase/ mortgage	The decision to sell land is made by the family. The village headman stands as the witness to such transactions. The parties are at liberty to register the transaction with formal authorities.  Conveyance of land is a practice when there is a need to mortgage land.
Managing private property	The authority to manage the property is vested in the <i>kni</i> (maternal uncle) <sup>3</sup> .
Managing community property	For Clan lands or the community lands, it is the <i>Durbar</i> that oversees taking decisions for such lands. It is the <i>Durbar kur</i> or the <i>Durbar raid</i> in charge of such decisions (Male dominant or only male group)

<sup>1</sup> There do exist certain variances to this principle, like among the Wars, wherein sons have a share onto the property (Khongpai, 1974, p. 13)

<sup>2</sup> Bareh, 2016, pp. 326–330

<sup>3</sup> Thus, it has been opined that amongst traditional Khasi societies, descent follows through the female while authority vests in the maternal uncles (Passah, 2017; Syiem, 2017).

### 3. PROJECT DESCRIPTION

#### 3.1 WMP ROAD

The proposed road existed before the formation of Meghalaya State and ROW is limited only up to the existing Drain. The proposed WMP project road has a total length of 26.42 km, starting from Weilo at chainage 22+500 and extending up to Phlangwanbroi at chainage 48+920, where the project road concludes.

#### 3.2 LOCATION DETAILS OF THE WMP ROAD

The project road traverses a diverse landscape, encompassing hilly terrains, agricultural fields, scrublands, and built-up areas, while passing through nine villages along its alignment. This WMP road plays a vital role in enhancing regional connectivity by linking economic hubs and facilitating access to industrial centers as well as tourism destinations. **Table 3.1** presents the chainage-wise details of the corridor and the alignment of the road is shown in **Figure 3.1**.

Table 3.1: Chainage wise WMP Road stretches details

Sl. No.	Starting Chainage	End Chainage	Corridor No.	Project length
1	22+500	48+920	8	26.42

Source: DPR

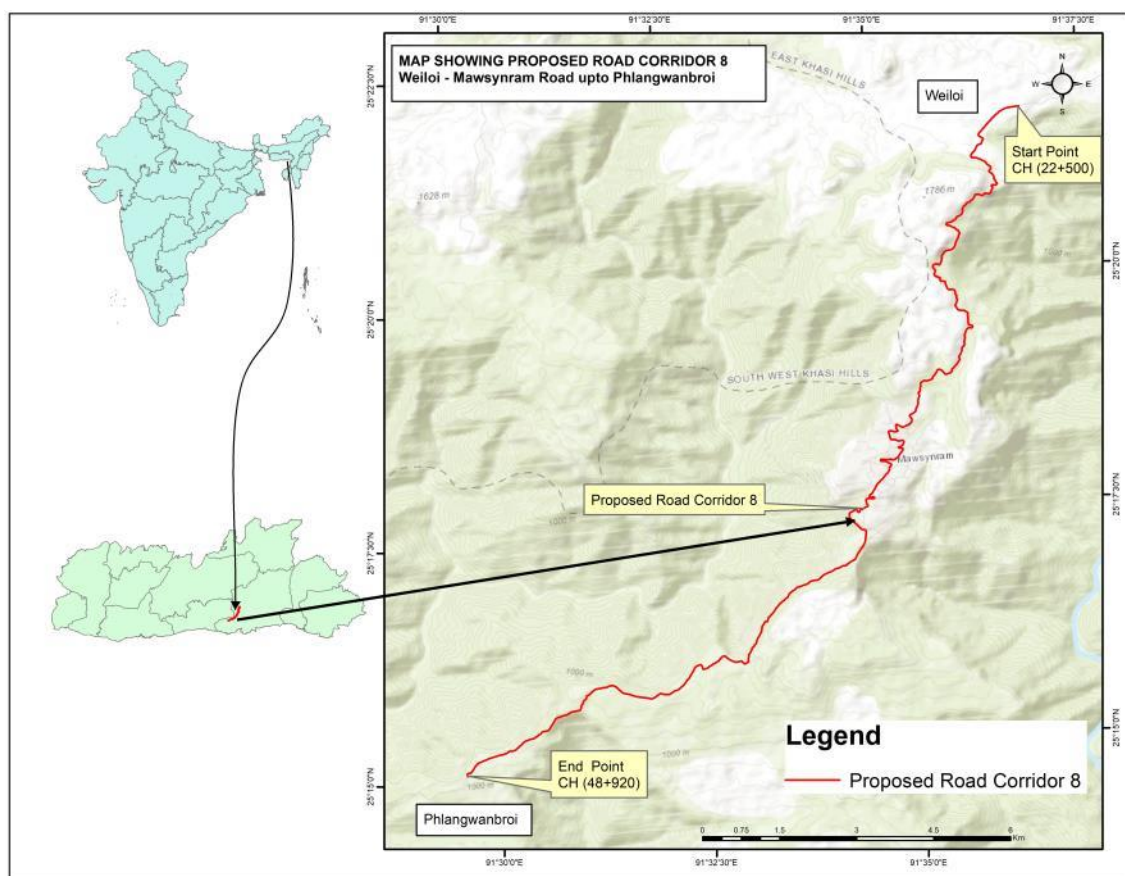


Figure 3.1: Road alignment map for WMP Road

### **3.3 PROJECT STUDY AREA (PROJECT INFLUENCE AREA)**

For the purpose of this study, the Project Influence Area has been categorized in three tiers to facilitate a holistic environmental and social impact of the road stretch and to minimize potential environmental and social risks. Three tiers are given below

1. 12 m of ROW for Direct Impact (6m from Centre line)
2. 500 m buffer for indirect impact area <sup>4</sup>
3. 10 km of study area (Project Influence Area)

The existing Right of Way (12 m) of the corridor has been considered adequate for characterizing baseline conditions and for assessing direct socio-economic impacts, including the profile of affected persons, religious structures, and common property resources. In stretches where the proposed RoW extends beyond the existing RoW to accommodate hill cutting or slope stabilization measures, the socio-economic assessment has been undertaken based on the actual proposed RoW.

The indirect impact area has been delineated as 0.5 km on either side of the proposed RoW from the Centre Line. This buffer has been considered adequate to cover drainage channels, biodiversity-rich zones, natural habitats, protected areas, agricultural land, landslide- and landslip-prone stretches, marshy areas, surface water bodies, physical features, and settlements, among others. The LULC map of the direct impact area is presented in **Figure 3.2**.

The project influence area has been delineated with a buffer of up to 10 km from the periphery of the proposed RoW to identify environmentally sensitive features such as protected areas, wildlife sanctuaries, national parks, wetlands, and wildlife corridors. 10 km Buffer area for project road is presented in **Figure 3.3**. Map showing distance from Ecosensitive Zones w.r.t Project Road is presented in **Figure 3.4**.

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<sup>4</sup> Based on Earlier experiences it was observed that dust, noise and other environmental parameters would get attenuated/diluted to meet existing baseline conditions within 500 m from the source.

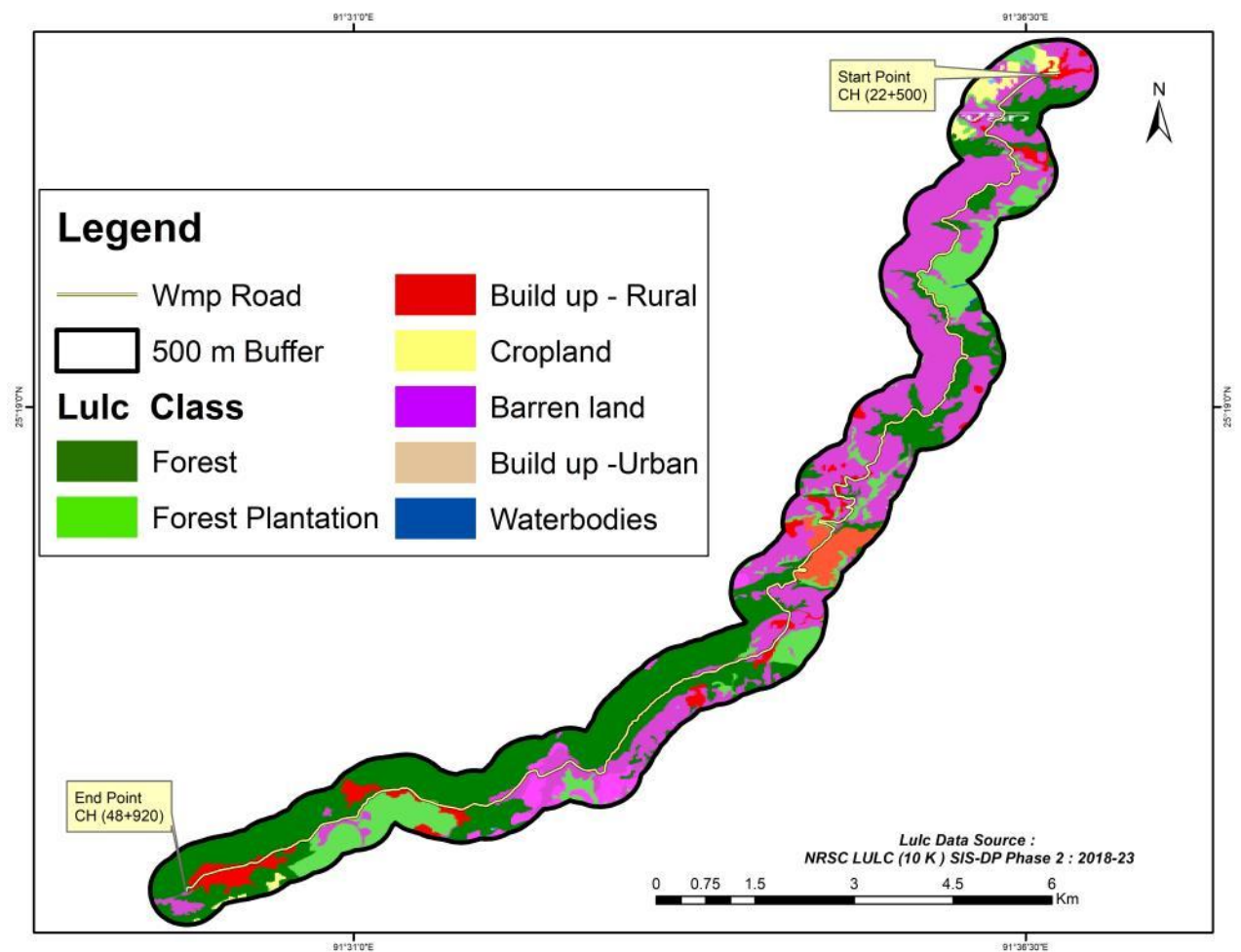


Figure 3.2: The LULC map of the direct impact area



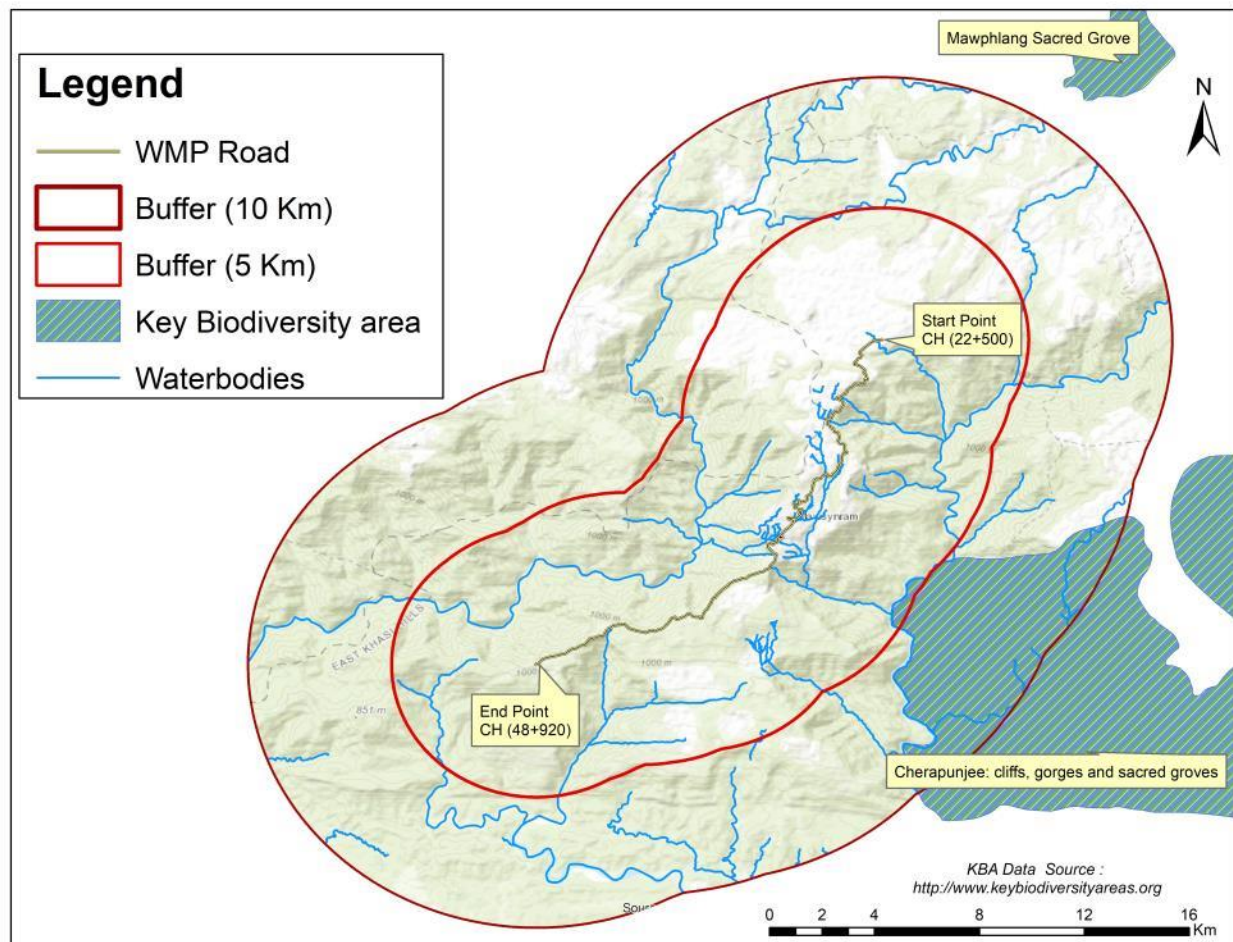
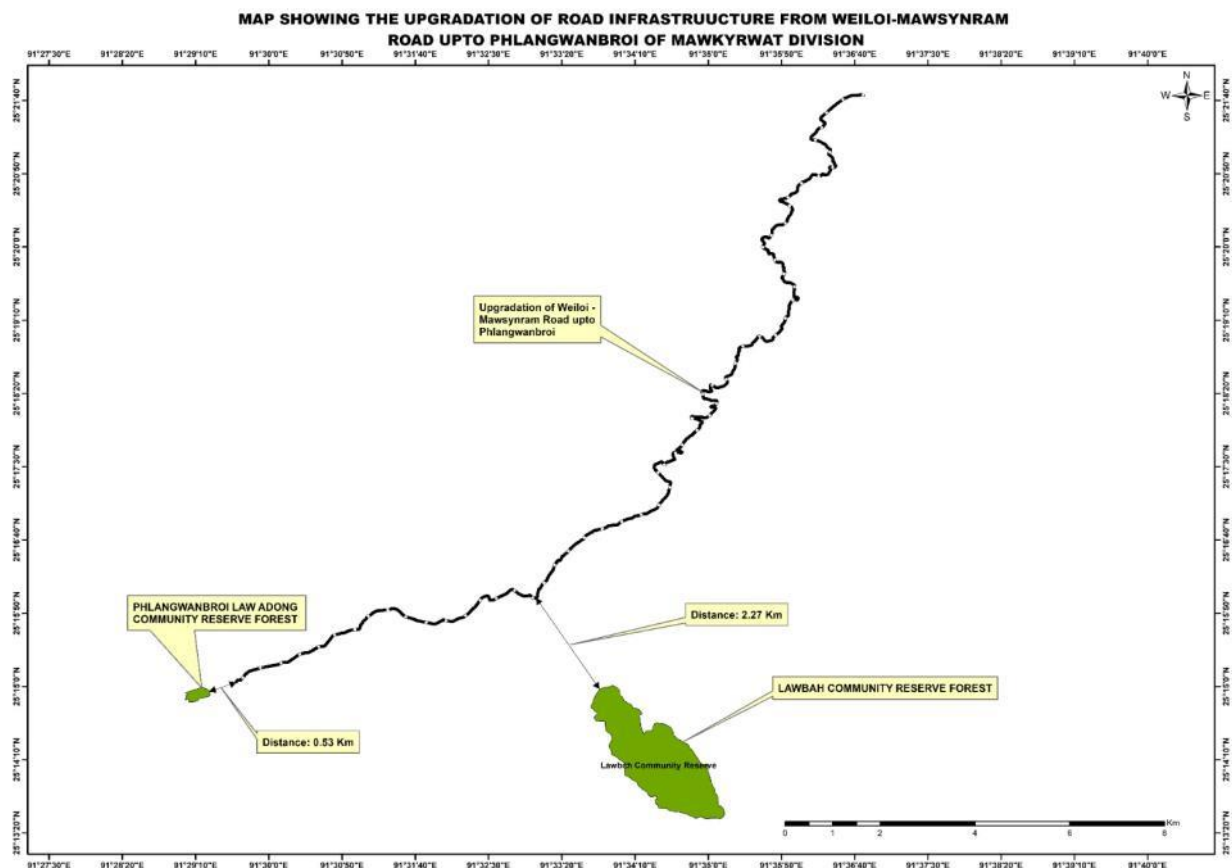


Figure 3.3: 10km Buffer area for project road





**Figure 3.4: Map showing distance from Ecosensitive Zones w.r.t Project Road**

The following sections of this chapter provide details of the existing road characteristics, key project components, resource requirements and proposed improvements.

### **3.4 KEY EXISTING CONDITIONS AND PROPOSED IMPROVEMENTS OF THE WMP ROADS**

The key existing conditions along the WMP project road, together with the proposed improvements, are outlined in the following sub-sections. These have been described based on findings from the primary field surveys as well as details provided in the Detailed Project Report (DPR).

#### **3.4.1 RIGHT OF WAY, CARRIAGE WIDTH, PAVEMENT CONDITIONS AND JUNCTIONS**

The existing Right of Way (RoW) for the project road is 12 m, while the existing road width varies between 3.75 m and 7.0 m. It is presently a single-lane roadway with a bituminous pavement surface. Details of the existing and proposed carriageway (CW) are summarized in Table 3.2. The pavement along the project stretch is bituminous, with its overall condition ranging from fair to poor, and most sections being in poor condition. Earthen shoulders of about 1.0 m width are provided on both sides; however, their condition has also been observed to be poor.

Table 3.2: Details of Existing Carriage way

S. No.	Chainage in Km		Length in km	Existing Carriageway width in (m)	Proposed Carriageway width in (m)
	From	To			
1	22.500	22.600	0.100	5.500	5.5
2	22.600	34.700	12.100	3.750	5.5
3	34.700	35.000	0.300	5.500	5.5
4	35.000	46.600	11.600	3.750	5.5
5	46.600	47.300	0.700	7.000	7.00
6	47.300	48.920	1.620	3.750	5.5
Total Length			26.420		

Source: DPR

#### Pavement Details:

The existing pavement along the project stretch is bituminous. Its general condition ranges from fair to poor, with most sections observed to be in poor condition as per finding from the DPR and field observations. Earthen shoulders are provided on both sides, with a width of about 1.0 m; however, their condition is also assessed as poor.

For the MLCIP project, the pavement design adopts a multi-layered approach, utilizing materials of specified thicknesses to ensure durability and performance. The pavement layers consist of:

- Bituminous Concrete (BC): 30 mm
- Dense Bituminous Macadam (DBM): 50 mm
- Aggregate Interlayer pavement (AIP): 100 mm
- Cement-Treated Base (CTB): 145 mm
- Granular Sub-Base (GSB): 200 mm

This results in a total pavement thickness of 525 mm, providing a robust structure capable of withstanding diverse traffic loads and environmental conditions.

#### Junctions Details:

Along the project stretch, there are 2 major intersections and 14 minor intersections. The details of these junctions are provided in Table 3.3.

Table 3.3: List of Junctions Weilo- Mawsynram Road upto Phlangwanbroi Section

Sr. No	Chainage	Side	Direction	Type of Junction
1	22.500	RHS	Mawkyrwat-Shillong Road	Major
2	22.900	RHS	Laitmawsiang	Minor
3	24.090	RHS	Wahmawpat	Minor
4	32.820	RHS	Jawahar Navodaya Vidhalaya	Minor

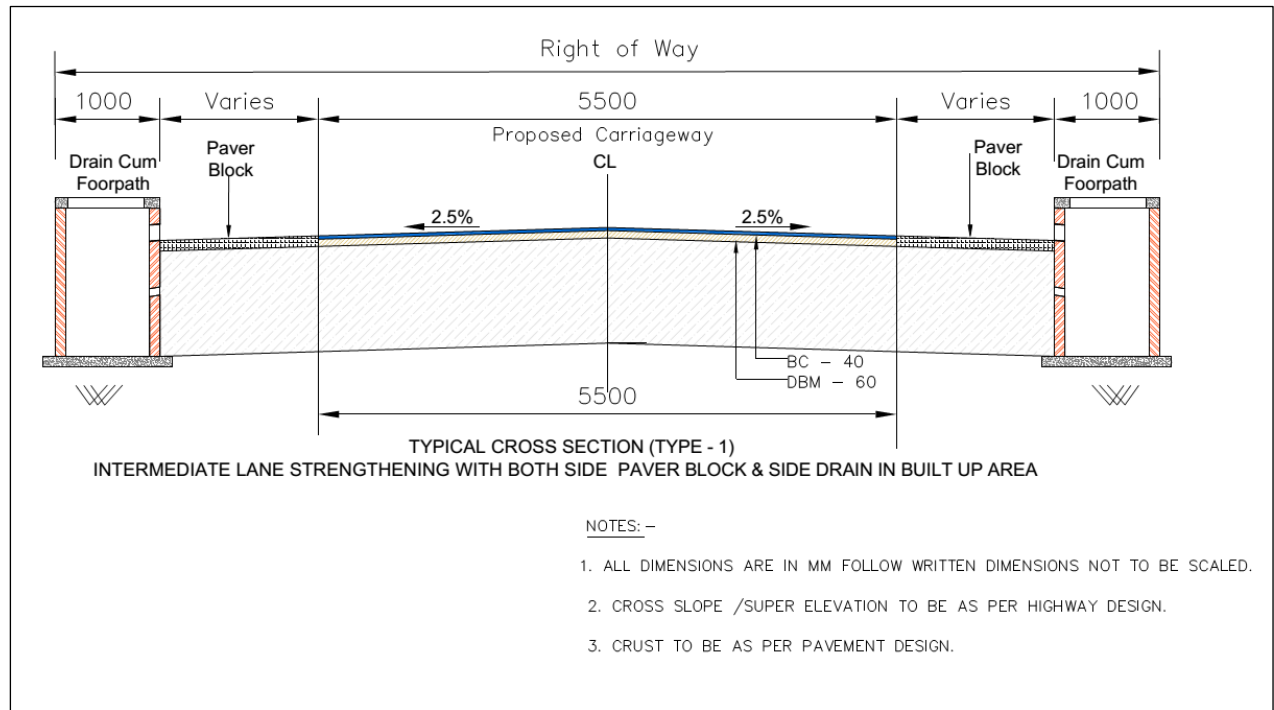
Sr. No	Chainage	Side	Direction	Type of Junction
5	33.290	RHS	Convent Road	Minor
6	33.870	LHS	Mawjymbuin Road	Minor
7	34.800	LHS	Village Road	Minor
8	35.200	RHS	Village Road	Minor
9	35.580	LHS	Higher Secondary School Mawsynram	Minor
10	36.900	LHS	Phlang	Minor
11	37.510	LHS	Nonglait	<b>Major</b>
12	43.080	LHS	Village Road	Minor
13	44.220	RHS	Mawkasain	Minor
14	45.330	RHS	Mawkasain	Minor
15	45.840	LHS	Phlangwanbroi View Point	Minor
16	46.350	LHS	Phlangwanbroi View Point	Minor

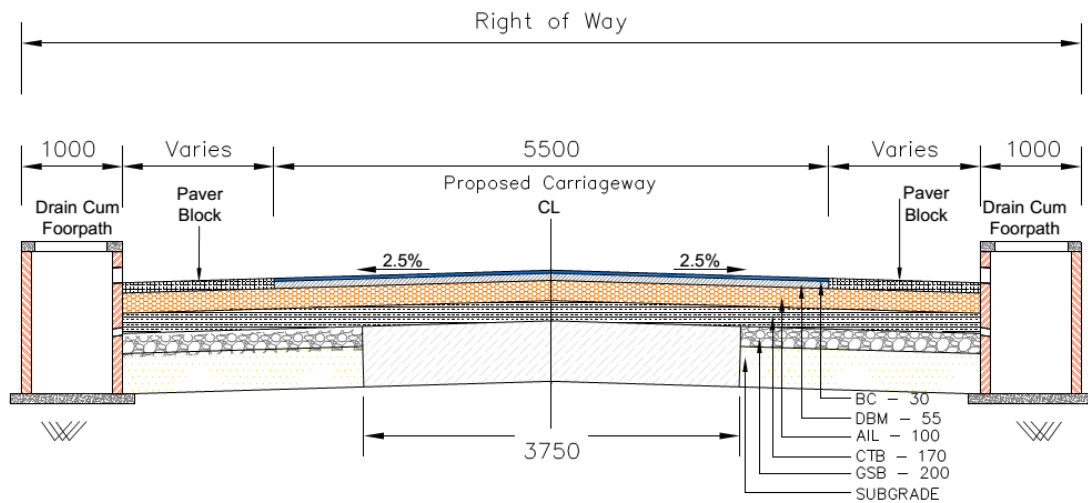
### 3.4.2 PROPOSED ROAD CROSS SECTIONS

The Weilo-Mawsynram Road up to Phlangwanbroi traverses terrain ranging from 932 m to 1,963 m above mean sea level. Based on the earthwork analysis as presented in Table 5.2 in Chapter 5, the total quantity of material to be excavated (cut) along the project corridor is 120,107.610 m<sup>3</sup>, while the total fill requirement is 61,265.620 m<sup>3</sup>. After balancing the cut and fill volumes, there remains a surplus of approximately 58,841.990 m<sup>3</sup> of excavated material that will need to be safely disposed of at designated muck disposal sites. This approach ensures effective earthwork management while minimizing environmental impacts and maintaining slope stability along the project corridor.

A total of five Typical Cross-Sections (TCS) have been proposed in the DPR for the 26.42 km project road. These TCSs vary across the alignment, with certain sections incorporating intermediate lanes. Each cross-section has been designed to address the specific terrain and infrastructure requirements, including provisions for road widening, slope stabilization, drainage, and utility corridors. Implementation of these cross-sections may also lead to environmental and social impacts, such as tree cutting, alteration of natural landscapes, potential biodiversity loss, and disruption of local ecosystems.

The details of different cross-sections, along with the chainage-wise cross-section designs adopted, are provided in **Annexure 3.1. A total of five Typical Cross-Sections (TCS) have been presented in Figure 3.5.**

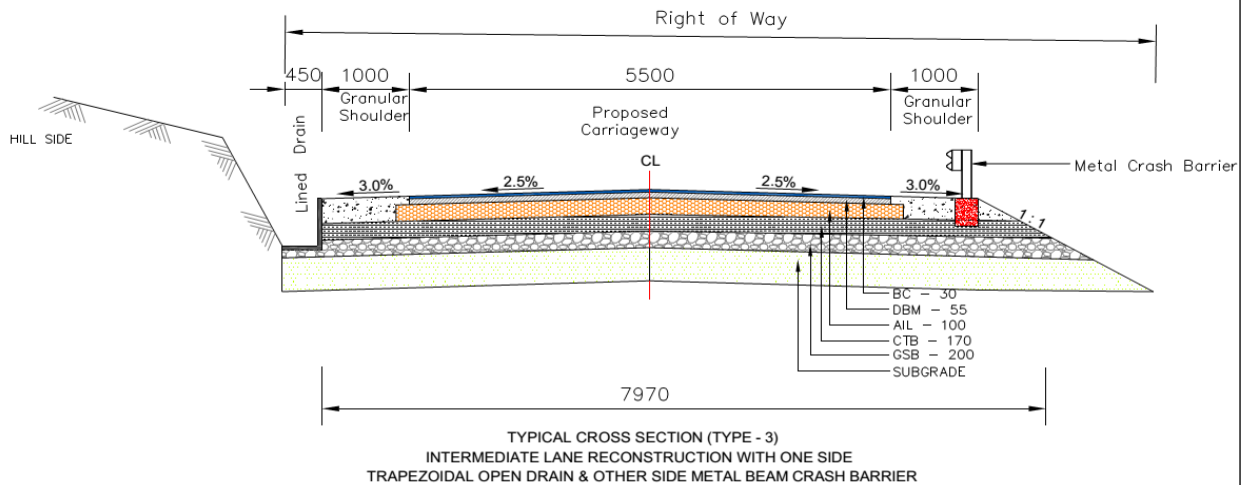




**TYPICAL CROSS SECTION (TYPE - 2)**  
INTERMEDIATE LANE WIDENING & STRENGTHENING WITH BOTH SIDE PAVER BLOCK & SIDE DRAIN IN BUILT UP AREA

**NOTES: -**

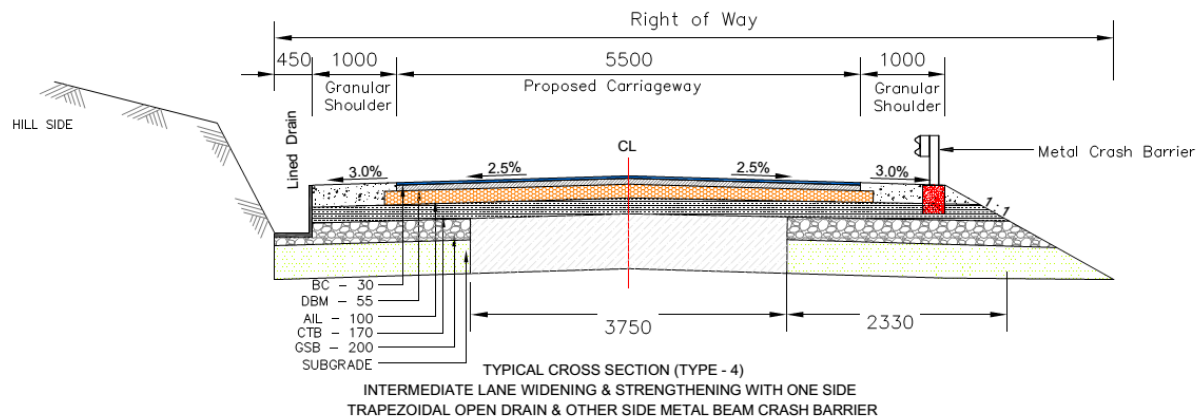
1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.



**TYPICAL CROSS SECTION (TYPE - 3)**  
INTERMEDIATE LANE RECONSTRUCTION WITH ONE SIDE  
TRAPEZOIDAL OPEN DRAIN & OTHER SIDE METAL BEAM CRASH BARRIER

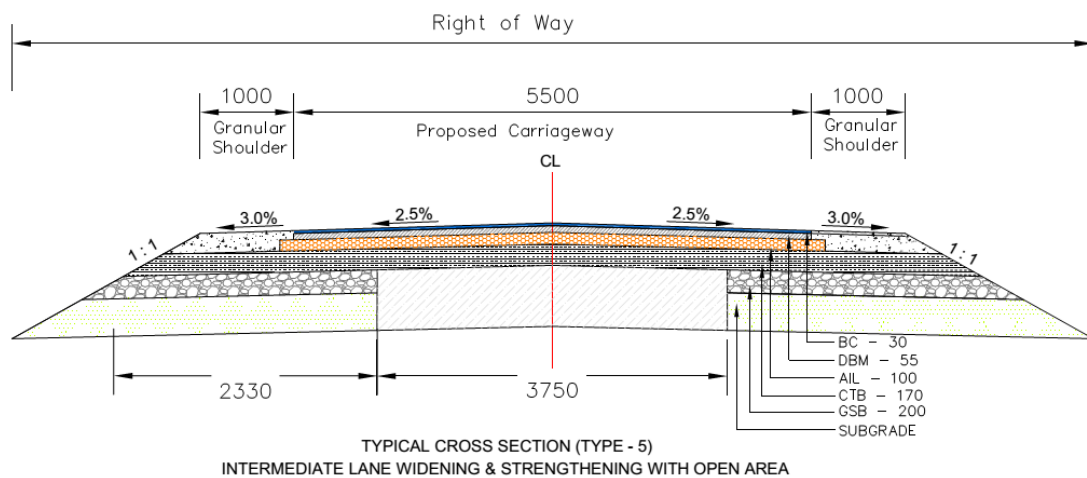
**NOTES: -**

1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.



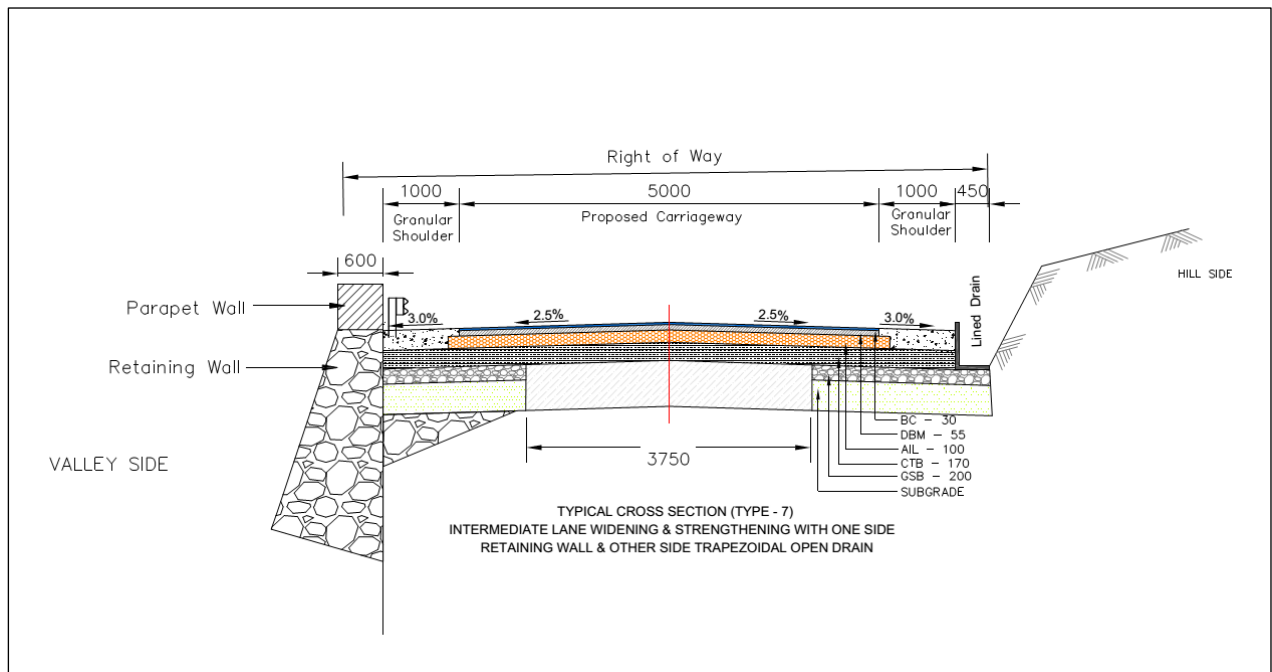
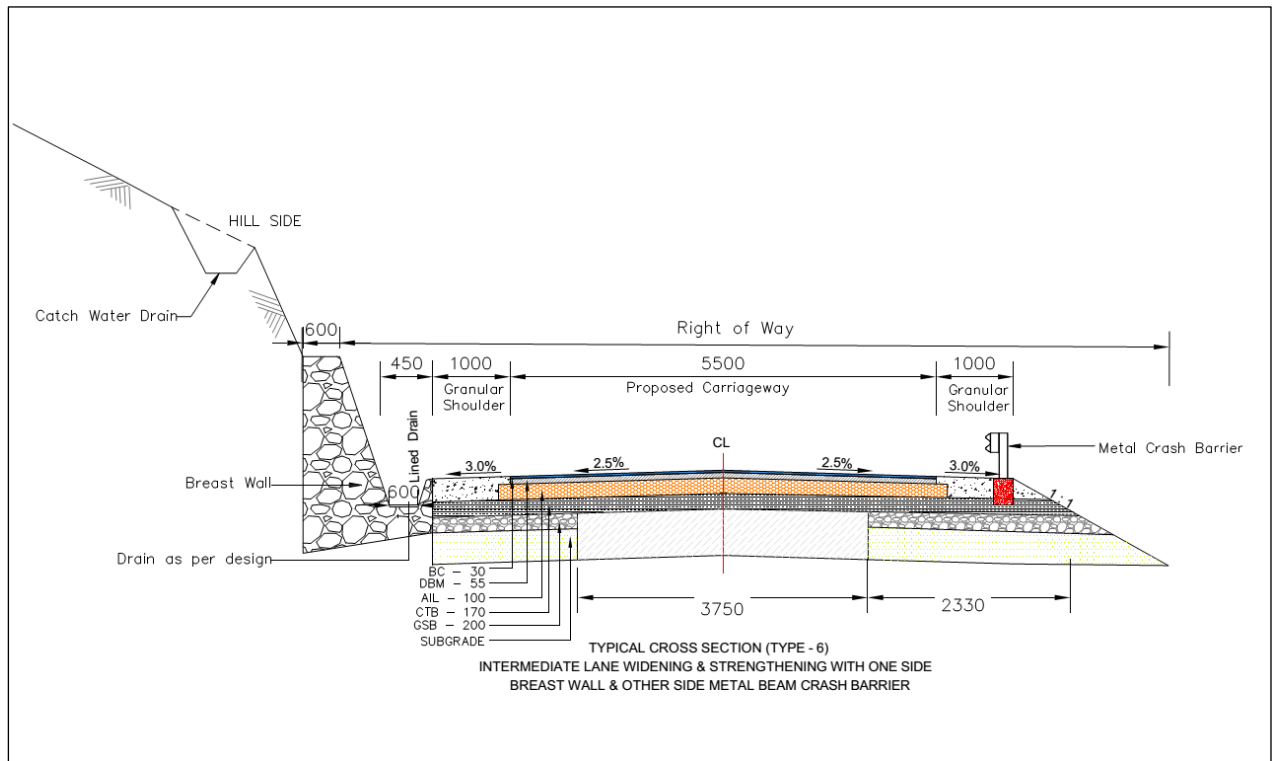
**NOTES: -**

1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.



**NOTES: -**

1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.



**Figure 3.5: Typical Cross Sections**

### 3.4.3 SETTLEMENTS AND CORRIDOR CHARACTERISTICS

#### 3.4.3.1 Settlements:

The WMP Road passes through hilly terrain, rural settlements and towns. The details of the

settlements along the stretch are presented in **Table 3.3**.

**Table 3.4: Chainage wise List of villages & towns along project road**

S. No.	Village Name	Chainages in KM	
		Start Point	End Point
1	Weilo	22.500	22.900
2	Wahmawpat	24.000	24.200
3	Mawsynram	31.400	37.600
4	Laitsohum	38.300	38.500
5	Mawrapad	43.000	45.300
6	Mawkasain (RHS)	45.300	45.800
7	Mawsawa (LHS)	46.500	47.000
8	Kenbah Malai	47.500	48.000
9	Phlangwanbroi (LHS)	47.500	48.000

#### **3.4.3.2 Corridor Characteristics**

The salient features of the WMP road are presented in **Table 3.5**.



**Table 3.5: Salient features of the Existing WMP Road**

Sl. No.	Characteristics	Details
1	Name of Road	Weiloi - Mawsynram Road upto Phlangwanbroi
2	Project road corridor road Length	26.42 km
3	District	East Khasi Hills
4	Villages/settlements enroute	09 village
5	Terrain	Hilly
	Existing	The present configuration of the road varies from Single Lane Road. Road width varies from 3.75m to 7.0m.
6	Proposed treatment	Brownfield. Improvement of sharp curves within the RoW, reconstruction of weak and damaged/ new culverts and bridges, rehabilitation and strengthening of existing pavement to intermediate lane and protection works.
7	Bridges	No. of Major Bridge – 0 No. of Minor Bridges – 11
8	Culverts	210
9	Forests / environmentally sensitive areas	Within 0.5 km of the project road, habitats include a mix of natural and modified ecosystems influenced by hilly terrain and human activities. Natural habitats feature with bamboo and degraded grasslands.
10	Religious Structures Affected	No religious structure is affected, however there are 04 nos. of churches and one memorial ground along the project road.
11	Fifth/Sixth Scheduled Areas	Sixth Schedule Area
12	River crossings	River crossings: one at 22+800
13	Water bodies / ponds	1 River
14	Sensitive receptors	04 nos. of churches and 03 nos. of School and one memorial ground. There is no direct impact on any of these CPR. Refer Table 4.25 for chainage wise details of CPR.
15	Transshipment areas/truck parking locations	Nil
16	Other features / issues if any	Nil

### 3.4.4 TREES

Approximately 35 trees are situated within the existing Right of Way (RoW) on both sides of the road. The chainage wise details of trees are presented in Table 3.6.

**Table 3.6: Chainage wise list of Trees**

Sl. No.	Chainage (km)	LHS/RHS	Common Name	Botanical Name	Girth at Breast Height (cm)
1	23+634	LHS	Dieng-rang	<i>Schima wallichii</i>	62
2	23+634	RHS	Dieng-soh-lang	<i>Castanopsis</i> spp.	58
3	24+045	LHS	Khasi Pine	<i>Pinus kesiya</i>	54
4	24+624	RHS	Dieng-sher	<i>Alnus nepalensis</i>	48
5	24+952	RHS	Dieng-soh-long	<i>Michelia champaca</i>	52
6	25+260	RHS	Kwai Tree	<i>Areca catechu</i>	28
7	26+699	RHS	Bamboo	<i>Bambusa</i> spp.	20
8	27+359	RHS	Dieng-soh-lam	<i>Sterculia villosa</i>	55
9	28+507	LHS	Jackfruit	<i>Artocarpus heterophyllus</i>	72
10	28+507	LHS	Khasi Pine	<i>Pinus kesiya</i>	50
11	29+085	RHS	Dieng-sher	<i>Alnus nepalensis</i>	45
12	29+051	LHS	Dieng-soh-long	<i>Michelia champaca</i>	47
13	29+051	RHS	Khasi Pine	<i>Pinus kesiya</i>	56
14	29+036	RHS	Dieng-sher	<i>Alnus nepalensis</i>	38
15	28+982	RHS	Dieng-soh-long	<i>Michelia champaca</i>	50
16	29+788	RHS	Kwai Tree	<i>Areca catechu</i>	25

**Upgradation of Weiloi - Mawsynram Road upto Phlangwanbroi for Meghalaya Logistics and Connectivity Improvement Project (MLCIP), funded by the World Bank**

**Environmental And Social Impact Assessment Report**

Sl. No.	Chainage (km)	LHS/RHS	Common Name	Botanical Name	Girth at Breast Height (cm)
17	29+828	RHS	Bamboo	<i>Bambusa</i> spp.	28
18	33+239	LHS	Dieng-soh-lam	<i>Sterculia villosa</i>	60
19	33+262	LHS	Jackfruit	<i>Artocarpus heterophyllus</i>	68
20	33+396	LHS	Khasi Pine	<i>Pinus kesiya</i>	52
21	33+373	LHS	Dieng-sher	<i>Alnus nepalensis</i>	42
22	33+700	RHS	Kwai Tree	<i>Areca catechu</i>	26
23	33+700	RHS	Bamboo	<i>Bambusa</i> spp.	24
24	33+700	RHS	Dieng-soh-lam	<i>Sterculia villosa</i>	58
25	33+708	RHS	Jackfruit	<i>Artocarpus heterophyllus</i>	74
26	33+708	RHS	Khasi Pine	<i>Pinus kesiya</i>	57
27	38+682	LHS	Dieng-sher	<i>Alnus nepalensis</i>	44
28	39+019	LHS	Dieng-rang	<i>Schima wallichii</i>	70
29	39+569	LHS	Dieng-soh-lang	<i>Castanopsis</i> spp.	62
30	42+722	LHS	Khasi Pine	<i>Pinus kesiya</i>	59
31	43+900	LHS	Dieng-sher	<i>Alnus nepalensis</i>	41
32	43+900	RHS	Dieng-soh-long	<i>Michelia champaca</i>	48
33	43+964	LHS	Kwai Tree	<i>Areca catechu</i>	24
34	44+455	LHS	Bamboo	<i>Bambusa</i> spp.	29
35	44+455	LHS	Bamboo	<i>Bambusa</i> spp.	27

To mitigate the ecological impact of tree felling, compensatory plantation (@1:10) would be carried out, in accordance with applicable environmental regulations and guidelines. These measures, along with their implementation strategies, are comprehensively detailed in the Environmental and Social Management Plan (ESMP). The ESMP is attached as **Annexure 3.2**.

### 3.5 COMPONENTS & ACTIVITIES OF THE PROPOSED PROJECT

The development of the road would necessarily entail the following three stages. Each of the stages would have several activities and sub-activities. The three stages are

#### 3.5.1 DETAILED DESIGN AND PRE-CONSTRUCTION STAGE

- Carrying out ESIA studies & preparation of ESMP and other Environmental and Social management instruments such as RAP, IPDP, LMP, SEA/SH plan and OHS plan
- Finalization of alignment with incorporation of environmental, social and community concerns in addition to the design and safety aspects
- Relocation of utilities and private & community structures
- Community consultation for land identification for borrow areas, disposal site, water availability, siting of camps, tree felling permission
- Identification of sources of material
- Contractor mobilization
- Setting of Construction Camp

#### 3.5.2 CONSTRUCTION STAGE

- Site clearing & construction camp establishment
- Material procurement & transportation
- Earthwork, hillside cutting, if required, embankment construction, GSB, WBM, operation of equipment, plant and machinery
- Structure demolition & construction work, if required
- Surfacing and shoulder protection & road furniture

#### 3.5.3 POST-CONSTRUCTION, OPERATIONS & MAINTENANCE STAGE

- Decommissioning and restoration of camp area, removal of Construction & demolition waste, Restoration of borrow area, disposal sites.
- Operation of vehicles and safety of road users

### 3.6 RESOURCE REQUIREMENTS

East Khasi Hills was one of the original districts of Meghalaya at the time of the State's formation in 1972. Consequently, many governmental establishments are not located within the district, and the pace of development has been relatively slow. Mining activity in the district is negligible, limited

mostly to sand for local consumption.

For the proposed road project, assessing the availability of suitable construction materials in the vicinity of the project road is essential. The major materials required include soil, sand, aggregates, bitumen, steel, and cement. Surface water will be utilized for construction purposes, subject to prior permission from the Irrigation/Water Resources Department. Details of the construction materials, their sources, and corresponding lead distances are provided in **Table 3.7**.

**Table 3.7: Details of construction material, sources along with the lead**

Material	Source	Lead (in km)	Surfaced Road	Unsurfaced Graveled Road
Building Stone/ Boulders	5th Km of Mawphlang-Balat Road	36.00	31.000	5.00
Stone Metal/ Aggregates/ GSB/ Stone Chip/ Filter Material/	5th Km of Mawphlang-Balat Road	36.00	31.000	5.00
Sand/ Blindage/ Binding Materials	20th Km of Mawphlang-Balat Road	36.00	16.000	20.00
Cement	Shillong	77.00	76.000	1.00
HYSD bar	Shillong	77.00	76.000	1.00

### 3.6.1 VOLUME OF CIVIL WORKS

The volume of civil works for MLCIP will depend on the construction methods employed, the typical cross-sections, and the specific materials used within the sub-project area. These civil works are critical to ensuring the highway's stability, safety, and environmental sustainability, thereby contributing to the long-term success of the road project. Details of the materials used including Bituminous Concrete (BC), Dense Bituminous Macadam (DBM), Prime Coat (PC), Tack Coat (TC), Granular Sub Base (GSB), and Wet Mix Macadam (WMM) treatments are provided in **Annexure 3.3**. The use of this comprehensive range of materials ensures the road's strength, durability, and overall performance.

The total quantity of material to be excavated (cut) along the project corridor is 120,107.610 m<sup>3</sup>, while the total fill requirement is 61,265.620 m<sup>3</sup>. After balancing the cut and fill volumes, there remains a surplus of approximately 58,841.990 m<sup>3</sup> of excavated material. This excess earthwork shall be disposed of or utilized by the contractor only at designated and pre-approved disposal sites identified by the Meghalaya Public Works Department (MPWD), in accordance with environmental management and safety norms.

Further, recycling and reuse of existing pavement materials shall be carried out as per MoRTH Specifications for Road Works (latest revision) and IRC: 120 guidelines. This approach promotes cut-and-fill optimization, reduces the requirement for fresh borrow materials, minimizes construction waste, and ensures compliance with the Solid Waste Management Rules, 2016 and Environmental (Protection) Act, 1986.

### 3.7 LAND REQUIREMENTS

No additional land requirement is anticipated for the proposed road project, as all construction activities are planned to be carried out entirely within the existing 12-metre Right of Way (RoW).

### 3.8 WATER REQUIREMENTS

The overall water requirement of the project is 72.1 KLD, of which 64.1 KLD will be used for construction activities and 8 KLD is required for domestic purposes.

Details of the water requirement assessed for the project road are presented in **Table 3.8**.

**Table 3.8: Water Requirement for Construction Works**

Activity	Daily Demand (Liters/km)	Total for 27 km (Liters/day)	Remarks
Permanent Works	800 – 1000	22000	Concrete mixing, compaction, culverts, drains.
Dust Suppression at Work Zone	300 – 500	9300	Reduced due to frequent rain; use only on dry days.
Curing	300 – 500	9100	Rainfall may assist, but controlled curing still needed.
Laboratory	Fixed	1000	Centralized testing facility.
Haul Roads	300 –5600	10000	Frequent spraying due to erosion-prone slopes.
Crusher	Fixed	8700	For aggregate washing and dust control.
Plant Cleaning & Workshop Washing	Fixed	4000	Includes batching plant and machinery.
Domestic Purpose	Fixed	8000	For 50–100 workers (drinking, cooking, sanitation).
<b>Total</b>		<b>72100</b>	

### **3.9 Project Cost**

The total estimated cost of the project as per the DPR is approximately INR 124.01 crore and the project is planned for a period of 36 months.

### **3.10 PROJECT IMPLEMENTATION SCHEDULE**

Based on the stipulated criteria and conditions, MPWD will award the civil works contract to an eligible contractor. The contractor will be responsible for procuring quality materials in sufficient quantities from the nearest authorized sources and approved manufacturers. Equipment meeting the prescribed standards must be used throughout the construction process.

The manpower requirement will vary over the construction period depending on the scope and type of work. The peak manpower is estimated to be approximately 50 personnel. Skilled manpower, primarily machine operators and the concrete casting crew, will generally be migrant workers accommodated in the construction camp. It is estimated that about 65–70% of the workforce will be sourced locally, while the remaining skilled workers, operators, supervisors, and engineers may be recruited from outside the area. The contractor will mobilize the required manpower according to the construction schedule. The construction period for the 26.42 km project stretch is planned for 36 months.

## 4. BASELINE ENVIRONMENT

### 4.1 GENERAL

This chapter provides an overview of the existing environmental and social conditions of the project area, covering natural, physical, biological, cultural, and socio-economic components. Based on this baseline scenario, the potential impacts of the proposed sub-project have been identified. The approach and methodology adopted for baseline data collection are outlined in Section 1.3 of Chapter 1.

### 4.2 NATURAL ENVIRONMENT (METEOROLOGY)

This section describes the present meteorological conditions of the area like climate, temperature, rainfall and relative humidity.

#### 4.2.1 CLIMATIC CONDITIONS

The climate of East Khasi Hills District is marked by moderate temperatures and high humidity. The district experiences three distinct seasons: summer, monsoon, and winter. The summer season extends from March to May, followed by the Southwest (SW) monsoon, which generally lasts until September. Winter sets in by November and continues until the end of February.

#### 4.2.2 TEMPERATURE

In East Khasi Hills, winter generally begins in November, with January being the coldest month. During this period, the maximum temperature typically ranges from 18–20°C, while the minimum can drop to around 4–6°C. Summer starts around March and lasts until May, with May being the hottest month. During the summer, maximum temperatures range from 25–28°C, and minimum temperatures are around 18–20°C. The region also experiences a significant amount of rainfall during the Southwest monsoon from June to September.

**Table 4.1** below presents the monthly mean maximum and minimum temperatures recorded at Shillong (IMD data), which has been considered as the nearest representative location for the project area.

**Table 4.1: Monthly Mean Maximum and Minimum Temperature**

Month	Maximum Temperature (°C)	Minimum Temperature (°C)
January	18.6	2.2
February	21.2	3.7
March	25.6	6.8
April	27.1	10.1
May	27.0	11.8
June	27.1	14.7
July	27.4	16.3



Month	Maximum Temperature (°C)	Minimum Temperature (°C)
August	27.3	16.2
September	26.9	14.8
October	25.2	10.9
November	22.8	7.1
December	20.1	4.0

Source: India Meteorological Department – Shillong Climatological Normals, (1991–2020)

#### Temperature projection and implications for project road

According to the Meghalaya State Climate Action Plan, the East Khasi Hills District is projected to experience a rise in average annual temperature of approximately 1.6°C to 1.7°C by 2050 (relative to the 1970s baseline), accompanied by increasing variability in rainfall and a higher frequency of extreme weather events. Such climatic shifts may exacerbate slope instability, drainage congestion, and pavement deterioration along the project corridor, particularly in the hilly terrain around Mawsynram. To enhance resilience, the project design incorporates adequate drainage capacity, strengthened retaining and breast walls, climate-appropriate pavement materials, and improved slope stabilization measures. These interventions aim to reduce vulnerability to heat- and rain-related stresses, safeguard the structural integrity of the road, and ensure long-term serviceability under changing climatic conditions.

Source: Meghalaya State Climate Action Plan

#### 4.2.3 RAINFALL AND HUMIDITY

The East Khasi Hills district experiences a humid subtropical to temperate monsoon climate, significantly influenced by its elevation and south-facing escarpments. Pre-monsoon showers occur in April and May, often accompanied by thunderstorms and occasional hailstorms, followed by a brief dry spell. The southwest monsoon generally sets in by late May or early June, bringing extremely heavy rainfall, with June to August being the wettest months. The southern parts of the district, particularly around Mawsynram and Cherrapunji, record some of the highest rainfall levels in the world, resulting in frequent slope failures, flash floods, and elevated landslide risks along the road corridor.

The average annual rainfall in East Khasi Hills District, as recorded at the Shillong IMD station, is presented in **Table 4.2**, which provides the year-wise rainfall distribution.

**Table 4-2: Monthly Rainfall Data**

Month	Average rainfall (mm)
January	12.6
February	15.4
March	42.7
April	131.4
May	244.5

Month	Average rainfall (mm)
June	423.7
July	402.0
August	328.4
September	270.1
October	197.2
November	24.7
December	7.2
<b>Annual total</b>	<b>2,099.9</b>

Source: India Meteorological Department – Shillong Climatological Normals, (1991–2020)

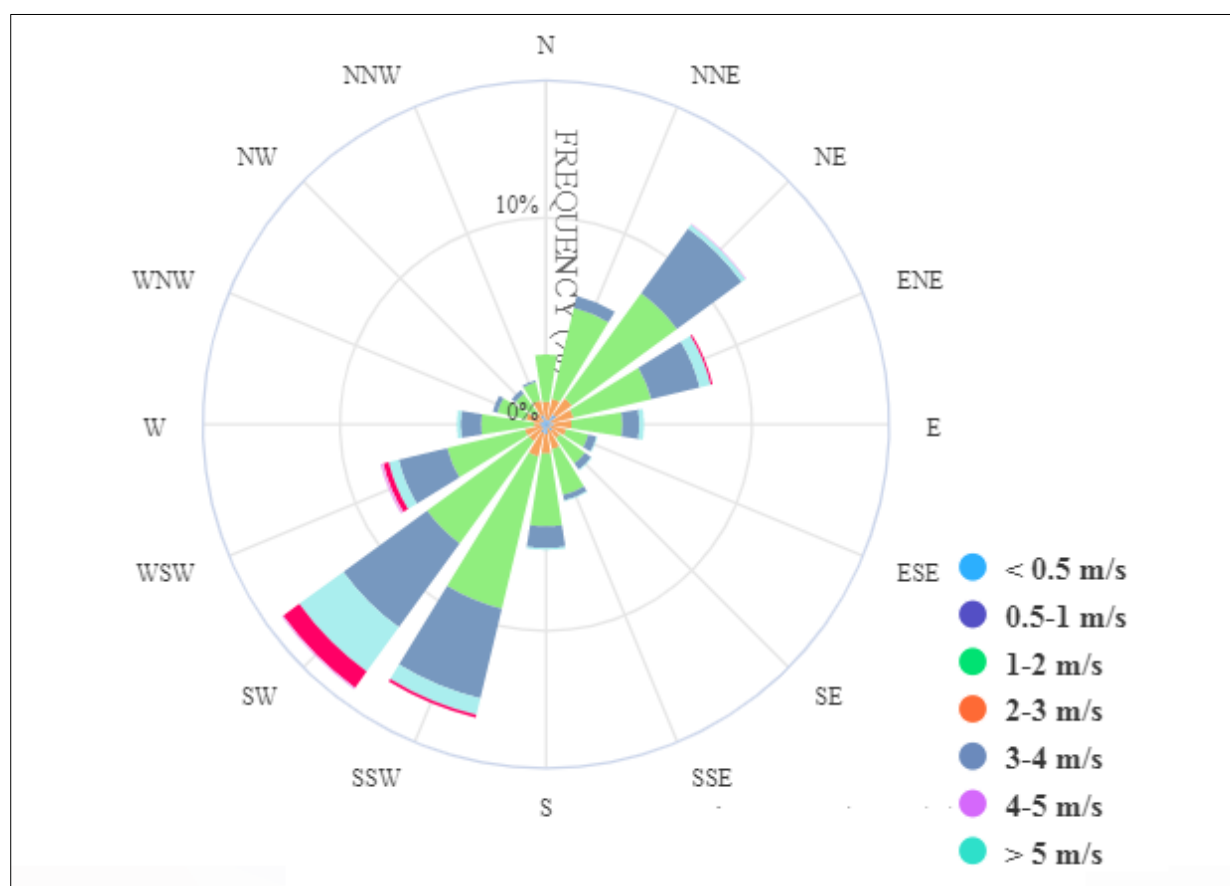
#### Rainfall projection and implications for project road

According to the Meghalaya State Climate Action Plan (2022), rainfall patterns in the East Khasi Hills District are projected to become increasingly erratic, with a rise in extreme precipitation events and short-duration, high-intensity rainfall by 2050. The Mawsynram region already recognized as one of the wettest places on Earth is expected to experience a further increase in seasonal rainfall intensity, leading to higher risks of surface runoff, erosion, slope failure, and localized flooding along the project corridor. Such conditions can accelerate drainage system overload, pavement damage, and disruption of traffic movement, particularly during the monsoon months. To address these climate-related risks, the project design includes enhanced cross-drainage structures, longitudinal side drains with proper outfalls, scientifically designed muck disposal sites, and bio-engineering measures for slope protection. These measures are intended to improve stormwater management, reduce erosion, and maintain road stability and connectivity under projected rainfall variability and extreme weather conditions.

The East Khasi Hills district in Meghalaya experiences consistently high humidity levels, typical of its subtropical highland climate. The average relative humidity remains around 83% throughout the year, reflecting persistently high moisture content in the atmosphere.

#### 4.2.4 WIND SPEED AND DIRECTION

The annual Windrose diagram for Shillong (nearest IMD station) is presented in **Figure 4.1**. The average wind speed is about 4.9 km/hr, predominantly blowing from the southwest direction.



Source: IMD Climatological Tables for 1991–2020

**Figure 4.1: Wind rose Diagram for Shillong (IMD)**

## 4.3 LAND ENVIRONMENT

This section describes the key characteristics of the project area including its Physiography, Elevation, Geology, Geomorphology and soils, land use pattern, agriculture and soil.

### 4.3.1 PHYSIOGRAPHY AND ELEVATION

East Khasi Hills district in Meghalaya is characterized by rugged, forested hills with deep valleys and numerous perennial rivers, including the Umkhrah, Umshyrpi, and Umiam, which support agriculture and local water supply. Elevations range from approximately 80 m in low-lying areas to over 1,400 m in Shillong and Cherrapunji. The region receives extremely high rainfall, particularly in Mawsynram and Cherrapunji, resulting in frequent landslides and significant surface runoff—key factors to consider in road alignment and infrastructure planning.

Source: CGWB District Profile – East Khasi Hills

### Baseline Scenario for WMP Road

According to the elevation map, the Weiloi–Mawsynram Road up to Phlangwanbroi traverses terrain ranging from 932 m to 1,963 m above mean sea level. This variation in elevation necessitates careful road alignment and implementation of slope stabilization measures during construction. The elevation profile of the project stretch is shown in **Figure 4.2**.

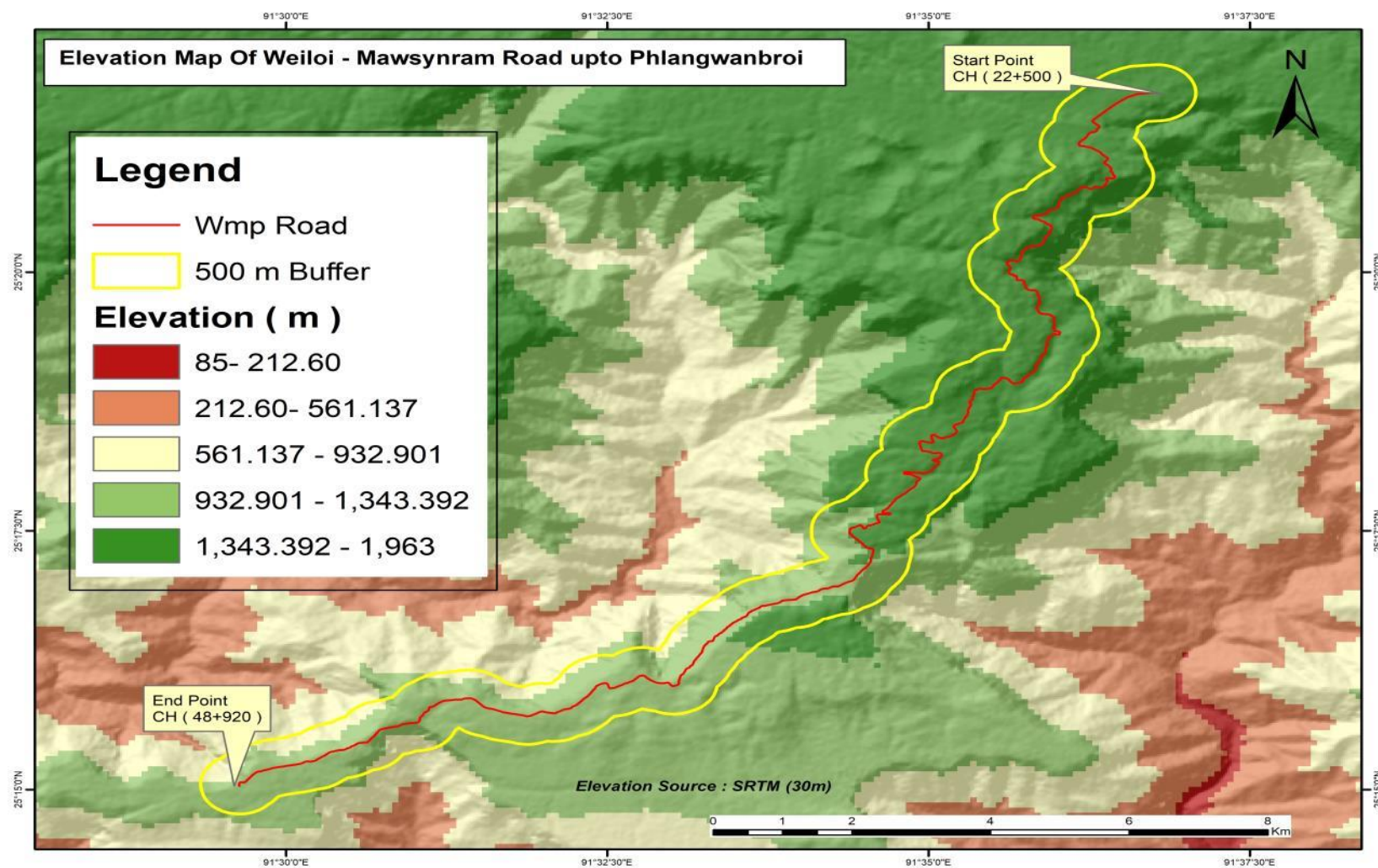


Figure 4-2: Elevation map of the project road (Elevation Source: SRTM (30m))

#### 4.3.2 GEOLOGY

##### **Baseline Scenario for Project Road**

The initial section of the corridor in East Khasi Hills district is underlain by Proterozoic rocks of the Assam–Meghalaya Gneissic Complex. These rocks predominantly consist of biotite gneiss, forming a rugged and stable basement that shapes the topography of this stretch.

Further along the corridor, most of the alignment traverses' rocks of Paleocene–Eocene age, characterized by limestone, calcareous shale, and sandstone lithologies, indicative of sedimentary deposition during the early Cenozoic era. This section often exhibits undulating terrain, plateaus, and karst features, which significantly influence drainage patterns, slope stability, and construction planning.

The geology of the project road is depicted in **Figure 4.3**.



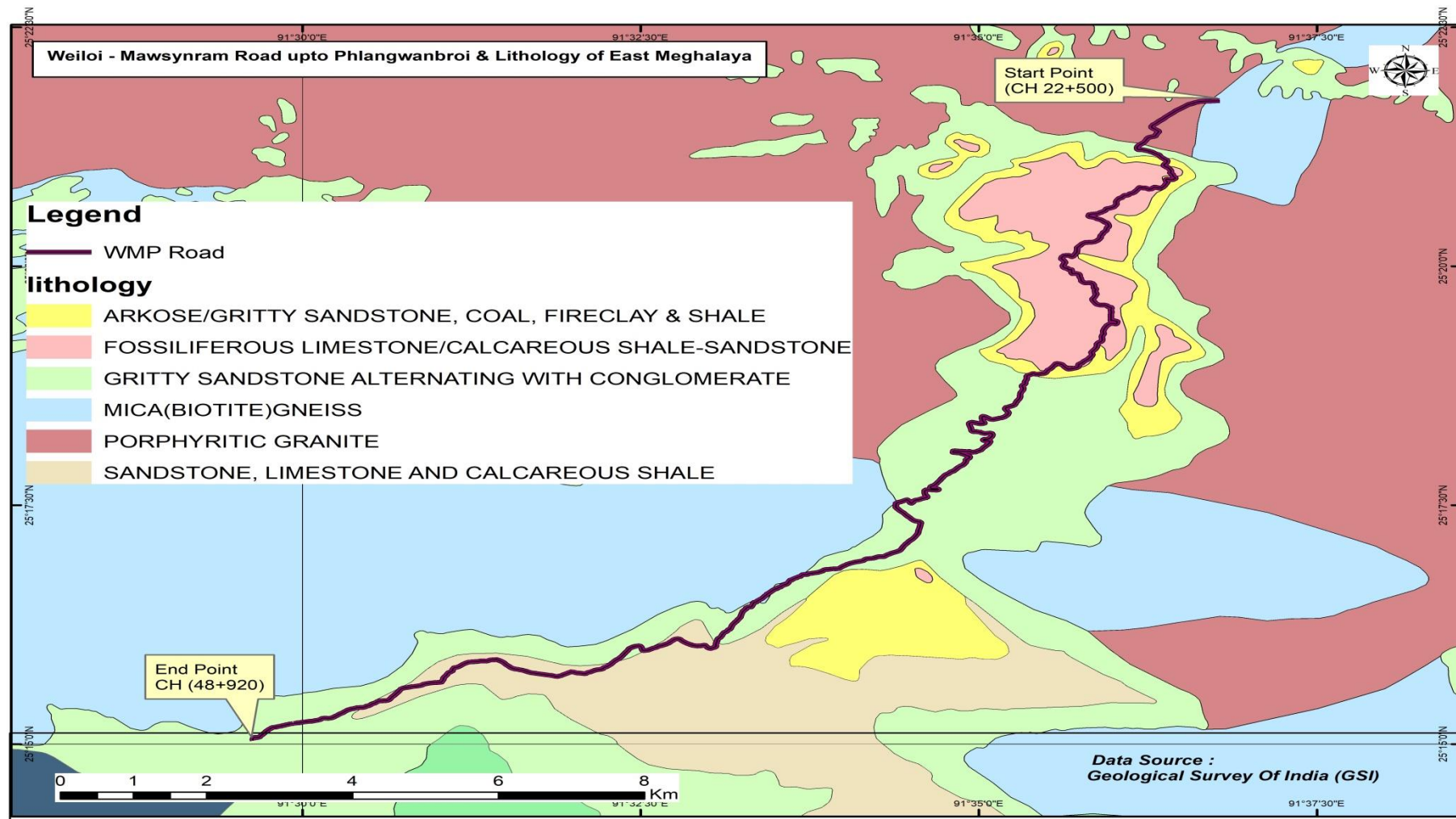


Figure 4-3 Local geology of the project road

### 4.3.3 GEO-MORPHOLOGY AND SOILS

Geomorphologically, East Khasi Hills district is characterized by rugged hills, undulating plateaus, valleys, and riverine floodplains. The terrain is predominantly hilly, with steep slopes in upland areas gradually transitioning into plateau regions and low-lying valleys in certain stretches.

Soils in the district are mainly lateritic and acidic, formed from the weathering of Shillong Group rocks under high rainfall. In the hilly sections, soils are highly acidic, with textures ranging from sandy loam to clay loam, and patches of lateritic red soil. These soils are rich in organic matter and nitrogen but are prone to erosion and leaching during heavy monsoon rains, which can lead to slope instability.

Given the terrain and soil conditions, road and infrastructure projects in East Khasi Hills require:

- Adequate **slope stabilization**
- Proper **drainage and erosion control**
- Use of **check walls, bioengineering techniques, and roadside plantations** to minimize soil loss and maintain stability

The block-wise soil type and land slope is given in below **Table 4-3**.

**Table 4-3: Block wise major soil area and Land Slope for Mawsynram**

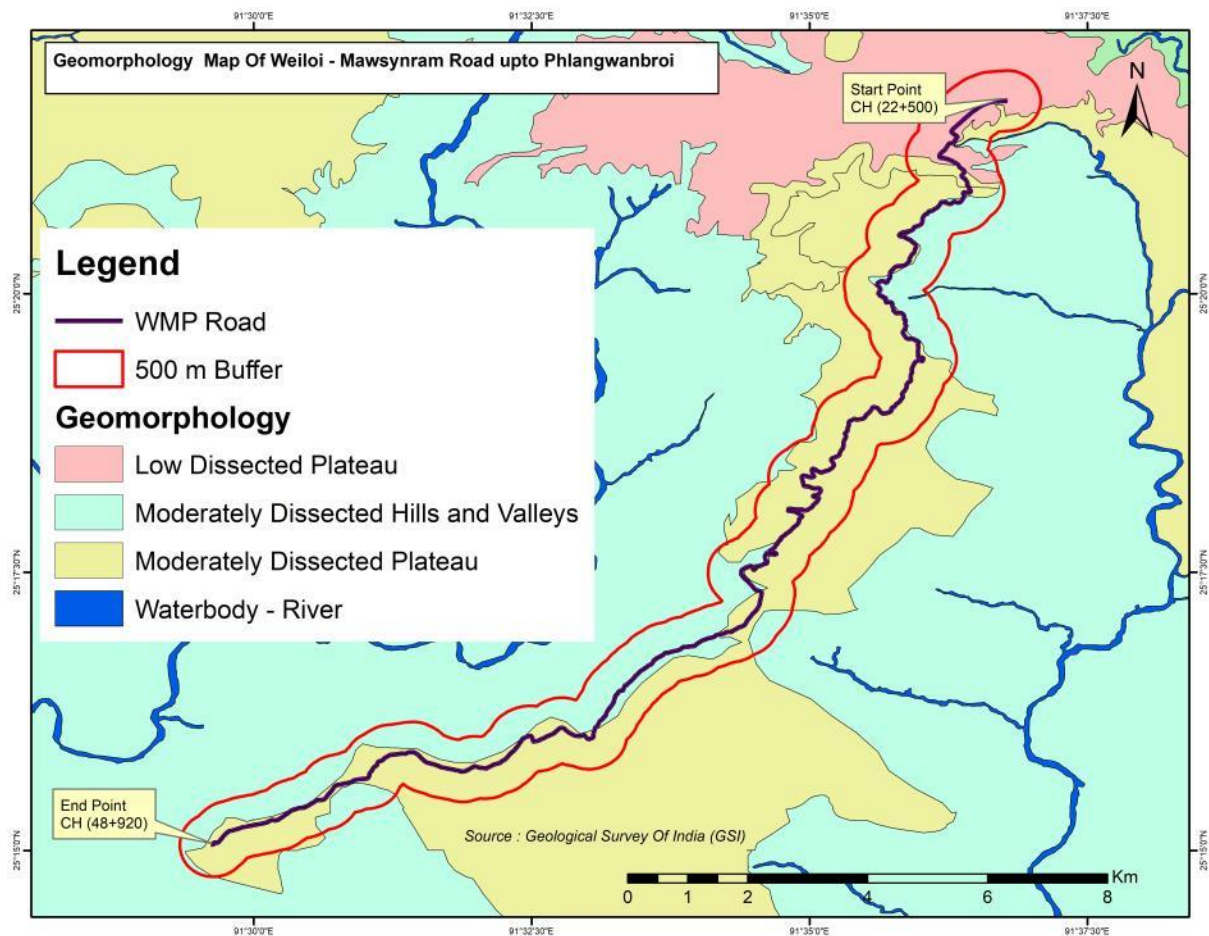
Block	Major Soil Type	Area (Ha)	0–3% Slope	3–8% Slope	8–25% Slope	>25% Slope
Mawsynram Development Block	Red lateritic loam	68,000	4,800	11,500	19,500	32,200

*Source: District Irrigation Plan 2016–2020, East Khasi Hills, Government of Meghalaya*

### Baseline Scenario for Sub- Project Road

The Weilo-Mawsynram-Phlangwanbroi road section in East Khasi Hills district is predominantly underlain by laterite and lateritic soils, formed from the weathering of Shillong Group rocks. These soils are acidic, with textures ranging from sandy loam to clay loam, and are highly susceptible to erosion and leaching under heavy rainfall. Of the district's total area of 2,74,000 ha, approximately 1,35,700 ha consists of steep slopes (>25%), 76,000 ha of moderate slopes (8–25%), 45,600 ha of gentle slopes (3–8%), and only 16,700 ha of flat land (0–3%). Given the fragile terrain, careful slope stabilization, drainage management, and bioengineering measures are essential for the design and construction of roads and associated infrastructure.

Geomorphological map of the project road is depicted in the **Figure 4.4**.



**Figure 4-4: Geomorphological map of East Khasi Hills**

#### 4.3.4 LAND USE PATTERN

##### Baseline Scenario of the WMP Road

The Land Use and Land Cover (LULC) within 500 m of the Weilo–Mawsynram–Phlangwanbroi road is dominated by barren land (39%), followed by unclassed forest (36%), forest plantation (16%), settlements (5%), cropland (2%), and water bodies (2%), which include cropland, water bodies, shifting cultivation, and fallow areas. There are no National Parks, Wildlife Sanctuaries, Wildlife Corridors, or other officially notified Eco-Sensitive Zones within a 10 km radius of the project road. However, the cliffs, gorges, and sacred groves of Cherrapunji identified as a Key Biodiversity Area (KBA) under the IUCN-convened KBA Programme are located approximately 5 km from the project alignment. The Land Use/Land Cover map of the project road corridor is presented in **Figure 4.5**.



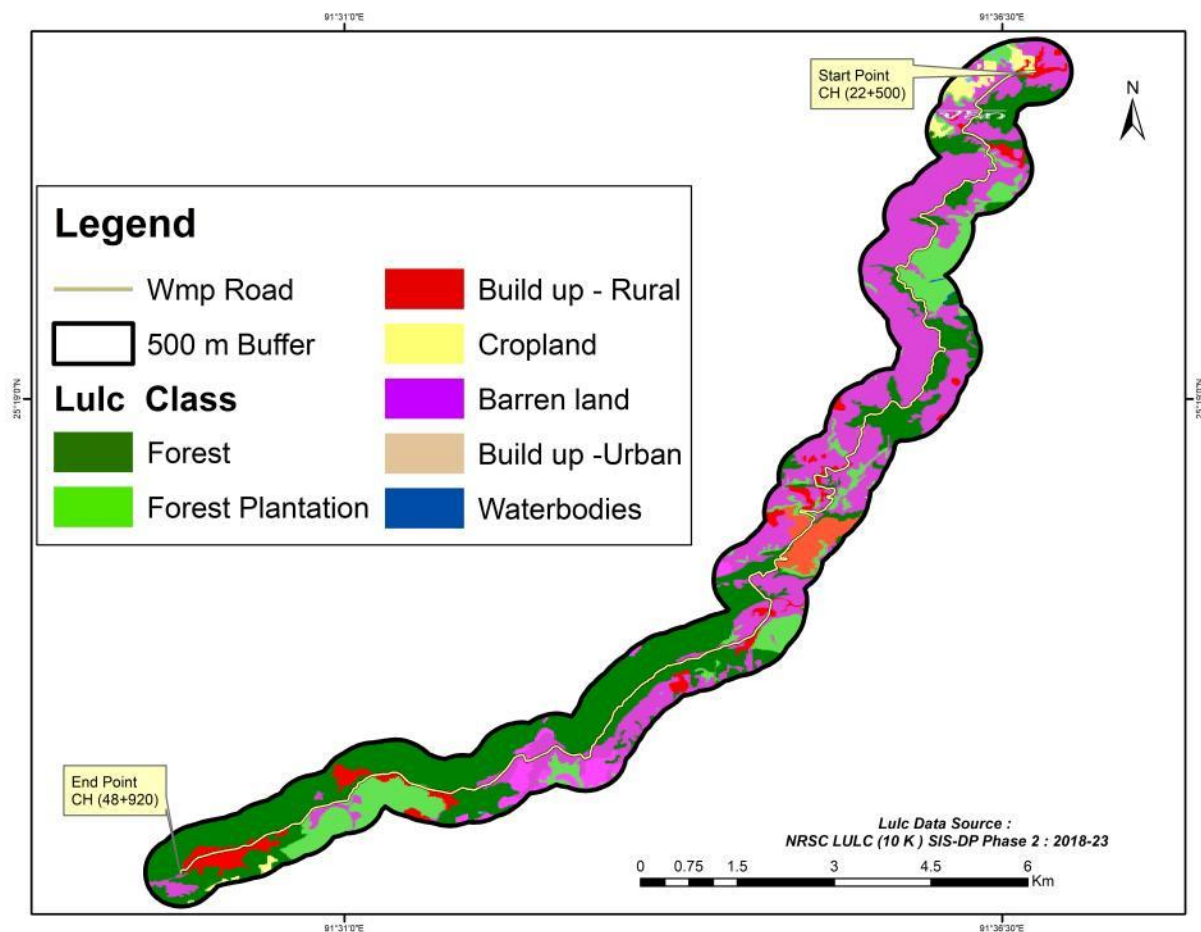


Figure 4.5: Land Use/Land Cover map of project road corridor

#### 4.3.5 AGRICULTURE

##### Baseline Scenario in Project Corridor Area

According to the consultations that was organized with the Indigenous communities, it was found that agriculture remains the main livelihood practice. The traditional practice of shifting cultivation (jhum) is still present among local households, particularly on steeper slopes and marginal lands, though it is not the dominant or primary form of farming for the majority of households in the area. Key crops grown in the WMP road area include paddy, maize, sesame, millet, jowar, cauliflower, cabbage, chilli, bitter gourd, tomatoes, lettuce, pumpkin, betel nut, betel leaf, pineapple, and banana. Farmers primarily sell their products in local markets, while surplus yields are supplied to other districts or states through vendors.

#### 4.3.6 SOIL QUALITY

Details of the soil sampling locations are presented in **Table 4.4** and shown in **Figure 4.6**. The collected soil samples were analyzed for various parameters in an NABL-accredited laboratory. The soil monitoring results are presented in the **Table 4.5**.

Table 4.4: Soil Monitoring Locations

Sl. No.	Project Area	Monitoring Location	Sample Code	Geographical Coordinate	
				Latitude	Longitude
1	Corridor 8	Weilo (Agriculture field)	SQ1	25.362159°	91.613071°
2		Mawsynram (paddy field)	SQ2	25.297922°	91.580456°
3		Phlangwanbroi (Agriculture Field)	SQ3	25.253353°	91.497891°

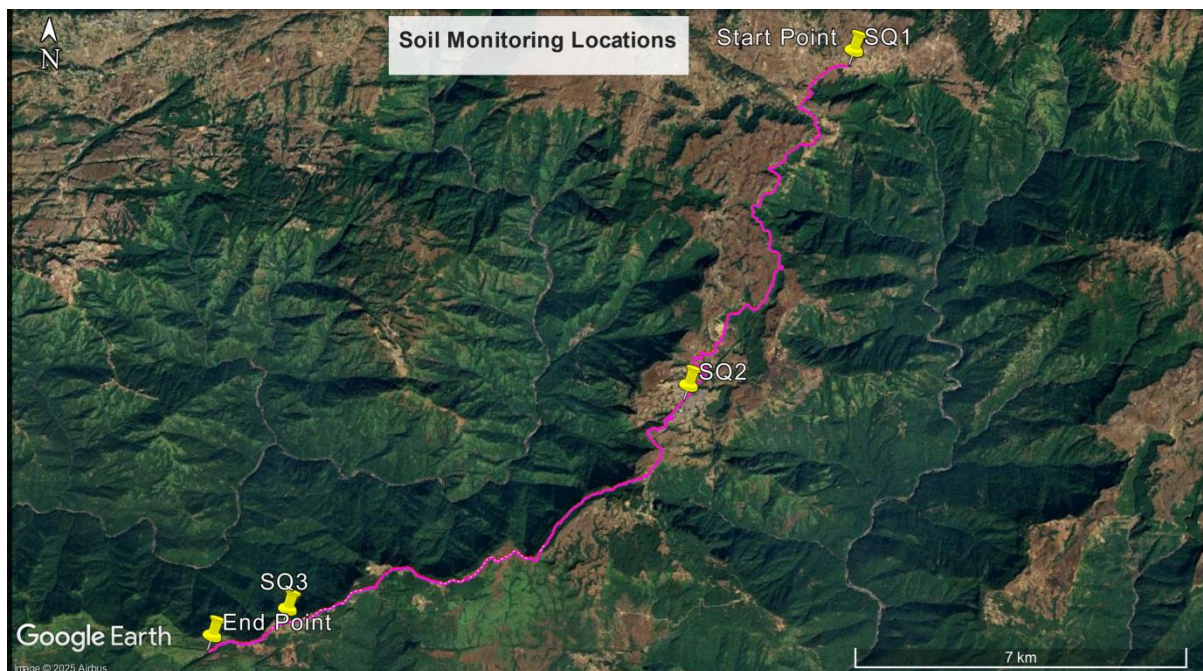


Figure 4.6: Soil monitoring locations

Table 4.5: Soil Monitoring Results in the sub-project road

Sl. No.	Parameters	Units	SQ1	SQ2	SQ3	Test Method
1			Brown	Brown	Brown	STRL/STP/SOIL/01
2	Class		Sandy Loam	Sandy Loam	Sandy Loam	IS2720 (P-4),1985 (Reaff: 2015)
3	nsity	gm/cm <sup>3</sup>	1.42	1.52	1.37	IS 14765: 2000, RA 2010

Sl. No.	Parameters	Units	SQ1	SQ2	SQ3	Test Method
4	holding Capacity	%	23.4	27.5	25.2	STRL/STP/SOIL/01
5		%	53.0	54.2	57.0	IS2720 (P-4),1985 (Reaff: 2015)
6		%	26.2	25.4	24.8	IS2720 (P-4),1985 (Reaff: 2015)
7		%	20.8	20.4	18.2	IS2720 (P-4),1985 (Reaff: 2015)
8	Suspension)	-	5.2	5.6	5.5	IS:2720 (P-26), 1987 (Reaff:2011)
9	al Conductivity(1:2)	µmhos/cm	221.0	234.3	243.9	4767(2000), RA 2016
10	Matter	%W/W	2.2	2.4	2.5	STRL/STP/SOIL/01
11	geable Calcium	mg/kg	815.0	845.0	739.0	IS 2720 (Part 24): 1976, RA 2010
12	geable Magnesium	mg/kg	240.0	210.0	290.0	IS 2720 (Part 24): 1976, RA 2010
13		mg/kg	3.8	4.2	2.9	IS 2720(Part-27): 1977
14		mg/kg	2.1	2.7	1.4	IS 2720(Part-27): 1977
15	um	mg/kg	3.5	2.9	2.6	IS 2720(Part-27): 1977
16		mg/kg	0.2	0.3	0.4	IS 2720(Part-27): 1977
17	e	mg/kg	15.6	16.3	18.8	IS 2720(Part-27): 1977
18	trogen (as N)	%	0.27	0.22	0.24	IS:10158:1982, RA 2009
19	Available Phosphorous	mg/kg	10.0	11.0	9.0	IS:10158:1982, RA 2009
20	geable Potassium	mg/kg	95.0	88.0	81.0	STRL/STP/SOIL/01
21						

Soils along the Road corridor are sandy loam, well-drained and moderately acidic (pH 5.2–5.6), which is typical for the region's high rainfall conditions. Organic matter levels are moderately high, reflecting good natural leaf-litter enrichment. Major nutrients (N & P) are moderate, whereas Potassium is slightly low due to natural leaching.

## 4.4 WATER ENVIRONMENT

Water bodies along the 26.42 km project road corridor are primarily represented by Wah Umkynrem, as observed during field studies. Surface water quality testing will be conducted in the river and other key sensitive ponds and streams to ensure water safety and identify any potential contamination. If required, the contractor will be instructed to implement appropriate mitigation measures to maintain water quality during construction.

Road construction projects are water-intensive, requiring a substantial volume of water throughout the construction period. As discussed with the DPR team, surface water is proposed as the primary source for construction purposes, subject to prior permission from the competent authority. In exceptional cases where surface water is unavailable, groundwater resources may be utilized. The project area has been classified as 'safe' by the CGWB; therefore, no further detailed groundwater assessment is required within the scope of this ESIA study.

### 4.4.2 Water Quality:

Three ground water samples have been collected in the month of October along the sub-project road to ascertain the baseline conditions of the ground water quality. The sampling locations were selected based on the land-use pattern and competitive uses in the sub-project area. Location details of the groundwater samples are presented in **Table 4.6** and shown in **Figure 4.7** and results are presented in **Table 4.7**. Ground water samples have been analyzed in accordance with the Drinking Water Quality Standards of IS 10500:2012.

**Table 4.6: Ground Water Sample Locations in the sub-project area**

Sl. No.	Project Area	Monitoring Location	Sample Code	Geographical Coordinate	
				Latitude	Longitude
1	Corridor 8	Weilo	WQ1	25.361905°	91.612002°
2		Mawsynram	WQ2	25.297114°	91.580281°
3		Phlangwanbroi	WQ3	25.252391°	91.496826°



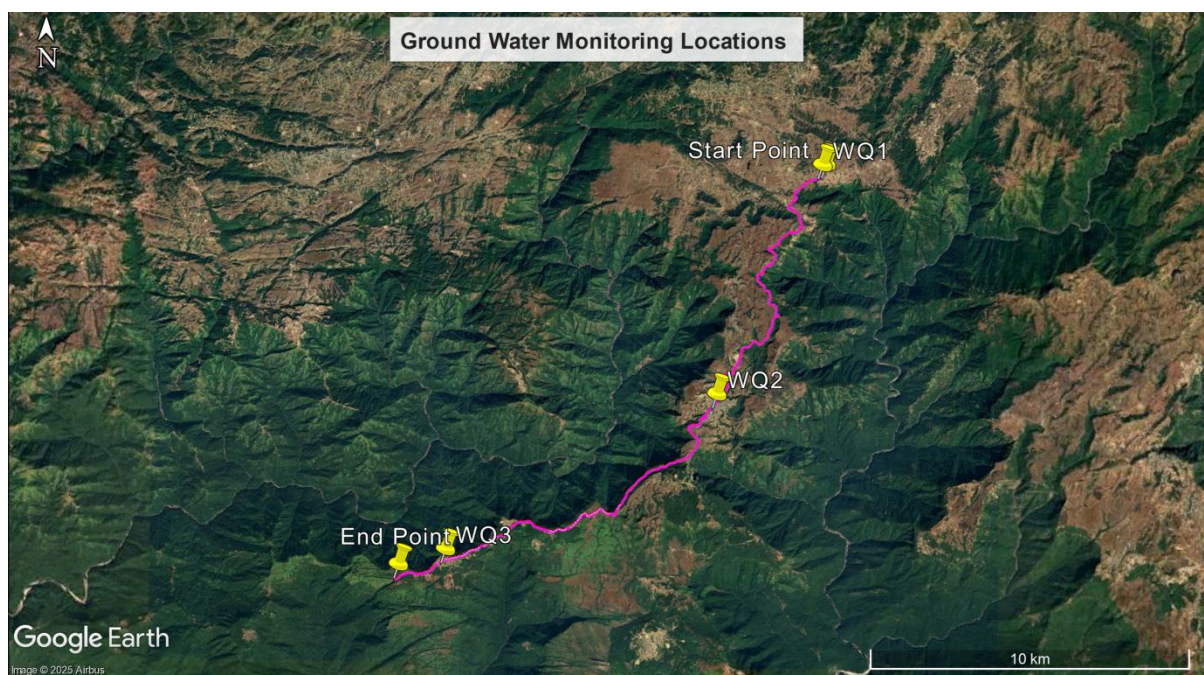


Figure 4.7: Ground Water monitoring locations

Groundwater samples GW-1, GW-2 and GW-3 were found to be clear, odourless and with acceptable taste, and turbidity remained below 1 NTU. The pH was within the desirable range (6.7–7.2). Total Hardness (108–133 mg/L), TDS (176–189 mg/L), Calcium, Magnesium, Chloride, Sulphate, Iron were all well within desirable limits of IS 10500:2012. All heavy metals such as Chromium, Arsenic, Aluminium, and Copper were below detectable limits, indicating no contamination from industrial or geogenic sources. Overall, the groundwater quality is suitable for drinking purposes after minimal treatment for iron removal.

Table 4.7: Ground Water monitoring results in the project area

S. No.	Parameters	Unit	Limit (IS-10500:2012)		GW-1	GW-2	GW-3	Test method
			Desirable Limit	Permissible Limit				
1	Color	Hazen	5	15	<5	<5	<5	IS: 3025(Pt-4)
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	IS: 3025(Pt-5)
3	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	IS: 3025(Pt-8)
4	Turbidity	NTU	1	5	<1	<1	<1	IS 3025(Part-10)
5	pH	-	6.5-8.5	No Relaxation	6.7	7.1	7.2	IS: 3025(Pt-11)
6	Total Hardness (as CaCO <sub>3</sub> )	mg/l	200	600	133	126	108	IS 3025(Part-21)

S. No.	Parameters	Unit	Limit (IS-10500:2012)		GW-1	GW-2	GW-3	Test method
			Desirable Limit	Permissible Limit				
7	Iron (as Fe)	mg/l	0.3	No Relaxation	0.10	0.21	0.25	3500-Fe- B, APHA 23rd Ed.2017
8	Chlorides (as Cl)	mg/l	250	1000	18.4	22.1	21.6	IS 3025(Part-32)
9	Fluoride (as F)	mg/l	1	1.5	BDL	BDL	BDL	4500-F-(D), APHA 23 <sup>rd</sup> Ed.2017
10	TDS	mg/l	500	2000	176	189	186.8	IS 3025(Part-16)
11	CALCIUM (as Ca <sup>2+</sup> )	mg/l	75	200	23.2	24.9	21.7	IS 3025(Part-40)
12	MAGNESIUM (as Mg <sup>2+</sup> )	mg/l	30	100	18.5	16.3	13.2	3500- Mg B, APHA 23rd Ed.2017
13	Sulphate (as SO <sub>4</sub> )	mg/l	200	400	10.4	14.7	12.9	IS 3025(Part-24)
14	Total Chromium (as Cr)	mg/l	0.05	No Relaxation	<0.01	<0.01	<0.01	3110- B, APHA 23rd Ed 2017
15	Alkalinity as CaCO <sub>3</sub>	mg/l	200	600	132.6	29.5	28.7	IS 3025(Part-23)
16	Aluminium (as Al)	mg/l	0.03	0.2	<0.01	<0.01	<0.01	IS 3025(Part-55)
17	Total Arsenic (as As)	mg/l	0.01	No Relaxation	<0.01	<0.01	<0.01	3110- B, APHA 23rd Ed2017
18	Copper (as Cu)	mg/l	0.05	1.5	<0.05	0.05	0.05	3110- B, APHA 23rd Ed2017
19	Manganese (as Mn)	mg/l	0.1	0.3	<0.01	0.01	0.01	3110- B, APHA 23rd Ed2017
20	Zinc (as Zn)	mg/l	5	15	0.22	0.16	0.22	3110- B, APHA 23rd Ed2017
21	Ammonia (as NH <sub>3</sub> -N)	mg/l	0.5	No Relaxation	<0.1	<0.1	<0.1	4500-NH <sub>3</sub> -B & C, APHA 23rd ED2017

S. No.	Parameters	Unit	Limit (IS-10500:2012)		GW-1	GW-2	GW-3	Test method
			Desirable Limit	Permissible Limit				
22	Anionic Detergents (as MBAS)	mg/l	0.2	1	<0.1	<0.1	<0.1	Annexure K of IS-13428
23	Boron (as B)	mg/l	0.5	1	<0.5(BDL)	5(BDL)	5(BDL)	IS: 3025 (Pt-57)
24	Mineral Oil	mg/l	0.5	No Relaxation	<0.1	<0.1	<0.1	IS 3025(Part-39)
25	Phenolic Compound (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	0.001	0.002	<0.001	0.001	0.001	IS 3025(Part-44)
26	Cadmium (as Cd)	mg/l	0.003	No Relaxation	<0.002	0.002	0.002	3110- B, APHA 23nd Ed2017
27	Cyanide (as CN)	mg/l	0.05	No Relaxation	<0.1	<0.1	<0.1	4500- CN-B, C & E, APHA 23nd Ed2017
28	Lead	mg/l	0.01	No Relaxation	<0.01	0.01	0.01	3110- B, APHA 23nd Ed2017
29	Mercury (as Hg)	mg/l	0.001	No Relaxation	<0.001	0.001	0.001	3110- B, APHA 23nd Ed.2017
30	Nickel (as Ni)	mg/l	0.02	No Relaxation	<0.02	0.001	0.001	3110- B, APHA 23nd Ed.2017
31	Residual Free Chlorine	mg/l	0.2	1.0	<0.2	0.02	0.02	4500-CI-B, APHA 23nd Ed2017
32	Molybdenum (Mo)	mg/l	<0.05	0.07	No Relaxation	<0.2	<0.2	3110- B, APHA 23nd Ed.2017
33	Polynuclear Aromatic Hydrocarbons	mg/l	<0.0001	0.0001	No Relaxation	No Relaxation	No Relaxation	APHA 6440,23nd Ed.2017
34	Poly chlorinated biphenyl	mg/l	<0.0001	0.0005	No Relaxation	No Relaxation	No Relaxation	APHA 6430,23nd Ed.2017
35	Nitrate	mg/l	45	No Relaxation	9.1	8.9	12.4	IS: 3025(Pt-34)

S. No.	Parameters	Unit	Limit (IS-10500:2012)		GW-1	GW-2	GW-3	Test method
			Desirable Limit	Permissible Limit				
36	Sodium (as Na <sup>+</sup> )	mg/l	-	-	24.2	18.6	21.3	APHA 4500-Na B / IS 3025 (Part 45): 1993
37	Potassium (as K <sup>+</sup> )	mg/l	-	-	4.7	5.5	6.8	APHA 4500-K B / IS 3025 (Part 45): 1993
Microbiological Parameters								
36	Total Coli form	MPN/100ml	Shall not be detectable in any 100 ml of sample		<1	<1	<1	IS: 1622-1981
37	<u>E.Coli</u>	<u>E.Coli</u> /100ml	Shall not be detectable in any 100 ml of sample		Absent	bsent	bsent	IS: 1622-1981

## 4.5 AIR ENVIRONMENT

### 4.5.1 AIR QUALITY

There are no major industries along the project road, and vehicular movement is the primary source of emissions. Based on site observations and public consultations, no noticeable deterioration in ambient air quality was observed.

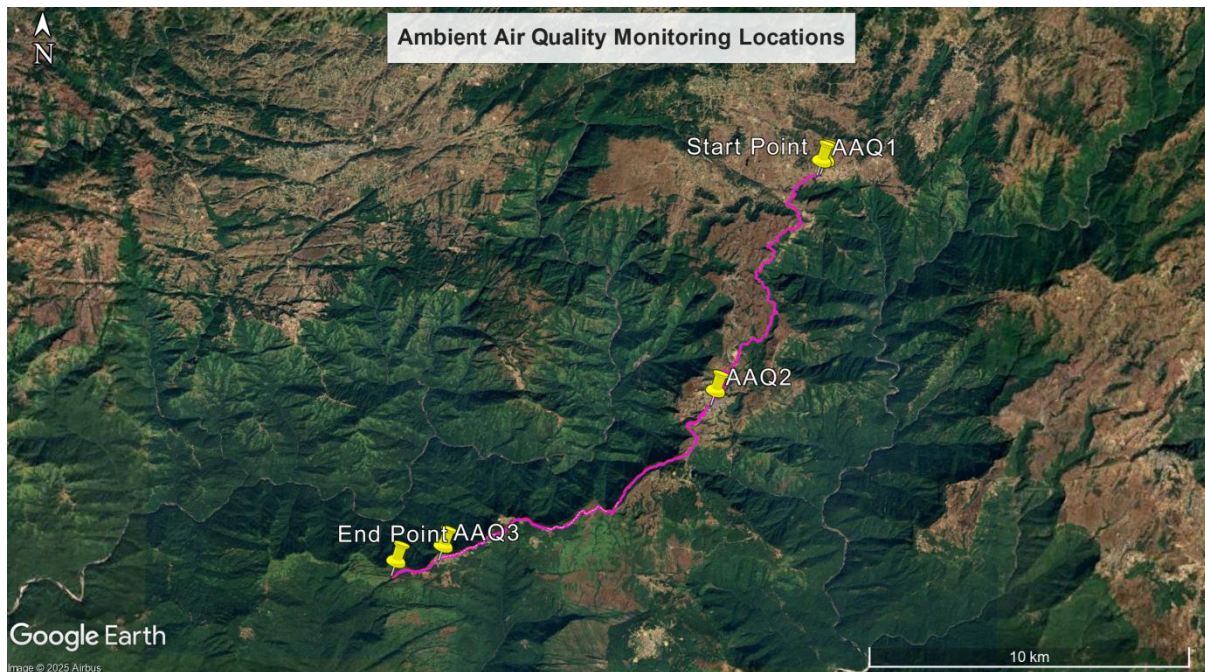
Ambient air quality monitoring has been conducted at three locations during the month of October. Parameters like Particulate Matter (PM<sub>10</sub>), Particulate Matter (PM<sub>2.5</sub>), Sulphur dioxide (SO<sub>2</sub>), Nitrogen dioxide (NO<sub>2</sub>) and Carbon Monoxide (CO) were monitored. Monitoring locations are given in **Table 4.8** & **Figure 4.8**.

Table 4.8: Ambient Air Quality monitoring locations in the sub-project area

Sl. No.	Project Area	Monitoring Location	Sample Code	Geographical Coordinate	
				Latitude	Longitude
1	Corridor 8	Weilo	AAQ1	25.361905°	91.612002°
2		Mawsynram	AAQ2	25.297114°	91.580281°



3		Phlangwanbroi	AAQ3	25.252391°	91.496826°
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**Figure 4.8: Air Quality monitoring locations**

The monitored ambient air quality along the project corridor covering Weiloj, Mawsynram, and Phlangwanbroi indicates that concentrations of key air pollutants are well within the permissible limits prescribed under the National Ambient Air Quality Standards (NAAQS, CPCB 2009). The recorded  $PM_{10}$  levels range from 51.2 to 59.8  $\mu\text{g}/\text{m}^3$  and  $PM_{2.5}$  from 27.8 to 30.2  $\mu\text{g}/\text{m}^3$ , which are significantly below the respective limits of 100  $\mu\text{g}/\text{m}^3$  and 60  $\mu\text{g}/\text{m}^3$ . Similarly, Sulphur Dioxide ( $\text{SO}_2$ ) and Nitrogen Dioxide ( $\text{NO}_2$ ) concentrations vary between 6.3–6.9  $\mu\text{g}/\text{m}^3$  and 7.1–7.7  $\mu\text{g}/\text{m}^3$ , respectively, much lower than the prescribed standard of 80  $\mu\text{g}/\text{m}^3$ . Carbon Monoxide (CO) levels were observed between 0.230–0.290  $\mu\text{g}/\text{m}^3$ , far below the permissible limit of 2000  $\mu\text{g}/\text{m}^3$ . Overall, the air quality in the project corridor is good and within National Ambient Air Quality Standards, suggesting no immediate air pollution concerns in the area. Ambient Air Quality Monitoring Results is presented in Table 4.9.

**Table 4.9: Ambient Air Quality Monitoring Results**

Sl. No.	Project Area	Location	Sample Code	PM <sub>10</sub> (µg/m <sup>3</sup> )	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Sulphur Dioxide (SO <sub>2</sub> ) (µg/m <sup>3</sup> )	Nitrogen Dioxide (NO <sub>2</sub> ) (µg/m <sup>3</sup> )	Carbon Monoxide (CO) (µg/m <sup>3</sup> )
1	Corridor 8	Weiloi	AQ1	51.2	27.8	6.3	7.1	0.250
2		Mawsynram	AQ2	59.8	30.2	6.9	7.7	0.290
3		Phlangwanbroi	AQ3	52.7	28.6	6.5	7.3	0.230
National Ambient Air Quality Standards, Central Pollution Control Board, 2009				100	60	80	80	2000

## 4.6 NOISE ENVIRONMENT

There are no major industries along the project road, and the primary source of noise is vehicular traffic. Based on site observations and public consultations, no significant noise levels were observed.

The noise level monitoring was carried out at three locations. A noise level meter has been used to measure noise levels as instant values which are integrated over a mentioned period to give Leq values as “A” weighted average. The detail of noise quality monitoring stations are mentioned in Table 4.10 and Figure 4.9. Analysis of the noise data collected from the site is mentioned in Table 4.11.

Table 4.10: Location of Noise Level Monitoring

Sl. No.	Project Area	Monitoring Location	Sample Code	Geographical Coordinate	
				Latitude	Longitude
1	Corridor 8	Weilo	NQ1	25.361905°	91.612002°
2		Mawsynram	NQ2	25.297114°	91.580281°
3		Phlangwanbroi	NQ3	25.252391°	91.496826°

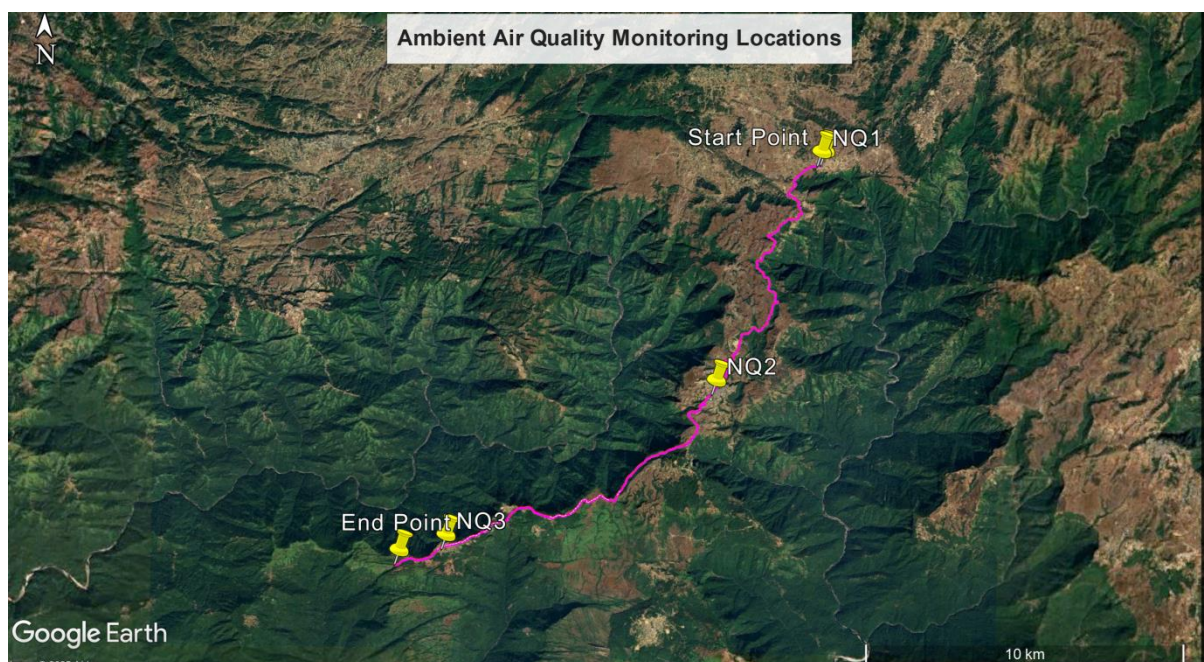


Figure 4.9: Noise Quality monitoring locations

Table 4.11: Analysis of Noise Level Monitoring

Location	Land Use	Standards dB(A)		Day Time Leq (dB(A))	Night Time- Leq (dB(A))
		Day	Night		
Weilo	Commercial	65	55	52.7	37.4
Mawsynram	Commercial	65	55	53.4	39.5
Phlangwanbroi	Residential	55	45	51.2	36.7

As per the baseline monitoring, it was found that Noise level (Leq) was meeting the standards at all the three monitoring locations. In Weilo, which is classified as a commercial area, the recorded daytime noise level is 52.7 dB(A) and the nighttime level is 37.4 dB(A). In Mawsynram, another commercial area, the recorded daytime noise level is Leq is 53.4 dB(A) and nighttime Leq is 39.5 dB(A) and in Phlangwanbroi, recorded daytime noise level is 51.2 dB(A) and 36.7 dB(A).

## 4.7 BIOLOGICAL ENVIRONMENT

### 4.7.1 BIODIVERSITY AND CRITICAL HABITAT IN PROJECT ROAD

The biodiversity within 10 km radius of the WMP Roads were studied based on the secondary sources followed by primary data collection in the direct impact area. Project Influence Area with 10 km buffer area is presented in **Figure 4.10**. The methodology adopted for biodiversity assessment is attached as **Annexure 4.1**.



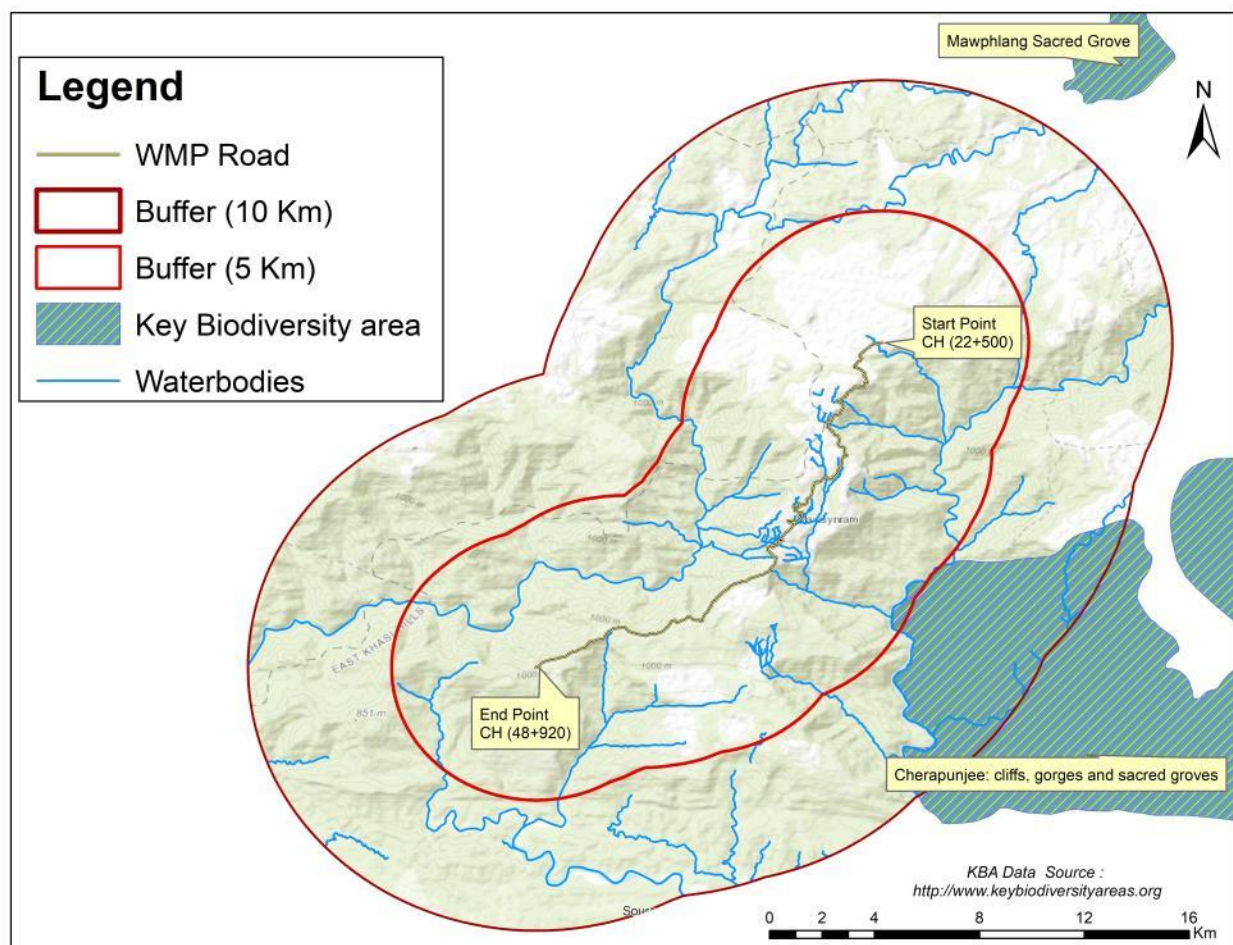


Figure 4.10: Project Influence Area with 10km buffer area for WMP road

#### Indirect Impact Area (Within 0.5 km):

Critical habitat assessment was conducted based on the “Critical Habitat” criteria outlined by World Bank’s ESF (ESS 1 & 6). The details of the presence of critical habitat within PIA are summarized in Table 4.12.

Table 4.12: Biodiversity and critical habitat assessment-based on field survey and GIS analysis for the 500 m buffer

Sl. No.	Habitat (includes natural or modified)	Observation	Remarks
I.	(a) Habitats protected by national and state legal regulations		
	(i) PAs - Wildlife Sanctuary, National Park, conservation reserve or community reserve, Tiger reserve and corridor and Eco-sensitive zone (As notified under the Wildlife Protection Act, 1972)	Not present	
	(ii) Reserve Forest (As notified under India Forest Act, 1927)	Not Present	No such area within 500 m buffer for the project road. However Lawbah Community Reserve forest

Sl. No.	Habitat (includes natural or modified)	Observation	Remarks
			is at a distance of 2.27 km from the project road and Phlangwanbroi Law Adong Community Reserve Forest is at a distance of 0.53 km from the project road.
	(iii) Protected wetland of Meghalaya	Not Present	
II.	b) Habitat of significant importance to Critically Endangered or Endangered species		
	(i) Species listed under Schedule I of the Wildlife (Protection) Act, 2002	Not Present	
	(ii) Species listed under Schedule III of the Wildlife (Protection) Act, 2002	Not present	
	(ii) Species notified as “threatened species” by the Govt. of Meghalaya under the Meghalaya Biodiversity Rules 2010	Not Present	
	(iii) Critically Endangered/Endangered species as listed by the IUCN Red List of Threatened species	Not Present	
III.	c) Habitats of significant importance to endemic or restricted-range species d) Habitats that support globally or nationally significant concentrations of migratory or congregatory species e) Highly threatened or unique ecosystems		
	(i) Biosphere Reserve (Core Area)	Not present	
	(ii) Ramsar Site	Not present	
	(iii) Important fish & Key Biodiversity Area	No	
	(iv) Habitat of Appendix I – Endangered migratory species as per the Convention on the Conservation of Migratory Species (CMS)	Not present	
	(v) Notified Elephant Reserve and Corridor	Not present	
	(vi) Natural habitats	Not Present	The habitats in the project area are modified for agricultural purposes, and the degraded forest is primarily dominated by bamboo species, Banana, Betel nut, Jackfruit.

#### 4.7.3 SUMMARY OF BIODIVERSITY ASSESSMENT AND RISKS

A total of 91 species of flora (40 Tree species, 7 Shrubs, 17 Herbs, 20 Fern, and 7 Grass species), 10 mammal species, 46 bird species, 8 reptile species, 5 amphibians and 11 butterfly species were recorded during the field survey. The detailed list of flora and fauna is attached as **Annexure 4.2**. A total of 06 species are listed under Schedule I of the Wildlife Protection Act, 2002. Although none of these species were recorded during the field surveys conducted in the study area, their presence has been indicated through secondary information sourced from the IBAT Tool.

## 4.8 SOCIO ECONOMIC ENVIRONMENT

The baseline study assessed the socio- economic profile of households and families within the Project Influence Area that may be affected by the project. The assessment covered various parameters including education levels, ethnicity, religion, source of livelihood and income levels of affected families.

The project corridor is predominantly inhabited by Scheduled Tribe communities, who constitute the majority of the population across all districts. The Khasi tribe, along with the Khyntiam, War and Maram Sub tribes, each with a distinct dialect reside along the project corridor.

These communities maintain rich cultural traditions, including matrilineal social structures among the Khasis, indigenous festivals, and belief systems that often coexist with Christianity. This ethnic and cultural diversity underpins East Khasi Hills District's societal identity and strongly influences local governance, land use practices, and community-based natural resource management.

As per the 2011 census, the demographic profile, literacy rates, and tribal population of the project district are presented below, with detailed demographic data provided in **Table 4.13**.

**Table 4-13: Demographic profile of East Khasi Hills District as Per 2011 Census**

District	Total Population	Male Population	Female Population	Rural Population	Urban Population	Literacy Rate Overall (%)	Literacy Rate Male (%)	Literacy Rate Female (%)
East Khasi Hills	825,922	4,10,749	415,173	459,441	366,481	84.15	84.51	83.81

*Source: Census 2011*

### Socio-Economic baseline of the project roads

The project road provides a vital link for numerous settlements, supporting communities that depend on the corridor for daily mobility, economic activities, and access to essential services. The region's socio-economic activities are closely intertwined with the natural and cultural landscape, making the road a critical component of local livelihoods and overall development.

### Population:

The project corridor passes through nine villages namely Mawsynram, Weilo, Wahmawpat, Laitsohum, Mawrapat, Mawkasain, Mawsawa, Kenbah Malai, Phlangwanbroi. Based on the population size, it may be mentioned that smaller rural settlements such as Laitsohum (216) and Mawsawa (206), have relatively low populations. Gender distribution is generally balanced, though some areas such as Mawsynram, Weilo, and Phlangwanbroi have a higher proportion of females. Larger settlements, including Mawsynram (1,337) and Phlangwanbroi (939), significantly influence the region's demographics, reflecting the variation in population density along the corridor. The population distribution of the sub-project affected villages is presented in **Table 4.14**.

Table 4-14: Population Distribution in Villages along the WMP Road

Total Population			
Village Name	Male	Female	Total
Mawsynram	635	702	1337
Weilo	366	387	753
Wahmawpat	400	386	786
Laitsohum	107	109	216
Mawrapat	198	183	381
Mawkasain	347	351	698
Mawsawa	100	106	206
Kenbah Malai	402	377	779
Phlangwanbroi	437	502	939

Source: Census 2011

## SEX RATIO

The sex ratio along the project road varies from 924 to 1,149<sup>5</sup>. Most villages, including Phlangwanbroi (1,149), Mawsynram (1,106), and Mawsawa (1,060), have more females than males, while Mawrapat (924) and Kenbah Malai (938) have a male-biased population. Overall, the corridor shows a predominantly female-biased demographic with notable inter-village variation. Detailed sex ratio data for the project-affected villages and two towns are presented in **Table 4.11**.

Table 4-15: Sex Ratio in the villages along the WMP road

Village Name	Sex Ratio
Mawsynram	1106
Weilo	1057
Wahmawpat	965
Laitsohum	1019
Mawrapat	924
Mawkasain	1012
Mawsawa	1060
Kenbah Malai	938
Phlangwanbroi	1149

Source: Census 2011

<sup>5</sup> Source: Census 2011

### Scheduled Tribe population:

The district is predominantly inhabited by Scheduled Tribe (ST) populations. Along the project road corridor, ST communities are mainly concentrated in smaller rural villages, with Mawsynram (1,325) and Phlangwanbroi (931) recording the highest ST populations. Medium-sized settlements such as Weilo (744) and Mawkasain (697) also have a notable ST presence, while smaller villages like Laitsohum (216) and Mawsawa (205) have comparatively lower ST populations. A detailed distribution of the ST population comprising of Khyntiam, War and Maram sub tribes along the project corridor is provided in **Table 4.12**.

**Table 4-16: ST Population in the Villages along the sub project road**

ST Population				Percentage
Village Name	Male	Female	Total	
Mawsynram	629	696	1325	99.10
Weilo	360	384	744	98.80
Wahmawpat	398	384	782	99.49
Laitsohum	107	109	216	100.00
Mawrapat	198	182	380	99.74
Mawkasain	346	351	697	99.86
Mawsawa	99	106	205	99.51
Kenbah Malai	400	376	776	99.61
Phlangwanbroi	431	500	931	99.15

*Source: Census 2011*

### Education:

The educational scenario along the project corridor shows notable variations in literacy levels across rural settlements. Mawsynram and Phlangwanbroi exhibit the highest literacy rates, whereas villages such as Laitsohum and Mawsawa have comparatively low literacy levels. Gender disparities persist, with males generally showing higher literacy rates; however, certain villages such as Tingba and Nengkram demonstrate more balanced gender participation. The detailed distribution of literate populations in the sub-project affected villages is provided in **Tables 4.12**.



Table 4-17: Literate Population in Villages along the sub project road

Literate Population				Percentage
Village Name	Male	Female	Total	
Mawsynram	515	568	1083	81.00
Weilo	248	250	498	66.14
Wahmawpat	324	297	621	79.01
Laitsohum	76	78	154	71.30
Mawrapat	123	121	244	64.04
Mawkasain	240	207	447	64.04
Mawsawa	53	56	109	52.91
Kenbah Malai	199	205	404	51.86
Phlangwanbroi	245	290	535	56.98

Source: Census 2011

#### Total workforce:

Among the nine villages, Mawsynram has the highest total workforce with 436 workers (273 males and 163 females), while Laitsohum has the lowest workforce with 62 workers (49 males and 13 females). In terms of main workers, Mawsynram again leads with 425, and Mawrapat has the lowest main workforce at 17 workers. For marginal workers, Mawrapat shows the highest number with 112, whereas Wahmawpat, Laitsohum, and Mawsawa have the lowest, each with only 1–2 marginal workers. This indicates that while larger villages have more stable employment (main workers), smaller villages rely more on marginal or seasonal work. The detailed workforce of the project affected villages is given in Table 4.15.

Table 4-18: Workforce Population of Village along the sub Project road

Area	Main Workers (No.)			Marginal Workers (No.)			Total Workforce (No.)			Percentage
	Male	Female	Total	Male	Female	Total	Male	Female	Total	
Mawsynram	269	156	425	4	7	11	273	163	436	32.61
Weilo	119	70	189	23	29	52	142	99	241	32.01
Wahmawpat	163	132	295	1	0	1	164	132	296	37.66

Area	Main Workers (No.)			Marginal Workers (No.)			Total Workforce (No.)			Percentage
	Male	Female	Total	Male	Female	Total	Male	Female	Total	
Laitsohum	49	12	61	0	1	1	49	13	62	28.70
Mawrapat	14	3	17	67	45	112	81	48	129	33.86
Mawkasain	83	18	101	66	21	87	149	39	188	26.93
Mawsawa	49	7	56	1	1	2	50	8	58	28.16
Kenbah Malai	178	48	226	16	16	32	194	64	258	33.12
Phlangwanbroi	192	116	308	10	82	92	202	198	400	42.60

Source: Census 2011

#### Disturbance to the Community:

Local communities, especially those in close proximity to construction sites, are likely to experience disturbances from noise, dust, and increased traffic. Construction activities, the operation of heavy machinery, and the movement of large transport vehicles will affect normal traffic flow along the project corridor. Considering the existing road network and the need for flexibility in transporting machinery and materials, road transport is expected to be the primary mode for supporting the project's construction activities. Chainage wise details of affected structures is given in Table 4.19.

**Table 4-19: Chainage wise details of likely affected structures**

SI No	Chainage	Village name	LHS	RHS	Distance from center line ( m )	Type of structure
1.	22+620	Weilo	✓		5.5	Semi Pucca House (Compound wall)
2.	34+630	Mawsynram		✓	5.5	Semi Pucca Shop (Shed)
3.	34+635	Mawsynram	✓		5.0	Semi Pucca Shop (Gate and shed)
4.	43+890	Mawrapad		✓	5.0	Kuchha Shop (Front room)
5.	45+690	Mawkasain	✓		4.5	Pucca House (Compound wall)
6.	45+700	Mawkasain	✓		5.0	Pucca House (Compound wall)
7.	45+720	Mawkasain		✓	5.0	House (Stair)

8.	45+730	Mawkasain	✓		3.5	Semi Pucca House (Only Shed)
9.	46+550	Mawsawa	✓		5.5	Kuchha Shop (4 shops)
10.	46+560	Mawsawa	✓		5.5	Semi Pucca House (Compound wall)

The project aims to minimize social impacts by ensuring that all construction activities are confined within the existing Right of Way (RoW). No additional land is required for the proposed works. However, thirteen structures located within the RoW are affected. While the project is expected to deliver substantial developmental benefits, it acknowledges these potential social concerns and commits to implementing suitable safeguards to manage them effectively.

Earlier, there were two locations at Chainage 32 and Chainage 33 where additional land was proposed for curve improvement. However, during the Free, Prior, and Informed Consent (FPIC) consultations, the respective villages did not agree to the land requirement. Consequently, the proposal for curve improvement at these locations was dropped.

## **PUBLIC AWARENESS AND KNOWLEDGE**

### **Health Concerns:**

There is a prevalent concern about the potential health risks of water borne diseases like diarrhea, typhoid, cholera, etc. These concerns were reported during consultations with the community at Phlangwanbroi

### **Community Disharmony concerns**

Concerns were raised during public consultation meetings at Mawsynram regarding potential conflicts between local communities and migrant labor due to the influx of the workforce during construction. However, no incidents of such conflicts were reported during the consultations. These concerns were raised as precautionary in nature, reflecting community apprehensions about maintaining social harmony.

## **4.9 SOCIO-ECONOMIC PROFILE OF PROJECT AFFECTED HOUSEHOLDS**

Socio-economic data of project-affected households were collected through census and socio-economic surveys, systematically tabulated, and analyzed to assess the extent of adverse impacts on structures and livelihoods. A structured, pre-tested questionnaire served as the primary tool for these surveys, which were conducted in September 2025.

### **4.9.1 DEMOGRAPHY**

The total number of project-affected households in terms of structures are 10. Among these, 8 households (80%) are male-headed, while 2 households (20%) are female-headed. Table 4.20 below summarizes the gender distribution of the heads of households.

Table 4.20: Gender Distribution of PAHs

Gender	Project Road	Percentage
Male	8	80.0
Female	2	20.0
<b>Total</b>	<b>10</b>	<b>100.0</b>

Source: EIS primary survey – 2025

#### 4.9.1.1 GENDER DISTRIBUTION OF PROJECT-AFFECTED PERSONS

The gender distribution of Project-Affected Persons (PAPs) of 10 project-affected households shows a nearly balanced composition, with a slightly higher proportion of males. Out of a total of 66 PAPs, 37 individuals (56%) are male, while 29 individuals (44%) are female. The gender distribution of PAPs is presented in Table 4.21.

Table 4.21: Gender Distribution of Project-Affected Persons (PAPs)

Gender	Project Road	
	Project Affected Persons	Percentage
Male	37	56.0
Female	29	44.0
<b>Total</b>	<b>66</b>	<b>100.0</b>

Source: EIS primary survey – 2025

#### 4.9.1.2 ETHNICITY

Along the project road, the Kynriam community constitutes the majority, representing 60% of settlements, followed by the War community at 30%, and the Maram community at 10%. The detailed distribution of ethnic groups along the project road is provided in Table 4.22.

Table 4.22: Community Wise Distribution of PAHs

Communities	Project Road	Percentage
Khynriam	6	60%
War	3	30%
Maram	1	10%

#### 4.9.2 IMPACT TO VULNERABLE HOUSEHOLDS

Census and socio-economic surveys identified vulnerable groups among the households, including women-headed households, below-poverty-line families, and the elderly population (60+ years). Table 4.23 presents the distribution of these vulnerable groups within the study area.

Table 4.23: Distribution of Vulnerable Group

Vulnerable Category	Project Road	Percentage
Schedule Tribes	10	100
Aged persons above 60 years	2	20
Below Poverty Line	2	20
Woman Headed Household	2	20
Scheduled Caste	0	0
Physically Challenged	0	0

### 4.9.3 ECONOMIC PROFILE

#### EMPLOYMENT PATTERNS

##### 4.9.3.1 AGRICULTURAL DOMINANCE

Along the project road, the majority of people are engaged in agriculture (5), business (3), service sector (1) and other (Non-Working) (1) play a smaller role, reflecting a predominantly agrarian and informal local economy. The occupational pattern of project-affected households (PAHs) in the area is presented in **Table 4.24**.

**Table 4.24: Occupation pattern of PAHs in project area**

Sl. No.	Occupation	Project Road
1	Agriculture	5
2	Business	3
3	Service Sector	1
4	Others (Non-Working)	1
Total		10

##### 4.9.3.2 INCOME

Along the project road, 60% of households earn less than ₹25,000 per month, while 20% earn between ₹25,000–50,000, and another 20% earn between ₹50,000–1,00,000. The monthly income range of project-affected households (PAHs) is presented in **Table 4.25**.

**Table 4-25: Monthly Income Range of PAHs**

Sl. No.	Monthly Income Range of HH	Project Road	
		No. of PAHs	Percentage
1	less than 25000	6	60.0
2	25000- 50000	2	20.0
3	50000-100000	2	20.0
4	More than 100000	0	0
Total		10	100.0

### 4.9.4 EDUCATION

Along the project road, out of 66 individuals, most have attained primary (24) or high school education (23). Fewer individuals have completed higher secondary (3) or graduate and above levels (11), while 5 individuals are illiterate. This indicates a moderate overall educational attainment, with particular scope for improvement among women. The education levels of Project-Affected Persons (PAPs) are presented in **Table 4.26**.

**Table 4.26: Education Level of PAPs**

Sl. No	Education	Project Road		
		Male	Female	Total
1	Primary (Class 1 to 4)	17	7	24
2	High School (Class 5-10)	9	14	23
3	Higher Secondary (Class 11-12)	1	2	3
4	Graduate and Above	8	3	11

5	Illiterate	2	3	5
	<b>Total</b>	<b>37</b>	<b>29</b>	<b>66</b>

#### 4.9.5 HEALTH STATUS

The health status of East Khasi Hills District has improved over the years due to targeted government initiatives; however, significant challenges remain. Rural-urban disparities, limited healthcare infrastructure, and the increasing prevalence of lifestyle-related diseases are major concerns. The district continues to face a dual burden of communicable diseases, such as malaria, dengue, and diarrheal illnesses, alongside a rising incidence of non-communicable diseases (NCDs), including hypertension, diabetes, and cardiovascular conditions. Improving overall health outcomes requires a multi-pronged approach that emphasizes healthcare accessibility, nutritional support, health education, disease prevention, and early diagnosis across both rural and urban areas.

The Mawsynram Community Health Centre (CHC) serves as the main hub, acting as a referral point for 4 Primary Health Centres (PHCs) and sub-centres. Outreach efforts are also made via Mobile clinics and weekly outreach sessions (e.g., at Kenmynsaw village community halls) deliver routine care, vaccinations, and maternal services despite 1–2 hour hikes in rain. The National Health Mission (NHM) Meghalaya supports these via the 108 ambulance helpline and 14410 health query line.

#### 4.9.7 TYPE OF LOSS

Approximately thirteen structures are expected to be affected by the project and they are present within the RoW, including seven temporary shops and six residential-related structures such as 1 semi-pucca commercial shed, 1 staircase, and 4 compound walls. Details are given in Table 4.19

#### 4.9.8 IMPACT TO STRUCTURES

The proposed improvements along the project corridor are expected to impact approximately thirteen structures, including seven shops and residential-related structures, such as one semi-pucca house shed, a staircase, and four compound walls. Additionally, there will be a minor, temporary disruption to access for one house during the construction period. Details of the impacted structures by project corridor are presented in Table 4.27.

**Table 4.27: Type of Impact on Project Affected Household**

Type of Impacts	Project road	%
Commercial (Major) (Non-Title Holder)	7	53.80
Minor Structures (Such as sheds, staircase and compound walls)	6	40.80
<b>Total</b>	<b>13</b>	<b>100.00</b>

#### 4.9.9 LOSS OF TREES

Approximately 35 trees are situated within the existing Right of Way (RoW) on both sides of the road. To mitigate the ecological impact of tree felling, compensatory plantation (@1:10) should be carried out, in accordance with applicable environmental regulations and guidelines. These measures, along with their implementation strategies, are comprehensively detailed in the Environmental and Social Management Plan (ESMP).

#### 4.9.9 COMMON PROPERTY RESOURCES

The Common Property Resources (CPRs) assessment classifies structures into government and community/public facilities. Construction induced Impacts on these CPRs will be limited to the construction phase. There are no direct impact on these CPRs. Details of the CPRs along the project road are presented in **Table 4.28**.

**Table 4.28: Common Property Resources**

CPR Structures	Number
Churches	<b>04 Churches</b> (Ch 43+000, LHS; Ch 46+800 RHS; Ch 46+300 LHS; 46+600 RHS)
School	<b>03 Schools</b> (Ch 32+100 LHS, 43+520 LHS, 46+600 RHS)
Memorial ground	1 Memorial ground at Ch 22+560
<b>TOTAL</b>	<b>8</b>
Shrines/ Tree Shrines	0
Memory Stone	2 Monoliths (Ch 23+200 and Ch41+500)
Cave	2 Caves (Ch 34+000 and 41+000)
<b>TOTAL</b>	<b>4</b>
<b>Grand Total</b>	<b>12</b>

#### 4.10 ARCHAEOLOGICAL AND HISTORICAL MONUMENTS

No ASI-protected monuments are located within 0.5 km of the project site. However, monoliths (at chainages 23+200 and 41+500) and caves (at chainages 34+000 and 41+000) are present within 500 m of the project road. Therefore, no baseline archaeological sites of direct significance are associated with the proposed WMP road corridor.

#### 4.11 HAZARD AND VULNERABILITY PROFILE

The hazard and vulnerability profile of the WMP road area and East Khasi Hills district includes landslides, flash floods, earthquakes, among others. Other hazards such as droughts, group clashes, and fire incidents also occur in the district. A seasonal hazard analysis of East Khasi Hills district is presented in **Table 4.29**.

**Table 4.29: Hazard analysis**

Type of Hazards	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Landslide			←	---	---	---	---	---	---	→		
Earthquake	←	---	---	---	---	---	---	---	---	---	---	→
Flashflood		←	---	---	---	---	---	---	---	→		
Storm			←	---	---	→						
Fire Accident	←	---	---	---	---	---	---	---	---	---	---	→
River Erosion				←	---	---	---	---	→			

Type of Hazards	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Industrial Hazard	←	---	---	---	---	---	---	---	---	---	---	→
Road Accident	←	---	---	---	---	---	---	---	---	---	---	→

#### 4.11.1 LANDSLIDE PRONE AREAS

The list of landslide-prone areas in East Khasi Hills district is provided in **Table 4.30**. Notably, no landslide-prone areas have been identified along the project road corridor. Other areas where hill slopes are made of soft and highly weathered rocks, earthen boulders etc. and the cut slopes fail by slumping, sliding and toe failures due to erosion such as at Ch 34.271, Ch 39.250, Ch 44.220, Ch 44.320 and Ch 44.410. Such spots are identified and toe protection of slopes is proposed by constructing the breast walls. The height of breast wall is proposed as 2.55m.

**Table 4.30: List of landslide prone areas in East Khasi Hills District**

S.No.	Name of block/sub division	Name of the locations
1	Shillong (Urban)	Mawlai, Laitumkhrach, Malki, Nongthymmai, Upper Shillong
2	Mawphlang	Mawphlang Village, Mawkynrew, Lyngkhat
3	Pynursla	Saitsohpen, Nongjri, Mawkynrew
4	Nongstoin	Laitkynsew, Mawlang, Nongsder
5	Sohra (Cherrapunjee)	Cherrapunjee, Nohsngithiang, Nongkrem, Laitkynsew
6	Ranikor	Nongkseih, Mawkynrew, Jalyntong
7	Mawkynrew	Mawkynrew, Pynden, Mawsmi
8	Selsella	Mawsynram, Thangkharang, Mawlieh

According to the landslide density map of East Khasi Hills district, the WMP road passes through areas of high to moderate landslide density, except for the initial stretches.

#### 4.11.2 FLOOD ZONES

The list of flash flood-prone areas in East Khasi Hills district is provided in **Table 4.31**. Notably, no flood-prone areas have been identified along the project road. Other areas where hill slopes are made of soft and highly weathered rocks, earthen boulders etc. and the cut slopes fail by slumping, sliding and toe failures due to erosion such as at Ch 34.271, Ch 39.250, Ch 44.220, Ch 44.320 and Ch 44.410. Such spots are identified and toe protection of slopes is proposed by constructing the breast walls. The height of breast wall is proposed as 2.55m.

**Table 4.31: List of flash flood prone areas in East Khasi Hills District**

Name of Block/Sub-Division	Flash Flood Prone Locations
Shillong (Urban)	Mawlai, Nongmynsong, Malki, Laitumkhrach
Mawphlang	Mawphlang Village, Nongkynrih, Mawkyndeng
Pynursla	Nongkseih, Saitsohpen, Nongsder



Name of Block/Sub-Division	Flash Flood Prone Locations
Sohra (Cherrapunjee)	Cherrapunjee town, Nongthymmai, Nohwet
Mawkynrew	Mawsmi, Nongtyngur, Pynursla
Nongstoin	Laitkynsew, Nonglangka, Mawphlang
Ranikor	Nongpoh, Nongjri, Mawlang

#### 4.11.3 EARTHQUAKE ZONES

##### Earthquakes

- **High Seismic Risk:** The region falls under **Seismic Zone V**, the most severe category in India.
- Caused by the region's location near the Himalayan tectonic plate boundary and Shillong Plateau faults.

The project road stretches fall under Zone – V, which is at Very High risk and intensity is IX. Seismic Zone details of East Khasi Hills is presented in **Table 4.32**.

**Table 4.32: Seismic Zone details of East Khasi Hills**

District	Seismic Zone	Notable Faults	Recent Earthquakes
East Khasi Hills	Zone V (Very High Damage Risk Zone)	Dudhani Fault, Darugiri Fault, Dapsi Fault, and other internal shear zones influencing Shillong Plateau tectonics	The district has experienced several low to moderate earthquakes (Magnitude 4.0–5.2), with notable tremors recorded in 2011 (Mw 4.2, Shillong) and 2021 (Mw 5.2, near Mawphlang–Shillong region)

Source: Meghalaya State Disaster Management Authority

## 5. ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

### 5.1 INTRODUCTION

The project is expected to generate both positive and adverse environmental and social impacts along the road corridor. This chapter presents an analysis of the potential impacts arising from the implementation of project activities. These impacts vary in type, nature, magnitude, extent, timing, duration, certainty, and reversibility. The assessment takes into account the nature of the project, the types of activities involved, and the scale of potential impacts across various environmental and social components, including:

- Physical Environment: Air quality, water resources, noise levels, and soil
- Biological Environment: Flora, Fauna and
- Socio-economic components: Property removal, Land Acquisition, ASI sites, Influx of labour

### 5.2 IMPACTS IDENTIFICATION AND EVALUATION

The potential impacts were identified through a three-step process:

1. Identification of project activities/aspects that could generate impacts;
2. Establishing the affected environmental and social components (valued receptors), which include vegetation, water bodies, soil, land stability, water quality and quantity, ambient air quality, employment and livelihoods, vulnerable groups, infrastructure, public safety, and occupational health and safety;
3. Determination of potential impacts through the preparation of an Impact Identification Matrix.

Based on the project information presented in Chapter 3 and the baseline environmental conditions described in Chapter 4, the anticipated impacts of the MLCIP project were identified and analyzed. The potential environmental and social impacts—both adverse and positive—arising from project activities during the Design, Construction, and Operational Phases were evaluated using the Leopold Matrix. This approach considered the interactions between project activities and both natural/physical environmental components and social components to determine whether such interactions could result in potential impacts.

### 5.3 IMPACT ANALYSIS USING LEOPOLD MATRIX (MAGNITUDE/IMPORTANCE CLASSIFICATION)

The Leopold Matrix is a comprehensive checklist designed for the identification, evaluation, assessment and analysis of environmental impacts on the development project following the interaction matrix analysis approach by Leopold. The Leopold Matrix developed for the road upgradation project is provided as **Table 5.1**. The checklist interaction matrix for environmental impact assessment was obtained by placing identified existing environmental components in the columns and the proposed project activities in the rows of the matrix. The process is summarized as follow:

### 5.3.1 IMPACT EVALUATION MATRIX

In order to assess the impacts of the proposed project, the impacts analysis across the project phases was done as follows.

1. Pre-Construction Phase
2. Construction Phase
3. Operational Phase

The description of the project activities and magnitude of the impacts for the various environments and social components for this project are presented in the below table. These impacts further have been categorized as per the World Bank's Environmental and Social Standards (ESSs) applicable to the project.

As per the impact evaluation matrix the environmental and social screening indicates that during the pre-construction phase, potential impacts are expected to be low to moderate, mainly due to site clearance, vegetation removal, and establishment of labour camps or material storage areas. These may temporarily affect air quality, noise levels, and local soil stability, but impacts will remain localized and reversible if proper site selection, vegetation management, and waste disposal measures are followed.

During the construction phase, impacts may intensify, particularly concerning air and noise pollution, waste generation. Activities such as excavation, grading, and drainage could also temporarily affect water resources and slope stability. However, these impacts are temporary and manageable through effective implementation of the Environmental and Social Management Plan (ESMP), including dust suppression, proper waste and fuel handling, and strong occupational health and safety (OHS) protocols.

In the operational phase, environmental and social risks are expected to be low to moderate, mainly linked to traffic movement, community safety, and road drainage maintenance. The project will also yield positive benefits, including improved road safety, slope stability, drainage efficiency, and local accessibility, along with biodiversity gains through compensatory plantation.

**Table 5.1: Impact Evaluation Matrix**

Project Activity	Relevant WB ESS	Air Quality	Noise	Water Resources	Soil Stability	Flora & Fauna	Public Health	Community Safety	Cultural Heritage	Hazardous Material Risk	Drainage	Road Safety
<b>Pre-Construction Phase</b>												
Site Clearance (Tree Felling, Vegetation removal, utility relocation)	ESS1, ESS6, ESS8	MN	MN	N	MN	MN	LN	LN	MN	N	N	LN
Labour Camp Siting & Mobilization	ESS1, ESS2, ESS4	MN	MN	MN	N	Low	MN	MN	MN	MN	LN	N
Site identification for construction plants, quarrying, material storage	ESS2, ESS3, ESS4, ESS6	HN	HN	HN	MN	HN	HN	HN	HN	HN	HN	HN
<b>Construction Phase</b>												

Earthworks (Excavation, Filling)	ESS1, ESS3, ESS4	MN	HN	MN	HN	MN	MN	LN	MN	MN	MN	MN
Grading, Levelling and Surface laying	ESS2, ESS3, ESS4	HN	HN	MN	MP (Improve d Stability)	MN	MN	LN	MN	MN	MN	MN
Drainage & Culvert Installation	ESS3, ESS4	N	LN	MP (Improve d Drainage )	MP (Improve d Stability)	LP	LP	LP	HN	N	MP	LP
Slope Stabilization & Bioengineering	ESS3, ESS4, ESS6	N	N	LN	N	MP	LP	LP	N	N	MP	LP
Construction Water Usage	ESS3, ESS4	LN	N	MN	LN	LN	LN	LN	N	N	LN	LN
Operation of Construction Plants	ESS2, ESS3	HN	HN	HN	N	MN	MN	MN	N	HN	MN	MN
Waste	ESS3, ESS4	MN	N	MN	MN	MN	HN	MN	N	HN	HN	MN

Generation and Disposal												
Fuel and Hazardous Material Handling	ESS2, ESS3, ESS4	MN	N	MN	N	LN	HN	MN	N	HN	N	N
Construction Traffic & Machinery	ESS2, ESS4	HN	HN	LN	LN	LN	MN	MN	N	MN	N	HN
Health & Safety Training and OHS Implementation	ESS2, ESS4	HP	HP	HP	N	N	HP	MP	N	MP	N	MP
Decommissioning of Construction Sites, Plants, Labour Camps	ESS2, ESS3	MN	MN	MN	MN	LN	MN	LN	N	MN	LN	LN
<b>Operational Phase</b>												
Operational Traffic Flow	ESS4, ESS10	LN	LN	LN	LN	LN	MP	MP	LN	LN	MP	MP

Transportation of Hazardous Materials	ESS4	MN	LN	LN	LN	MN	HN	HN	MN	HN	MN	HN
Compensatory Plantation	ESS6	HP	N	MP	MP	HP	MP	MP	LP	N	MP	HP
Monitoring & Community Engagement	ESS10	-	—	—	—	—	MP	MP	N	N	N	LP

Below is an explanation of the rating undertaken for the Leopold compliance matrix.

Short Form	Full Form
HN	High Negative Impact
MN	Moderate Negative Impact
LN	Low Negative Impact
N	Neutral Impact
LP	Low Positive Impact
MP	Moderate Positive Impact
HP	High Positive Impact

## **5.4 ENVIRONMENTAL IMPACTS (ESS1, ESS2, ESS3, ESS4, ESS6, ESS8)**

The assessment of potential environmental impact consists of comparing the expected changes in the environment with or without the project. The analysis predicts the nature and significance of the expected impacts. The following sections provide a detailed analysis of the project's environmental and social impacts across its various phases in detail. Corresponding mitigation measures have been incorporated into the sub-project ESMP and sub-project RAP, IPDP, including project-level plans (LMP, Work Site safety Plan (OHS plan), SEP, and SEA/SH Prevention and Response Plan). Based on this indicative ESMP, contractor will prepare contractor's environment and social management plan (C-ESMP) and get it approved by MPWD before starting the pre-construction work.

### **5.4.1 IMPACTS DURING PRE-CONSTRUCTION PHASE**

The project envisages upgrading the existing single-lane carriageway to an intermediate lane configuration to enhance the capacity and extend the service life of the WMP Road. While all the construction activities are proposed within the existing Right of Way (RoW).

Pre-construction activities will primarily include:

- Site clearance and reconstruction/improvement of approach roads for movement of plant and machinery,
- Establishment of contractor's camp, material storage, and construction yard, and
- planning for material sourcing and finalization of work methodology.

The work methodology will define activity sequencing and associated occupational and community health and safety (OHS/CHS) risks. It will be reviewed by the Project Management Unit (PMU) and C-ESMP prior to mobilization.

During the pre-construction phase, potential impacts are anticipated from site clearance, vegetation removal, tree felling, material sourcing, labour camp establishment, and utility relocation. A total of 35 trees will be felled along the corridor, leading to localized loss of vegetation and minor habitat disturbance (ESS6). These impacts will be mitigated through compensatory plantation at a ratio of 1:10, greenbelt development, and adoption of native species tolerant to local climatic and pollution conditions.

Significant utility shifting is required prior to the commencement of construction works. A total of 720 nos. of electric poles are identified along the WMP road corridor for shifting. Of these, 512 poles are on the LHS and 208 on the RHS. Utility relocation activities may temporarily disrupt local services and traffic movement, and therefore must be planned and executed in coordination with respective line departments, ensuring safety and minimal community inconvenience (ESS4).

The sourcing of materials such as aggregates, sand, and stone may cause short-term adverse impacts on land, air, and water quality if not properly managed. Hence, materials shall be procured only from authorized borrow areas, licensed quarries, and SPCB-approved crushers following CPCB guidelines (ESS3). The establishment of labour camps and construction support facilities may exert localized pressure on water availability, sanitation systems, and waste management infrastructure. Appropriate provisions for safe drinking water, adequate sanitation, drainage arrangements, and solid waste



disposal must be made to prevent health and hygiene issues in compliance with ESS2 and ESS4.

Early-stage stakeholder engagement (ESS10) and preparation of a Contractor's Environmental and Social Management Plan (C-ESMP) will be essential. The C-ESMP shall apply the mitigation hierarchy—prioritizing avoidance, then minimization, and finally offsetting and restoration through design improvements, slope stabilization, compensatory plantation, and safety training. Implementation of these measures during the pre-construction stage will ensure environmentally responsible preparation and minimize potential social disruptions before commencement of construction works.

### *Ecological and Environmental Impacts*

Although the WMP corridor passes mostly through agricultural areas, there are patches of unclassed forest on community land, streams, that may be disturbed by construction activities. Site-specific **Environmental Management Plans (EMP)** will be developed by the contractor in consultation with the Environment Officer of PMU to minimize biodiversity loss.

#### **Mitigation Measures:**

- Avoid construction camps and material storage near streams or unclassed forest on community land.
- Restrict vegetation clearing to the minimum area required for works.
- Maintain a buffer of at least 100 m from natural drainage channels or water bodies.
- Implement soil erosion control measures (silt fencing, sediment traps, and slope turbing).
- Prohibit hunting, fishing, or collection of forest produce by workers.
- Awareness and sensitization of labourers on local wildlife and biodiversity conservation.
- Schedule noisy operations (rock breaking, heavy equipment use) away from bird nesting seasons (March–July).

### *Occupational Health and Safety (OHS)*

To ensure safe working conditions, a **Hazard Identification and Risk Assessment (HIRA)** will be conducted for each task.

#### **Mitigation Measures:**

- Develop and implement a site-specific OHS Plan conforming to World Bank Environmental, Health and Safety (EHS) Guidelines.
- Provide PPE (helmets, safety shoes, high-visibility vests, gloves) to all workers.
- Conduct regular health check-ups for labourers.
- Ensure proper sanitation, potable water (minimum 5 litres per person per day), and waste disposal facilities in camps.
- Regular inspection and certification of lifting and construction equipment.
- Engage trained personnel for operating machinery and working at height or confined spaces.

### *Community Health and Safety*

Construction works along existing habitations and roadside markets can pose safety risks to pedestrians and road users.

#### **Mitigation Measures:**

- Prepare and implement a **Traffic Management Plan** to regulate vehicle movement, material haulage, and diversions.
- Install barricades, signage, and warning lamps at work sites.
- Prepare a **Community Health and Safety Plan** ensuring public segregation from work zones.
- Schedule high-risk activities during off-peak hours to minimize traffic congestion.
- Conduct community awareness campaigns before any temporary road closure or service disruption.

The OHS Plan, CHS Plan, and Traffic Safety Plan must be reviewed and approved by PMU/PMTC before initiation of construction.

#### ***Construction Camp and Site Selection***

Contractor's camps, stockpile, and equipment yards will be located at least 500 m from settlements and 100 m from water bodies or forest areas. Camps should follow **IFC/World Bank Labour Accommodation Guidelines** and local environmental norms. The layout of camps will be reviewed and cleared by the Environment Officer, PMTC prior to establishment.

#### **Disposal of Construction Debris and Waste**

Limited C&D waste (excavated material, asphalt fragments, scrap metal) will be generated.

#### **Mitigation Measures:**

- Segregate reusable and non-reusable debris.
- Reuse topsoil for slope stabilization and landscaping.
- Dispose of debris only at approved low-lying barren areas located at least 1 km downwind of settlements and away from drainage lines.
- Avoid dumping in water bodies, wetlands, or near agricultural fields.
- Regularly monitor disposal sites to prevent contamination and visual pollution.

#### ***Shifting of Utilities***

Minor relocation of electrical poles, telephone lines, and water pipelines may be required.

#### **Mitigation Measures:**

- Coordinate with line departments (MePDCL, PHE, Telecom) for planned relocation prior to construction.
- Provide prior notice to local communities about any temporary service disruption.
- Restrict utility shifting to daytime hours to avoid safety risks at night.

#### ***Plant, Machinery, and Vehicle Selection***

All construction equipment and vehicles shall comply with **CPCB emission standards** and have valid **Pollution Under Control (PUC)** certificates. The contractor shall maintain equipment in good working condition to minimize noise and air pollution.

### *Sourcing of Construction Materials*

All aggregates, sand, and stone shall be sourced only from **approved quarries** having valid environmental clearance and consent to operate. Borrow areas, if required, shall comply with **MoEF&CC Standard Operating Procedures (SOP 2022)** for rehabilitation and closure.

#### **Mitigation Measures:**

- Contractor to submit quarry permits, EC copies, and compliance reports before material use.
- No borrowing shall be allowed within forest areas or near habitations.
- Borrow area restoration to be certified by the Environmental Officer, PMU before final payment.

### *Water Requirement*

Construction water will be required for concrete mixing, dust suppression, and domestic use.

#### **Mitigation Measures:**

- Obtain permission for groundwater abstraction from the State Water Resources Department.
- Prefer use of surface water from local streams or treated water from nearby sources.
- Avoid over-extraction from community wells.
- Maintain drainage around storage and batching areas to prevent stagnation.

#### **5.4.1.1 IMPACTS ON PHYSIOGRAPHY (ESS3)**

The sub-project area comprises an existing road traversing hilly terrain. Land use along the road stretches includes agricultural areas, unclassed forest, dense vegetation, and shifting cultivation. The same alignment will generally be followed for upgrading the road from existing single/intermediate lanes to an intermediate configuration with paved shoulders and geometric corrections at selected locations. The existing ground profile will be maintained, with minor profile adjustments at certain locations. Rehabilitation and upgradation will generally be restricted to the existing right-of-way (ROW) in settlement areas.

The Weilo-Mawsynram Road up to Phlangwanbroi traverses terrain ranging from 932 m to 1,963 m above mean sea level. The total quantity of material to be excavated (cut) along the project corridor is 120,107.610 m<sup>3</sup>, while the total fill requirement is 61,265.620 m<sup>3</sup>. After balancing the cut and fill volumes, there remains a surplus of approximately 58,841.990 m<sup>3</sup> of excavated material that will need to be safely disposed of at designated muck disposal sites. This approach ensures effective earthwork management while minimizing environmental impacts and maintaining slope stability along the project corridor.

#### **5.4.2 IMPACTS DURING CONSTRUCTION PHASE**

Most of the adverse environmental impacts are related to construction works which are inevitable but are manageable through certain tested and known environment friendly practices. The negative environmental effects can be taken care of at an early stage through proper engineering designs and through the contract during construction practices.

### **Construction Phase**

The construction phase involves earthworks, grading, drainage works, slope protection, and culvert installation, which are expected to cause significant short-term adverse impacts on air quality, noise, water resources, and soil stability (ESS2, ESS3, ESS4). Occupational health and safety (OHS) risks including accidents, exposure to dust and noise, handling of heavy machinery, and potential landslides require robust safety protocols.

#### **Mitigation measures under the C-ESMP include:**

- There will be no constructional camp during construction period upto 100 m on both sides from the Monolith (At Ch 23+100 and Ch 41+500)
- Provision of utility ducts for underground pipelines and GI (Galvanized Iron) pipe crossovers shall be incorporated into the design to ensure safe and organized routing of essential services, minimize future excavation, and facilitate maintenance without disrupting road infrastructure
- Speed deduction measures to be taken near Ch 29+650 (Hairpin bend)
- Safety measures shall be implemented to avoid any damage to the school infrastructure and to ensure the safety of students, staff, and the surrounding community during all phases of construction at Ch 32+100, Ch 43+520 and Ch 46+600
- At Ch 33+740 (Mawjyngbuin cave) and Ch 39+160 (Krem Puri cave): Access roads should not be damaged or obstructed during construction activities; necessary precautions must be taken to maintain uninterrupted access for local residents and emergency services

Additionally, the Contractor must ensure provision of PPE, emergency preparedness plans, spill prevention measures, and OHS training and monitoring to reduce worker and community risks.

### **Labour Camp and Community Health & Safety**

Labour camps and site operations pose community health and safety risks (ESS2, ESS4), including sanitation, water access, and increased traffic hazards. Labour influx may exacerbate these risks if not well managed. Hence, the C-ESMP must ensure adequate water supply, waste management, health facilities, and grievance mechanisms, as well as community liaison programs to maintain good relations between workers and local residents.

The standard road construction works involved are site clearance, excavation, filling of earth materials and subgrade materials, laying of bituminous mixtures, handling of hazardous materials like bitumen, diesel, etc., dumping of unusable debris materials, transportation of materials from production site to construction site, and other constructional activities and associated works like mobilization of construction equipment, setting up of construction plants, setting up of workforce camps, quarrying, material storage etc. These activities have certain impacts of various magnitudes on different components of the environment.

Environment Screening of the proposed road corridor identified the presence of sensitive receptors and community assets along the alignment. These include monoliths at chainages 23+100 and

41+500, religious and cultural sites such as a church (43+000) and caves (Mawjyngbuin at 33+740 and Krem Puri at 39+160), as well as educational institutions including Jawahar Navodaya Vidyalaya (32+100) and SSA Schools (43+520 and 46+600). A pipeline at 26+650 and a hairpin bend at 29+650 were also noted. Mitigation measures have been proposed to safeguard these features, such as maintaining buffer zones around monoliths, ensuring uninterrupted access to caves, pipeline protection through ducts and crossovers, safety and pollution control measures near schools, regulated access near the church, and speed management at hairpin bends. Beautification has been recommended around monoliths. Overall, the screening highlights the need for careful planning to protect cultural, educational, and community resources during road construction.

The anticipated impacts due to all these activities have been described below:

#### **5.4.2.1 IMPACTS ON GEOLOGY (ESS3)**

The construction of WMP Roads will require different materials such as earth, aggregate, boulders, and sand that occur naturally and whose formation process is slow and takes years. Minimizing the construction footprint on natural resources is a fundamental design principle for pavement and structures.

As per the engineering design, the estimated quantities of other construction materials that are required for construction of the sub-project area are attached as **Annexure 3.3**.

With an estimated surplus of approximately 58841.990 m<sup>3</sup> of excavated material after balancing cut and fill, the DPR emphasizes reuse of suitable cut and excavated earth for embankment formation, slope dressing, and construction of protection works such as toe walls, gabion retaining walls. In addition, stone and granular materials recovered from dismantling of existing pavement and drainage structures will be recycled and reused for sub-base layers, shoulder construction, and filter media where technically feasible, thereby reducing dependence on new quarry material. These practices not only conserve natural resources but also minimize environmental impacts from material extraction, transportation, and waste disposal. Only unsuitable or non-recyclable materials will be disposed of at MPWD-designated disposal sites in accordance with environmental management guidelines.

#### **5.4.2.2 COMPACTION AND CONTAMINATION OF SOIL (ESS3)**

Contamination of soil during the construction stage may happen primarily due to construction and allied activities. The sites where construction vehicles are parked and serviced are likely to be contaminated because of leakage or spillage of fuel and lubricants. Contamination of soil during construction might be a major long-term residual negative impact. Unwarranted disposal of construction spoil and debris will add to soil contamination. This contamination is likely to be carried over to water bodies in case of dumping near water bodies.

#### **5.4.2.3 INCREASED EROSION AND LOSS OF TOP SOIL (ESS3)**

Topsoil loss may occur in land parcels used for short-term purposes (e.g., borrow areas, construction camps) as well as in areas permanently impacted due to road rehabilitation, unless measures for preservation are adopted. Project activity involves tree cutting and vegetation removal from the PRow followed by construction and strengthening of the present carriageway.

Since the project involves upgrading an existing road alignment rather than developing a Greenfield corridor, substantial removal of topsoil is not anticipated. However, localized topsoil disturbance may

occur during shoulder widening, drainage improvement, and embankment raising activities. To mitigate this, the ESIA prescribes specific topsoil management measures to be implemented during construction. These include: (i) stripping and preserving topsoil up to a depth of 150 mm from all areas of cutting, filling, and temporary construction zones; (ii) storing topsoil separately in designated stockpiles with proper slope protection and sediment barriers to prevent erosion; (iii) reuse of stored topsoil for median greening, roadside plantation, and slope turfing after construction; and (iv) prohibition of topsoil disposal at dumping sites. These measures shall form part of the Environmental Management Plan (EMP) and be monitored through the supervision consultant to ensure effective implementation during the construction phase.

The alignment passes through areas which have sandy loam with varying amounts of clay, typically exhibiting low to medium plasticity. These soils are light textured and are thus prone to erosion by winds and during rain and consequent slides can occur due to hilly slopes of the area. Additionally, the movement and operation of vehicles, construction equipment, and material transport during project execution may cause soil compaction, particularly in borrow areas, temporary storage sites, and parking zones if not properly managed. Soil compaction reduces permeability and soil fertility, affecting natural drainage and vegetation growth. To minimize this impact, all construction activities and machinery movement will be strictly confined within the designated Right of Way (RoW) and approved working areas. Parking and servicing of vehicles and equipment will be allowed only in designated hard-surfaced zones, while borrow areas will be managed to prevent soil degradation through controlled excavation, use of light equipment, and post-extraction rehabilitation as per the approved Borrow Area Management Plan. These measures will ensure that soil structure and fertility in adjacent agricultural and community lands remain unaffected.

#### **BORROW AREAS AND QUARRIES (ESS3)**

Opening of a new borrow pit creates the following impact

- The borrowing of earth in an unregulated manner may lead to unstable slopes, erosion, loss of fertility, inundation of water, breeding areas for mosquitos and an unhygienic environment. Fertile topsoil may be wasted if not preserved for backfilling.
- The transportation of earth from borrows and quarry areas in open/uncovered trucks can increase the dust levels and overloaded borrow transportation material may cause spillage of material on road causing dust, high emission, vehicle wear and tear, road surface damage due to overloading.
- Haul roads may develop surface damage due to plying of trucks and if left unattended may cause problems to other pedestrians and commuters on the road.
- Unauthorized borrowing without requisite approval/permissions from local self-government bodies may create social conflict in the area.
- Open borrow pits abandoned without proper restoration may lead to accidents and risks of social nuisance.

As given below in the table, earthwork quantity from cutting comes out more than the required for filling. The earthwork detail in the project area is listed in **Table 5.2**.

**Table 5.2: Earthwork details in the project area**

Corridor	Fill (m <sup>3</sup> )	Cut (m <sup>3</sup> )
Corridor-8	61265.620	120107.610

From the above table it is calculated that after balancing cut and fill, the remaining quantity of 58841.990 cum earthwork will be dumped/disposed by the contractor. The details for the muck disposal site are presented in **Table 5.3**. Average height should be 1.2 m to 1.5 m.

**Table 5.3: Details for the muck disposal site**

S.No.	Location	Distance from WMP road (m)	Area of disposal site (ha)	Quantity of Muck to be disposed (cu.m)	Environment Sensitivity (If any)
1	Umnongrim village at Ch 24+800 km	400	1.70	20594.696	No specific environmental sensitivity noted
2	Mawsynram at Ch 37+200 km	10	2.70	33539.934	To minimize environmental impacts, all efforts will be made to avoid cutting trees, and the site will be managed to preserve existing vegetation.
3	Phlangwanbroi at Ch 48+000	10	0.30	4707.36	No specific environmental sensitivity noted

### **Mitigation Measures**

- For sitting location of a muck disposal site include selecting a location with stable topography, away from water bodies and agricultural land, to prevent environmental contamination.
- Muck disposal sites shall be located on stable, non-erodible terrain away from water bodies and agricultural land.
- Dumping will be done in compacted layers ( $\leq 1$  m thick) with retaining walls, drainage channels, and slopes maintained within the natural angle of repose ( $30^{\circ}$ – $35^{\circ}$ ).
- Each site will be protected with toe walls, sediment traps, and vegetative cover for stabilization.
- The contractor shall operate only at approved locations under supervision and maintain the site until full rehabilitation is achieved.

- The site should incorporate proper retaining structures, such as toe walls and catch drains, to prevent sliding and erosion.
- Adequate drainage must be provided through surface and subsurface channels to control runoff.
- Muck should be deposited in layers, compacted, and stabilized using vegetation or geotextiles to minimize dust and erosion.
- Access roads should be provided to ensure safe transport of muck, and the site should be fenced and clearly demarcated.
- Environmental safeguards, including periodic monitoring and rehabilitation plans, must be integrated into the design to ensure long-term stability and ecological compliance.

The typical design of the muck disposal site will be incorporated into the DPR. Dumpsite Stabilization Plan is attached as **Annexure 5.1**.

#### **5.4.2.4 AMBIENT AIR QUALITY (ESS3)**

Construction-stage activities are likely to have adverse impacts on both workers and settlements adjacent to the road, particularly those located downwind. The main types of pollution anticipated are dust pollution and emissions from harmful gases from the construction plant and equipment.

##### **Impacts from Generation of dust**

- Transportation and tipping of cut material - while the former will occur over the entire stretch between the cutting location and disposal site, the latter is more location specific and more intense;
- Transportation of raw materials from quarries and borrow sites
- Site levelling, clearing of trees
- Construction of structures and allied activities

##### **Impacts from Generation of polluting gases including SO<sub>2</sub>, NO<sub>x</sub> and CO**

- Hot mix plants
- Large construction equipment, trucks and asphalt producing and paving equipment
- The movement of heavy machinery, oil tankers etc.
- Inadequate vehicle maintenance and the use of adulterated fuel in vehicles.

The impacts are expected to be temporary (limited to construction period) and confined within construction areas. Mitigation Measures for Ambient Air Quality is presented in Table 5.4.

**Table 5.4: Mitigation Measures for Ambient Air Quality (ESS3)**

Impact Source	Mitigation Measures
Transportation and tipping of cut material; site levelling and excavation	Regular water sprinkling (at least 3 times in a dry season) on haul roads, excavation areas, and disposal sites to suppress dust. Limit vehicle speeds



	to 25 km/h on unpaved roads.
<b>Transportation of raw materials from quarries and borrow sites</b>	Cover all vehicles carrying loose materials with tarpaulin; avoid overloading and ensure proper loading/unloading to prevent spillage.
<b>Stone crushing, batching, and asphalt plants</b>	Locate plants at least 500 m from settlements and sensitive receptors; install dust extraction, bag filters, and stack emission controls. Regularly maintain equipment to minimize emissions.
<b>Site clearing, vegetation removal, and handling of topsoil</b>	Restrict vegetation clearance to the required RoW; immediately stabilize exposed soil using mulching, water spraying, or temporary turfing.
<b>Concrete and asphalt mixing operations</b>	Use pre-mixed bitumen and maintain mixing temperature within permissible limits to reduce hydrocarbon release. Avoid fuel adulteration.
<b>Operation of heavy machinery and transport vehicles</b>	Maintain all equipment and vehicles regularly; prohibit use of old or poorly maintained machinery; use low-sulphur fuel.
<b>Generation of gaseous pollutants (SO<sub>2</sub>, NO<sub>x</sub>, CO)</b>	Ensure all machinery meets CPCB emission norms; prohibit idling of vehicles; schedule material transport to avoid congestion.
<b>Worker and community exposure to dust and fumes</b>	Provide PPE (dust masks, goggles) to workers; display warning and awareness signs; avoid high-emission activities near schools or dense settlements.
<b>Monitoring and compliance</b>	Conduct periodic ambient air quality monitoring (PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub> , CO) at identified locations and ensure compliance with CPCB National Ambient Air Quality Standards.

#### **5.4.2.5 NOISE (ESS3)**

During construction, particularly in residential and commercial areas, ambient noise levels may temporarily exceed statutory limits within about 50 m of active work zones due to operation of heavy machinery, material transport, and equipment use. The main noise sources will include excavators, graders, vibratory rollers, and transport vehicles, which typically generate levels above 70 dB(A). Vibration from rollers may also affect nearby structures depending on soil type, structural age, and construction quality.

These impacts will be intermittent, short-term, and localized, as all construction activities will not occur simultaneously along the corridor. Sensitive receptors such as schools, hospitals, and religious places located near the project road may experience temporary disturbance during high-noise activities. However, impacts will attenuate with distance and can be effectively mitigated through equipment maintenance, use of temporary noise barriers, scheduling of high-noise works during daytime, and strict adherence to CPCB noise standards.

The scale of construction required for upgrading the WMP Road is moderate and within the existing Right of Way (RoW). The primary sources of noise emissions include construction equipment, material transport vehicles, stone crushers, and asphalt plants. These activities are temporary, localized, and limited to the construction period. Noise levels are expected to rise intermittently during operations such as excavation, compaction, and pavement laying, especially near settlements and sensitive

receptors like schools and health centers. However, with proper scheduling of high-noise activities during daytime, maintenance of equipment, and adherence to CPCB noise standards, the impacts will remain within acceptable limits. Consequently, the overall scale of works and the expected marginal increase in post-construction traffic are not anticipated to result in any significant or lasting adverse impacts on ambient air quality or noise levels.

Ambient noise level may increase temporarily in the close vicinity of various construction activities, maintenance workshops, and vehicles and earthmoving equipment. These construction activities are expected to generate noise levels in the range of 80 – 95 dB(A) at about 1m from the source.

### **Mitigation Measures**

- Staging of construction equipment and unnecessary idling of machinery within noise-sensitive areas shall be avoided wherever possible.
- All plants and equipment used in construction (including third-party units) must conform to MoEF&CC/CPCB noise standards.
- All vehicles and equipment used in construction shall be fitted with effective exhaust silencers.
- Servicing of all construction vehicles and machinery shall be done regularly; during routine servicing, the effectiveness of exhaust silencers shall be checked and replaced if defective.
- Construction activities shall be restricted to daytime hours (6 AM–10 PM). Night-time work may be carried out only in emergencies, following all prescribed mitigation measures for night operations.
- Unnecessary honking at construction sites shall be strictly prohibited.
- Temporary barricading shall be installed around active construction zones, especially near settlements, schools, or hospitals, to minimize noise propagation.
- Noise monitoring shall be carried out at construction sites as per the approved monitoring schedule, and results shall be submitted to the Project Management Consultant (PMC) and Project Management Unit (PMU) for review and compliance verification.

### **DG Set Noise Control Standards**

To minimize noise from generator operations during construction, the following measures shall be implemented:

- The contractor must use silent DG sets as prescribed by the Central Pollution Control Board (CPCB).
- If a silent DG set is not available, noise shall be controlled by providing an acoustic enclosure or acoustically treated housing.
- The acoustic enclosure shall be constructed with suitable materials of adequate thickness, supported by a structural or sheet-metal base, and insulated with fire-retardant acoustic foam.
- The acoustic enclosure/acoustic treatment shall be designed to provide a minimum 25 dB(A) insertion loss or to meet ambient noise standards, whichever is higher.
- Each DG set shall be provided with a proper exhaust muffler to further reduce noise emissions.
- The DG set shall be properly sited to minimize its noise impact beyond the premises, ensuring compliance with ambient noise standards at the nearest receptor.

- A routine and preventive maintenance schedule shall be prepared and followed in consultation with the DG set manufacturer to ensure that noise levels do not deteriorate with use.

At the outset, it should be noted that unavailability of exact information on the construction methodology, hours of work, no. of equipment and their ratings / fuel consumption, construction schedule, etc. are the limiting factors while estimate the construction noise for this subject project;

#### **5.4.2.6 SURFACE WATER QUALITY AND SILTATION (ESS3)**

Construction activities such as earthworks, material storage, and operation of construction camps may temporarily affect surface water quality along the WMP Road corridor. Proposed sub project road cross Wah Umkynrem River at Chainage 22+800. Earth Runoff from exposed soil surfaces, stockpiles, and construction zones can carry suspended solids, oils, and debris into nearby streams or drainage channels, leading to increased turbidity and siltation. Additionally, improper disposal of construction wastewater or accidental spills of fuels and lubricants may also contribute to localized water pollution. Construction activities such as bridge works, river training, and slope protection may temporarily increase turbidity and sediment load in the river, potentially affecting local fish habitats and water quality. These effects are expected to be localized and short-term, primarily during active construction near the river crossing.

Labour camps and site facilities will generate domestic wastewater and sewage, which, if discharged untreated, may degrade nearby water bodies.

#### **Mitigation measures**

- To prevent this, sewage treatment through septic tanks and soak pits or mobile bio-toilets shall be provided at all camps.
- Construction runoff shall be managed through temporary drainage channels, sediment traps, and silt fencing, ensuring that no untreated discharge enters natural watercourses.
- With proper implementation of drainage control, containment of oil and grease near equipment yards, and treatment of domestic wastewater, no significant or long-term impact on surface water quality or aquatic habitats is anticipated during the project construction and operation phases.
- Proper implementation of erosion and sediment control measures including silt fencing, and controlled work scheduling will minimize such impacts.

#### **Mitigation Measures for Groundwater Protection (Pile/Material Storage Areas)**

- Site Selection: Locate material and pile storage yards at least 100 m away from water bodies, wells, or natural drainage channels. Avoid low-lying or flood-prone areas.
- Impervious Flooring: Provide impermeable flooring (e.g., compacted clay or concrete base with HDPE lining) in storage areas for materials such as bitumen, fuel, cement, and chemicals to prevent seepage into soil and groundwater.
- Storm water Management: Construct peripheral drains around storage yards to collect and divert runoff to sedimentation pits before discharge. Prevent mixing of clean storm water

with contaminated runoff.

- **Spill Prevention and Control:** Store fuel and lubricants in bunded areas (110% capacity of the largest container) with proper spill kits (sand, absorbents). Immediately clean up any spills or leaks.
- **Topsoil and Excavated Material:** Store topsoil separately on raised and covered platforms to prevent erosion and sediment-laden runoff into groundwater recharge zones.
- **Waste and Debris Management:** Prohibit dumping of construction waste, oils, or concrete slurry on bare ground. Dispose of waste only at approved sites.
- **Regular Inspection:** Conduct routine checks for leakages, cracks, or improper containment in fuel and chemical storage zones.

#### **5.4.2.7 IMPACTS ON NATURAL DRAINAGE AND WATERSHED MANAGEMENT (FLOODING) (ESS3)**

Along the rivers and streams crossed by the road, bank protection measures are required to prevent accelerated sedimentation that could alter drainage patterns and affect riverine habitats. The road alignment generally follows the existing topography, except at locations of cross-drainage structures. The project highway stretch includes a total of 11 minor bridges and 210 culverts. Many of the existing culverts, if not adequately strengthened during the proposed road widening, rehabilitation, and upgradation, could fail structurally, leading to disruptions in water flow, increased flood risk, and potential damage to the road. Such failures may also pose safety hazards to road users and nearby communities.

#### **5.4.2.8 GROUND WATER QUALITY (ESS3)**

The road construction projects are water intensive and demand a large volume of water during the entire project's construction period. Project road stretch will require approx. 72.1 KLD. The demand for construction is proposed to be met from surface water sources. However, in extreme cases, where surface water is not available, it is proposed to use groundwater resources. The project area is not classified as critical, semi-critical or overexploited by CGWB. It is "safe" area for ground water abstraction.

Untreated discharge from the labour camp may lead to contamination of ground water sources in the vicinity of the camp.

#### **5.4.2.9 CONSTRUCTION AND DEMOLITION WASTE (ESS3)**

Construction and demolition (C&D) waste from major demolitions is not expected along the proposed WMP alignment because no permanent structures will be removed. Only temporary structures with masonry or light walls (e.g., temporary kiosks, sheds, compound walls) will be dismantled where absolutely necessary to establish the right-of-way. Even these limited removals, if not handled correctly, can obstruct natural drainage, cause siltation of nearby water bodies, generate dust, and create temporary traffic inconveniences or health nuisances. To avoid such impacts, all temporary-structure debris will be managed through a contractor-led waste handling plan that emphasizes source segregation, timely removal, reuse/recycling where feasible, controlled transport, and disposal at authorized sites.

### Key mitigation measures

- **Avoidance & minimization:** limit removals to only those temporary walls/structures that are unavoidable for construction; explore minor realignments or temporary protection works to retain structures where possible.
- **Segregation on site:** separate inert masonry/brick, concrete, metal, wood and mixed waste at designated temporary collection points to maximize reuse/recycling.
- **Reuse & recycling:** priorities reuse of intact masonry/brick and concrete as backfill or for temporary access tracks; recover metal and timber for reuse.
- **Designated storage & timely removal:** store debris in covered areas away from drains and surface water; remove to authorized disposal/recycling facilities within agreed short timeframes to prevent runoff and scavenging.
- **Dust control:** dampen stockpiles and vehicle loads, cover trucks during transport, and restrict demolition/dismantling operations during high-wind conditions.
- **Drainage protection:** install silt traps/sediment control (e.g., sandbags, temporary settling pits) at nearby drains and around stockpiles to prevent siltation of water bodies.
- **Traffic & public safety:** schedule dismantling works off-peak where possible, use flaggers and signage, and maintain clear pedestrian/vehicular passage around work areas.
- **Permits & authorised disposal:** ensure waste is transported only to licensed C&D disposal or recycling facilities and that manifests/receipts are retained.
- **Contractor responsibilities & training:** the contractor shall prepare the C&D waste handling plan, train workers on segregation and pollution prevention, and maintain daily records of waste quantities and destinations.
- **Monitoring & reporting:** include C&D waste management in construction supervision checklists; undertake fortnightly inspections and submit waste disposal receipts as part of monthly compliance reports.

#### **5.4.2.10 MUNICIPAL SOLID WASTE (ESS4)**

The project corridor is expected to generate approximately 20 to 25 kg of municipal solid waste per day during the construction stage, based on an estimated 50 workers at the project site, assuming an average waste generation of 0.4 to 0.5 kg per person per day. This waste if not disposed of properly, may lead to littering in the immediate vicinity of the camp sites and contamination of ground water as well as air pollution due to unauthorized burning.

### Mitigation measures

- Disposal of sanitary wastes and excreta shall be into septic tanks. If bio-toilets will be used the excreta could be converted to manure.
- Kitchen wastewater shall be disposed into soak pits/kitchen sump located preferably at least 15 m 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 of in landfill sites.
- Provide segregated garbage bins in the camps and ensure that these are regularly emptied and disposed of hygienically as per the Comprehensive Solid Waste Management Plan approved by the Environmental Expert of Project Authority.

The camping area should be periodically sprayed with Bleaching powder and other disinfectants.

#### **5.4.2.11 HAZARDOUS WASTE (ESS4)**

Approximately 180 cu.m. of scarified bituminous material will be generated from the project road during pavement rehabilitation. Improper disposal may cause localized soil and water contamination due to leaching of hydrocarbons; therefore, its reuse and handling shall follow MoRTH (5th Revision) guidelines.

As per MoRTH Clause 517 and Clause 305.2.2.2, the scarified bituminous material shall be recycled and reused in Granular Sub-Base (GSB), Wet Mix Macadam (WMM) layers, or for pavement shoulders, after appropriate screening and blending to achieve the required gradation. The reclaimed mix can also be incorporated in hot or cold recycling processes depending on site conditions and equipment availability.

Any quantity of scarified bitumen found unsuitable for reuse shall be disposed of at designated locations approved by the Engineer-in-Charge, with proper base lining and containment to prevent leachate migration and protect soil and water quality. This approach promotes resource recovery, cost efficiency, and environmental compliance in line with MoRTH and CPCB sustainability principles.

The corridor-wise details of existing bituminous surface to be scarified in the project area are presented in

**Table 5.5: Amount of expected Scarified Bituminous Material**

Sl. No.	Description	Unit	Quantity
1.	Scarifying existing bituminous waste	cum	180

A small quantity of hazardous substances, such as diesel, petroleum products, and other chemicals, will be used or stored during construction. If these substances are not stored properly, leakage or spillage may occur, potentially causing contamination of soil and water.

During the construction phase, used batteries are expected to be discarded and must be disposed of in accordance with the Battery Waste Management Rules, 2022. Lead-based batteries, if not properly managed, may contaminate soil and water through the leakage of lead.

#### **DISRUPTION OF COMMUNITY SERVICES (ESS4)**

Local services, including water supply lines, irrigation channels, drainage systems, ditches, and streets, are often disrupted during road earthworks. These services are essential for crop production, drinking

water supply, and local access, and their damage can also affect road construction activities. Details of utilities, such as electric poles, are provided in **Annexure 5.2**.

#### **5.4.2.12 DIVERSION OF TRAFFIC (ESS4)**

Since the road upgradation works will be carried out on the existing alignment, there will be a direct interface with road traffic. Short-term impacts during construction will include traffic diversions and management challenges, potentially causing hindrance to the existing traffic flow. There is also a risk of accident hazards during this phase. Although such diversions do not directly impact the natural environment, poorly planned diversions can lead to adverse effects. Rapid restoration of diverted services can help minimize the severity of impacts resulting from the disruption of existing services.

#### **5.4.2.13 IMPACTS ON OCCUPATIONAL HEALTH & SAFETY (ESS2)**

During the construction phase of the road project, workers are continuously exposed to various occupational and environmental hazards. These include prolonged exposure to dust and gaseous emissions from equipment, vehicles, and material handling. In addition, there are significant safety risks associated with activities such as hill-side cutting, benching, excavation, embankment formation, operation of heavy machinery, and protection works along eroded riverbanks. Specific risks also arise from working near waterlogged or submerged sections, culvert and bridge construction, and sharp curves or junction improvements, where vehicular movement poses added danger. Electrocuting, work at heights, slips, trips, and falls, as well as tree cutting and vegetation clearance, further contribute to potential safety concerns. Proper use of personal protective equipment (PPE), adherence to standard operating procedures (SOPs), traffic and work-zone safety management, and regular safety training will be critical to prevent accidents and ensure worker well-being throughout the construction period. Table 5.6 presents Hazard analysis as per DPR.

Table 5.6 Hazard analysis as per DPR

Activity / Task	Potential Hazards	Associated Risks / Impacts	Proposed Mitigation & Control Measures	Responsible Agency
Site clearance and earthwork (excavation, grading)	Cave-ins, slope failure, dust generation/ inhalation, contact with sharp objects	Injury from collapsing sides, respiratory issues, cuts and bruises	<ul style="list-style-type: none"> <li>• Use proper shoring and benching of excavations</li> <li>• Restrict unauthorized entry-</li> <li>• Provide dust masks and PPE</li> <li>• Regular inspection of slopes and trenches</li> <li>• Water sprinkling to control dust</li> </ul>	Contractor / Site Engineer
Operation of heavy machinery (excavator, roller, grader, paver)	Machine entanglement, collision, vibration, noise	Physical injury, hearing loss, fatigue	<ul style="list-style-type: none"> <li>• Only trained operators</li> <li>• Maintain equipment regularly</li> <li>• Use reverse alarms, lights, and mirrors</li> <li>• Use ear protection and seat belts</li> </ul>	Contractor / Safety Officer
Material handling and lifting (manual or crane use)	Dropped loads, back injuries, entanglement	Fractures, strains, crushing injury	<ul style="list-style-type: none"> <li>• Inspect lifting equipment and slings</li> <li>• Train workers on safe lifting techniques</li> <li>• Use tag lines and certified riggers-</li> <li>• Prohibit standing under suspended loads</li> </ul>	Contractor / Safety Supervisor
Asphalt and hot mix plant operation	Burns, inhalation of fumes, fire hazard	Thermal burns, respiratory irritation	<ul style="list-style-type: none"> <li>• Use heat-resistant gloves, long sleeves</li> <li>• Maintain fire extinguishers near site</li> </ul>	Plant Operator / Safety Officer



Activity / Task	Potential Hazards	Associated Risks / Impacts	Proposed Mitigation & Control Measures	Responsible Agency
			<ul style="list-style-type: none"> <li>Ensure good ventilation.</li> <li>Prohibit smoking near bitumen storage</li> </ul>	
Working near traffic / along existing road	Collision with moving vehicles, poor visibility	Fatal accidents, severe injuries	<ul style="list-style-type: none"> <li>Implement Traffic Management Plan-</li> <li>Install warning signs, cones, and barricades</li> <li>Assign flagmen with high-visibility vests.</li> <li>Restrict work to off-peak hours</li> </ul>	Contractor / Traffic Marshal
Construction at height (culverts, retaining walls, bridges)	Fall from height, falling tools or materials	Fractures, head injuries, fatalities	<ul style="list-style-type: none"> <li>Use full-body harnesses and guardrails.</li> <li>Provide safety nets and helmets</li> <li>Secure tools with lanyards</li> <li>Supervise work at height</li> </ul>	Contractor / Safety Officer
Welding, cutting, and concreting works	Electric shock, eye injury from sparks, burns	Eye irritation, electrocution, burns	<ul style="list-style-type: none"> <li>Provide face shields and gloves</li> <li>Ensure proper earthing of welding sets</li> <li>Keep fire extinguishers nearby.</li> <li>Maintain distance from flammable material</li> </ul>	Contractor / Electrical Supervisor
Fuel and chemical storage / handling	Fire, explosion, spillage	Groundwater contamination, burns,	<ul style="list-style-type: none"> <li>Store in bunded area with 110% capacity.</li> </ul>	Contractor / Store In-charge

Activity / Task	Potential Hazards	Associated Risks / Impacts	Proposed Mitigation & Control Measures	Responsible Agency
		inhalation	<ul style="list-style-type: none"> <li>• Provide spill kits and firefighting equipment</li> <li>• Train staff on spill response.</li> <li>• Maintain MSDS at site</li> </ul>	
Labour camp and sanitation facilities	Poor hygiene, contaminated water, waste mismanagement	Disease outbreak, worker illness	<ul style="list-style-type: none"> <li>• Provide potable water (≥5 L/person/day).</li> <li>• Maintain toilets and waste bins</li> <li>• Regular disinfection and waste removal.</li> <li>• Conduct health check-ups</li> </ul>	Contractor / Camp Supervisor
Noise and vibration from machinery / DG sets	Prolonged exposure to high noise levels	Hearing loss, stress, fatigue	<ul style="list-style-type: none"> <li>• Use silencers and acoustic enclosures.</li> <li>• Restrict operation to daytime</li> <li>• Rotate workers and provide ear protection</li> <li>• Monitor noise levels regularly</li> </ul>	Contractor / Environmental Officer
Electrical works (temporary wiring, lighting)	Short-circuit, electrocution	Shock, burns, fire	<ul style="list-style-type: none"> <li>• Use insulated tools and cables.</li> <li>• Regular inspection of wiring</li> <li>• Provide ELCB protection</li> <li>• Ensure Only certified electricians to handle work</li> </ul>	Contractor / Electrical Supervisor

Activity / Task	Potential Hazards	Associated Risks / Impacts	Proposed Mitigation & Control Measures	Responsible Agency
<b>Extreme weather conditions (rain, heat)</b>	Slippery surfaces, heat stress, dehydration	Falls, injuries, fatigue	<ul style="list-style-type: none"> <li>• Schedule work during cooler hours</li> <li>• Provide shaded rest areas</li> <li>• Supply drinking water and electrolyte drinks</li> <li>• Stop work during heavy rainfall</li> </ul>	Site Engineer / Safety Officer
<b>Waste and debris disposal</b>	Sharp objects, dust, unstable mounds	Cuts, respiratory irritation	<ul style="list-style-type: none"> <li>• Segregate and reuse materials</li> <li>• Dispose at approved sites</li> <li>• Cover trucks during transport</li> <li>• Provide gloves and masks</li> </ul>	Contractor / Site Engineer

#### **5.4.2.14 WORK SITE SAFETY (ESS2)**

Construction site safety is one of the most overlooked things during a construction project. In most workplaces accidents are common due to lack of work site safety. Accidents have the potential to be life-threatening and can be avoided through proper Work site Safety. The likely hazardous materials to be transported or stored on-site which includes diesel, petrol, oils for machinery, explosives for blasting in rocky terrains (if required), cement and lime (which can cause respiratory issues if inhaled), bitumen (flammable and can cause burns), solvents and paints (volatile and toxic). Accidental leaks or exposure of hazardous materials can harm local flora and fauna. Lack of PPE and safety training increases the likelihood of accidents and health issues for workers handling hazardous materials. A project level Worksite Safety Plan (OHS plan) has been prepared as a separate document which outlines the various impacts and strategies to manage them.

#### **5.4.2.15 ROAD SAFETY MEASURES (ESS4)**

Road Construction activity will impact safety on the road for commuters, pedestrians, students, women and elderly people. In addition to this, sub project stretch being in landslide prone areas, there will be chances of landslide/rock fall on the road from time to time. Animal crossings, although not reported in the current stretch, can yet be a possibility during the construction stage and mitigation measures may have to be incorporated in the Contractor's C-ESMP.

#### **5.4.2.16 ANTICIPATED IMPACTS ON BIOLOGICAL ENVIRONMENT (ESS6)**

Since the proposed Weilo-Mawsynram-Phlangwanbroi Road involves no widening beyond the existing Right of Way (RoW), and no diversion of forest land or habitat alteration, none of the identified species meet the threshold for Critical Habitat criteria under IFC PS6 or World Bank ESS6. Hence, all species have been screened out from further critical habitat assessment.

Critical Habitat Screening for the Weilo-Mawsynram-Phlangwanbroi Road Project is presented in Table 5-7.

Table 5.7: Critical Habitat Screening for the Weilo–Mawsynram–Phlangwanbroi Road Project

Scientific Name	IUCN Status	Restricted Range	Migratory / Congregatory	Habitat & Distribution	Likelihood of Occurrence in Project Area	Rationale for Critical Habitat Screening	Screened In / Out
Bufoides meghalayanus (Khasi Hills Toad)	Critically Endangered (CR)	Yes – endemic to Khasi Hills (Meghalaya only)	No	Found in rocky outcrops, forest streams, and moist crevices near Mawsynram–Cherrapunjee plateau	Low	Although endemic to the Khasi Hills, no habitat alteration or widening is proposed within the project footprint. The road lies within an existing RoW.	Screened Out
Hoolock hoolock (Western Hoolock Gibbon)	Endangered (EN)	NE India & Bangladesh	No	Evergreen and semi-evergreen forests of Meghalaya, prefers canopy continuity	Low	The project remains within existing RoW, minimizing disturbance to arboreal habitats.	Screened Out
Nycticebus bengalensis (Bengal Slow Loris)	Endangered (EN)	NE India, SE Asia	No	Nocturnal primate inhabiting secondary and primary forests	Low	Road upgrading within existing RoW; no direct impact on forest habitat.	Screened Out
Elephas maximus (Asian Elephant)	Endangered (EN)	Wide but fragmented range in NE India	Yes – seasonal movements	Forested corridors and hill–valley mosaics	Low	No new alignment or widening proposed; hence, elephant movement corridors remain unaffected.	Screened Out

Scientific Name	IUCN Status	Restricted Range	Migratory / Congregatory	Habitat & Distribution	Likelihood of Occurrence in Project Area	Rationale for Critical Habitat Screening	Screened In / Out
Neofelis nebulosa (Clouded Leopard)	Vulnerable (VU)	NE India, SE Asia	No	Dense evergreen and semi-evergreen forests	Low	No forest diversion or habitat loss; no potential for significant impact.	Screened Out
Manis pentadactyla (Chinese Pangolin)	Critically Endangered (CR)	NE India and SE Asia	No	Forested slopes with termite mounds	Low	Habitat outside the existing RoW; no new land clearance proposed.	Screened Out
Manis crassicaudata (Indian Pangolin)	Endangered (EN)	Indian subcontinent	No	Forest edges and cultivated land mosaics	Low	Possible presence in surrounding areas; however, no direct impact expected within RoW.	Screened Out
Anthracoceros albirostris (Oriental Pied Hornbill)	Near Threatened (NT)	No	Possible local congregations	Evergreen and moist deciduous forests; nests in tree cavities	Low	No mature nesting trees or canopy removal within the project stretch.	Screened Out
Rhyticeros undulatus (Wreathed Hornbill)	Vulnerable (VU)	No	Yes – breeding congregations	Montane forests of NE India; forms colonies during nesting	Low	No nesting colonies or forest removal along the existing road alignment.	Screened Out
Rucervus unicolor (Sambar Deer)	Vulnerable (VU)	No	No	Forested valleys and hill slopes	Low	No significant habitat modification expected.	Screened Out

Scientific Name	IUCN Status	<u>Restricted Range</u>	<u>Migratory / Congregatory</u>	<u>Habitat &amp; Distribution</u>	<u>Likelihood of Occurrence in Project Area</u>	<u>Rationale for Critical Habitat Screening</u>	<u>Screened In / Out</u>
Macaca assamensis (Assam Macaque)	Near Threatened (NT)	No	No	Forest edges and secondary forests	Moderate	Common in the region but not restricted or dependent on habitats impacted by the project.	Screened Out
Pavo cristatus (Indian Peafowl)	Least Concern (LC)	No	Congregatory locally	Scrub and forest edges	Low	Common species with no conservation concern in the project zone.	Screened Out

#### 5.4.2.17 IMPACTS ON AQUATIC ECOLOGY

Impacts on aquatic ecology during construction include increased silt inflow into surface water bodies and the potential discharge of liquid wastes and untreated sewage from construction and labour camps.

##### Mitigation Measures:

- Proper drainage channels and waste management systems will be established at construction sites.
- Labour camps will be equipped with septic tanks or mobile toilets and soak pits to prevent direct sewage discharge into nearby water bodies.
- Disposal of construction material or debris into rivers or streams will be strictly prohibited.
- Regular monitoring of water quality will be conducted to ensure compliance with environmental standards

Environmental impacts such as soil erosion due to toe failure at Ch 34.271, Ch 35.150, Ch 35+400, Ch 39.250, Ch 39.300, Ch 44.220, Ch 44.320, Ch 44.410, Ch 48.600 will be addressed through toe wall protection works and breast walls. The summary of breast walls is presented in Table 5.8 and summary of toe walls is presented in Table 5.9.

**Table 5.8: Summary of Breast walls**

Sl. No.	Proposed Chainage (Start)	Proposed Chainage (End)	Length (km)	TCS	Side	Height (m)
1	34.271	34.695	0.424	TCS-6	RHS	2.550
2	39.250	39.550	0.300	TCS-6	LHS	2.550
3	44.220	44.270	0.050	TCS-6	RHS	2.550
4	44.320	44.370	0.050	TCS-6	RHS	2.550
5	44.410	44.440	0.030	TCS-6	RHS	2.550

**Table 5.9: Summary of Toe Walls**

S. No.	From	To	Length (m)	Height (m)
1	35.150	35.320	170	1.5
2	35.400	35.650	250	1.5
3	39.300	39.390	90	1.5
4	48.600	48.690	90	1.5



During the operational phase, significant impacts on aquatic ecology are not anticipated; although the alignment crosses a river, appropriate mitigation measures such as sediment control, construction of temporary diversion structures, and proper wastewater management will minimize potential adverse effects.

To address the potential impacts on biodiversity, a comprehensive set of mitigation measures have been developed and incorporated into the ESMP.

#### **5.4.2.18 IMPACTS ON ARCHAEOLOGICAL, HISTORICAL AND CULTURAL SITES (ESS8)**

No ASI-protected monuments are located within 0.5 km of the project site. However, Monoliths (at Ch 23+200 and Ch 41+500) and caves (at Ch 34+000 and Ch 41+000) are situated within 500 m of the project road. No construction camps will be established within 100 m on either side of the Monoliths during the construction period.

Another key potential impact during project construction is the risk of partial or total destruction of previously unknown heritage assets, such as undiscovered archaeological sites, due to ground excavation. This highlights the need for a defined mitigation approach.

During the construction works, as part of the Contractor's project CESMP, a "chance-find" procedure will be developed and implemented. A guidance note for the protocol on the "chance find procedure" is to be incorporated in the indicative ESMP as part of this ESIA. Workers need to be trained in the use of this procedure.

#### **5.4.3 IMPACTS DURING OPERATIONAL PHASE**

During the operation stage, the main sources of environmental impacts are the increased traffic volume and speed. The increase in traffic volume and speed may enhance the safety risk especially in the rural area. No sudden change in the volume of traffic is expected due to this road as the road is already existing and opened for public traffic. The project also provides opportunities for the restoration of vegetation around the vicinity of the worksite and roads by implementing the compensatory plantation programme, which will not only enhance the aesthetic view but can also help in reclamation of soil.

During the operation phase, moderate increases in air and noise pollution may occur due to higher vehicular movement (ESS4). Nevertheless, the overall impacts are largely positive, with enhanced road safety, reduced travel time, and improved connectivity supporting local economic development. Landscaping, replantation, and slope bioengineering measures (ESS6) will improve local biodiversity, stabilize embankments, and enhance the corridor's visual aesthetics.

Various impacts during operation phase are discussed below:

##### **5.4.3.1 Impacts on Water Quality and Resources**

During the operation phase, the possibility of degradation of water quality is very remote. The impact on the surface water quality during operation can be expected due to accidental spillage. However, the probability of such accidents is minimal since enhancement of road safety measures such as improvement of curves and widening of the roads and other pedestrian facilities are taken care of in the design stage.

#### **5.4.3.2 Impact on Air Quality**

Vehicular emissions are the principal source of pollution during the operation stage. The project road being mostly located adjacent to open agricultural land, adequate dispersion of gaseous pollutants is expected.

#### **5.4.3.3 Impact on Noise Quality**

Impact due to increased noise level and vibration is anticipated due to increased vehicular movement upon improvement of existing road condition. Road side plantation will act as a noise barrier and is likely to reduce the noise quality during the operational phase and any further mitigation is beyond the control of the project authority.

#### **5.4.3.4 Accidents Involving Hazardous Materials**

Accidents involving hazardous chemicals may generally be catastrophic to the environment, though the probability of occurrence is low. Prevention of an accident involving hazardous material is a better way of minimizing the impacts. The provisions mandated by 'The Hazardous Wastes (Management and Handling) rules, 1989 and "Manufacture Storage and import of Hazardous Chemicals Rules" 1989 under the Environmental (Protection) Act, 1986 will be complied with. Vehicles delivering hazardous substances will be expected to have printed warning signs on the vehicles and measures to contain any hazardous spillage on the road.

In case of spillage, the report to relevant departments will be made and instructions will be followed in taking up the contingency measures immediately as per the Emergency Management Plan of the contractor's OHS plan.

### **5.5 SOCIAL RISKS & IMPACTS (ESS2, ESS4, ESS5 ESS7 and ESS10)**

The construction of the road is expected to intersect various areas of significant social and economic value, which necessitates careful consideration and management. Key areas of concern include impacts on agricultural lands, residential communities, and culturally significant sites. The route traverses along agricultural land that are important for local food production, livelihoods and eco system services in general. Disruption to these areas could result in economic losses for farmers and reduced agricultural output. Mitigation measures, including re-alignment, compensation, and access to community benefit programs have been considered to minimize adverse effects and ensure that the project contributes positively to the socio-economic landscape. This has been outlined in the Resettlement Action Plan.

The construction of the WMP road is not expected to have significant social impacts on roadside communities, as no additional land is required for the project. The project aims to minimize social impacts by ensuring that all construction activities are confined within the existing Right of Way (RoW). Approximately thirteen structures are expected to be affected by the project and they are present within RoW, including seven temporary shops and six residential-related structures which are 1 semi-pucca commercial shed, 1 staircase, and 4 compound walls.

Along the proposed road corridor (chainages 22+620–46+560), covering villages including Weilo, Wahmawpat, Mawsynram, Mawrapad, Mawkasain, and Mawsawa, identified few private structures likely to be affected. These include semi-pucca (some with compound walls, gates, or stairs), kutchra

and semi-pucca shops, and access routes to residences, located at an average distance of 3.5–5.5 m from the road centerline. Concentrations of affected structures were observed particularly in Mawsynram (34+630–34+670), Mawkasain (45+690–45+730), and Mawsawa (46+550–46+560). The social risks primarily involve loss of assets, and restricted access to residences or livelihoods. In accordance with ESS5, mitigation measures will include careful alignment design, avoidance of displacement where feasible. Given that these communities include indigenous and vulnerable groups, as per ESS7, additional measures such as meaningful consultation, culturally appropriate mitigation, and support to maintain community cohesion will be implemented to minimize adverse impacts during construction. FPIC was carried out as the project will result in loss of assets and cause relocation of IPs who are Non-Title Holders.

Furthermore, the easement zones around the construction areas will potentially cause hindrance on land use, limiting some of the activities such as building construction, tree planting, and certain agricultural practices. These restrictions can disrupt community development plans, hinder local businesses, and affect the overall quality of life for residents.

To mitigate these social impacts, household surveys and extensive meaningful stakeholder consultations were carried out to understand the concerns and needs of affected communities. The **Free, Prior, and Informed Consent (FPIC)** process was followed in a culturally appropriate manner to ensure meaningful engagement with Indigenous Peoples, securing their consent through transparent and participatory consultations. Additionally, community engagement programs have been conducted to provide clear information about the project, address misconceptions, and explore opportunities for local benefits, such as job creation and infrastructure improvements.

By ensuring that the road construction remains within the existing Right of Way (RoW) and does not require additional land or impose new easement restrictions, the project aims to minimize social impacts and maintain positive relationships with local communities. Contractors will be required to ensure that existing access ways to public and private amenities are maintained throughout the construction period.

The Project recognizes the critical importance of addressing Sexual Exploitation, Abuse, and Harassment (SEA/SH) both within the workplace and in interactions between workers and the local community. To address these concerns, SEA/SH Prevention and Response Action Plan has been prepared for the project.

Given below are the impacts on various social components from the project:

#### **5.5.1 SOCIAL COMPONENT ISSUES: IMPACT ON LAND, STRUCTURES AND LIVELIHOOD**

##### **Potential Risks & Impacts**

Approximately thirteen structures are expected to be impacted, including seven temporary shops and residential-related structures such as one semi-pucca house shed, a staircase, and four compound walls

Social impacts from the project will be mitigated as per the sub-project RAP, IPDP and ESMP.

#### **5.5.2 SOCIAL COMPONENT ISSUES: TEMPORARY RESTRICTION TO ACCESS**

### **Potential Risks & Impacts**

Construction activities, such as road improvement works, may temporarily restrict access for residents and business owners. These disruptions can affect daily movement to and from homes, limit customer access to shops, and cause inconvenience to the local community. Such temporary access constraints may lead to frustration among residents and business owners, potentially straining community relations and generating dissatisfaction with the project if not properly managed.

To mitigate these risks, the Contractor will implement the following measures:

- Maintain alternative access routes to residences and shops wherever feasible.
- Schedule construction works in a phased manner to minimize disruption.
- Install clear signage and provide advance notice to affected persons about construction schedules and access changes.
- Ensure safe pedestrian pathways and temporary crossings in congested areas.
- Coordinate closely with local communities and shop owners through the Grievance Redressal Mechanism (GRM) to promptly address access-related complaints.

These mitigation measures will be detailed in the Environmental and Social Management Plan (ESMP).

#### **5.5.4 SOCIAL COMPONENT ISSUES: IMPACT ON VULNERABLE PEOPLE**

### **Potential Risks & Impacts**

Construction projects can disproportionately affect vulnerable and disadvantaged populations such as women-headed households, below-poverty-line families, and the elderly population (60+ years). This has been discussed in Section 4.9.2. . These groups may face increased difficulties related to mobility, access to essential services, and overall safety during construction activities. Failure to adequately address their unique needs can exacerbate existing inequalities and lead to additional social and economic challenges. There can be difficulty for the community to reach the nearby hospital when road construction is on-going.

To address these risks, the following measures will be implemented:

- Ensure continuous access to essential services, particularly healthcare and educational institutions, through alternate routes or temporary walkways.
- Provide advance information to communities regarding construction schedules, traffic diversions, and safety measures through local notice boards and community meetings.
- Establish priority crossing points and temporary access for elderly persons, school children, and differently abled individuals.
- Engage local women's groups, self-help groups, and village councils in monitoring safety and access conditions during construction.
- Maintain a functional Grievance Redress Mechanism (GRM) to ensure that concerns from vulnerable groups are addressed promptly and effectively.

Amenities for Indigenous Peoples (IPs) residing in the road project such as toilets, beautification work around the monoliths etc have been incorporated under the Indigenous Peoples Development Plan

(IPDP), which builds upon the outcomes of the consultations and Free, Prior, and Informed Consent (FPIC) process conducted with the affected communities. Furthermore, continuous engagement with IP and other vulnerable groups will be maintained throughout the project implementation phase through the Stakeholder Engagement Plan (SEP), which provides for inclusive communication, regular disclosure of project information, and responsive community feedback mechanisms.

#### **5.5.5 SOCIAL COMPONENT ISSUES: INFLUX OF MIGRANT LABOR**

##### **Impact of Labor Influx**

Poor behavior by workers from outside, in sub-project areas can lead to disruption of local community cohesion, especially smaller communities. This can occur through unaccustomed or violent behavior, including gender-based violence, and/or an increase in communicable diseases.

There is potential for an increased risk of the spread of communicable diseases and increased rates of illicit behaviour and crime resulting from the worker influx, however, the volume and skilled nature of the incoming workforce reduce this likelihood.

##### **Gender Based Violence**

Despite being a predominantly matrilineal society, Meghalaya has recorded a worrying upward trend in reported crimes against women. According to the Government of Meghalaya's Gender Statistics 2023 publication, total registered cases of crimes against women rose from 237 in 2020 to 287 in 2021.

The East Khasi Hills District leads the state in the number of registered crimes against women. For 2021, the Gender Statistics report lists 228 cases in East Khasi Hills — the highest among all districts.<sup>6</sup>

GBV Action Plan has been prepared and is attached as **Annexure 5.4**.

Consultations were held with communities residing along the project road, utilizing the Free, Prior, and Informed Consent (FPIC) process to understand their needs and challenges & to seek their consent. These consultations highlighted critical issues in basic accessibility, including education, healthcare, and markets, emphasizing the need for improved road infrastructure. While most villages have sanitation facilities, some lack adequate toilet facilities. Education access is limited in certain areas due to the absence of high schools and public transportation, making travel to schools difficult. Similarly, medical facilities exist but are often inaccessible due to transportation constraints, underscoring that essential services, though available, remain out of reach for many community members without improved transport options.

The risk associated with labour influx for the project is expected to be moderate, as workers from outside may be required and will stay on-site during the construction phase. This could potentially cause some discomfort for the local community, particularly for women and children living in the surrounding areas.

Although the road spans over hilly terrain, regular supervision can be done during the construction phase which reflects a positive perspective of the project. Also, during the construction phase, access

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<sup>6</sup> <https://des.megplanning.gov.in>

to the schools would be provided. The project would be equipped with monitoring indicators for GBV and SEA/SH risks along with the avoidance of proximity of female workers with the male workers mandated to be implemented by the contractors. This is outlined in the site specific ESMP and the SEA/SH Action Plan.

#### **5.5.6 SOCIAL COMPONENT ISSUES: LABOR AND WORKING CONDITIONS**

Challenges may arise in finding workers while balancing community expectations for local employment opportunities. Local communities may oppose hiring external workers, preferring that job opportunities remain within the local population. Further, there may be risks related to working conditions, terms and conditions of employment, occupational health and safety, discrimination and equal opportunity of all employees. The project level Labour Management Plan (LMP) and Work site safety plan (OHS Plan) outlines strategies for managing these risks. Labour Management Plan is attached as attached as **Annexure 5.5**. Occupational Health and Safety plan is attached as **Annexure 5.6**.

#### **5.5.7 SEA/SH IMPACTS**

The Project recognizes the importance of addressing Sexual Exploitation, Abuse, and Harassment (SEA/SH) both within the workplace and in interactions between workers and the local community. Measures to address these risks are outlined in the ESMP and the SEA/SH Prevention and Response Action Plan.

#### **5.5.8 POSITIVE SOCIAL/COMMUNITY IMPACTS**

For the most part the impact of the proposed road project on the socio-economic environment will be significantly beneficial. The project will strengthen the existing road by widening or new construction, paved shoulder and drainage improvement. Improved access to connecting roads with uninterrupted movement on wider roads will be a major stimulus to economic growth, particularly in rural areas of the sub-project areas. During construction, benefits to local people can be maximized if the contractor recruit's construction workers locally. Wherever possible, the contractors should also not discriminate in the employment of women. The long-term effects of the proposed project in poverty reduction are expected to be largely positive.

### **5.6 CLIMATE-RELATED IMPACT**

Climate change poses a significant challenge to the State of Meghalaya, with its diverse ecosystems, high biodiversity, and socio-economic dependence on agriculture, forestry, and natural resources. The state is highly vulnerable to the impacts of climate change due to its unique geographic and climatic conditions.

Rising temperatures have further contributed to ecological imbalances, affecting agricultural productivity, forest health, and water resources. Additionally, the district lies in Seismic Zone V, and the interplay of climate-induced hazards and geophysical risks adds further complexity to its vulnerability.

Due to the uneven climatic behavior, it is essential that climate mitigation and adaptation plans to combat the impacts of climate change are factored in the development process to avoid economic burden of adaptation in the long run, and gain from new opportunities that will be thrown up along

the way. The Potential impacts of Climate Change trend on road transport infrastructure are provided in **Table 5.8**. A detailed preliminary assessment has been undertaken to assess climate disaster risks, details of which are available in **Annexure 5.7**.

**Table 5.10: Potential impacts of Climate Change trend on road transport infrastructure**

Climate Trend / Parameter	Observed Pattern	Impact on Road Infrastructure
High Rainfall	10,000–11,800 mm (Mawsynram)	<ul style="list-style-type: none"> <li>- Erosion of road embankments and landslides in hilly terrains.</li> <li>- Structural damage to culverts and bridges.</li> </ul>
Low Rainfall	<ul style="list-style-type: none"> <li>- Significant drop in annual rainfall</li> <li>- Reduced annual rainfall correlates with reduced soil moisture and vegetation</li> </ul>	<ul style="list-style-type: none"> <li>- Dry soil conditions may cause cracks in asphalt roads.</li> <li>- Lower soil stability, leading to uneven settling of road foundations.</li> <li>- Loss of vegetation can weaken slopes and lead to landslides in hilly areas like East Khasi Hills.</li> <li>- Roads may face increased dust and reduced traction due to dry conditions.</li> </ul>
Rising Temperatures	- Maximum temperature rising from 20.4°C to 23.5°C	<ul style="list-style-type: none"> <li>- Higher temperatures cause thermal expansion of road materials, leading to surface cracks.</li> <li>- Softening of asphalt during hot days can cause deformation and rutting.</li> </ul>
Landslide Risk	<ul style="list-style-type: none"> <li>- Frequent rainfall and runoff events increase landslide susceptibility in the district's terrain</li> </ul>	<ul style="list-style-type: none"> <li>- Roads in hilly areas may face closures due to landslides.</li> <li>- Increased repair costs for damaged road sections and disrupted connectivity to remote areas.</li> </ul>

## **6. ANALYSIS OF ALTERNATIVES**

### **6.1 INTRODUCTION**

In line with best practices for managing environmental and social impacts, several alternative approaches have been considered for the proposed road widening and upgrade project. The design is being refined to enhance safety, improve the road structure, and accommodate both current and future traffic demands. This chapter presents an analysis of the potential impacts under the “With Project” and “Without Project” scenarios.

### **6.2 WITH AND WITHOUT PROJECT ALTERNATIVES**

An alternative analysis was conducted for the project stretch, considering various design scenarios as well as a “Without Project” scenario. These are described in the following sections.

#### **6.2.1 WITHOUT PROJECT SCENARIO**

The road traverses’ areas with high population densities, particularly in Mawsynram, as well as hilly and rural stretches where traffic is frequently disrupted due to poor road conditions and the demand for efficient through-traffic movement. This situation is further exacerbated by land-use conflicts, including uncontrolled development along the route and encroachments within the designated right-of-way.

The continued growth in population, rising traffic volumes, and expanding economic activity along the corridor are likely to exacerbate the existing challenges. Without the proposed upgrades, current road safety hazards and adverse environmental impacts along the route are expected to persist and worsen. Additionally, the limited socioeconomic development of these remote and underdeveloped areas would remain constrained. Therefore, halting the project would not be practical or justified, as it would impede essential improvements and limit the potential for economic growth in the region.

#### **6.2.2 WITH PROJECT SCENARIO**

The “With Project” scenario is expected to generate positive long-term impacts across social, environmental, economic, and financial dimensions. Key interventions include widening the existing roadway to intermediate lanes, in line with the project’s objectives.

From an economic perspective, the project is viable and is anticipated to substantially improve current conditions, supporting the development goals set by the Government of Meghalaya and enhancing the region’s growth potential.

While the project promises multiple developmental benefits, it is important to recognize that, like all infrastructure initiatives, it may also result in certain impacts on the environment and local communities.

Potential environmental and social impacts can be mitigated through the adoption of best environmental management and social development practices. Where impacts cannot be fully avoided, suitable mitigation measures will be implemented to minimize and offset adverse effects. A detailed comparison of the “With Project” and “Without Project” scenarios, along with the anticipated benefits of the proposed project, is presented in **Table 6-1** below.



**Table 6.1: "With and Without" Project Scenarios – A Comparative Assessment**

Component	"With" Project Scenario	"Without" Project Scenario
Highway Geometry	Intermediate lane with shoulder and paved surface is being developed with geometric improvements	Existing Single/Intermediate lane carriageway with poor geometry
Design Speed	(30-50 kmph for Intermediate lane)	30-40 kmph entire project section.
Congestion in Settlements	Improved carriageway with good surface and separated footpath with railing in built-up area reduces interaction of pedestrians with through traffic resulting in reduction of vehicular emissions, reducing travel time and vehicle operating cost. This in turn contributes to lowering of GHG emission; and may improve people/public health due to no or low exposure period.	Lack of road or lack of good road surface with shoulder and foot path, congestion and frequent vehicle stoppage due to mixing of local, pedestrian and through traffic will increase localized accumulation of vehicular emission with potential impacts on human health and contribute to generation of GHG emission.
Felling of roadside trees	Felling of both old and young trees. Old and weak trees near the road edge shall be a road hazard and shall be felled. Ten times of felled trees, the number of new young and healthy saplings to be planted as compensatory afforestation..	No Felling of trees hence maintaining the healthy local ecology.
Pedestrian safety	Pedestrian facilities in the form of footpath, street lights, etc. are to be provided in built-up area locations.	Lack of dedicated pedestrian facilities such as footpaths and adequate lighting making it unsafe for pedestrians.
Road Safety Measures	Provision of proper road markings, zebra crossings, crash barriers and improvement of geometry to reduce accidents.	Accident incidents will rise with an increased traffic volume.
Environmental Quality	Development of roads in hilly and urban settlements improves environmental quality within the urban areas due to lowered pollution levels and relieving of congestion. Besides, an aggressive tree plantation and provision of enhancement features shall not only provide aesthetics but also improve the quality of air.	Poor in settlement areas due to non-motorable road conditions, congestion and high emission levels because of slow movement of traffic. A further deterioration is expected due to Increase in traffic volumes and further congestion.
Drainage	Will be improved due to reconstruction of culverts / bridges/ side drains with adequate hydraulics.	These issues remain un-addressed without the project
Roadside Amenities	Appropriate roadside amenities to be provided at various locations along the corridor.	Not adequate in the present scenario.
Wayside Facilities	Wayside facilities are proposed at several locations, where necessary like rest areas, with appropriate facilities for recreation, road public toilets, street lights etc.	Not of adequate standards, quality and number in present scenario.
Environmental	Enhancement of landslides/water	No enhancement measures involved.

Component	"With" Project Scenario	"Without" Project Scenario
Enhancement	bodies, community and cultural properties	
Social Development	Higher potential for social development due to improvement in access and consequent increase in connectivity.	Social development activities are likely to be significantly constrained due to the severe inadequacy of infrastructure.
Financial and Economic Analysis	Project financially viable for upgrading from existing lane configuration to intermediate lane configuration.	The cost of maintenance while catering to the projected higher traffic, accident cost, Vehicle operating cost & travel time cost shall be higher.

### 6.3 ENVIRONMENTAL AND SOCIAL ALTERNATIVES (TO SPECIFIC ONCE) CONSIDERED FOR THE PROPOSED STRETCH

Various avoidance measures have been developed to minimize environmental and social impacts and to protect sensitive features along the proposed sub-project road. **Table 6.2** summarizes the measures adopted to offset these impacts, and a detailed description of each measure is presented in the following sections.

**Table 6.2: Alternative considerations for Minimization of Environmental Impacts**

Chainage (km)	Type of Structures	Proposed / Mitigation Measure Adopted	Purpose / Environmental Consideration
23+100 (RHS)	Monolith	No construction camp shall be established within 100 m on both sides of the Monolith during the construction period.	To preserve the cultural and heritage significance of the Monolith and prevent vibration or pollution impacts.
26+650	Pipeline to Mawlynnu Village	Provision of utility ducts for underground pipelines and GI (Galvanized Iron) pipe crossovers shall be incorporated into the design to ensure safe and organized routing of essential services.	To avoid damage to existing utilities, and facilitate maintenance without disrupting the road infrastructure.
29+650	Hairpin Bend	Speed reduction measures such as signage and rumble strips shall be installed.	To ensure road safety and reduce accident risk at sharp curves.
32+100 (RHS)	Jawahar Navodaya Vidyalaya (under construction)	Safety measures shall be implemented to avoid any damage to school infrastructure and ensure safety of students and staff. This includes installation of temporary barriers, regulated working hours, dust and noise control, and proper signage.	To reduce vehicular speed and ensure safety of school children, pedestrians, and nearby residents.
33+740 (LHS)	Mawjyngbuin Cave	Access roads shall not be damaged or obstructed during construction; necessary precautions will be taken to maintain continuous access for local residents and emergency services.	To preserve tourism access and protect the cultural and ecological value of the cave area.
39+160 (LHS)	Krem Puri Cave	Access roads shall not be damaged or obstructed during construction;	To maintain unimpeded access and safeguard

Chainage (km)	Type of Structures	Proposed / Mitigation Measure Adopted	Purpose / Environmental Consideration
		necessary precautions will be taken to maintain continuous access for local residents and emergency services.	tourism and heritage sites.
41+500 (RHS)	Monolith	No construction camp shall be established within 100 m on both sides of the Monolith during the construction period.	To protect the cultural and historical importance of the Monolith.
43+000 (LHS)	Church	Access roads shall not be damaged or obstructed during construction; necessary precautions will be taken to maintain access for local residents and visitors.	To maintain community access and respect the sanctity of the religious site.
43+520 (LHS)	SSA School	Safety measures shall be implemented to avoid any damage to school infrastructure and ensure safety of students and staff. Includes barriers, dust suppression, noise control, and coordination with school authorities.	To ensure safe access and mobility for school children and reduce vehicular speed in the area.
46+600 (RHS)	SSA School	Safety measures shall be implemented to avoid any damage to school infrastructure and ensure safety of students and staff. Includes barriers, dust suppression, noise control, and coordination with school authorities.	To ensure safety of students and pedestrians and reduce vehicle speed near the school.

The Environmental and Social Impact Assessment conducted during the pre-design stage helped identify and mitigate potential negative impacts of the project. While the project is expected to provide numerous benefits, the assessment highlighted potential adverse effects associated with widening the road within the proposed 12 m right-of-way. Along these stretches, roadside communities are likely to be directly and immediately affected by construction activities, potentially experiencing losses of land, assets, and livelihoods. In line with the mitigation hierarchy for managing environmental and social risks, alternative analyses were conducted to minimize direct negative impacts. Based on these analyses, the design team was advised to limit road widening to within the existing right-of-way.

Mitigation measures primarily focus on settlements along the project road, particularly villages and towns or areas with the highest potential impacts. Stakeholder recommendations have been incorporated into the designs wherever feasible.

The following is a summary of the considerations incorporated into the road design to mitigate environmental and social impacts:

- The design will incorporate utility ducts for underground pipelines and GI (Galvanized Iron) pipe crossovers to ensure safe and organized routing of essential services, minimize future excavation, and enable maintenance without disrupting the road infrastructure.

- No construction camps will be established within 100 m of the Monolith. Instead, the DPR proposes beautification measures around the Monolith to enhance its cultural and aesthetic value.
- Curves and bends will be smoothed to improve geometric design; where adjustments may affect local settlements, road realignment has been proposed.
- Paved shoulders will be provided wherever possible to accommodate non-motorized traffic.
- Unnecessary displacement will be avoided by adjusting the alignment, narrowing the impact zone, or tailoring designs to meet both rural and urban cross-section requirements.
- Design speed will be reduced in densely populated areas to enhance safety.
- Impacts on existing shrines and places of worship will be minimized.
- Safety features, including speed control measures near schools and healthcare facilities, will be incorporated.
- Road elevation in settlement areas will be minimized to prevent water seepage into adjacent properties.
- Ensure continuous access to businesses and residential properties throughout the construction period.
- Minimize land clearance to reduce the loss of public and private assets, including wells, tree plantations, and other community resources within the project area.

## 7. STAKEHOLDER CONSULTATION AND INFORMATION DISCLOSURE

This chapter presents an overview of the stakeholder consultations conducted as part of the Environmental and Social Impact Assessment (ESIA) for the proposed MLCIP. These consultations were intended to ensure a participatory approach in identifying and addressing potential environmental and social impacts of the project.

Relevant stakeholders were mapped and can be categorized under three broad categories as shown in below **Table 7.1**.

**Table 7.1: List of relevant stakeholders**

Category of stakeholder	Project Stakeholder
Project-Affected Parties	<ul style="list-style-type: none"> <li>▪ Village community</li> <li>▪ Street side Shop Owners</li> <li>▪ Shop owners (NTH)</li> <li>▪ Residential structure owners</li> <li>▪ Dorbar Shnong</li> </ul>
Interested Parties	<p><b>Government agencies</b></p> <ul style="list-style-type: none"> <li>• Public Works Department Meghalaya</li> <li>• Khasi Hills Autonomous District Council (KHADC)</li> <li>• Meghalaya Forests &amp; Environment Department</li> <li>• Meghalaya State Pollution Control Board (MSPCB)</li> <li>• Meghalaya State Biodiversity Board (MSBB)</li> <li>• Land Records &amp; Revenue Department, Meghalaya</li> <li>• Meghalaya State Disaster Management Authority (MSDMA)</li> <li>• Meghalaya Energy Corporation Limited (MeECL) (for electricity &amp; power supply)</li> <li>• Public Health Engineering (PHE) Department (Water supply &amp; sanitation)</li> <li>• Agriculture Department, Meghalaya</li> <li>• Irrigation Department, Meghalaya</li> <li>• Transport Department, Meghalaya</li> <li>• Department of Health Services, Meghalaya (including AIDS Control Society functions)</li> <li>• Department of Arts &amp; Culture, Meghalaya (instead of Directorate of Archaeology, Meghalaya)</li> <li>• District Social Welfare Office (East Khasi Hills)</li> <li>• District Legal Services Authority</li> <li>• District Child Protection Unit</li> <li>• Office of the Child Development Project Officer Jawahar Navodaya Vidyalaya</li> </ul> <p><b>Civil society organizations</b></p> <ul style="list-style-type: none"> <li>• District Rural Development Agency (DRDA) Administration – livelihood &amp; rural development initiatives</li> <li>• East Khasi Hills Women's Self-Help Group Federations – grassroots women's collectives focused on livelihood generation, microfinance, and social empowerment.</li> </ul>

	<ul style="list-style-type: none"> <li>Bethany Society – NGO based in Shillong working on disability inclusion, rural development, and sustainable livelihoods in the region.</li> <li>Church-based Organizations (Presbyterian / Catholic Missions) – significant role in education, health, and social services across villages</li> </ul> <p><b>Community Based Organization</b></p> <p>Bio-Diversity Management Committee</p>
Vulnerable groups	<ul style="list-style-type: none"> <li>Women Headed Household (WHH),</li> <li>PAPs falling under Below Poverty Line (BPL),</li> <li>Scheduled Tribe (ST) categories,</li> <li>Persons with disabilities</li> </ul>

During the ESIA, consultations were carried out with representatives from all three stakeholder categories, including government agencies, communities, and other organizations, with particular attention to vulnerable groups. Special focus was given to communities located in sub-project areas likely to experience significant impacts, such as effects on residential and commercial structures or on common property resources. Key common property resources identified include religious structures, public utilities, and other community assets critical to local livelihoods and cultural heritage.

Representatives from relevant stakeholders were consulted to incorporate their concerns and expertise, ensuring that the project aligns with broader developmental, economic, and environmental objectives. Key discussions focused on potential displacement, loss of livelihoods, environmental degradation, law and order issues, forest land concerns, irrigation impacts, structural matters such as cross-drainage structures, and corresponding mitigation measures. These consultations helped document and integrate the priorities and concerns of affected communities, providing valuable input to shape strategies for minimizing adverse impacts.

Through public consultations, stakeholders' viewpoints and suggestions were captured and considered as inputs to the technical design. All suggestions were incorporated into the project design to the extent feasible and warranted.

Additionally, **Annexure 7.1** provides a summary of consultations with project-affected parties from local communities and institutional stakeholders from government agencies.

The project has prepared a project-level Stakeholder Engagement Plan (SEP), which outlines the procedures for stakeholder engagement throughout the project cycle. The SEP details the process, methods, and frequency of engagement with various stakeholders and will be implemented accordingly during the project period. Stakeholder Engagement Plan is attached as **Annexure 7.2**.

## 7.1 Public Consultation

Public consultations were a key component of the Environmental and Social Impact Assessment (ESIA) process. These consultations were conducted to ensure that the views, concerns, and suggestions of local communities and other stakeholders were effectively considered in project planning and decision-making. The process was guided by the principles of transparency, inclusiveness, and participation, in line with the requirements of the World Bank's Environmental and Social Standard 10

(ESS10) on Stakeholder Engagement and Information Disclosure. Consultations were organized at different stages of the project to inform stakeholders about the project objectives, potential environmental and social impacts, and proposed mitigation measures, while also providing an opportunity for them to share feedback and local insights. The outcomes of these consultations were incorporated into the project design and environmental and social management plans to enhance the project's sustainability and community acceptance.



#### **7.1.1 STAKEHOLDER CONSULTATIONS**

Stakeholder consultations formed an integral part of the Environmental and Social Impact Assessment (ESIA) process. These consultations were carried out to ensure that the perspectives, concerns, and expectations of all relevant stakeholders particularly the project-affected persons, IPs, and vulnerable groups were effectively captured and integrated into project planning and decision-making. A total of six consultations were conducted as part of the Environmental and Social Impact Assessment (ESIA) process for the proposed road project. These included two preliminary public consultations, two Focus Group Discussions (FGDs) with youth, one Focus Group Discussions (FGDs) with women and one with DPR consultant.




The details of consultations along the project road is presented in **Table 7.2**.





Table 7.2: Summary of consultations



Sl. No.	Area	Date	Name of stakeholder	Outcomes of consultation	Suggestions (from consultations) for integration into project design	Photograph
1.	Mawsynram	20-08-2025	4 Men 1 Woman	<ul style="list-style-type: none"> <li>Participants appreciated the project and acknowledged its positive impact on the community.</li> <li>Requested fair compensation and support in case of any demolitions affecting their properties or livelihoods.</li> <li>Strong support from the local community for the project</li> </ul>	<ul style="list-style-type: none"> <li>Construct smoother roads to enhance accessibility and improve transportation.</li> <li>Ensure fair compensation and support for individuals affected</li> </ul>	 <p>Latitude: 25.299114 Longitude: 91.581559 Elevation: 1421.09±4.0 m Accuracy: 1.92 m GPSTime: 20-08-2025 13:06 Note: Project Site</p>
2.	Phlangwanbroi	20-08-2025	Commuters: 8	<ul style="list-style-type: none"> <li>Participants raised concerns emphasizing the need for better illumination for safety.</li> <li>Need of aped breakers &amp; Zebra Crossing for safety of pedestrians.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure the installation of adequate streetlights throughout the village to improve safety and visibility, particularly at night.</li> <li>Speed breaker and Zebra crossing required near L P S School.</li> </ul>	 <p>Latitude: 25.253812 Longitude: 91.499397 Elevation: 1059.17±7.73 m Accuracy: 15.21 m Time: 20-08-2025 14:29 Note: 47+150 Phlangwanbroi</p>
key informant interview						
1.	Mawsynram	20.09.2025	PAH	<ul style="list-style-type: none"> <li>Participants appreciated the project and acknowledged its positive</li> </ul>	<ul style="list-style-type: none"> <li>Construct smoother roads to enhance accessibility and improve transportation.</li> </ul>	



Sl. No.	Area	Date	Name of stakeholder	Outcomes of consultation	Suggestions (from consultations) for integration into project design	Photograph
				impact on the community.		 <p>Latitude: 25.299778 Longitude: 91.581704 Elevation: 1435.06±10.6 m Accuracy: 5.036 m Time: 20-09-2025 11:53 Note: 34+670</p>  <p>Latitude: 25.298426 Longitude: 91.583821 Elevation: 1438.0±2.41 m Accuracy: 6.521 m Time: 20-09-2025 12:23 Note: 43+890</p>
2.	Phlangwanbroi	20.09.2025	PAH	<ul style="list-style-type: none"> <li>Limited local opportunities, inadequate skill development platforms, and lack of structured guidance</li> </ul>	<ul style="list-style-type: none"> <li>Integrate capacity-building and skill development components</li> </ul>	 <p>Latitude: 25.256378 Longitude: 91.507292 Elevation: 1087.9±2.5 m Accuracy: 3.79 m Time: 20-09-2025 13:15 Note: 45+690</p>

FGD with Youths

Sl. No.	Area	Date	Name of stakeholder	Outcomes of consultation	Suggestions (from consultations) for integration into project design	Photograph
1.	Mawsynram	16.09.2025	Youth (8 nos.)	<ul style="list-style-type: none"> <li>• Limited local opportunities, inadequate skill development platforms, and lack of structured guidance</li> <li>• Migration remains a major coping strategy, but often comes with social and economic risks</li> </ul>	<ul style="list-style-type: none"> <li>• Integrate capacity-building and skill development components</li> <li>• Encourage microenterprise development by promoting small-scale livelihood opportunities</li> </ul>	 <p>Latitude: 25.286518 Longitude: 91.575796 Altitude: 1306.2±1.19 m Accuracy: 20.0 m Time: 16-09-2025 15:34 Note: FPIC2 @ WMP FGD youth</p>
2.	Mawsynram	16.09.2025	Youth (7 nos.)	<ul style="list-style-type: none"> <li>• Promote skill-building, entrepreneurship,</li> <li>• Better road connectivity for transportation of goods and services</li> </ul>	<ul style="list-style-type: none"> <li>• Establish feedback and monitoring mechanisms through the Stakeholder Engagement Plan (SEP)</li> <li>• Integrate capacity-building and skill development components</li> </ul>	 <p>16/09/25 2:12 pm State Highway 4 Mawsynram Meghalaya Lat: 25.286522 Long: 91.5758 GMT+5</p>
FGD with Women						

Sl. No.	Area	Date	Name of stakeholder	Outcomes of consultation	Suggestions (from consultations) for integration into project design	Photograph
1.	Mawsynram	16.09.2025	Women (6 nos.)	<ul style="list-style-type: none"> <li>• Women are eager to contribute economically but are constrained by limited opportunities, social barriers, and lack of structured support</li> <li>• There is a pressing need for inclusive, women-centric interventions that promote local entrepreneurship, skills, and connectivity</li> </ul>	<ul style="list-style-type: none"> <li>• Integrate women-focused skill development initiatives</li> <li>• Strengthen participation of women's Self-Help Groups (SHGs) in project-related awareness, monitoring, and plantation maintenance programs.</li> </ul>	 <p>Latitude: 25.285363 Longitude: 91.574981 Elevation: 1356.3±1.11 m Accuracy: 9.658 m Time: 16-09-2025 15:08 Note: FPIC2 @ WMP Road &amp; Wise DPR brief</p> <p>Powered by NoteCam</p>
<b>Consultation with DPR consultant</b>						
1.	DPR Consultant	25-08-2025	DPR Consultants	<ul style="list-style-type: none"> <li>▪ Preliminary observations from an 26.42km site visit were presented, along with information requirements.</li> <li>▪ Current data for Existing Right of Way (ERoW) and Proposed Right of Way (PRoW) is unavailable.</li> <li>▪ PRoW will be considered as 12 meters, in accordance with relevant codes for state highways.</li> <li>• A topographic survey has been conducted within a 60-meter width.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Incorporate the 12-meter Proposed Right of Way (PRoW) into the design to ensure compliance with relevant codes for state highways.</li> <li>▪ Utilize the data from the topographic survey conducted within a 60-meter width to inform the design process and address any topographical challenges.</li> <li>▪ Develop flexible design options that can accommodate variations in the PRoW, ensuring that any potential adjustments can be made without significant delays.</li> </ul>	 <p>Latitude: 25.58179 Longitude: 91.884458 Elevation: 1510.9±2.04 m Accuracy: 2861 m Time: 25-08-2025 16:48 Note: Discuss/review</p> <p>Powered by NoteCam</p>

Sl. No.	Area	Date	Name of stakeholder	Outcomes of consultation	Suggestions (from consultations) for integration into project design	Photograph
					<ul style="list-style-type: none"> <li>▪ Consider the inclusion of safety features such as guardrails and proper signage to enhance road safety along the newly proposed road alignment.</li> <li>▪ Plan for ecological assessments to ensure that the road design minimizes environmental impacts, especially in sensitive areas identified during the site visit.</li> <li>▪ Allow for future expansion possibilities in the design to accommodate potential increases in traffic volume and road usage over time.</li> </ul>	

### 7.1.2 FPIC PROCESS

As per the requirements of the World Bank's Environmental and Social Standard 7 (ESS7), the Free, Prior, and Informed Consent (FPIC) process is required for the following circumstances:

- (i) have adverse impacts on lands and natural resources traditionally owned or used by Indigenous Peoples, including situations where such ownership is not legally recognized; (ii) result in the relocation or physical displacement of Indigenous households or communities from their customary or ancestral lands; or
- (iii) have significant impacts on Indigenous Peoples' cultural heritage, including their cultural, spiritual, or sacred sites and practices that hold collective significance for their identity and well-being.

In the case of the proposed road project, the FPIC process was triggered under the first condition, as the project activities involve the use of land and natural resources traditionally owned and utilized by Indigenous communities. The process was therefore undertaken to ensure that affected communities were fully informed, consulted in a culturally appropriate manner, and provided their collective consent prior to implementation.

The FPIC process was carried out in a phased and participatory manner, beginning with preliminary stakeholder mapping and engagement with the local Dorbar Shnongs (village councils).

The scope of the Borrower's Free, Prior, and Informed Consent (FPIC) process encompassed comprehensive engagement with Indigenous Peoples (IPs) and traditional institutions to ensure culturally appropriate participation throughout project preparation. The FPIC process included discussions on key aspects of the project, such as the proposed road design, alignment options, construction methodology, and implementation arrangements, as well as the anticipated environmental and social impacts and proposed mitigation measures. Consultations were conducted with representatives of the Dorbar Shnong (village councils), village elders traditional leaders (Rangbah Shnong), women's groups, youth representatives, and other community members residing within the project's area of influence.

The discussions also focused on the potential risks associated with the project—such as impacts on land, unclassified forest on community land (Law Adong), water sources, access to livelihoods, and cultural resources—and on measures proposed to avoid, minimize, or mitigate these impacts. Community members were informed about the project's benefits, including improved road connectivity, economic opportunities, and enhanced access to essential services. The FPIC process thus ensured that Indigenous communities were not only consulted but also actively involved in shaping project decisions, implementation arrangements, and benefit-sharing mechanisms, reflecting their collective consent and ownership over the development process.

The FPIC process was conducted in a transparent and participatory manner, ensuring that community participation was entirely voluntary and free from any form of external manipulation, interference, or coercion. All consultations were facilitated by the ESIA team in collaboration with the Public Works Department (PWD) and information disclosed well in advance in the local Khasi language. Meetings were held in accessible community spaces and scheduled in consultation with local leaders to maximize participation. Written consent from community representatives and participants was obtained through attendance sheets and minutes of meetings (MoM), which were duly reviewed and counter-signed by the Rangbah Shnong (village headmen), council members, and representatives of the participating villages. Photographic and video documentation further corroborates that participants were engaged freely, and expressed their views without any undue pressure or influence. The signed records and documentation of the FPIC proceedings are enclosed in Annexure 7.3 of this



report.

Information related to the proposed road project was disseminated in a culturally appropriate and accessible manner to ensure full understanding and participation of Indigenous communities. Project details including road alignment maps, typical cross-sections, and environmental and social management measures were presented using simple visual aids such as diagrams, maps, and posters. These materials were translated into the local Khasi language and explained verbally during meetings to accommodate all literacy levels. The consultation sessions were facilitated by local interpreters and community mobilizers familiar with local customs and communication practices, ensuring clarity and mutual understanding. Frequently Asked Questions (FAQs) like project objectives, timelines, expected benefits, and potential risks were addressed during each session. Meetings were conducted in familiar community spaces, allowing both men and women, including elders and youth, to freely participate and express their views. This culturally sensitive approach ensured that the FPIC process was inclusive, transparent, and fully aligned with the traditional decision-making systems of the Khasi community.

- Process of good faith negotiation (sufficient time for IP Communities' decision-making, willingness to compromise, ) and agreements reached that documents the process of GFN

The FPIC process was conducted through good faith negotiations between project authorities and Indigenous Peoples' communities, allowing adequate time for traditional institutions and affected households to review project information, discuss internally, and make collective decisions. The project team incorporated community feedback—such as alignment adjustments and protection of unclassified forest—reflecting genuine efforts at consensus-building. All meetings were held transparently and respectfully, enabling free expression of views, particularly from women and elders, without coercion or interference. Agreements reached were documented through signed minutes and countersigned by the Rangbah Shnong and KHADC representatives, serving as evidence that the FPIC process was participatory, voluntary, and conducted in good faith.

#### **Free, Prior, and Informed Consent (FPIC) Process adopted for the project road.**

The ESIA consultant, comprising of four experts (Social, community, Tribal and Gender) and two community mobilizers, initiated the Free, Prior, and Informed Consent (FPIC) process by identifying affected communities within the project's area of influence, in accordance with the requirements of World Bank ESS7.

One-on-one interactions were conducted with Village council members, the secretary, and other key representatives between 25th and 30th August 2025 to discuss the project and assess the communities' willingness to participate in the process.

**Official Invitations to Stakeholders** – The Village Council (Dorbar Shnong) agreed to call a meeting with village heads, traditional leaders, elders, women's groups, affected persons, and youth representatives to facilitate the consultation process. A mutually agreed-upon schedule was developed to ensure that community members had ample time to participate in discussions. The schedule outlined the sequence and timing of pre-consultation meetings, FPIC rounds, and focus group discussions—covering initial one-on-one meetings (25–30 August 2025), the first FPIC consultations (04 and 09 September 2025), and the second FPIC consultation (16 September 2025). This schedule, agreed upon collectively by community representatives and project officials, provided sufficient time for advance notice, internal deliberations within each village, and informed

participation during meetings.

**Conducting consultations and obtaining consent** - Comprehensive efforts were made to ensure Free, Prior, and Informed Consent (FPIC) from Project Affected Persons (PAPs), stakeholders, community members, and the village Council. Three rounds of Free, Prior, and Informed Consent (FPIC) consultations were conducted with the Indigenous communities along the project corridor. These included an initial round to introduce the project and explain the FPIC process, a second round to present the detailed project design and discuss potential environmental and social impacts, and a third round (planned as part of the ESIA disclosure phase) to confirm community consent and agreement on mitigation measures.

**FPIC consultations undertaken for the project stretch are explained below:**

- The first round of consultations for FPIC was conducted by the ESIA team on **04.09.2025** and **09.09.2025** at *Mawsynram village* with a **total of 53 participants**. The participants included project-affected persons (PAPs), village headmen (Rangbah Shnong), government officials, civil society organizations, and representatives from the Khasi Hill Autonomous District Council (KHADC). The discussions focused on key concerns such as displacement, livelihood loss, minimizing project impacts and the protection of common property resources. As part of this process, participants were also sensitized about the project and introduced to the principles of **Free, Prior, and Informed Consent (FPIC)**, thereby marking the initiation of the FPIC process. The signed mom of the FPIC proceedings are enclosed in Annexure 7.3 of this report.
- The second round of consultations for FPIC for the *project road* was subsequently convened at *Mawsynram Village* on 16.09.2025. This meeting provided an important platform for stakeholders to deliberate on project details, address community concerns, and ensure transparent and inclusive communication. The proceedings were presided over by the Executive Engineer (EE), Mawsynram, with active participation from the Assistant Executive Engineer (AEE), Sub-Divisional Officer (SDO), and representatives of key consultancy firms including *Enviro Infra Solutions (ESIA Consultants)*, *KOBA Engineering Services Pvt. Ltd. (DPR Consultants)*, and *Satra Consultancy (ESMF Consultants)*. Local stakeholders, including village headmen, women, and youth representatives, also took part, ensuring broad-based and inclusive participation. In total, **39 local stakeholders participants** engaged actively in the discussions, reflecting the community's genuine interest in the proposed infrastructure development.
- The meeting was organized in a structured manner to cover all key aspects. It commenced with the chairperson reading out the minutes of the first FPIC meeting to maintain continuity and transparency. This was followed by a detailed presentation of the Detailed Project Report (DPR), a comprehensive session on the Environmental and Social Impact Assessment (ESIA), and an informative discussion on the Grievance Redress Mechanism (GRM). To encourage active and inclusive participation, two parallel group discussions were held: one dedicated to women participants to capture their specific perspectives, and another with the youth group to gather their insights and suggestions. This structured approach ensured that diverse viewpoints were acknowledged and documented, thereby strengthening the participatory nature of the FPIC process. The signed mom of the FPIC proceedings are enclosed in Annexure 7.3 of this report.

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- The third round of consultations for FPIC for the project road was subsequently convened at Mawsynram Village on 08.10.2025. The third round of FPIC consultation was conducted to reconfirm and document the communities' consent to the proposed project interventions following the disclosure of detailed design, mitigation measures, and findings from the draft Environmental and Social Impact Assessment (ESIA). It also served to validate the outcomes of the previous FPIC meetings. The session provided an opportunity for stakeholders to review the commitments made by the implementing agency, discuss the finalized mitigation and benefit-sharing measures, and formally reaffirm community consent before the project's implementation phase.
- The proceedings were presided over by the Executive Engineer (EE), Mawsynram, with active participation from the Assistant Executive Engineer (AEE), Sub-Divisional Officer (SDO), and representatives of key consultancy firms including Enviro Infra Solutions (ESIA Consultants), Koba Engineering Services Pvt. Ltd. (DPR Consultants), and Satra Consultancy (ESMF Consultants). Local stakeholders, including village headmen, women, and youth representatives, also took part, ensuring broad-based and inclusive participation. In total, 33 local stakeholders participants engaged actively in the discussions, reflecting the community's genuine interest in the proposed infrastructure development. The signed mom of the FPIC proceedings are enclosed in Annexure 7.3 of this report.

**Sufficient time and Information to enable Informed Consent** – Consultations were conducted in Khasi, the local language, to ensure informed participation. One week prior notice was issued to inform communities about the meeting schedules. During the FPIC meeting, the project team provided detailed information on project impacts, benefits, mitigation measures, and grievance mechanisms through presentation. The indigenous communities were given adequate time to discuss, ask questions, and deliberate before providing or withholding consent for the project. The details regarding the agreements which were reached with the communities as conditions of FPIC are summarized as a part of FPIC mom and attached as Annexure 7.3.

**Documentation of FPIC Proceedings** – The discussions, concerns, inputs, and decisions made during the FPIC meetings were recorded, analyzed, and formally documented. All meetings were documented through minutes, photographs, and videography to maintain a transparent record and ensure that Project-Affected Persons (PAPs) participated freely and voluntarily, without coercion. Attendance was recorded at each consultation to confirm the presence of key stakeholders and community members. The Minutes of Meeting (MoM), including photographs and attendance sheets for FPIC 1, FPIC 2 and FPIC 3, are presented in **Annexure 7.3**. The outcomes of the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> FPIC are summarized in **Tables 7.3 to 7.5**, respectively, while photographs of the FPIC sessions are presented in **Figures 7.1 to 7.3**.



Table 7.3: Summary of the FPIC 1 Meeting

Issue discussed	Photograph
<p>During the site visit, in the presence of village representatives from Mawsynram and the Junior Engineer (JE) of Mawsynram, the need for proper planning and improvement of the junction was discussed, as it is one of the key traffic areas in the village.</p>	 <p>Latitude: 25.299881 Longitude: 91.581864 Elevation: 1411.36x20.8 m Accuracy: 01.46 m Time: 04-09-2025 13:07 Note: 34+900 request for footpath</p> <p>Powered by MawaCam</p>
<p>Community representatives have expressed the need for constructing footpaths and proper fencing on both sides of the road at chainage 34+900. Additionally, the owner of a shop located at this point has willingly agreed shift the location of the shop to another place provided by the Dorbar Shnong of that particular Village, understanding the importance of the proposed improvements for both the current needs and the future development of the area.</p>	 <p>Latitude: 25.299874 Longitude: 91.581879 Elevation: 1366.09x12.0 m Accuracy: 9.03 m Time: 04-09-2025 13:08 Note: 34+900 request for footpath</p> <p>Latitude: 25.300237 Longitude: 91.582166 Elevation: 1375.24x4.57 m Accuracy: 3.78 m Time: 04-09-2025 13:50 Note: FPIC-1: Weill Mawshyram up to Phlangwanbroi sh. 34+900</p> <p>Powered by MawaCam</p>
<p>The public toilet located at the entrance of the Mawsynram market needs to be relocated, as it is causing foul odors and creating unhygienic living conditions for the public. This was echoed by the participants in the 1<sup>st</sup> FPIC meeting followed by a transact walk.</p>	 <p>Latitude: 25.299527 Longitude: 91.581175 Elevation: 1419.78x6.73 m Accuracy: 6.407 m Time: 04-09-2025 13:09 Note: 34+900 public toilet req for relocation</p> <p>Powered by MawaCam</p>




Issue discussed	Photograph
<p>On the right-hand side of the road at chainage 34+600, a breast wall needs to be constructed not only for beautification purposes but also to prevent soil erosion and ensure slope stability.</p>	 <p>Latitude: 25.300388 Longitude: 91.582005 Elevation: 1419.97m Accuracy: 4.045 m Time: 04-09-2023 12:04 Note: 34+750 breast wall</p>










Figure 7.1: Photographs during 1<sup>st</sup> FPIC

Table 7.4: Transact Walk with the Village Representatives after the 2<sup>nd</sup> FPIC Meeting

CH No	Descriptions	Pictures
38+300	<b>Law Adong</b> (Unclassed forest on community land) of Laitsohum village is existed close to the road but outside the ROW. Representatives requested precautionary measures during construction to preserve the ecological balance and prevent any unintended damage to this vital natural resource.	
40+400	The village representative requested that the boundary at the end of the protected forest in Laitsohum village be clearly marked, ensuring construction activities transition carefully to avoid any encroachment.	

CH No	Descriptions	Pictures
42+250	Start point of Mawrapad village, <b>Law Adong</b> , an area of significant cultural and environmental importance to the local community.	
42+300	End point of Law Adong (Unclassed forest on community land) of Mawrapad village, requiring similar protective strategies as outlined for other protected zones.	
44+500	1st muck dumping site inspection, evaluated for its suitability in terms of environmental impact and accessibility during the project phase.	
45+300	Precaution to be taken during construction as there is a drinking water source available at the site, emphasizing the need for pollution prevention measures to safeguard community health.	
45+700	Request for breast wall at RHS	
45+750	Request for breast wall at RHS as there is a settlement above, highlighting concerns for resident safety and property protection.	



CH No	Descriptions	Pictures
45+800	Precaution plus request for breast wall as settlement above	
46+000	Precaution to be taken as drinking water source available, therefore a request was made for regular monitoring during the construction phase.	
46+150	Law Adong (Unclassed forest on community land) of Mawkasai village, a protected forest area that demands careful planning to minimize disturbance to flora and fauna.	
47+000	End point of Lawadong	
45+000	Request for retaining wall	
47+000	Water tank of Mawsawa village and request for retaining wall at RHS	
48+000	Request for footpath at LHS	

The table above presents in detail the key concerns raised by village representatives during the

transact walk after the end of the the DPR presentation. These issues were carefully recorded and further examined during the subsequent site visit, which played an important role in validating the concerns and identifying practical solutions.







It is essential that the identified sites receive due attention from the DPR team, particularly where they have not yet been incorporated into the existing Detailed Project Report. Special caution must be exercised in relation to water sources to avoid any risk of contamination or disruption during construction activities. Likewise, the *Law Adong* areas designated as protected forests demand strict precautionary measures to ensure environmental integrity and full compliance with regulatory standards throughout project implementation.



**Figure 7.2: Photographs during 2<sup>nd</sup> FPIC**

**Table 7.5: Summary of the FPIC 3 Meeting**

SL No	Ch No	Description	Geo tag Photograph
1	31+300	For The particular site the latest road maintenance have been done during the period Dec 24 to Jan 25 nevertheless,	

SL No	Ch No	Description	Geo tag Photograph
		the road have been damaged due to geological issues. Assessment has been made on the type of soil at the particular site, while special provision for retaining the quality of the road is to be implemented.	
2	33+500	Request street light and a stand shed at a particular junction as is one of the center point.	
3	33+520	The particular site to the RHS has structure like the PHE water tank and office. If there is a requirements of hill cutting at the particular site, a breast wall needs to be put up for retaining and protecting the above structures	
4	33+750	Request for streetlight at the particular junction, the entrance point of the Mawjyngbuin cave.	
5	31+600	Request for streetlight. The starting of Mawsynram market. Stretches to about 400 meters.	
6	31+500	Request for street light at main junction of Mawsynram market. Stretches to about 400 meters.	
7	44+100	During the meeting, concern	




SL No	Ch No	Description	Geo tag Photograph
		raised by the village headman on the possibility of impact to the public toilet, on assessment at site along the staff PWD, it is found the structure is 5.5 meters away from the center point. Recommendation: To provide proper safety measures at the junction of the public toilet.	



Figure 7.3: Photographs during 3<sup>rd</sup> FPIC

The FPIC process resulted in community consent for the project, conditional upon:

- Inclusion of slope protection and breast walls,
- Provision of streetlights and drainage in built-up areas,
- Ensuring safety of nearby public structures,
- Environmentally sound muck disposal practices, and
- Continuous coordination with the *Dorbar Shnong* and PWD for implementation and grievance handling.



No dissenting opinions were recorded, and the participants unanimously agreed to support the project following these commitments. All the agreements and commitments outlined above were formally documented in the Minutes of Meeting (MoM) of the FPIC–III consultation and counter-signed by the participants, including representatives from the Dorbar Shnong, local communities, and project officials. The signed MoM, along with attendance sheets and photographic evidence, is attached as Annexure 7.3.

#### **Summary of FGD with Youths (Under FPIC)**

As part of the FPIC consultation process, a Focus Group Discussion (FGD) was conducted on 16.09.2025 with local youth representatives to understand their perspectives on livelihood challenges, employment opportunities, and migration trends in the project area. The discussion revealed that while the youth are motivated and willing to engage in productive activities, they face significant barriers such as limited access to skill development, inadequate employment opportunities within the region, and lack of career guidance. Many participants shared that migration to urban centers like Shillong and Guwahati is often a coping mechanism driven by better income prospects, though it exposes them to social and economic risks. The youths emphasized the need for skill training, entrepreneurship promotion, financial support mechanisms, and local job creation through government and private sector engagement. They also recognized that improved road connectivity under the proposed project would enhance market access, tourism potential, and livelihood diversification. These insights have been incorporated into the project's livelihood enhancement and community engagement strategy, ensuring that youth-related priorities are addressed during implementation.

#### **Summary of FGD with Women (Under FPIC)**

As part of the FPIC consultation process, a Focus Group Discussion (FGD) was held with local women participants to understand their livelihood challenges, access to opportunities, and perspectives on the proposed project. The discussion highlighted that while women are willing and motivated to contribute economically, they face constraints such as limited access to skill development, social and cultural barriers to mobility, and inadequate financial and childcare support. Most women are engaged in agriculture, weaving, poultry, and small-scale enterprises, while some migrate to nearby cities like Shillong and Guwahati for domestic or factory work due to limited local opportunities. Participants emphasized the need for women-focused skill training centres, microfinance access, awareness on welfare schemes, and support for women-led cooperatives in agro-processing and handicrafts. Improved road connectivity under the project was seen as a key enabler for better market access and mobility. The insights and recommendations gathered during this FGD have been incorporated into the project's Gender Action Plan and Livelihood Development Strategy to ensure inclusive benefits for women and other vulnerable groups.

**Public Disclosure:** Draft Environment and Social Impact Assessment (ESIA), Draft Environment and Social Management Plan (ESMP), Draft Resettlement Action Plan and Draft Indigenous People Development Plan (IPDP) for project road will be uploaded at MPWD website for public disclosure along with the Executive Summary in local language i.e. Khasi.

## **8. ENVIRONMENTAL AND SOCIAL MANAGEMENT, MONITORING & REPORTING PROGRAMME**

### **8.1 GENERAL**

Monitoring and reporting are critical components in the implementation of the project. Monitoring involves periodic checks to determine whether activities are being carried out in accordance with the proposed mitigation plans. It provides essential feedback to project management, helping ensure that project objectives are achieved on schedule. The reporting system ensures that environmental and social mitigation measures are implemented as planned. Together, monitoring and reporting support the proper implementation of the Environmental and Social Management Plan (ESMP).

The broad objectives of monitoring and reporting on E&S management are:

- To evaluate the performance of mitigation measures proposed in the ESMP and in other mitigation plans.
- To evaluate the adequacy of environmental and social assessment.
- To suggest improvements in ESMP and other mitigation plans based on the monitoring and to devise fresh monitoring based on the improved ESMP.
- To enhance environmental quality and social development through proper implementation of suggested mitigation measures.
- To meet the requirements of the existing environmental and social regulatory framework and community obligations.

### **8.2 ENVIRONMENT AND SOCIAL MANAGEMENT PLAN**

The Environmental and Social Management Plan (ESMP) has been prepared in accordance with the World Bank's Environmental and Social Framework (ESF) to ensure that the potential environmental and social impacts identified during the assessment are effectively managed during the design, construction, and operation phases of the project. The ESMP outlines specific mitigation, enhancement, and monitoring measures; defines institutional responsibilities; and provides a framework for capacity building and reporting. It serves as a practical tool to guide the implementation of mitigation measures, ensuring compliance with applicable national regulations and the World Bank's Environmental and Social Standards (ESSs), while promoting sustainable and inclusive project outcomes. Environment and Social Management Plan is presented in Table 8.1.

**Table 8.1: Environmental and Social Management Plan**

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
	PRE-CONSTRUCTION					
1	Consents/ Permits/ Approvals/ Compliances	Non-compliance to various Environmental/ social/ regulatory requirements pertaining to the proposed project could lead to legal Implications	<ul style="list-style-type: none"> <li>➤ Obtain all necessary statutory clearances (CTE, CTO, Labour License, Fire NOC, Tree Cutting Permission, etc.)</li> <li>➤ Renew permits before expiry.</li> </ul>	Contractor/ MPWD	CTE, CTO, Labour License, Fire NOC, Tree Cutting Permission to be submitted and tracked	MPWD/PMC/CSC
2	Land Procurement	Loss of Land/ Livelihoods	<ul style="list-style-type: none"> <li>➤ RPF and RAP shall be followed.</li> </ul>	MPWD division, contractor and concerned authorities	Compensation records maintained; Grievances resolved	MPWD/CSC/NGO
3	Contractor's ESMP (CESMP) Preparation and Implementation	Inadequate preparation and implementation of CESMP by Contractor can leave environmental and social issues unattended	<ul style="list-style-type: none"> <li>➤ The contractor needs to follow the project ESMP to formulate the CESMP and get it approved by MPWD.</li> </ul>	Contractor	Approved CESMP including TMP, LMP and other relevant plans, and implemented;	MPWD/PMC/CSC
4	Identification of land for material storage yard/ construction camp/ labour camp	Discharges from Yards/ Camps to pollute the surroundings and lead to social tension.	<ul style="list-style-type: none"> <li>➤ Contractor needs to identify suitable land for storage yard/ construction camp/ labour camp</li> <li>➤ The land shall not be closer to the water bodies, waterlogged areas or wetlands.</li> </ul>	Contractor	Approved site location; Lease/NOC copies;	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<ul style="list-style-type: none"> <li>➤ The land will be handed back to the owner in the same condition as it was prior to the commencement of project activities, once the project is completed.</li> <li>➤ Contractor to produce the lease agreements, NOC etc. for these lands.</li> </ul>			
5	Supply of Construction Material	Sourcing materials from unauthorized sources.	<ul style="list-style-type: none"> <li>➤ Procurement of construction material only from approved quarries and sites and licensed/ authorized vendors/ manufacturers. Contractor to produce approvals and receipts.</li> </ul>	Contractor	EC, Permits, challans, Material source approval copies;	MPWD/CSC
6	Water	Pollution of surface and groundwater sources.	<ul style="list-style-type: none"> <li>➤ The Contractor will be responsible for arranging adequate supply of water for the entire construction period.</li> <li>➤ The contractor will minimize the pollution and wastage of water during construction</li> </ul>	Contractor	Permission for Water source; Usage records; Wastewater management measures	MPWD/PMC/CSC
7	Appointment of Environment, Social and Safety Officers	Inefficient and incompetent supervision by contractors may lead to negative impacts on environment, Social, health and safety.	<ul style="list-style-type: none"> <li>➤ The Contractor would prepare OHS plan and other required plans; as a part of CESMP, as per the WB guidelines.</li> <li>➤ The contractor will appoint qualified and experienced Environment. Social and Safety personnel to ensure implementation of CESMP and occupational health and safety issues at the camps and construction work sites.</li> </ul>	Contractor	To be mobilized before construction; approved OHS plan	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
8	Identification of OHS Hazard and Risk Categorization	May cause physical harm, injury, illness, or death to workers.	<ul style="list-style-type: none"> <li>➤ Conducting workplace inspections to identify hazards and document.</li> <li>➤ Consulting with workers to identify hazards that may not be obvious to employers or safety professionals.</li> <li>➤ Reviewing safety data sheets (SDSs) to collect information about the hazards of chemicals and other substances used in the workplace.</li> <li>➤ Consulting with industry standards and regulations to identify specific hazards that must be addressed in the workplace.</li> </ul>	Contractor	OHS hazard register; Inspection reports;	MPWD/CSC
9	Other Construction Vehicles, Equipment and Machinery	Vehicles and equipment not complying with regulations may lead to pollution of environment.	<ul style="list-style-type: none"> <li>➤ The contractor will maintain records of fitness and Pollution Under Control (PUC) certificates for all vehicles and generators used during the contract period</li> </ul>	Contractor	Records of valid PUC / fitness; Inspection log	MPWD/PMC/CSC
10	Tree Cutting	Loss of green cover and biodiversity	<ul style="list-style-type: none"> <li>➤ Maximum efforts shall be made to minimize the number of trees to be felled.</li> <li>➤ Tree cutting and disposal shall be done as per the Forest Dept.</li> </ul>	Contractor	Records of trees cut and saved.	MPWD/CSC
11	Joint field verification	The impacts may not have been identified in time.	<ul style="list-style-type: none"> <li>➤ The MPWD and the Contractor shall carry out joint field verification to ascertain the local complaints/suggestions and to confirm the need for additional protection measures or changes in design/scale/nature of protection measures including the efficacy of</li> </ul>	Contractor	Verification reports;	MPWD

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			enhancement measures suggested in the ESMP. The MPWD shall maintain proper documentation and justifications/reasons in all such cases.			
12	Damage to existing eco-system due to borrowing activities	Indiscriminate borrowing activities may damage the eco-system and lead to unproductive environment	<ul style="list-style-type: none"> <li>➤ The Contractor will have to obtain the Environmental Clearance for borrow areas.</li> <li>➤ The borrow area will be operated as per the MoEFCC guidelines issued by the concerned SEAC and SEIAA.</li> </ul>	Contractor	Borrow area EC copy; Approved management and closure plan	MPWD /CSC
13	Identification of construction material transportation route	Inconveniences and safety issues to the public due to the material transport vehicles.	<ul style="list-style-type: none"> <li>➤ The material transport route through existing network of roads should be planned and approved by the local transport authorities.</li> <li>➤ The local communities need to be consulted with prior information on any likely inconveniences.</li> </ul>	Contractor	Approved route plan; Community consultation record	MPWD/CSC
14	Identification of sites for debris disposal or wastes generated from construction camps and site offices	Pollution due to indiscriminate dumping of wastes. Wastes entering water bodies and groundwater causing pollution	<ul style="list-style-type: none"> <li>➤ MPWD Division and the Contractor are responsible for identifying a suitable area in consultation with local administration to dispose of the wastes from labour camps, construction sites and site offices.</li> </ul>	Contractor	Approved disposal site and its management plan; NOC, Agreement with landowner; Waste disposal records;	MPWD/CSC
15	Relocation of Utility and Common Property Resources	Loss of services from utilities and common property resources for	<ul style="list-style-type: none"> <li>➤ When the utilities/ Common Property Resources need to be shifted, they will be shifted in consultation with the communities and with least</li> </ul>	Contractor/ MPWD Division	Records of Relocation	MPWD/ PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
	(CPR)	the public	inconvenience to the public. ➤ If any displacement of Utility/CPRs is required, they will be relocated with prior approval of the concerned agencies. The relocation site identification will be in accordance with the choice of the community.		completion.	
	CONSTRUCTION					
1	Crushers, Hot mix Plants & Batching Plants	Impacts due to establishment and operation of plants and equipment	➤ Crushers, hot-mix and batching plants shall be located at least 1000m (1km) away from residential/ settlements, forests, wildlife movement areas, and commercial establishments, preferably in the downwind direction. ➤ The Contractor shall submit a detailed layout plan for all such sites and seek prior approval before entering into a formal agreement with a landowner for setting-up such sites. ➤ Specifications of crushers, hot mix plants, and batching plants shall comply with the technical requirements of the contract and prior Consent / NOC for all such plants shall be obtained. ➤ No such installation by the Contractor shall be allowed till all the required legal clearances are obtained from the competent authority.	Contractor	Approved layout plan; Valid NOCs/Consents; Dust suppression records; Air quality monitoring reports	MPWD/PMC/CSC
2	Borrow Areas	Impacts due to improper operation and closing of	➤ Borrow area should be located at a minimum distance of 300m from the	Contractor	EC and lease copies; Approved Borrow	MPWD/PMC/CSC



Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
		borrow areas	residential/ settlement area. Proper barricading should be provided and access to the borrow areas should be restricted to the unauthorized persons. ➤ The Contractor should submit the EC, a copy of agreement with the landowner, borrow area management and closure plan before initiating any kind of borrowing activities.		area restoration and Closure plan	
3	Quarries	Impacts due to improper management, operation and closing of quarries	➤ The Contractor shall identify materials from legally valid quarries with existing NOC from the relevant departments. ➤ No quarry or associated plants can be set-up within 1000m from the residential/ settlement locations ➤ Contractor shall prepare a haul road network for quarry transport and ensure the suitability of such haul roads from the safety of residents, biodiversity and other environment points of views.	Contractor	Quarry permit, EC; Safety inspection report; Haul road maintenance record, dust suppression measure, geotagged photos	MPWD/PMC/CSC
4	Dismantling of Bridges/ Culverts/ Structures	Impacts due to improper dismantling and disposal	➤ All necessary precautions shall be taken while working near cross-drainage channels, to prevent earthwork, stonework, construction materials from obstructing cross-drainage at rivers, streams, and drainage systems, or from causing flooding. ➤ Reusable materials (e.g., steel, stones, bricks) shall be segregated and stored	Contractor	Debris disposal/reuse records; Approved Site restoration plan; Photographic documentation.	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>properly for reuse or recycling.</p> <ul style="list-style-type: none"> <li>➤ Non-recyclable debris and waste materials shall be transported to approved disposal sites identified and approved by the concerned authority.</li> <li>➤ Disposal sites shall be located away from water bodies, agricultural lands, and other environmentally sensitive areas.</li> <li>➤ Temporary barriers or silt fences shall be provided to prevent debris from entering watercourses.</li> <li>➤ Upon completion, the associated disposal sites shall be restored to their original condition or as directed by the Engineer</li> </ul>			
5	Bituminous waste disposal	Impacts due to hazardous wastes	<ul style="list-style-type: none"> <li>➤ The contractor shall maintain records of quantities generated, transported, and disposed of, along with details of the disposal site and approvals obtained.</li> <li>➤ Bituminous waste shall be collected and stored temporarily in impermeable, lined containers or areas to prevent leaching or contamination of soil and groundwater.</li> <li>➤ The disposal of bituminous wastes shall be carried out by the Contractor at secure landfill sites approved by the concerned government authorities.</li> <li>➤ No bituminous waste shall be</li> </ul>	Contractor	Records of Waste reused/disposed; Details of approved disposal site; Photographic documentation.	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>disposed of in water bodies, open lands, agricultural fields, or along the roadside</p> <ul style="list-style-type: none"> <li>➤ Periodic inspections shall be carried out to ensure compliance with waste management guidelines.</li> <li>➤ Where feasible, recycling or reuse of scarified bituminous material in road base or other construction activities shall be promoted, subject to environmental and quality standards.</li> </ul>			
6	Contamination of Soil	Soil pollution due to Oil and fuel spills from construction equipment and plants.	<ul style="list-style-type: none"> <li>➤ Construction plants, workshops, and fuel storage areas shall be located at least 500 m away from any surface water body and environmentally sensitive locations.</li> <li>➤ Oil interceptors shall be installed at construction camps, vehicle parking, and washing areas to trap oil and grease before wastewater is discharged.</li> <li>➤ All fuel and lubricant storage tanks shall be placed on impermeable platforms or within bunded (contained) areas.</li> <li>➤ Regular maintenance and inspection of construction equipment and vehicles shall be carried out to prevent leakage of oil, fuel, or hydraulic fluids.</li> <li>➤ Spill control kits (absorbent pads, sand, and containment booms) shall be available at all fuel storage and</li> </ul>	Contractor	Spill log; Waste oil disposal records; Fuel storage inspection record. Photographic documentation.	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>handling locations.</p> <ul style="list-style-type: none"> <li>➤ Used oil and lubricants shall be collected, stored in labelled, leak-proof containers, and handed over only to authorized aggregators/recyclers for disposal in compliance with applicable hazardous waste regulations.</li> <li>➤ Records of fuel usage, storage, and waste oil disposal shall be maintained and made available for inspection.</li> <li>➤ Stormwater runoff from fuel and equipment storage areas shall be directed through oil-water separators before discharge.</li> </ul>			
7	Air Pollution - Dust Generation	Dust generation will cause air pollution and will have impacts on health and safety.	<ul style="list-style-type: none"> <li>➤ Vehicles delivering materials should be covered to reduce spills and dust blowing off the load.</li> <li>➤ Water should be sprinkled regularly on the work sites.</li> <li>➤ Road slopes to be covered immediately after completion.</li> <li>➤ Speed limits shall be enforced for construction vehicles within and near project sites to reduce dust generation.</li> <li>➤ Personal protective equipment (PPE) such as masks shall be provided to all workers exposed to dusty environments.</li> <li>➤ Air quality monitoring shall be conducted periodically to ensure compliance with prescribed air quality</li> </ul>	Contractor	Air quality monitoring reports; Dust suppression log; PPE compliance records	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			standards. ➤ Community complaints related to dust shall be recorded, and addressed promptly.			
8	Emissions	The emissions from vehicles and construction equipment will pollute the air causing health and safety issues as well.	<ul style="list-style-type: none"> <li>➤ Fitness and PUC of the vehicles and equipment's need to be ensured.</li> <li>➤ LPG shall be used as fuel for cooking of food at construction labour camp instead of fuel wood.</li> <li>➤ Dust extraction, collection and control systems shall be installed at batching plants, crushers, and material handling areas to minimize particulate emissions.</li> </ul>	Contractor	Valid PUC certificates; Equipment maintenance log; Emission test results	MPWD/PMC/CSC
9	Contamination of Surface / Ground Water	Discharges from construction activities and construction camps/labour will lead to surface/groundwater pollution.	<ul style="list-style-type: none"> <li>➤ All the debris resulting from construction activities and labour camp shall be removed from the site and disposed at approved sites away from water bodies, on a regular basis to prevent them from getting into surface runoff.</li> <li>➤ Adequate sanitation and waste management facility to be provided in construction camp.</li> <li>➤ Construction labours should be restricted from polluting the water sources or misusing the sources.</li> <li>➤ Use least amount biodegradable bentonite slurry during piling work.</li> <li>➤ Contain the Bentonite slurry properly, to not enter waterways or soil and dispose of the slurry appropriately after use.</li> </ul>	Contractor	Water quality monitoring report; Waste disposal records; Camp inspection records. Photographic documentation.	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
10	Water requirement for project	Over extraction or exploitation of ground/surface water will lead to water scarcity.	<ul style="list-style-type: none"> <li>➤ Contractor to ensure optimum and judicious use of water;</li> <li>➤ Discourage labour from wastage of water and applicable prior approvals shall be obtained from concerned authorities.</li> <li>➤ Rainwater harvesting structures shall be installed at construction camps and plant sites to promote sustainable use of water.</li> <li>➤ Awareness programs shall be conducted for laborers and staff on responsible water use and conservation practices.</li> <li>➤ Records of daily water consumption shall be maintained as part of regular reporting.</li> </ul>	Contractor	Water consumption log; Permission for water source; Installation of Rainwater harvesting structure	MPWD/PMC/CSC
11	Coffer dam to make dry working space for bridge work	Change in the flow pattern and quality of water, effect on local habitat	<ul style="list-style-type: none"> <li>➤ Selecting the right location for the cofferdam to minimize its impact on the environment.</li> <li>➤ Using environmentally friendly materials to construct the cofferdam eg. Biodegradable/ reusable materials can be used instead of concrete.</li> <li>➤ Restoring the environment after construction. This may involve replanting vegetation and removing any debris.</li> </ul>	Contractor	Worksite inspection record; Restoration completion record	MPWD/PMC/CSC
12	Noise from vehicles, plants and	Noise from construction vehicles, plant and equipment will lead to noise pollution and	<ul style="list-style-type: none"> <li>➤ Construction operations should be undertaken primarily during day time to minimize noise impacts.</li> <li>➤ Fitness and PUC of the vehicles and equipment's need to be ensured.</li> </ul>	Contractor	Noise level test report; PPE usage record; Complaint	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
	equipment	cause health and safety issues	<ul style="list-style-type: none"> <li>➤ No noisy construction activities will be permitted around educational institutions/ health centers (silence zones) and up to 100 m from other sensitive receptors.</li> <li>➤ Noise level monitoring shall be carried out as per the monitoring schedule. In case there is increase in noise level, preventive measures should be taken to reduce the noise level.</li> <li>➤ Hearing Protection devices (earplugs or earmuffs) should be provided</li> </ul>		register; vehicles, plants and equipment maintenance records.	
13	Blasting	Unmanaged blasting result in health and safety issues and accidents.	<ul style="list-style-type: none"> <li>➤ The Contractor will inform well in advance and obtain permission as is required from all Government Authorities, public bodies and private parties;</li> <li>➤ Blasting will be carried out only with permission of Engineer-in-charge. All the statutory laws and regulations, rules etc., pertaining to acquisition, transport, storage, handling, and use of explosives will be strictly followed.</li> <li>➤ Blasting management plan shall be developed and should be approved by the concerned authority. The same shall be strictly followed by the contractor.</li> </ul>	Contractor	Approved Blasting management Plan; Blasting permission; Incident log. Geotagged photos.	MPWD/PMC/CSC
14	Loss of trees and Plantation	Cutting of trees can lead to loss of biodiversity.	<ul style="list-style-type: none"> <li>➤ Clearing and uprooting should be avoided beyond that which is directly required for construction activities.</li> <li>➤ Kerosene / LPG should be preferably</li> </ul>	Contractor	Tree felling register; Plantation record;	MPWD/PMC/CSC



Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
	works		used to avoid felling of the trees or provide community kitchen for the labour camps for cooking. ➤ Camps and storage yards shall be located in the areas already devoid of vegetation or having little vegetation			
15	Terrestrial Flora and Fauna	Construction activities and workers may cause harm to flora and fauna.	➤ All the workers will need to be oriented and monitored by the contractor so as not to cause any harm to the flora and fauna. ➤ Hunting and fuel wood collection will be strictly prohibited	Contractor	Worker awareness attendance; Wildlife sighting log	MPWD/PMC/CSC
16	Aquatic Fauna	Construction activities and workers may cause harm to fauna.	➤ Any works affecting aquatic habitat will be done during low flow (when water depth is less than 5 m) and when banks would be dry. ➤ Where any GI wire mesh gabions are used; all GI wire ends need to be folded inside. ➤ Ensure that no construction activities will be carried out during monsoon and the fish breeding season.	Contractor	Work timing records; Site inspection checklist	MPWD/PMC/CSC
17	Occupational Health and Safety	When Occupational Health and Safety are compromised the associated risks from accidents and incidents could affect health and safety of the workers and others on construction/ project	➤ The Contractor would prepare OHS plan and other required plans as per the WBs guidelines. ➤ All the laborers to be engaged for construction works shall be screened for health and adequately treated before issue of work permits. ➤ Periodic health check-up of construction workers. ➤ Prevention of mosquito breeding need to be ensured at the project site	Contractor	Approved OHS plan; OHS training log; PPE checklist; Awareness programme and Health inspection reports	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
		sites. Improper first aid facilities on the sites could affect health and safety of workers and others.	<p>and other ancillary areas</p> <ul style="list-style-type: none"> <li>➤ The contractor's Environment and Safety personnels, shall ensure implementation of CESMP including Occupational health and safety issues at the camp, construction work sites</li> <li>➤ Avoiding collection of stagnant water. Adequate drainage, sanitation and waste disposal will be provided at workplaces.</li> <li>➤ All workers and staff should be provided with Personal Protective Equipment (PPE) appropriate to their job on-site and their use shall be ensured.</li> <li>➤ All construction sites should be barricaded properly.</li> <li>➤ Smoking should be prohibited near areas of fire or explosion risk.</li> <li>➤ Sufficient supply of potable water should be ensured for all workers and employees on-site.</li> <li>➤ Ensure a FA room at the camp and first aid kits are available in all work areas.</li> <li>➤ Safe working techniques will be followed up and all the workers will be trained.</li> <li>➤ An Emergency Response system in case of any incidence will be developed and implemented.</li> <li>➤ The Contractor will conduct awareness programmes on EHS,</li> </ul>			

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>HIV/AIDS and other sexually transmitted diseases for workers at least once in a quarter and the record of such training programme must be recorded.</p> <p>➤ Conduct regular safety audits on safety measures adopted during construction.</p>			
18	Community Health and Safety	<p>The safety aspects like (i) safety of road users including pedestrians and cyclists</p> <p>(ii) safety of cattle;</p> <p>(iii) safety of local community</p> <p>(iv) unsafe/ hazardous traffic conditions due to construction vehicle movement need to be considered during the construction stage. Children are most vulnerable to injury due to vehicular accidents.</p>	<p>➤ Plants and equipment will be installed sufficiently away from the settlements.</p> <p>➤ Proper caution signage, barricading, delineators, lightings etc. will be installed at construction zone and temporary diversions.</p> <p>➤ Hard barricading will be provided at construction zone near habitation area and public roads, and the same will be maintained throughout the construction period.</p> <p>➤ Proper traffic management will be ensured near roads of the Construction zone.</p> <p>➤ Road safety education will be imparted to drivers running construction vehicles. In case of negligent driving, suitable action will be taken.</p> <p>➤ Speed restrictions shall be imposed on project vehicles to control speeding.</p> <p>➤ Installation of temporary speed bumps to control speed near</p>	Contractor	<p>Safety signage installed;</p> <p>Community complaint register;</p> <p>Traffic control records</p>	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>designated pedestrian crossing areas/school areas/ market places/ religious places/ human habitations.</p> <ul style="list-style-type: none"> <li>➤ The general public/ residents shall not be allowed to any of the risk areas of the project, e.g., excavation sites, construction sites and areas where heavy equipment is in operation.</li> <li>➤ In the consideration of risk at civil works, each labour should be covered under ECA 1923 insurance until completion of work.</li> </ul>			
19	Emergency Response system	Absence may result to increased incidents, injury, economic loss etc.	<ul style="list-style-type: none"> <li>➤ <b>Develop and implement ERS</b></li> <li>➤ <b>Train personnel and Establish communication channels</b></li> <li>➤ Systematic planning and training for emergencies.</li> </ul>	Contractor	Approved ERP; Emergency drill and training report; Incident response record	MPWD/PMC/CSC
20	Health Management – Communicable Diseases	The water fringe areas provides suitable habitats for the growth of vectors of various diseases, which is likely to increase the incidence of water-borne diseases.	<ul style="list-style-type: none"> <li>➤ There would be possibility of the transmission of communicable diseases due to migration of labour population from other areas at the construction site.</li> <li>➤ Agreement shall be made with nearby health centre or hospital for emergency treatment.</li> <li>➤ Special Measures for COVID 19 should be strictly followed at the camp and construction site.</li> </ul>	Contractor	Health screening record; Awareness session log; Medical report; Agreement with nearby hospital	MPWD/PMC/CSC

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21	Risk of Natural Hazards	The project area is at risk from floods and Earthquakes.	<ul style="list-style-type: none"> <li>➤ Protection of Agriculture Land near roads/ bridges.</li> <li>➤ The mitigation measures should be adopted as per norms of State Disaster Management Authority, Government of Meghalaya.</li> </ul>	Contractor	Site assessment report; Record of Compliance with SDMA norms	MPWD/PMC/CSC
22	Risk of Force Majeure  Combine with previous	These unforeseen risks can have both adverse environmental and social impacts	<ul style="list-style-type: none"> <li>➤ All reasonable precaution will be taken to prevent danger of the workers and the public from fire, flood, drowning, etc.</li> <li>➤ All necessary steps will be taken for prompt first aid treatment of all injuries likely to be sustained during the course of work.</li> <li>➤ Contractor has to prepare a response plan before start of construction works</li> </ul>	Contractor	Force majeure preparedness plan; Emergency contact list	MPWD/PMC/CSC
23	Hygiene	Impacts related to unhygienic surroundings	<ul style="list-style-type: none"> <li>➤ At every workplace, good and sufficient water supply shall be maintained to avoid waterborne diseases to ensure the health and hygiene of workers.</li> <li>➤ Adequate drainage, mobile toilets shall be provided at workplace.</li> <li>➤ Preventive Medical care shall be provided to workers.</li> <li>➤ Proper Hygiene shall be maintained</li> </ul>	Contractor	Sanitation inspection record; Hygiene logbook	MPWD/PMC/CSC
24	Traffic	Unplanned and	<ul style="list-style-type: none"> <li>➤ Before start of the construction, proper traffic management plan</li> </ul>	Contractor	Approved TMP;	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
	Management	unmanaged traffic diversion and detours can result in public nuisance.	<p>will be prepared and submitted to MPWD for approval. Secure assistance from local police for traffic control during the construction.</p> <ul style="list-style-type: none"> <li>➤ Necessary signage and barricading will be provided for safety of road users.</li> <li>➤ Contractor will ensure that no construction materials and debris are lying on the road. It will be collected and disposed of properly.</li> <li>➤ Unnecessary parking and sound pollution to be strictly avoided near settlements and sensitive receptor such as schools, hospital and cultural centers.</li> <li>➤ The contractor will ensure that the diversion/ detour is always maintained in running conditions, particularly during the monsoon to avoid disruption to traffic flow.</li> </ul>		Signage/barricade checklist; Traffic incident register; geotagged photos	
25	GBV-SEAH Risks	GBV-SEAH risks may arise due to labor influx	<ul style="list-style-type: none"> <li>➤ Ensure labor camps are away from settlement areas</li> <li>➤ Ensure that every worker working in the project has been given an orientation on the Worker's Code of Conduct, especially on GBV and SEAH, and has signed the Code of</li> </ul>	Contractor	Signed CoC register; GBV training log; GBV complaint record	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>Conduct.</p> <ul style="list-style-type: none"> <li>➤ Conduct periodic awareness programs targeted at women laborers and women and children of communities residing close to the work sites for reporting incidents of GBV- SEAH</li> <li>➤ Ensure complaints of GBV- SEAH are recorded and addressed with urgency. Ensure that name(s) of complainant(s) are kept in confidence and enable anonymous reporting of complaints.</li> <li>➤ Activate GBV Grievance Redressal Committee immediately on receipt of any GBV- SEAH complaint. Take action on recommendation of the GBV Grievance Redressal Committee within 24 hours of submission of the report.</li> </ul>			
26	Chance Finds	There is a possibility of Cultural relics, Chance finds at the construction sites. Without proper plan these artefacts may be misused by contractor/ workers.	<ul style="list-style-type: none"> <li>➤ If any cultural remains of geologic or archaeological interest are found, CSC and MPWD shall be immediately informed of such discovery and carry out the instructions for dealing with the same.</li> </ul>	Contractor	Chance find report; Notification records	MPWD/PMC/CSC

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27	Compliance to Labour Welfare Laws and reporting	Workplace accidents and injuries, unsafe working condition, loss of productivity etc.	<ul style="list-style-type: none"> <li>➤ Establish a policy and ensure the compliance within the organization, from the top to the lowest-level employee, understands the importance of complying with labour laws and reporting.</li> <li>➤ Employees should be trained on their rights and responsibilities under labour laws.</li> <li>➤ Employees should have a way to report violations of labour laws without fear of retaliation. This could be a hotline, an email address, or a suggestion box.</li> <li>➤ Investigating and taking action on violations. This could include disciplinary action against the violator, or even legal action.</li> <li>➤ Employees should be kept updated on the organization's compliance with labour laws. This could be done through regular training sessions, newsletters, or other communication channels.</li> </ul>	Contractor	Labour law compliance record; Training attendance record	MPWD/PMC/CSC
28	Labour Influx	Strain on infrastructure, such as housing, healthcare, and education;	<ul style="list-style-type: none"> <li>➤ Proper plan for labour influx by investing in infrastructure and social services.</li> <li>➤ Governments can regulate the flow of labour to ensure that it is</li> </ul>	Contractor	Labour License and registration records; Local labour hiring	MPWD/PMC/CSC



Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
		social tension, as new arrivals compete with locals for jobs and resources.	orderly and sustainable. ➤ Local communities can engage with new arrivals to help them understand the local culture and customs. ➤ Maximum use of local labours		records.	
29	GRM	Increased impunity, conflict and violence; Loss of trust and confidence	➤ Establish a grievance redressal mechanism ➤ Ensure that the mechanism is impartial and independent ➤ Provide adequate support to people who use the mechanism ➤ Communicate effectively with people about the mechanism	Contractor	GRM register; Grievance resolution records	MPWD/PMC/CSC
30	Monitoring and Reporting (Monthly/Quarterly)	Monitoring environmental attributes like (Air, Water, Noise & soil microbiology) and proper reporting are important for the successful ESMP implementation	➤ The parameters to be monitored, frequency and duration of monitoring as well as the locations to be monitored will be as per Monitoring Plan prepared. ➤ Regular submission of CESMP implementation monitoring report	Contractor	Monthly/quarterly ESMP compliance report; Monitoring data records	MPWD/PMC/CSC
	Operation Phase					
1	Debris and Waste from Clearing/ Closure of Construction Site,	Land and soil contamination due to improper waste disposal;	➤ Contractor shall prepare and implement a Site Restoration Plan approved by the Engineer. ➤ On completion of works, all temporary structures, debris, and	Contractor	Site clearance restoration records and closure NOC; Geotagged photos	MPWD

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
	Labor Camps, Disposal Sites, and Borrow Areas	Aesthetic degradation; Health risks to nearby communities	wastes shall be cleared. ➤ Disposal pits and sanitation trenches shall be filled, compacted, and sealed. ➤ Topsoil removed during construction shall be re-spread to aid vegetation regrowth. ➤ Native grass or trees shall be planted to stabilize restored areas and improve aesthetics.			
2	Soil Erosion due to Runoff over Steep Slopes and Embankments	Loss of fertile topsoil; Siltation of nearby water bodies; Slope instability or road damage	➤ Regularly inspect slopes and embankments for erosion signs. ➤ Implement bioengineering measures like turfing, hydroseeding, and vegetation planting. ➤ Provide stone pitching, retaining walls, or gabions where needed. ➤ Maintain effective drainage systems to reduce concentrated runoff.	Contractor	Reports on Erosion inspection; implementation of mitigation measures; Drain maintenance log	MPWD
3	Water Pollution from Road Runoff and Drainage into Water Bodies	Deterioration of surface and groundwater quality; Sediment and oil contamination in nearby streams or waterbodies	➤ Conduct regular water quality monitoring during operation phase. ➤ If pollutants exceed prescribed limits, install silt traps, or sedimentation chambers. ➤ Ensure roadside drains are cleaned and desilted regularly. ➤ Conduct public awareness to	Contractor	Water quality monitoring results; Drain cleaning records	MPWD

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			discourage waste disposal into water bodies.			
4	Dust Generation from Vehicular Movement	Deterioration of ambient air quality; Nuisance to roadside residents and vegetation; Reduced visibility	<ul style="list-style-type: none"> <li>➤ Establish and maintain roadside plantation to serve as dust barriers.</li> <li>➤ Maintain smooth road surfaces to minimize dust generation.</li> <li>➤ Install signage discouraging over-speeding, which increases dust levels.</li> </ul>	Contractor	Air quality results; Plantation survival record	MPWD
5	Air Pollution from Vehicular Emissions	Increased levels of NO <sub>x</sub> , SO <sub>2</sub> , CO, and PM; Health impacts on local population; Deterioration of roadside vegetation	<ul style="list-style-type: none"> <li>➤ Conduct ambient air quality monitoring at sensitive locations.</li> <li>➤ Maintain green buffers along the corridor.</li> <li>➤ Organize awareness campaigns for drivers on emission reduction and vehicle maintenance.</li> </ul>	Contractor	Air quality results; Plantation survival record ; Awareness records	MPWD
6	Noise Pollution from Increased Traffic Movement	Noise nuisance to residents; Disturbance to schools, hospitals, and wildlife	<ul style="list-style-type: none"> <li>➤ Conduct periodic noise level monitoring.</li> <li>➤ Provide noise barriers, dense plantation near sensitive receptors.</li> <li>➤ Enforce “No Horn” zones near schools and hospitals.</li> <li>➤ Maintain road surface to minimize noise due to uneven pavement.</li> </ul>	Contractor	Noise monitoring results; Maintenance records	MPWD
7	Road Safety and Accident Risks	Traffic congestion; Increased likelihood of road accidents; Risk to	<ul style="list-style-type: none"> <li>➤ Install and maintain proper signage, reflectors, and road markings.</li> <li>➤ Ensure adequate lighting at</li> </ul>	Contractor	Accident record; Safety audit report;	MPWD

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
		pedestrians and local communities	intersections and pedestrian zones. ➤ Provide speed control measures and pedestrian crossings in settlement areas. ➤ Conduct community road safety awareness programs.		Awareness records	
8	Maintenance Waste from Roadside Maintenance, Drain Cleaning, or Repairs	Soil and water contamination from indiscriminate disposal; Visual pollution and clogging of drains	➤ Collect and dispose of maintenance waste at designated locations. ➤ Prohibit dumping into drainage channels or low-lying areas. ➤ Reuse or recycle suitable materials (e.g., asphalt, concrete, metal).	Contractor	Waste logbook; Disposal records	MPWD

### 8.3 PERFORMANCE INDICATORS

Environmental and social components identified in affecting the environment and social conditions at critical locations have been suggested as performance indicators (PIs). For example, near the construction site, a thick layer of dust over the nearby vegetation/leaf is an indication that the dust control measures are not effective. The performance indicators shall be evaluated under three heads as;

- Environmental condition indicators to determine efficacy of environmental management measures in control of air, noise, water and soil pollution.
- Environmental and social management indicators to determine compliance with the suggested environmental and social management measures. Social monitoring indicators will be indicated as part of the Resettlement Action plan (RAP)/Indigenous People Development Plan (IPDP).
- Operational performance indicators have also been devised to determine efficacy and utility of the proposed mitigation measures.

The performance indicators and monitoring plans prepared for the road stretch are given in **Annexure 8.1**. Details of the performance indicative parameters for each of the component will have to be identified and reported during all stages of the implementation.

### 8.4 MONITORING PLAN FOR ENVIRONMENTAL CONDITIONS

Environmental monitoring involves regular checking of the environmental management issues detailed in the ESMP and to ascertain whether the mitigation measures are achieving their objectives, according to the ESMP, with the progress of the works. It provides the necessary feedback for Project management to keep the programme on schedule.

For each environmental condition, the Monitoring Plan specifies the parameters to be monitored, the locations of monitoring sites, and the frequency and duration of monitoring. It also outlines the applicable standards, as well as the responsibilities for implementation and supervision. The Monitoring Plan, along with details of monitoring locations for environmental condition indicators during the construction and operation stages of the project, is presented in **Table 8.1**.

The monitoring will be carried out by Contractor through the NABL accredited agency and will be supervised by the Environment Specialists of the CSC/PMC and E&S Cell, MPWD.

### 8.5 MONITORING PLAN FOR SOCIAL CONDITIONS

The social monitoring plan is designed to track and evaluate the effectiveness of social safeguard measures implemented under the Environmental and Social Impact Assessment (ESIA). It ensures compliance with national and international social safeguard frameworks, including the Resettlement Action Plan (RAP) and the Indigenous Peoples Development Plan (IPDP). The monitoring plan for social condition indicators of the sub-project during the construction stage is presented in **Table 8.2**.

Table 8.2: Environmental Monitoring Plan for Environmental condition indicators (Air, Water, Noise and Soil)

Environmental Attribute	Timing	Parameter	Standards	Frequency	Duration	Location	Total no. of Samples during construction and operation stage.	Implementation
Air	Construction	CO, NOx, PM10, PM2.5 and SO2	CPCB Guidelines (NAAQMS/ Volume- I/2013-14)	3 locations for 3 Seasons* for 1year	24 hours sampling	3 locations (Construction Plant Sites, settlements and Work Zones)	9	Contractor through NABL accredited Laboratory and supervised by Construction Supervision Consultant
	Operation			3 locations for 3 Seasons for 1 year.		At 3 locations during operation stage where monitoring had been done during construction stage	9	Contractor through NABL accredited Laboratory and supervised by Construction Supervision Consultant

Environmental Attribute	Timing	Parameter	Standards	Frequency	Duration	Location	Total no. of Samples during construction and operation stage.	Implementation
Water	Construction	As per Drinking Water Standards	Indian standards for inland surface waters (IS:2296,1982) and for drinking water (IS:10500-2012)	Surface water at 2 locations for 3 Seasons for 2 consecutive years. Ground water at 2 locations for 3 seasons for 2 consecutive years	As per Grab Sampling guidelines	Drinking water samples from the labour camps and from hand pumps. Surface water from the water courses near the work site and River.	24	Contractor through NABL accredited Laboratory and supervised by Construction Supervision Consultant
	Operation			Surface water 2 locations for 3 Seasons for 1 years. Ground water at 2 locations for 3 Seasons for 1 years.		At 4 locations during operation stage where monitoring had been done during construction stage	12	Contractor through NABL accredited Laboratory and supervised by Construction Supervision Consultant

Environmental Attribute	Timing	Parameter	Standards	Frequency	Duration	Location	Total no. of Samples during construction and operation stage.	Implementation
Noise	Construction	Noise Levels on dB scale (A)	Noise rules 2000 by CPCB	3 locations for 3 Seasons for 1 year.	Leq in dB(A) of daytime and night-time	Near the working zones, sensitive receptors and construction plant sites.	9	Contractor through NABL accredited Laboratory and supervised by Construction Supervision Consultant
	Operation			3 locations for 3 Seasons for 1 year		At 03 locations during operation stage where monitoring had been done during construction stage	9	Contractor through NABL accredited Laboratory and supervised by Construction Supervision Consultant
Soil	Construction	Monitoring of Pb, SAR and Oil and	(IS): 2720 for 'Method of Test for Soils'	2 locations for 3 Seasons for 2 consecutive years.	Grab Sampling	Soil at 2 location 3 times a year for 24 Months	12	Contractor through NABL accredited Laboratory and supervised by



Environmental Attribute	Timing	Parameter	Standards	Frequency	Duration	Location	Total no. of Samples during construction and operation stage.	Implementation
		Grease						Construction Supervision Consultant
	Operation			2 locations for 3 Seasons for 1 year			6	Contractor through NABL accredited Laboratory and supervised by Construction Supervision Consultant

\*Except Monsoon

Social Monitoring will be done during Construction stage of the proposed Project as per the details provided in Table 8.3.

**Table 8.3: Social Monitoring Plan**

Indicator Category	Responsibility	Performance Indicators	Data Collection Method	Frequency
Resettlement & Livelihood Restoration	RP Implementation consultant/ MPWD	% of affected households receiving compensation & assistance	Household surveys, payment records	Quarterly
Labour & Working Conditions	Contractor/ CSC/ MPWD	Compliance with fair wages, working hours, safety	Labour camp inspections, interviews	Monthly
		% of local workforce employed in project	Contractor reports	Quarterly
Social Inclusion & Gender	RP Implementation consultant/ Contractor/ MPWD	% of women engaged in livelihood activities	Beneficiary tracking	Quarterly
Stakeholder Engagement & Grievance Redressal	RP Implementation consultant/ Contractor/ CSC/MPWD	No. of community consultations held	Consultation records	Bi-annually
		% of grievances resolved within set timeline	GRM logs	Quarterly
Indigenous Peoples & Cultural Heritage	RP Implementation consultant/ Contractor/ MPWD	Documentation of FPIC & community agreements	Meeting records, video/audio evidence	Ongoing
		No. of cultural sites protected/enhanced	Site inspections, community feedback	Annually

## 8.6 REPORTING SYSTEM

Reporting system for the project operates at two levels:

- Reporting for environmental condition indicators and environmental & social management indicators at site level
- Reporting for operational performance indicators at the PWD level.

The reporting system for environmental condition indicators and environmental and social management indicators is managed by the Contractor CSC, and E&S Cell - MPWD. The reporting system is presented in **Table 8.4**. Reporting formats prepared by the CSC/PMC for the Contractor will serve as the basis for implementation by the Contractor and monitoring by the CSC, E&S Cell - MPWD. The list of reporting formats prepared for the project is presented in **Table 8.5**.

- The reporting system shall start with the Construction Contractor who is the main executor of the implementation activities. The Contractor will report to the Construction Supervision Consultant (CSC)/Project Management Consultant (PMC), who in turn shall report to the E&S cell MPWD.
- Contractor will prepare its monthly and quarterly report format and get approval from CSC/PMC and likewise CSC/PMC will get approval of MPWD on its formats before reporting.

- The Contractor shall prepare formats and submit monthly and quarterly environmental and social compliance reports along with formal monthly and quarterly overall project reporting to the CSC.
- The CSC/PMC shall submit separate quarterly environmental and social monitoring reports to E&S cell MPWD in addition to submission of the summary of the activities of the month in the formal monthly report including any deviations and corrective actions
- E&S cell MPWD /CSC will be responsible for the preparation of the targets for identified non-compliances.
- Solutions for further effective implementation may also emerge as a result of the compliance monitoring reports.
- Environmental and Social Management Compliance Certificate shall be issued by Environment Specialist of CSC/PMC during the submission of each Interim Payment Certificate (IPC). This certificate will be based on compliance status of environmental and social measures during that tenure for which IPC has been produced.
- Photographic records will be kept to provide useful environmental monitoring tools. All material source locations, debris disposal locations, plants locations, Construction camp locations, Crusher locations etc. will have a complete photographic record. Photographs for all these establishments will be taken prior to establishment activities begin, during the establishment and operation process and after rehabilitation. The record will be submitted to CSC/PMC half yearly and will also be availed to PMC/ E&S cell MPWD, as and when required.
- A full record of construction activities shall be kept as a part of normal contract monitoring system.
- The operation stage monitoring reports may be annual, provided the Project Environmental and social completion report shows that the implementation was satisfactory.

This reporting will be as follows:

- Contractor reporting to the CSC/PMC
- CSC/PMC reporting to E&S Cell - MPWD
- MPWD reporting to the World Bank

**Table 8.4: Reporting System for environmental & social management indicators**

Items	Contractor	Project Management Consultant (PMC)		E&S cell (MPWD)		World Bank (WB)
	Implementation & Reporting to CSC/PMC	Supervision	Reporting to MPWD	Oversee Compliance Monitoring	Report to WB	Desired Supervision
<b>Construction Stage</b>						
Monitoring of Construction Site and Construction Camp	Before start of work	Regular	Monthly		Quarterly	Quarterly
Pollution Monitoring	As required	As required	Quarterly	Quarterly	Quarterly	Quarterly
Debris Disposal Area	Weekly	Regular	Monthly	Quarterly	Quarterly	Quarterly

Items	Contractor	Project Management Consultant (PMC)		E&S cell (MPWD)		World Bank (WB)
	Implementation & Reporting to CSC/PMC	Supervision	Reporting to MPWD	Oversee Compliance Monitoring	Report to WB	Desired Supervision
Monitoring of Enhancements	Implementation	As required	Quarterly	Quarterly	Quarterly	Yearly
Topsoil Preservation	Weekly	As required	Monthly	Quarterly	Quarterly	Yearly
Borrow Area/Quarry Area	Regular	Regular	Monthly	Quarterly	Quarterly	Yearly
Tree Cutting	-	-	-	Quarterly	Quarterly	Yearly
Grievance from construction site	Regular	As required	Monthly	Monthly	Monthly	Yearly
<b>Operation Stage</b>						
Pollution Monitoring	For one year	As required	Quarterly	As per monitoring plan	-	-

**Table 8.5: Reporting System for operational performance indicators**

Item	Stage	Contractor	Project Management Consultant (PMC)	
		Implementation & reporting to CSC/PMC	Supervision	Reporting to E&S Cell
Approval of Construction Camp/Plant Site and its Management Plan	Pre-Construction	One Time	One Time	One Time
Approval of Borrow Management Plan (General & Specific)	Pre-Construction	General –One Time Specific re- development plan - one for each borrow area	Regular	Quarterly
Construction Camp and Plant Site Management	Construction	Monthly	Regular	Quarterly
Topsoil Management	Construction	Monthly	Regular	Quarterly
Pollution Control and Construction Plants	Construction	Monthly	Regular	Quarterly
Pollution Monitoring	Construction and Operation	-		Quarterly
Vehicles and Pollution Control	Construction	Monthly	Regular	Quarterly
Details of the DG Sets and Pollution Control	Construction	Monthly	Regular	Quarterly
Details of Oil Storage	Construction	Monthly	Regular	Quarterly
Working at Water Courses & Pollution Control	Construction	Monthly	Regular	Quarterly
Details of Water Extraction	Construction	Monthly	Regular	Quarterly
Details of Personal Protective Equipment	Construction	Monthly	Regular	Quarterly

Status of Consent for Water Extraction	Construction	Quarterly	Quarterly	Quarterly
Deviations and Corrective Actions	Construction	—	Monthly	Quarterly
Implementation of Enhancement Measures for Cultural Properties, Water Harvesting Structures	Construction	Monthly	Regular	Quarterly
Debris generated by the hill ward side widening, cutting of hill slopes	During construction	Throughout the construction period	Regular	Quarterly
Grievance Redressal Mechanism during Construction	During Construction	Monthly	Regular	Monthly
Work Force Management	During Construction	Monthly	Regular	Quarterly
Occupational Health Safety Measures	During Construction	Monthly	Regular	Quarterly
Road Safety Measures	During Construction	Monthly	Regular	Quarterly
Accidents Reporting	During Construction	Monthly	Regular	Quarterly

During regular monthly meetings, environmental and social aspects should be discussed, with the staff responsible for implementing the Environmental and Social Management Plan from the Contractor, E&S Cell, and PMC.

#### **Environmental Monitoring Cost**

The environmental monitoring budget has been estimated based on the project's length and the existing environmental conditions along the proposed alignment. A total of INR 8,01,000 has been projected to cover environmental monitoring activities during both the construction and operation stages. Detailed cost estimates are provided in **Table 8.6: Environmental Monitoring Cost**.

Table 8.6: Environmental Monitoring Cost

S. No.	Environmental Attribute	Stage	Locations / Seasons	Unit	Quantity	Unit Rate (INR)	Cost (INR)
1	Air quality monitoring	Construction	3 locations, 3 seasons, 2 years	No.	18	9,000	1,62,000
2	Air quality monitoring	Operation	3 locations, 3 seasons, 2 years	No.	18	9,000	1,62,000
3	Water quality monitoring	Construction	2 locations, 3 seasons, 2 years (For surface and ground water each)	No.	24	7,000	1,68,000
4	Water quality monitoring	Operation	2 locations, 3 seasons, 1 year (For surface and ground water each)	No.	12	7,000	84,000
5	Noise quality monitoring	Construction	3 locations, 3 seasons, 1 year	No.	9	3,000	27,000
6	Noise quality monitoring	Operation	3 locations, 3 seasons, 2 years	No.	18	3,000	54,000
7	Soil quality monitoring	Construction	2 locations, 3 seasons, 2 years	No.	12	6,000	72,000
8	Soil quality monitoring	Operation	2 locations, 3 seasons, 2 years	No.	12	6,000	72,000
	<b>Total</b>						<b>8,01,000</b>

## **8.7 INSTITUTIONAL FRAMEWORK OF THE PROJECT**

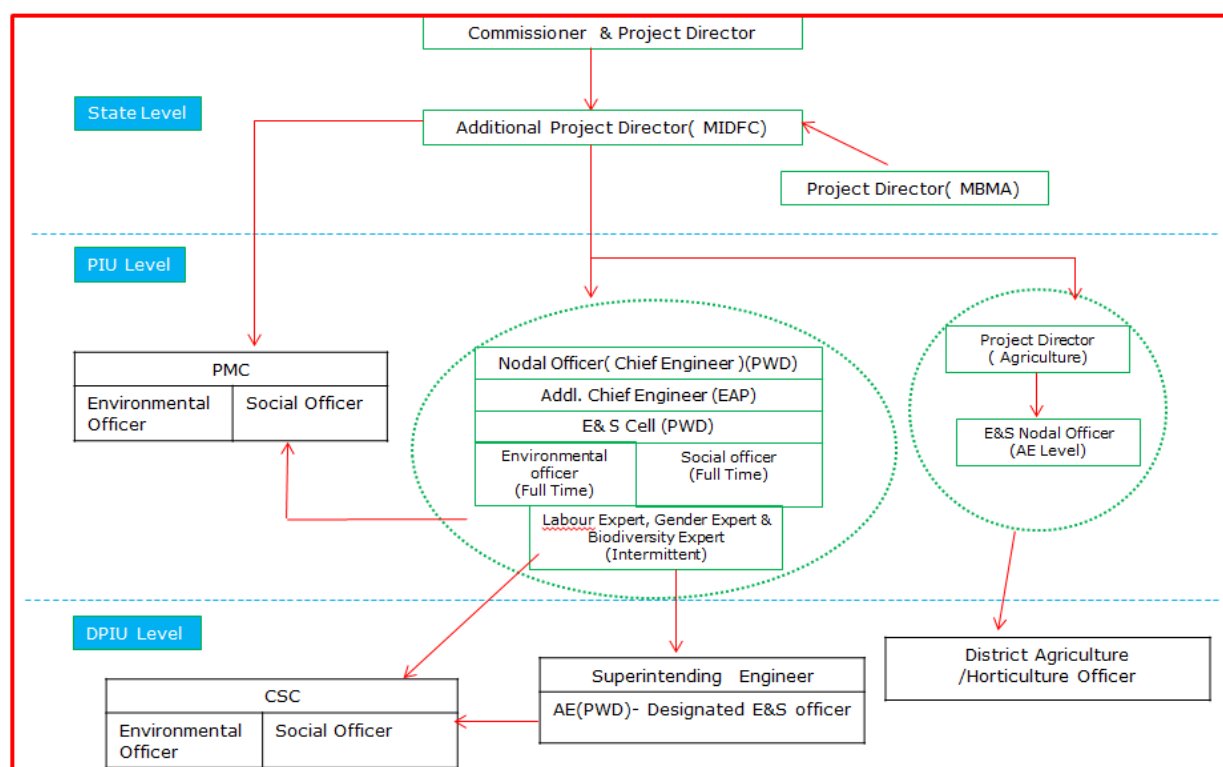
The Meghalaya Infrastructure Development and Finance Corporation (MIDFC) will implement the MLCIP, leveraging World Bank experience from projects such as the *Meghalaya Integrated Transport Project (MITP)*, where a PMU coordinates activities across implementing agencies. E&S project staff under the PIU which is the PWD, Government of Meghalaya (MPWD) will manage safeguards as per the World Bank's Environmental and Social Framework (ESF). This will build considerable experience for MIDFC and the MPWD on WB procedures, especially in managing complex issues on resettlement, tribal land rights, biodiversity in hilly terrains, and engagement with Sixth Schedule institutions. Therefore, existing capacities must be leveraged such that experienced personnel are on-boarded during the preparation stage and lessons from past projects are duly integrated.

The project will be implemented through the MPWD, with MIDFC as the central PMU. Respective PIUs will be set up in the Department of Agriculture & Meghalaya Basin Management Agency (MBMA). A Project Management Consultant (PMC) and Construction Supervision Consultant (CSC) will also be engaged to backstop the PMU/PIU on specific technical, institutional, and monitoring tasks. The PMU, PIUs, PMC, and CSC must be adequately staffed with competitively recruited E&S Specialists to support preparing site-specific ESIs for DPRs and other E&S documents.

### **8.7.1 Governance and Overall Institutional Structure of the Project**

The implementation arrangements will align with the current institutional architecture of the Government of Meghalaya (GoM), incorporating Sixth Schedule provisions for tribal autonomy. The MIDFC, responsible for overall project coordination and financing, will be the project holder and lead implementing agency. The MPWD will oversee civil works (roads, bridges, and ropeways), while Department of Agriculture (DoA), and MBMA will assist the PMU to implement agrologistics and community components.

The MIDFC-PMU will oversee overall project management and coordination through officers experienced in World Bank procedures. The PMC, a team of experts and consultants headed by a Team Leader, will provide technical support for project activities that exceed the skill set of implementing agencies. The CSC will provide construction supervision. Additionally, the PMC/CSC will assist in collating information and documenting the same. The project implementation structure is shown in **Figure 8.1**.



**Figure 8.1: Project Implementation Organogram**

### **Meghalaya Infrastructure Development and Finance Corporation (MIDFC) – Project Management Unit (PMU)**

The Meghalaya Infrastructure Development and Finance Corporation (MIDFC) serves as the state's nodal agency for planning, financing, and implementing major infrastructure and development projects across Meghalaya.

The Project Management Unit (PMU) under MIDFC serves as the central coordinating body providing strategic direction, policy alignment, and oversight for the project's implementation. It manages planning, budgeting, and inter-agency coordination between PWD and MBMA, ensuring compliance with World Bank ESF, national, and state safeguard regulations and leads stakeholder engagement. Key officials include the Commissioner & Project Director, Additional Project Director (MIDFC), and specialized Procurement, Financial, and E&S Experts.

### **Project Implementation Unit (PIU) – Meghalaya Public Works Department (MPWD)**

The Project Implementation Unit (PIU) under MPWD is the main agency implementing MLCIP's road and connectivity components. It prepares DPRs, manages procurement, and oversees construction through Divisional PIUs and Supervision Consultants. The PIU ensures technical quality, environmental and social safeguard compliance, and coordination with local institutions. It reports progress to the PMU (MIDFC) and conducts capacity-building activities for field staff and contractors. Key officials include the Nodal officer (Chief Engineer -Roads), Additional Chief Engineer (EAP), Nodal Officer (Environmental), Liaison Officer (Social) and E&S Officers.



### **Project Implementation Unit (PIU – MBMA/DoA) for Agrologistics**

The PIU within MBMA implements the Agrologistics Component, focusing on value chain enhancement, storage, processing, and market linkages. It identifies and develops agrologistics infrastructure, partners with agribusinesses and FPOs, and promotes sustainable, gender-inclusive models. The PIU ensures safeguard compliance, aligns logistics infrastructure with PWD connectivity works, and builds capacity among farmers and entrepreneurs. Key officials include the Project Director (MBMA), Nodal Officer (Agrologistics), and Social & Environmental Specialists responsible for technical coordination and safeguard adherence.

### **Divisional Project Implementation Units (DPIU – PWD)**

Each DPIU under PWD acts as the field-level unit implementing infrastructure works through contractors under PIU and SC supervision. It ensures quality, safety, and timely execution, coordinates with district authorities and traditional institutions, monitors ESMP compliance, and submits progress reports to the PIU. DPIUs also facilitate community engagement and grievance redressal.

### **District Project Implementation Unit (DPIU –DoA / MBMA)**

The DPIU under MBMA implements district-level agrologistics projects, linking FPOs, cooperatives, and private partners to strengthen value chains. It manages civil and non-civil works, oversees procurement, and ensures safeguard compliance. The unit coordinates with traditional institutions for site selection and promotes sustainable business models for the long-term operation of agrologistics facilities.

### **Project Management Consultant (PMC)**

The Project Management Consultant (PMC) provides technical, managerial, and E&S support to the PMU and PIUs. It assists in DPR preparation, safeguards integration, progress monitoring, and capacity building, ensuring project quality, compliance, and timely implementation across all components.

### **Supervision Consultant:**

The Supervision Consultant (SC) 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.

Project implementation will be guided by a comprehensive Project Operations Manual (POM), to be prepared by the PMU with support from the Project Management Consultant (PMC). Each implementing entity will provide its respective inputs, and the POM will be finalized within three months of the project's effectiveness date. The Project Operations Manual (POM) will be closely aligned with the Environmental and Social Management Framework (ESMF) to ensure that environmental and social safeguard processes are fully integrated into project planning, implementation, and reporting. It will include detailed operational guidance on screening, risk

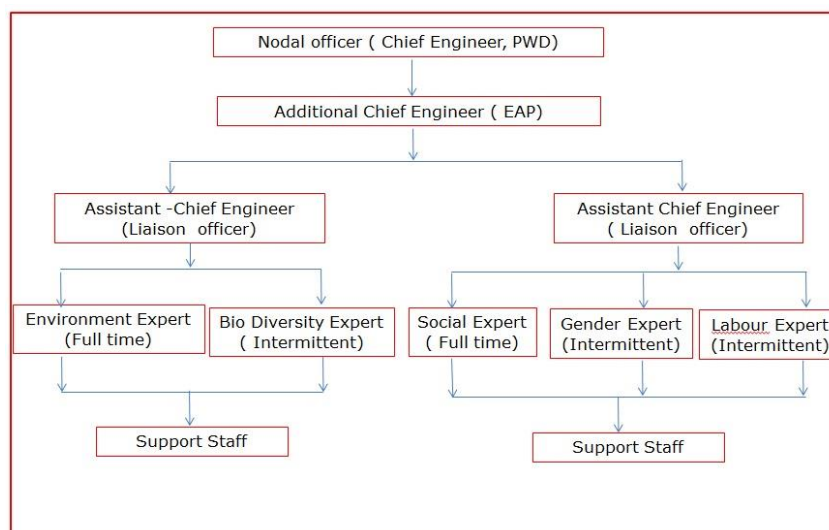
categorization, preparation of Environmental and Social Impact Assessments (ESIAs), and implementation of Environmental and Social Management Plans (ESMPs). The POM will also define roles and responsibilities of the PMU, PIUs, and DPIUs in environmental and social compliance, outline reporting formats, and specify timelines for monitoring and audits. This alignment will ensure uniform application of safeguard measures across all project components, promote accountability, and strengthen the overall monitoring and evaluation (M&E) system under MLCIP.

### **8.7.2 Institutional Arrangement for E&S Management**

- ❖ **Project Management Unit (PMU):** MIDFC will constitute a PMU, drawing from the pool of officers that already have experience with the World Bank procedures. PMU will be responsible for management and coordination of project implementation.
- ❖ **Project Implementation Unit (PIUs):** MIDFC will be supported by PIUs in the Public Works Department (Roads & Bridges), Agriculture, Horticulture, and MBMA, GoM. There will be Nodal Officers at E&S at all the PIUs. The PIUs will have Nodal Officers with assigned charge for E&S. They will not only oversee the implementation of Environmental and Social Codes of Practice during the construction but will also support in the integration of the environmental and social aspects into the agrologistics and community interventions. Currently, there is limited E&S staff in the PIUs – especially at Agriculture and MBMA levels such capacities will be required (and client has agreed to mobilize them before implementation begins).
- ❖ **Environment and Social (E&S) Cell:** Established within PWD, headed by the Additional Chief Engineer (EAP), and supported by two Executive Engineers, Environmental Officer (full-time), Social Officer (full-time), Labour Expert (intermittent), Gender Expert (intermittent), Biodiversity Expert (intermittent) and support staff. The E&S Cell will provide support to MIDFC and PIUs across all project stages:
  - Preparatory: Screening, assisting ESIA preparation, integration into DPRs, assisting PMC/CSC for statutory clearances
  - Implementation: Site inspections, monitoring, capacity building
  - Post-Implementation: Audits, lessons learned
- ❖ **Project Management Consultant (PMC):** The technical support for implementation of project activities that are beyond skill-set of implementing agencies will be brought in by the PMC, with a team of experts/consultants, headed by the Team Leader (TL). The PMC will have one Environmental and one Social Officer to support the PMU/PIU in the implementation of the ESMF for the project and the ESMP for each sub project. The Environment and Social Specialist will verify on site the implementation of the ESMP before each bill is submitted to PMU with recommendation for payment.
- ❖ **Construction Supervision Consultant (CSC)** The CSC will provide day-to-day supervision of construction works, with Environmental Specialist, Social Specialist, to ensure contractor compliance with ESMPs, OHS, labour standards, gender inclusion, and social safeguards.

The implementation structure for the environmental and social management has been aligned to the institutional structure of the project. The E&S institution would help integrate the

sustainability principle in the ESMF into the construction of roads, bridges, ropeways, and Agrologistics systems, and the use of infrastructure in agriculture and logistics interventions planned under this project. The PMU, PIUs, PMC, CSC, and the organizations supporting this project would ensure the effective engagement of stakeholders and handhold them through the project cycle to ensure that the project makes positive environmental and social benefits. The Institutional structure for implementation of the Environmental and Social Safeguard is presented in Figure 8-2.



**Figure 8.2: Organizational Structure of the E&S Cell**

### 8.8 Roles and Responsibilities of Key Staff and Entities

The implementation of the Environmental and Social Management Framework (ESMF) under the Meghalaya Logistics Connectivity Improvement Project (MLCIP) will be supported by a multi-disciplinary team across the Project Management Unit (PMU), Project Implementation Units (PIUs), and field divisions. The key responsibilities of staff and entities involved are summarized in Table 8.7.

**Table 8.7: The Key Responsibilities of Staff and Entities**

Designation	Institution / Entity	Core Roles and Responsibilities	Environmental & Social Responsibilities (ESF-linked)	Reporting / Coordination Line
Commissioner-cum-Project Director (PMU)	MIDFC / Government of Meghalaya	Provides overall leadership and strategic direction for MLCIP. Ensures policy alignment, resource allocation, and	Responsible for ensuring full ESF compliance, approval of ESMPs, oversight of land acquisition, labour	Reports to Chief Secretary, GoM; Coordinates with PWD, MBMA, and World Bank.

Designation	Institution Entity /	Core Roles and Responsibilities	Environmental & Social Responsibilities (ESF-linked)	Reporting Coordination Line /
		compliance with World Bank ESF and national/state laws. Chairs Project Steering Committee and oversees inter-departmental coordination.	management, stakeholder engagement, and reporting to World Bank.	
Additional Project Director (MIDFC)	MIDFC	Supports the Commissioner in day-to-day project management, coordination, budgeting, and decision-making. Oversees PIUs and ensures timely implementation and reporting.	Supervises implementation of ESMF, monitors environmental and social safeguard performance, ensures disclosure and grievance redress follow-up.	Reports to Commissioner-cum-Project Director; coordinates with PIUs, consultants, and PMU specialists.
Project Director (MBMA)	Meghalaya Basin Management Agency	Leads agrologistics component implementation, ensures integration of agricultural value chains, market linkages, and climate-resilient infrastructure.	Ensures compliance with ESS5 (Land Acquisition), ESS7 (Indigenous Peoples), and ESS10 (Stakeholder Engagement). Guides community consultations and inclusion of women and tribal	Reports to Additional Project Director, MIDFC; coordinates with Agriculture, Horticulture, and FPOs.

Designation	Institution / Entity	Core Roles and Responsibilities	Environmental & Social Responsibilities (ESF-linked)	Reporting / Coordination Line
			groups.	
Nodal Officer Cum Project Director (Chief Engineer, PWD)	Public Works Department	Heads design, technical standards, and construction quality control for connectivity works. Integrates environmental and social considerations in DPRs and tendering.	Ensures engineering designs include environmental safeguards, slope protection, and labour-safety features. Supervises PIU-PWD E&S compliance.	Reports to Commissioner (PMU) and coordinates with PIU engineers and E&S Cell.
Additional Chief Engineer (EAP)	PWD (Externally Aided Projects Wing)	Supports coordination with contractors and consultants for schedule, budget, and compliance.	Monitors contractor adherence to ESMP and safety standards. Provides quality assurance and periodic technical audits.	Reports to Chief Engineer; liaises with PMU and supervision consultants.
Environmental Expert	E&S Cell, PIU (PWD/MBMA)	Leads environmental screening, scoping, and monitoring of subprojects. Advises on mitigation measures, pollution control, and natural resource management.	Ensures ESMP implementation, site inspections, contractor environmental performance, and reporting under ESS1 and ESS3.	Reports to Additional Chief Engineer (EAP) and Nodal Officer/Chief Engineer, PWD.

Designation	Institution / Entity	Core Roles and Responsibilities	Environmental & Social Responsibilities (ESF-linked)	Reporting / Coordination Line
Social Expert	E&S Cell, PIU (PWD/MBMA)	Conducts social screening, stakeholder consultations, and supervises RAP/IPDP implementation. Ensures fair compensation and livelihood restoration.	Monitors ESS5, ESS7, ESS10 compliance, supports GRM operation, and prepares social audit reports.	Reports to Additional Chief Engineer (EAP) and Nofal Officer/Chief Engineer, PWD.
Gender Expert (Intermittent)	E&S Cell (PIU/PMU Shared)	Provides technical input on gender inclusion, women's employment, and gender-based violence prevention strategies.	Implements Gender Action Plan (GAP) and ensures compliance with ESS2 and ESS10.	Advises and reports to E&S Cell, PIU
Labour Expert (Intermittent)	E&S Cell (PIU/PMU Shared)	Advises on labour welfare, OHS standards, and contractor compliance. Conducts periodic labour audits and site safety training.	Ensures compliance with ESS2, BOCW Act 1996, and national labour codes. Supports management of worker grievances.	Advises and reports to E&S Cell, PIU
Biodiversity Expert (Intermittent)	E&S Cell (PIU/PMU Shared)	Provides expertise on ecological sensitivity, biodiversity conservation,	Ensures compliance with ESS6 (Biodiversity Conservation), screens sites for ecological risk,	Advises and reports to E&S Cell, PIU and coordinates with Forest Department.

Designation	Institution / Entity	Core Roles and Responsibilities	Environmental & Social Responsibilities (ESF-linked)	Reporting / Coordination Line
		and compensatory afforestation plans.	and develops mitigation strategies.	
Environmental Expert	Project Management Consultant (PMC)	Supports PMU and PIU in reviewing environmental documents, conducting audits, and quality assurance for ESMP implementation.	Verifies compliance with ESS1, ESS3, ESS4, and national environmental laws. Provides training inputs.	Reports to PIU and PMC Team Leader.
Social Expert	Project Management Consultant (PMC)	Advises on social safeguards, assists in RAP/IPDP implementation, and monitors GRM effectiveness.	Ensures ESS5 and ESS10 compliance, conducts stakeholder engagement verification, and prepares review reports.	Reports to PIU and PMC Team Leader.
Project Director (DPIU)	Divisional/District PIU (PWD/MBMA)	Leads division/district-level implementation, supervises contractors, and coordinates community liaison. Ensures field-level compliance with ESMPs.	Implements safeguard measures locally, supervises labour conditions, safety, and community consultations.	Reports to PIU Project Director and PMU.

Designation	Institution / Entity	Core Roles and Responsibilities	Environmental & Social Responsibilities (ESF-linked)	Reporting / Coordination Line
Environmental & Social Officer	DPIU	Supports Project Director (DPIU) in monitoring E&S compliance, maintaining records, and conducting field verification.	Implements ESMP at site, manages grievance records, and reports progress to PIU.	Reports to DPIU Project Director and PIU E&S Cell.
Environmental Expert	Supervision Consultant	Conducts day-to-day site inspections, monitors ESMP compliance, and prepares environmental progress reports.	Ensures mitigation measures are implemented and recommends corrective actions for non-compliance.	Reports to PIU and PMC.
Social Expert	Supervision Consultant	Monitors social safeguards on-site, manages community engagement and grievance redress, and reports social performance.	Ensures adherence to RAP/IPDP commitments and ESS5 compliance.	Reports to PIU and PMC.
Project Director (Agriculture) / E&S Nodal Officer (Agrologistics)	Department of Agriculture / MBMA	Coordinates agrologistics subprojects, ensures integration of production, storage, and market infrastructure.	Ensures compliance with ESS3, ESS7, and ESS10. Oversees environmental management of cold-chain and market facilities.	Reports to Project Director (MBMA) and coordinates with District Agriculture Officers.
District Agriculture	Department of	Implements agrologistics	Ensures environmentally	Reports to E&S Nodal Officer (Agrologistics)



Designation	Institution / Entity	Core Roles and Responsibilities	Environmental & Social Responsibilities (ESF-linked)	Reporting / Coordination Line
Officer	Agriculture	facilities at field level, supports FPOs, and supervises sustainability practices.	sustainable operations and equitable access for smallholders and women farmers.	and MBMA.
Contractor	Contractor EHS Team	Executes construction in compliance with technical and E&S requirements. Prepares Contractor's ESMP (C-ESMP) and maintains OHS measures.	Ensures compliance with ESS2, ESS3, ESS4, and ESS10, manages worker welfare, waste disposal, and safety.	Reports to DPIU/PIU; supervised by Supervision Consultant.

Under the institutional arrangement for MLCIP, strict enforcement mechanisms ensure accountability in environmental and social (E&S) compliance. 1% retention from each contractor bill is applied for E&S non-compliance. The issue must be rectified within two billing cycles, failing which the amount is forfeited. More than five forfeitures trigger contract termination and encashment of the Environmental and Social (ES) Bank Guarantee by the PMU.

## **9. GRIEVANCE REDRESSAL MECHANISM**

### **9.1 INTRODUCTION**

Effective grievance redressal mechanisms ensure good governance, accountability, and transparency in managing and mitigating the environmental and social issues of a particular project. This consists of defining the process for recording/receiving complaints and their redressal in respect of environmental and social matters.

An integrated system will be established with Grievance Redressal Cells (GRCs), with necessary officers, officials, and systems at MIDFC (PMU). Grievances, if any, may be submitted through various mediums, including in person, in written form to a noted address, e-mail, or through direct calls to concerned official/s. The Social and Environmental Expert within PMU shall be responsible for coordination of grievance/complaints received.

The grievance redress mechanism should be in place at the time of initiating the implementation of R&RAP and civil construction activities in the project area. A platform for grievance redressal should be organized and its regular meetings may be conducted so as to allow people to put forth their grievances. It will help the appropriate authority to find solutions and amicably address the issues. The project, apart from web-based mechanism, will have a two-tier grievance redressal mechanism, i.e., (1) at the project site level, (2) State level (PMU level) .

**Web-based grievance mechanism:** MIDFC website will include a link where affected person(s) can register their complaints online. A telephone number will also be on the website of MIDFC and the project sites, so that the general public can register their complaint with the PMU office. In case of grievances received through a toll-free number or web-based system, a person should be made in-charge of screening and resolution of the same/communicating with the concerned divisions for resolution of the same. The person in-charge, based on the nature of the complaint, should forward the same to the concerned official. A ticket or a unique number will be generated for all such complaints. The complainant should follow up based on that unique number. All calls and messages should be responded to within 15 days. If a response is not received within 15 days, the complaint should be escalated to the Project Director.

**Tier I:** Under this project, the local Village Employment Councils (VECs) and community-level organizations will function as nodal point for the first-tier grievance redress mechanism. The local Headman will serve as the focal point responsible for receiving, documenting, and addressing complaints and feedback from stakeholders.

The Tier I Grievance Redress Cell shall operate under the Chairmanship of the Divisional/District Project Director (DPD) and will include the Resident Engineer (representing the Engineer), Environmental and Social (E&S) Experts of Construction Supervision Consultant (CSC), Environmental and Social Officers from the Divisional Project Implementation Unit (DPIU), representatives from relevant line departments, and representatives from local institutions.

Upon receipt of a grievance, the focal point shall review and assess the complaint for resolution at the local level. If the grievance or dispute cannot be satisfactorily resolved at the VEC level within fifteen (15) days from the date of submission, the matter shall be escalated to the Project Management Unit (PMU)/ State Level for further review and mediation.

**Tier II:** If the aggrieved person is not satisfied with the decision of the site-level Grievance Cell, the grievance may be escalated to the PMU/State-level Grievance Redress Cell (Tier II). The Tier II Cell shall be chaired by the Secretary, Department of Planning, and shall include the Chief Engineer, Project Director, and Social Development Expert of the Project as members. The State-level Grievance Redress Cell shall review the case and provide its decision or recommendations within fifteen (15) days of receiving the grievance.

If the aggrieved person is not satisfied with the decision of the State-level Grievance Cell, they shall have the right to seek redress through the judiciary. The Project Proponent shall extend all necessary assistance and support to the aggrieved person in pursuing the matter before the judicial authorities.

## 9.2 GRIEVANCE REDRESSAL MECHANISM (GRM) FLOWCHART

The following flowchart illustrates the three-tier grievance redressal mechanism with responsibilities and timelines for resolution.

<b>Tier I: Project Site Level</b>	Responsibility: VECs & Headman Timeline: Resolution within 15 days If unresolved → Escalate to PMU (Tier II)
<b>Tier II: State Level (PMU)</b>	Responsibility: Secretary Planning, Chief Engineer, Project Director, Social Expert Timeline: Resolution within 15 days

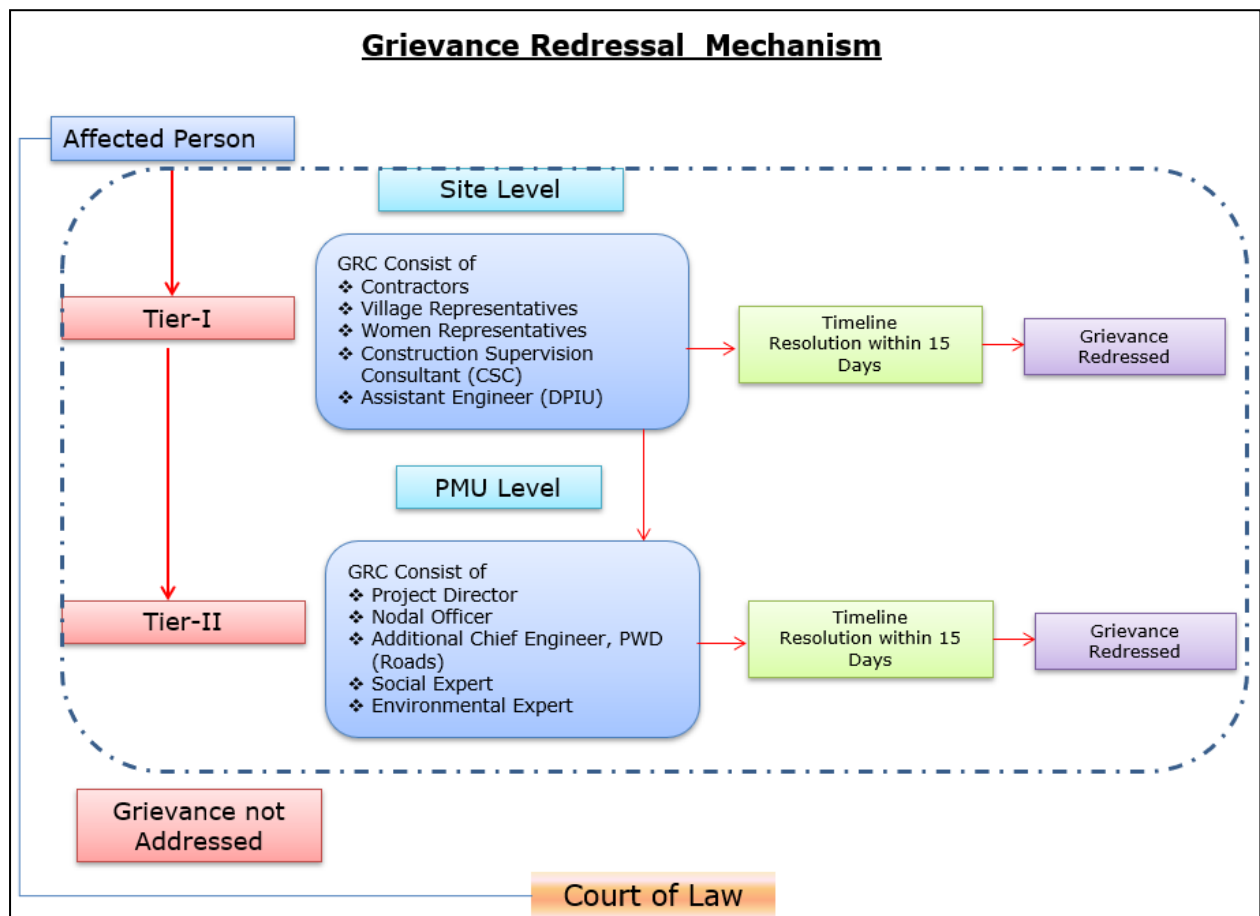


Figure 9.1: Grievance redressal Mechanism

*(MIDFC website will include a link where affected person(s) can register their complaints online. A telephone number will also be on the website of MIDFC and the project sites, so that the general public can register their complaint with the PMU office)*

### 9.2.1 Expanded Grievance Redressal Mechanism Details

To ensure the effectiveness and accessibility of the grievance redressal mechanism, it's crucial to elaborate on specific aspects of its implementation and operation. This includes detailed procedures, communication strategies, monitoring mechanisms, and capacity-building initiatives. Detailed Procedures for Grievance Submission and Processing

#### 1. Multiple Channels for Grievance Submission:

**In-Person:** Designated officers at the project site and PMU office will be available during specified hours to receive grievances directly from affected persons. A standard form, available in local languages, will be provided to facilitate the submission process. The officer will assist individuals who may have difficulty filling out the form.

**Written Submission:** A dedicated postal address will be established for receiving written grievances. The address will be widely publicized through community meetings, public notices, and the project website.

**Electronic Submission:** The MIDFC website will feature a user-friendly online grievance submission portal. This portal will allow individuals to submit complaints in their preferred language. Upon submission, an automated acknowledgment will be sent to the complainant, along with a unique tracking number.

**Toll-Free Helpline:** A toll-free helpline will be operational during working hours, staffed by trained operators who can record grievances and provide information on the redressal process. The helpline number will be prominently displayed at project sites and in public areas.

**Email Submission:** A dedicated email address will be established for receiving grievances electronically. This address will be monitored regularly by the grievance focal point.

#### **Details of contact for Grievances**

Description	Contact details
Company:	PWD, Meghalaya
To:	Chief Engineer-cum-Nodal officer
Address:	HV9P+GFJ, Lachumiere, Shillong, Meghalaya 793001
E-mail:	<a href="mailto:esmlcip@gmail.com">esmlcip@gmail.com</a>
Website:	<a href="http://megpwd.gov.in/contacts.html">http://megpwd.gov.in/contacts.html</a>
Telephone:	Tel: 0364-3572466
Fax:	-

#### **2. Grievance Logging and Acknowledgment:**

All grievances received through any channel will be logged into a centralized Grievance Management System (GMS). The GMS will record the date of receipt, complainant details, nature of the grievance, and the assigned tracking number,

Within three working days of receiving a grievance, the complainant will be sent an acknowledgment letter or email, confirming receipt and providing the tracking number for future reference.

#### **3. Grievance Screening and Assessment:**

The grievance focal point will screen all logged grievances to determine their eligibility and relevance to the project. Grievances that are clearly outside the scope of the project or are frivolous will be rejected, with a clear explanation provided to the complainant.

Eligible grievances will be assessed to determine their severity, urgency, and complexity. This assessment will inform the prioritization and allocation of resources for investigation and resolution.

#### **4. Grievance Investigation:**

The grievance focal point will assign the grievance to the appropriate officer or department for investigation. The investigation will involve gathering information from relevant sources, including the complainant, project staff, community members, and technical experts.

The investigation will be conducted in a fair, impartial, and transparent manner. The complainant will be kept informed of the progress of the investigation and will be given the opportunity to provide additional information or clarification.

#### **5. Grievance Resolution:**

Based on the findings of the investigation, the grievance focal point will develop a proposed resolution, in consultation with relevant stakeholders. The resolution will aim to address the root cause of the grievance and provide a fair and equitable outcome for all parties involved.

The proposed resolution will be communicated to the complainant, along with an explanation of the rationale behind it. The complainant will be given the opportunity to accept or reject the proposed resolution.

#### **6. Grievance Closure:**

If the complainant accepts the proposed resolution, the grievance will be closed, and the outcome will be documented in the GMS.

If the complainant rejects the proposed resolution, the grievance will be escalated to the next tier of the grievance redressal mechanism.

#### **9.2.2 World Bank Grievance Redressal System**

The World Bank's Grievance Redress Services (GRS) provides a confidential mechanism for individuals and communities affected by World Bank financed projects to submit complaints regarding actual or potential harm. In the context of Meghalaya, integration of such a system must consider the state's complex socio-ethnic landscape.

Although community consultations did not report active social conflicts, secondary sources indicate the presence of inter-tribal tensions. Since its formation in 1972, Meghalaya has experienced ethnic conflicts between indigenous tribes and settler non-tribal communities. The dominance of business establishments, labor opportunities, and other economic sectors by settlers primarily economic

migrants from Bangladesh, Nepal, and other parts of India created anxiety among the native population, culminating in three major ethnic riots between tribal and non-tribal communities.

By the late twentieth century, relations between ethnic communities showed relative improvement. While interactions between indigenous tribes and settler communities have largely stabilized, emerging tensions have shifted to dynamics among indigenous tribes themselves. This evolving context highlights the importance of a responsive grievance redress system, such as the GRS, that is sensitive to inter-tribal dynamics and ensures that all affected individuals can safely report concerns related to development projects.

*Note: please visit <http://www.worldbank.org/GRS> / [www.inspectionpanel.org](http://www.inspectionpanel.org).. For information on how to submit complaints to the World Bank Inspection Panel,*

### ➤ **Conflict Resolution through Grassroots Institutions**

In Meghalaya, conflicts are often resolved within tribal communities through grassroots institutions, guided by uncodified customary laws and practices. Among the Khasis, the Dorbar Shnong, and among the Garos, the Nokma, function as quasi-judicial bodies to settle disputes, including those related to land. Decisions made by these institutions are widely regarded as legitimate and are generally respected and adhered to by community members, reflecting the continued importance of traditional governance systems in maintaining social harmony.

#### **9.2.3 Communication Strategy**

**Community Awareness Campaigns:** Conduct regular community awareness campaigns to inform local residents about the grievance redressal mechanism, its purpose, and how to access it. These campaigns will utilize a variety of communication channels, including community meetings, public notices, radio broadcasts, and social media.

**Information Dissemination:** Distribute information leaflets and posters in local languages, outlining the grievance redressal process, contact details, and timelines.

**Stakeholder Engagement:** Engage with local leaders, community representatives, and civil society organizations to promote awareness and understanding of the grievance redressal mechanism.

**Website and Social Media:** Maintain an up-to-date website and social media presence to provide information on the grievance redressal mechanism, including frequently asked questions, contact details, and progress updates on grievance resolution.

#### **9.2.4 Monitoring and Evaluation**

**Grievance Tracking System:** Implement a robust Grievance Management System (GMS) to track all grievances received, their status, and the outcomes of the redressal process. The GMS will generate regular reports on grievance trends, resolution times, and complainant satisfaction.

**Regular Audits:** Conduct regular audits of the grievance redressal mechanism to assess its effectiveness, identify areas for improvement, and ensure compliance with established procedures.

Complainant Feedback: Collect feedback from complainants on their experience with the grievance redressal mechanism. This feedback will be used to improve the quality of the service and ensure that it is meeting the needs of the community.

Key Performance Indicators (KPIs): Define and monitor key performance indicators (KPIs) to measure the effectiveness of the grievance redressal mechanism. These KPIs may include:

- Number of grievances received
- Percentage of grievances resolved within the target timeframe
- Complainant satisfaction rate
- Number of grievances escalated to higher tiers

### **9.2.5 Capacity Building**

Capacity-building activities will include training grievance officers, creating awareness among community members on how to use the GRM, and guiding local leaders in resolving concerns at the community level. Further details are provided in the Capacity Development Chapter.

## **9.3 INTEGRATION WITH PROJECT MANAGEMENT**

Grievance Redressal as an Integral Part of Project Planning and Implementation: Integrate the grievance redressal mechanism into all stages of the project cycle, from planning and design to implementation and monitoring.

Coordination with Project Teams: Foster close coordination between the grievance redressal team and other project teams, such as the environmental and social safeguards team, the community engagement team, and the construction team.

Regular Reporting: Include regular reports on grievance redressal activities in project progress reports.

By implementing these detailed procedures, communication strategies, monitoring mechanisms, and capacity-building initiatives, the project can ensure that the grievance redressal mechanism is effective, accessible, and responsive to the needs of the community. This will contribute to building trust, promoting social harmony, and ensuring the long-term sustainability of the project. The Grievance Submission Form is given as Annexure -5



## 10. CONCLUSION AND RECOMMENDATIONS

### 10.1 CONCLUSION

An Environmental and Social Impact Assessment Study was conducted to assess the potential environmental and social impacts of the project. Primary information about the project influence area was gathered using an Environmental and Social Screening Checklist to evaluate the extent of environmental and social impacts resulting from project interventions. Environmental and social baseline data were collected from secondary sources to depict the existing conditions of the project area accurately. This information serves as a foundation for assessing potential environmental and social impacts, as well as enhancing the accuracy of impact predictions. Additionally, public consultations and FPIC were held with stakeholders to incorporate their inputs and concerns. The key findings of the ESIA are summarized as follows:

- Proposed project will ease the traffic flow and create safe and smooth mobility to motor vehicles as well as pedestrians. The proposed road improvement can reduce travel time from the farthest section of the road to the nearby market from one hour to just 30 minutes. The project is imperative for encouraging more trade and commercial activity (including public transport) in the district of East Khasi Hills.
- The environmental and the social impact assessment have been conducted in accordance with World Bank ESF and National & State regulations. All the potential impacts were identified in relation to pre-construction, construction, and operation phases.
- The existing road is a State Highway situated at an elevation of over 1,000 m above mean sea level (AMSL), with the Bangladesh border located within 20 km of the project road (aerial distance). As per the EIA Notification dated 14th July 2022, all highway projects of defense or strategic importance located within 100 km of the Line of Control or an international border are exempt from prior environmental clearance, provided they comply with the Standard Operating Procedures (SOP) issued from time to time. Accordingly, the proposed project does not require environmental clearance.
- Unclassed forest on community land is located along the project road corridor at chainages 38+300, 40+400, and 46+150. However, as all construction activities will remain confined within the existing Right of Way (RoW), no adverse impact on these Unclassed forest is anticipated.
- The proposed project alignment does not pass through any Wildlife Sanctuary/National Park/Biosphere Reserve/Tiger Reserve.
- No ASI Protected monuments found within 0.5 km from the project site. However, Monolith (Ch 23+200 and Ch41+500) and Cave (Ch 34+000 and 41+000) are present within 500 from the project Road.
- Approximately 35 nos. of trees are located within the existing Right of Way (RoW) along both sides of the road. To mitigate the ecological impact of tree felling, compensatory afforestation should be undertaken in line with applicable environmental regulations and





guidelines.





- The project road is expected to have some environmental and social impacts due to construction activities along the corridor, its proximity to culturally important sites such as monoliths and caves, and potential effects on Project-Affected Persons (PAPs) arising from access-related issues.
- Stakeholder Consultations were conducted to assess the perception of the people about the proposed project. The outcome of the consultations suggested that people are in general with the project because it will improve the present road conditions and connectivity. However, they also raised the requirement for the road safety measures; road furniture's (including streetlights, signage's, speed breaker etc.) and proper compensation for the loss of their assets.
- Occupational health and safety measures for both workers and the local community shall be ensured through the preparation and implementation of a comprehensive Labour Management Plan (LMP), in compliance with the World Bank's Environmental and Social Standard ESS2 on Labor and Working Conditions
- The mitigations will be further assured by a program of environmental and social monitoring conducted during construction and operation to ensure that all measures are implemented, and to determine whether the environmental and social conditions has stipulated or protected. This will include observations on- and off- site, document checks, and interviews with workers and beneficiaries, and any requirements for remedial action will be reported by the contractor to the MPWD.
- The ESMP shall be included in the bidding document along with appropriate contractual clauses for safeguarding the environment and social impacts during the project construction and operation (maintenance period).
- An overall project level and also construction stage level Grievance Redress Mechanism (GRM) will be formed to receive, feedback, suggestions and complaints, if any, from affected parties and addressing them during the construction stage and operation stage.
- The prepared ESMP will assist the Contractor and MPWD in mitigating the Environmental and Social impacts and guide them in the environmentally sound execution of the proposed project.
- A copy of the updated ESMP shall be always kept on-site during the construction period. As per the World Bank policy requirements, the prepared safeguard documents shall be disclosed in the World Bank website.

During the field survey, as well as consultations with the Detailed Project Report (DPR) team and the Public Works Department (PWD), several key issues were identified. For each observation, appropriate mitigation measures have been proposed to minimize adverse impacts and ensure smooth project implementation. These observations and their corresponding recommendations are summarized in **Table 10.1**.



**Table 10.1: Observations and Corresponding Recommendations**

CH No.	Type of Structures	Distance from center line	Mitigation measures proposed	Pictures
23+100 RHS	Monolith	9.7m	There will be no constructional camp during construction period upto 100 m on both sides from the Monolith.	 Latitude: 25.362663 Longitude: 91.827842 Elevation: 1636.52m Accuracy: 1.7m Time: 20-08-2023 11:46 Note: uploaded by user
26+650	Pipeline to mawlynnu village	7 m	Provision of utility ducts for underground pipelines and GI (Galvanized Iron) pipe crossovers shall be incorporated into the design to ensure safe and organized routing of essential services, minimize future excavation, and facilitate maintenance without disrupting road infrastructure	 Latitude: 25.361113 Longitude: 91.827842 Elevation: 1637.21m Accuracy: 1.7m Time: 20-08-2023 12:13 Note: uploaded by user
29+650	Hairpin band	5 m	Speed deduction measures to be taken	 Latitude: 25.361113 Longitude: 91.827842 Elevation: 1637.21m Accuracy: 1.7m Time: 20-08-2023 12:29 Note: uploaded by user
32+100 RHS	Jawahar Navodaya Vidyalaya (under construction)	75m from centre point	Safety measures shall be implemented to avoid any damage to the school infrastructure and to ensure the safety of students, staff, and the surrounding community during all phases of construction.  These measures include installation of temporary protective barriers, regulated construction hours, dust and noise	 Latitude: 25.361113 Longitude: 91.827842 Elevation: 1637.21m Accuracy: 1.7m Time: 20-08-2023 12:30 Note: uploaded by user

CH No.	Type of Structures	Distance from center line	Mitigation measures proposed	Pictures
			control, proper signage, and close coordination with school authorities.	
33+740 LHS	Mawjyngbuin cave	Access to the cave	Access roads should not be damaged or obstructed during construction activities; necessary precautions must be taken to maintain uninterrupted access for local residents and emergency services	
39+160 LHS	Krem Puri cave	Access within 10m	Access roads should not be damaged or obstructed during construction activities; necessary precautions must be taken to maintain uninterrupted access for local residents and emergency services	
41+500 RHS	Monolith	7 m	There will be no constructional camp during construction period upto 100 m on both sides from the Monolith.	
43+000 LHS	Church	5.5m from boundary wall of church	Access roads should not be damaged or obstructed during construction activities; necessary precautions must be taken to maintain uninterrupted access for local residents and emergency services	
43+520 LHS	SSA School	20m	Safety measures shall be implemented to avoid any damage to the school infrastructure and to ensure the safety of students, staff, and the surrounding community during all phases of	

CH No.	Type of Structures	Distance form center line	Mitigation measures proposed	Pictures
			<p>construction.</p> <p>These measures include installation of temporary protective barriers, regulated construction hours, dust and noise control, proper signage, and close coordination with school authorities.</p>	
46+600 RHS	SSA School	6 m from boundary wall	<p>Safety measures shall be implemented to avoid any damage to the school infrastructure and to ensure the safety of students, staff, and the surrounding community during all phases of construction.</p> <p>These measures include installation of temporary protective barriers, regulated construction hours, dust and noise control, proper signage, and close coordination with school authorities.</p>	

## 10.2 RECOMMENDATIONS

The following recommendations are made in accordance with the World Bank's Environmental and Social Standards (ESS) for the proposed Upgradation of Weilo - Mawsynram Road upto Phlangwanbroi for Meghalaya Logistics and Connectivity Improvement Project (MLCIP), funded by the World Bank, to ensure environmentally sustainable and socially inclusive development outcomes:

- The Contractor should prepare a site-specific contractor Environmental and Social Management Plan called as C-ESMP based on final design and identifications of locations of construction camps, quarries and borrow areas etc. within one month from the date of entering into the contract.
- MPWD shall conduct required consultations regularly or as needed with all stakeholders, including local residents, village councils, and public representatives, and maintain records of each consultation and meeting. These consultations are to be carried out during the pre-construction and construction phases to ensure stakeholder concerns are addressed and

documented.

- MPWD shall organize training for the capacity development of concerned E&S cell MPWD /PMC/CSC staff and district-level MPWD engineers on ESHS policies, regulations, and procedures for implementing, monitoring, and reporting ESMP measures. This training is to be conducted during the pre-construction phase.
- Contractors will engage the experienced ES&HS Staff for ESMP implementation as well as to ensure imparting induction, work-specific and other required trainings to the workers;
- MPWD will support Project Affected Peoples (PAP) as per RAP prepared for the project road stretch.
- Contractor/ MPWD to ensure the compliance of applicable laws at State/National level and relevant policies and best practices.
- The shifting of public utilities will be planned in advance to maintain supply of electricity and telephone services to people without or minimum disruptions, with prior intimation through Media, newspaper and other mode of communication.
- MPWD to monitor the implementation and redress of grievances timely and amicably.
- The contractor to ensure safe access to vulnerable people such as elderly and people with disabilities during the construction stage.



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### ANNEXURE 2.1: IRC AND MoRTH CODES APPLICABLE TO THE



Sl. No.	IRC Code/MoRTH	IRC Code Theme
1	IRC:34-2011	Recommendations for Road Construction in Areas Affected by Water Logging, Flooding and/or Salts Infestation
2	IRC:56-2011	Recommended Practice for Treatment of Embankment and Roadside Slopes for Erosion Control
3	IRC:90-2010	Guidelines of Selection, Operation and Maintenance of Bituminous Hot Mix Plant
4	IRC:104-1988	Guidelines for EIA of Highway Projects
5	IRC:120-2015	Recommended Practice for Recycling of Bituminous Pavements
6	IRC:121-2017	Guidelines for Use of Construction and Demolition Waste in Road Sector
7	IRC:125-2017	Guidelines on Dozers for Highway Works
8	IRC:126-2017	Guidelines on Wet Mix Plant
9	IRC:137-2022	Guidelines on use of Fibre-Reinforced Polymer Bars in Road Projects
10	IRC:138-2023	Guidelines for Highway Engineers on Disaster Resilient Green Highways in Multi Hazard Ecosystem
11	IRC:2018	Pocket book for Road Construction Equipment
12	IRC:SP:13-2022	Guidelines for the Design of Small Bridges and Culverts
13	IRC:SP:21-2009	Guidelines on Landscaping and Tree Plantation
14	IRC:SP:42-2014	Guidelines on Road Drainage
15	IRC:SP:44-1994	Highway Safety Code
16	IRC:SP:48-1998	Hill Road Manual
17	IRC:SP:55-2014	Guidelines on Traffic Management in Work Zones
18	IRC:SP:73- 2018	Manual of Specifications & Standards for Two Lanning of Highways with Paved Shoulder
19	IRC:SP:84-2019	Manual of Specifications and Standards for Four Laning of Highways
20	IRC:SP:93-2017	Guidelines on Requirements for Environmental Clearances for Road projects
21	IRC:SP:96- 2012	Guidelines for Selection, Operation and Maintenance of Concrete Batching and Mixing Plants
22	IRC:SP-98-2020	Guidelines for the use of Waste Plastic in Hot Bituminous Mixes (Dry Process) in Wearing Courses
23	IRC:SP-103-2014	Guidelines on Tree Plantation along Rural Roads
24	IRC:SP-106-2015	Engineering Guidelines on Landslide Mitigation Measures for Indian Roads
25	IRC:SP-108-2015	Guidelines on Preparation and Implementation of Environment Management Plan
26	IRC:SP-113-2018	Guidelines on Flood Disaster Mitigation for Highway Engineers
27	IRC:SP:130-2022	Guidelines on Design and Installation of Noise Barriers for Roads
28	IRC:SP:133-2022	Guidelines on Reducing Carbon Footprint of Road Projects
29	MoRTH	Manual for Maintenance of Roads, 1983

(Source: <https://www.irc.nic.in/WriteReadData/LINKS/Catalogue%20Jan%20202492926e69-ea2d-4443-a94f-55e367f4feed.pdf>)



### ANNEXURE 3.1: PROPOSED ROAD CROSS-SECTIONS (Chainage wise)

Sr. No.	Proposed Chainage		Length in (kms.)	Ext. ROW	Ext. C.way	TCS	Descriptions	Provisions.
	Start	End						
1	22.500	22.540	0.040	12 m	5.5m	TCS-1	Intermediate Lane Strengthening with Both Side Paver Block & Side Drain in Built Up Area	Pdg. & laying 60 DBM +40 BC
2	22.540	22.780	0.240	12 m	3.75m	TCS-2	Intermediate Lane Widening & Strengthening with Both Side Paver Block & Side Drain in Built Up Area	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
3	22.780	23.540	0.760	12 m	3.75m	TCS-5	Intermediate Lane Widening & Strengthening in Open Area	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
4	23.540	24.530	0.990	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
5	24.530	24.615	0.085	12 m	3.75m	TCS-3	Intermediate Lane Reconstruction with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Dismantal of Old Material. Pdg. & laying 200 GSB + 170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width
6	24.615	25.930	1.315	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
7	25.930	25.995	0.065	12 m	3.75m	TCS-7	Intermediate Lane Widening & Strengthening with One Side Retaining Wall & Other Side Trapezoidal Open Drain	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
8	25.995	26.210	0.215	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55

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Sr. No.	Proposed Chainage		Length in (kms.)	Ext. ROW	Ext. C.way	TCS	Descriptions	Provisions.
	Start	End						
							Side Metal Beam Crash Barrier	DBM + 30 BC in full Width)
9	26.210	26.260	0.050	12 m	3.75m	TCS-7	Intermediate Lane Widening & Strengthening with One Side Retaining Wall & Other Side Trapezoidal Open Drain	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
10	26.260	26.470	0.210	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
11	26.470	26.585	0.115	12 m	3.75m	TCS-7	Intermediate Lane Widening & Strengthening with One Side Retaining Wall & Other Side Trapezoidal Open Drain	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
12	26.585	26.885	0.300	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
13	26.885	27.740	0.855	12 m	3.75m	TCS-7	Intermediate Lane Widening & Strengthening with One Side Retaining Wall & Other Side Trapezoidal Open Drain	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
14	27.740	29.020	1.280	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
15	29.020	29.460	0.440	12 m	3.75m	TCS-7	Intermediate Lane Widening & Strengthening with One Side Retaining Wall & Other Side Trapezoidal Open Drain	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
16	29.460	29.600	0.140	12 m	3.75m	TCS-3	Intermediate Lane Reconstruction with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Dismantal of Old Material. Pdg. & laying 200 GSB + 170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width

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	Start	End						
17	29.600	29.690	0.090	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
18	29.690	29.790	0.100	12 m	3.75m	TCS-7	Intermediate Lane Widening & Strengthening with One Side Retaining Wall & Other Side Trapezoidal Open Drain	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
19	29.790	30.000	0.210	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
20	30.000	30.110	0.110	12 m	3.75m	TCS-7	Intermediate Lane Widening & Strengthening with One Side Retaining Wall & Other Side Trapezoidal Open Drain	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
21	30.110	30.250	0.140	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
22	30.250	30.400	0.150	12 m	3.75m	TCS-7	Intermediate Lane Widening & Strengthening with One Side Retaining Wall & Other Side Trapezoidal Open Drain	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
23	30.400	31.298	0.898	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
24	31.298	31.435	0.137	12 m	3.75m	TCS-7	Intermediate Lane Widening & Strengthening with One Side Retaining Wall & Other Side Trapezoidal Open Drain	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
25	31.435	31.720	0.285	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55

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Sr. No.	Proposed Chainage		Length in (kms.)	Ext. ROW	Ext. C.way	TCS	Descriptions	Provisions.
	Start	End						
							Side Metal Beam Crash Barrier	DBM + 30 BC in full Width)
26	31.720	31.750	0.030	12 m	3.75m	TCS-7	Intermediate Lane Widening & Strengthening with One Side Retaining Wall & Other Side Trapezoidal Open Drain	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
27	31.750	31.940	0.190	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
28	31.940	32.050	0.110	12 m	3.75m	TCS-3	Intermediate Lane Reconstruction with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Dismantal of Old Material. Pdg. & laying 200 GSB + 170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width
29	32.050	33.206	1.156	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
30	33.206	33.476	0.270	12 m	3.75m	TCS-7	Intermediate Lane Widening & Strengthening with One Side Retaining Wall & Other Side Trapezoidal Open Drain	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
31	33.476	33.790	0.314	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
32	33.790	34.271	0.481	12 m	3.75m	TCS-7	Intermediate Lane Widening & Strengthening with One Side Retaining Wall & Other Side Trapezoidal Open Drain	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
33	34.271	34.695	0.424	12 m	3.75m	TCS-6	Intermediate Lane Widening & Strengthening with One Side Breast Wall & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)

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Sr. No.	Proposed Chainage		Length in (kms.)	Ext. ROW	Ext. C.way	TCS	Descriptions	Provisions.
	Start	End						
34	34.695	34.931	0.236	12 m	5.5m	TCS-1	Intermediate Lane Strengthening with Both Side Paver Block & Side Drain in Built Up Area	Pdg. & laying 60 DBM +40 BC
35	34.931	35.110	0.179	12 m	3.75m	TCS-2	Intermediate Lane Widening & Strengthening with Both Side Paver Block & Side Drain in Built Up Area	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
36	35.110	35.350	0.240	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
37	35.350	35.650	0.300	12 m	3.75m	TCS-3	Intermediate Lane Reconstruction with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Dismantal of Old Material. Pdg. & laying 200 GSB + 170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width
38	35.650	35.750	0.100	12 m	3.75m	TCS-7	Intermediate Lane Widening & Strengthening with One Side Retaining Wall & Other Side Trapezoidal Open Drain	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
39	35.750	36.050	0.300	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
40	36.050	36.310	0.260	12 m	3.75m	TCS-7	Intermediate Lane Widening & Strengthening with One Side Retaining Wall & Other Side Trapezoidal Open Drain	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
41	36.310	36.800	0.490	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
42	36.800	37.450	0.650	12 m	3.75m	TCS-5	Intermediate Lane Widening & Strengthening in Open Area	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)

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Sr. No.	Proposed Chainage		Length in (kms.)	Ext. ROW	Ext. C.way	TCS	Descriptions	Provisions.
	Start	End						
43	37.450	38.220	0.770	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
44	38.220	38.990	0.770	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
45	38.990	39.250	0.260	12 m	3.75m	TCS-3	Intermediate Lane Reconstruction with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Dismantal of Old Material. Pdg. & laying 200 GSB + 170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width
46	39.250	39.550	0.300	12 m	3.75m	TCS-6	Intermediate Lane Widening & Strengthening with One Side Breast Wall & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
47	39.550	40.470	0.920	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
48	40.470	42.250	1.780	12 m	3.75m	TCS-5	Intermediate Lane Widening & Strengthening in Open Area	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
49	42.250	42.470	0.220	12 m	3.75m	TCS-3	Intermediate Lane Reconstruction with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Dismantal of Old Material. Pdg. & laying 200 GSB + 170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width
50	42.470	43.050	0.580	12 m	3.75m	TCS-5	Intermediate Lane Widening & Strengthening in Open Area	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
51	43.050	44.150	1.100	12 m	3.75m	TCS-2	Intermediate Lane Widening & Strengthening with Both Side Paver Block & Side Drain in Built	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55



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Sr. No.	Proposed Chainage		Length in (kms.)	Ext. ROW	Ext. C.way	TCS	Descriptions	Provisions.
	Start	End						
							Up Area	DBM + 30 BC in full Width)
52	44.150	44.710	0.560	12 m	3.75m	TCS-3	Intermediate Lane Reconstruction with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Dismantal of Old Material. Pd. & laying 200 GSB + 170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width
53	44.710	45.350	0.640	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
54	45.350	45.850	0.500	12 m	3.75m	TCS-3	Intermediate Lane Reconstruction with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Dismantal of Old Material. Pd. & laying 200 GSB + 170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width
55	45.850	46.010	0.160	12 m	3.75m	TCS-2	Intermediate Lane Widening & Strengthening with Both Side Paver Block & Side Drain in Built Up Area	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
56	46.010	46.130	0.120	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
57	46.130	46.550	0.420	12 m	3.75m	TCS-2	Intermediate Lane Widening & Strengthening with Both Side Paver Block & Side Drain in Built Up Area	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
58	46.550	47.240	0.690	12 m	5.5m	TCS-1	Intermediate Lane Strengthening with Both Side Paver Block & Side Drain in Built Up Area	Pdg. & laying 60 DBM +40 BC
59	47.240	47.320	0.080	12 m	3.75m	TCS-2	Intermediate Lane Widening & Strengthening with Both Side Paver Block & Side Drain in Built Up Area	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)

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Sr. No.	Proposed Chainage		Length in (kms.)	Ext. ROW	Ext. C.way	TCS	Descriptions	Provisions.
	Start	End						
60	47.320	47.510	0.190	12 m	3.75m	TCS-3	Intermediate Lane Reconstruction with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Dismantal of Old Material. Pd. & laying 200 GSB + 170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width
61	47.510	48.670	1.160	12 m	3.75m	TCS-4	Intermediate Lane Widening & Strengthening with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Pdg. & laying Concentric widening for 200 GSB + (170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width)
62	48.670	48.811	0.141	12 m	3.75m	TCS-3	Intermediate Lane Reconstruction with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Dismantal of Old Material. Pd. & laying 200 GSB + 170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width
62	0.000	1.547	1.547	10 m	3.75m	TCS-3	Intermediate Lane Reconstruction with One Side Trapezoidal Open Drain & Other Side Metal Beam Crash Barrier	Dismantal of Old Material. Pd. & laying 200 GSB + 170 CTB + 100 AIL+ 55 DBM + 30 BC in full Width
		<b>Total Length</b>	<b>27.858</b>					

## ANNEXURE 3.2: ENVIRONMENT AND SOCIAL MANAGEMENT PLAN

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
	<b>PRE-CONSTRUCTION</b>					
1	Consents/ Permits/ Approvals/ Compliances	Non-compliance to various Environmental/ social/ regulatory requirements pertaining to the proposed project could lead to legal Implications	<ul style="list-style-type: none"> <li>➤ Obtain all necessary statutory clearances (CTE, CTO, Labour License, Fire NOC, Tree Cutting Permission, etc.)</li> <li>➤ Renew permits before expiry.</li> </ul>	Contractor/ MPWD	CTE, CTO, Labour License, Fire NOC, Tree Cutting Permission to be submitted and tracked	MPWD/PMC/CSC

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Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
2	Land Procurement	Loss of Land/ Livelihoods	➤ RPF and RAP shall be followed.	MPWD division, contractor and concerned authorities	Compensation records maintained; Grievances resolved	MPWD/CSC/NGO
3	Contractor's ESMP (CESMP) Preparation and Implementation	Inadequate preparation and implementation of CESMP by Contractor can leave environmental and social issues unattended	➤ The contractor needs to follow the project ESMP to formulate the CESMP and get it approved by MPWD.	Contractor	Approved CESMP including TMP, LMP and other relevant plans, and implemented;	MPWD/PMC/CSC
4	Identification of land for material storage yard/ construction camp/ labour camp	Discharges from Yards/ Camps to pollute the surroundings and lead to social tension.	<ul style="list-style-type: none"> <li>➤ Contractor needs to identify suitable land for storage yard/ construction camp/ labour camp</li> <li>➤ The land shall not be closer to the water bodies, waterlogged areas or wetlands.</li> <li>➤ The land will be handed back to the owner in the same condition as it was prior to the commencement of project activities, once the project is completed.</li> <li>➤ Contractor to produce the lease agreements, NOC etc. for these lands.</li> </ul>	Contractor	Approved site location; Lease/NOC copies;	MPWD/PMC/CSC
5	Supply of Construction Material	Sourcing materials from unauthorized sources.	➤ Procurement of construction material only from approved quarries and sites and licensed/ authorized vendors/ manufacturers.	Contractor	EC, Permits, challans, Material source approval copies;	MPWD/CSC

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Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			Contractor to produce approvals and receipts.			
6	Water	Pollution of surface and groundwater sources.	<ul style="list-style-type: none"> <li>➤ The Contractor will be responsible for arranging adequate supply of water for the entire construction period.</li> <li>➤ The contractor will minimize the pollution and wastage of water during construction</li> </ul>	Contractor	Permission for Water source; Usage records; Wastewater management measures	MPWD/PMC/CSC
7	Appointment of Environment, Social and Safety Officers	Inefficient and incompetent supervision by contractors may lead to negative impacts on environment, Social, health and safety.	<ul style="list-style-type: none"> <li>➤ The Contractor would prepare OHS plan and other required plans; as a part of CESMP, as per the WB guidelines.</li> <li>➤ The contractor will appoint qualified and experienced Environment. Social and Safety personnel to ensure implementation of CESMP and occupational health and safety issues at the camps and construction work sites.</li> </ul>	Contractor	To be mobilized before construction; approved OHS plan	MPWD/PMC/CSC
8	Identification of OHS Hazard and Risk Categorization	May cause physical harm, injury, illness, or death to workers.	<ul style="list-style-type: none"> <li>➤ Conducting workplace inspections to identify hazards and document.</li> <li>➤ Consulting with workers to identify hazards that may not be obvious to employers or safety professionals.</li> <li>➤ Reviewing safety data sheets (SDSs) to collect information about the hazards of chemicals and other</li> </ul>	Contractor	OHS hazard register; Inspection reports;	MPWD/CSC

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			<p>substances used in the workplace.</p> <p>➤ Consulting with industry standards and regulations to identify specific hazards that must be addressed in the workplace.</p>			
9	Other Construction Vehicles, Equipment and Machinery	Vehicles and equipment not complying with regulations may lead to pollution of environment.	<p>➤ The contractor will maintain records of fitness and Pollution Under Control (PUC) certificates for all vehicles and generators used during the contract period</p>	Contractor	Records of valid PUC / fitness; Inspection log	MPWD/PMC/CSC
10	Tree Cutting	Loss of green cover and biodiversity	<p>➤ Maximum efforts shall be made to minimize the number of trees to be felled.</p> <p>➤ Tree cutting and disposal shall be done as per the Forest Dept.</p>	Contractor	Records of trees cut and saved.	MPWD/CSC
11	Joint field verification	The impacts may not have been identified in time.	<p>➤ The MPWD and the Contractor shall carry out joint field verification to ascertain the local complaints/suggestions and to confirm the need for additional protection measures or changes in design/scale/nature of protection measures including the efficacy of enhancement measures suggested in the ESMP. The MPWD shall maintain proper documentation and justifications/reasons in all such cases.</p>	Contractor	Verification reports;	MPWD
12	Damage to existing	Indiscriminate	<p>➤ The Contractor will have to obtain</p>	Contractor	Borrow area EC	MPWD /CSC

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Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
	eco-system due to borrowing activities	borrowing activities may damage the eco-system and lead to unproductive environment	the Environmental Clearance for borrow areas. ➤ The borrow area will be operated as per the MoEFCC guidelines issued by the concerned SEAC and SEIAA.		copy; Approved management and closure plan	
13	Identification of construction material transportation route	Inconveniences and safety issues to the public due to the material transport vehicles.	➤ The material transport route through existing network of roads should be planned and approved by the local transport authorities. ➤ The local communities need to be consulted with prior information on any likely inconveniences.	Contractor	Approved route plan; Community consultation record	MPWD/CSC
14	Identification of sites for debris disposal or wastes generated from construction camps and site offices	Pollution due to indiscriminate dumping of wastes. Wastes entering water bodies and groundwater causing pollution	➤ MPWD Division and the Contractor are responsible for identifying a suitable area in consultation with local administration to dispose of the wastes from labour camps, construction sites and site offices.	Contractor	Approved disposal site and its management plan; NOC, Agreement with landowner; Waste disposal records;	MPWD/CSC
15	Relocation of Utility and Common Property Resources (CPR)	Loss of services from utilities and common property resources for the public	➤ When the utilities/ Common Property Resources need to be shifted, they will be shifted in consultation with the communities and with least inconvenience to the public. ➤ If any displacement of Utility/CPRs is required, they will be relocated with prior approval of the concerned agencies. The relocation	Contractor/ MPWD Division	Records of Relocation completion.	MPWD/ PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			site identification will be in accordance with the choice of the community.			
	<b>CONSTRUCTION</b>					
1	Crushers, Hot mix Plants & Batching Plants	Impacts due to establishment and operation of plants and equipment	<ul style="list-style-type: none"> <li>➤ Crushers, hot-mix and batching plants shall be located at least 1000m (1km) away from residential/ settlements, forests, wildlife movement areas, and commercial establishments, preferably in the downwind direction.</li> <li>➤ The Contractor shall submit a detailed layout plan for all such sites and seek prior approval before entering into a formal agreement with a landowner for setting-up such sites.</li> <li>➤ Specifications of crushers, hot mix plants, and batching plants shall comply with the technical requirements of the contract and prior Consent / NOC for all such plants shall be obtained.</li> <li>➤ No such installation by the Contractor shall be allowed till all the required legal clearances are obtained from the competent authority.</li> </ul>	Contractor	Approved layout plan; Valid NOCs/Consents; Dust suppression records; Air quality monitoring reports	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
2	Borrow Areas	Impacts due to improper operation and closing of borrow areas	<ul style="list-style-type: none"> <li>➤ Borrow area should be located at a minimum distance of 300m from the residential/ settlement area. Proper barricading should be provided and access to the borrow areas should be restricted to the unauthorized persons.</li> <li>➤ The Contractor should submit the EC, a copy of agreement with the landowner, borrow area management and closure plan before initiating any kind of borrowing activities.</li> </ul>	Contractor	EC and lease copies; Approved Borrow area restoration and Closure plan	MPWD/PMC/CSC
3	Quarries	Impacts due to improper management, operation and closing of quarries	<ul style="list-style-type: none"> <li>➤ The Contractor shall identify materials from legally valid quarries with existing NOC from the relevant departments.</li> <li>➤ No quarry or associated plants can be set-up within 1000m from the residential/ settlement locations</li> <li>➤ Contractor shall prepare a haul road network for quarry transport and ensure the suitability of such haul roads from the safety of residents, biodiversity and other environment points of views.</li> </ul>	Contractor	Quarry permit, EC; Safety inspection report; Haul road maintenance record, dust suppression measure, geotagged photos	MPWD/PMC/CSC
4	Dismantling of Bridges/ Culverts/ Structures	Impacts due to improper dismantling and disposal	<ul style="list-style-type: none"> <li>➤ All necessary precautions shall be taken while working near cross-drainage channels, to prevent</li> </ul>	Contractor	Debris disposal/reuse records; Approved	MPWD/PMC/CSC



Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>earthwork, stonework, construction materials from obstructing cross-drainage at rivers, streams, and drainage systems, or from causing flooding.</p> <ul style="list-style-type: none"> <li>➤ Reusable materials (e.g., steel, stones, bricks) shall be segregated and stored properly for reuse or recycling.</li> <li>➤ Non-recyclable debris and waste materials shall be transported to approved disposal sites identified and approved by the concerned authority.</li> <li>➤ Disposal sites shall be located away from water bodies, agricultural lands, and other environmentally sensitive areas.</li> <li>➤ Temporary barriers or silt fences shall be provided to prevent debris from entering watercourses.</li> <li>➤ Upon completion, the associated disposal sites shall be restored to their original condition or as directed by the Engineer</li> </ul>		<p>Site restoration plan; Photographic documentation.</p>	
5	Bituminous waste disposal	Impacts due to hazardous wastes	<ul style="list-style-type: none"> <li>➤ The contractor shall maintain records of quantities generated, transported, and disposed of, along with details of the disposal site and</li> </ul>	Contractor	<p>Records of Waste reused/disposed; Details of approved disposal</p>	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>approvals obtained.</p> <ul style="list-style-type: none"> <li>➤ Bituminous waste shall be collected and stored temporarily in impermeable, lined containers or areas to prevent leaching or contamination of soil and groundwater.</li> <li>➤ The disposal of bituminous wastes shall be carried out by the Contractor at secure landfill sites approved by the concerned government authorities.</li> <li>➤ No bituminous waste shall be disposed of in water bodies, open lands, agricultural fields, or along the roadside</li> <li>➤ Periodic inspections shall be carried out to ensure compliance with waste management guidelines.</li> <li>➤ Where feasible, recycling or reuse of scarified bituminous material in road base or other construction activities shall be promoted, subject to environmental and quality standards.</li> </ul>		site; Photographic documentation.	
6	Contamination of Soil	Soil pollution due to Oil and fuel spills from construction equipment and plants.	<ul style="list-style-type: none"> <li>➤ Construction plants, workshops, and fuel storage areas shall be located at least 500 m away from any surface water body and</li> </ul>	Contractor	Spill log; Waste oil disposal records; Fuel storage inspection record.	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>environmentally sensitive locations.</p> <ul style="list-style-type: none"> <li>➤ Oil interceptors shall be installed at construction camps, vehicle parking, and washing areas to trap oil and grease before wastewater is discharged.</li> <li>➤ All fuel and lubricant storage tanks shall be placed on impermeable platforms or within bunded (contained) areas.</li> <li>➤ Regular maintenance and inspection of construction equipment and vehicles shall be carried out to prevent leakage of oil, fuel, or hydraulic fluids.</li> <li>➤ Spill control kits (absorbent pads, sand, and containment booms) shall be available at all fuel storage and handling locations.</li> <li>➤ Used oil and lubricants shall be collected, stored in labelled, leak-proof containers, and handed over only to authorized aggregators/recyclers for disposal in compliance with applicable hazardous waste regulations.</li> <li>➤ Records of fuel usage, storage, and waste oil disposal shall be maintained and made available for</li> </ul>		Photographic documentation.	

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			inspection. ➤ Stormwater runoff from fuel and equipment storage areas shall be directed through oil-water separators before discharge.			
7	Air Pollution - Dust Generation	Dust generation will cause air pollution and will have impacts on health and safety.	➤ Vehicles delivering materials should be covered to reduce spills and dust blowing off the load. ➤ Water should be sprinkled regularly on the work sites. ➤ Road slopes to be covered immediately after completion. ➤ Speed limits shall be enforced for construction vehicles within and near project sites to reduce dust generation. ➤ Personal protective equipment (PPE) such as masks shall be provided to all workers exposed to dusty environments. ➤ Air quality monitoring shall be conducted periodically to ensure compliance with prescribed air quality standards. ➤ Community complaints related to dust shall be recorded, and addressed promptly.	Contractor	Air quality monitoring reports; Dust suppression log; PPE compliance records	MPWD/PMC/CSC
8	Emissions	The emissions from vehicles and	➤ Fitness and PUC of the vehicles and equipment's need to be ensured.	Contractor	Valid PUC certificates;	MPWD/PMC/CSC

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		construction equipment will pollute the air causing health and safety issues as well.	<ul style="list-style-type: none"> <li>➤ LPG shall be used as fuel for cooking of food at construction labour camp instead of fuel wood.</li> <li>➤ Dust extraction, collection and control systems shall be installed at batching plants, crushers, and material handling areas to minimize particulate emissions.</li> </ul>		Equipment maintenance log; Emission test results	
9	Contamination of Surface / Ground Water	Discharges from construction activities and construction camps/ labour will lead to surface/groundwater pollution.	<ul style="list-style-type: none"> <li>➤ All the debris resulting from construction activities and labour camp shall be removed from the site and disposed at approved sites away from water bodies, on a regular basis to prevent them from getting into surface runoff.</li> <li>➤ Adequate sanitation and waste management facility to be provided in construction camp.</li> <li>➤ Construction labours should be restricted from polluting the water sources or misusing the sources.</li> <li>➤ Use least amount biodegradable bentonite slurry during piling work.</li> <li>➤ Contain the Bentonite slurry properly, to not enter waterways or soil and dispose of the slurry appropriately after use.</li> </ul>	Contractor	Water quality monitoring report; Waste disposal records; Camp inspection records. Photographic documentation.	MPWD/PMC/CSC
10	Water requirement	Over extraction or exploitation of	<ul style="list-style-type: none"> <li>➤ Contractor to ensure optimum and judicious use of water;</li> </ul>	Contractor	Water consumption log;	MPWD/PMC/CSC

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	for project	ground/surface water will lead to water scarcity.	<ul style="list-style-type: none"> <li>➤ Discourage labour from wastage of water and applicable prior approvals shall be obtained from concerned authorities.</li> <li>➤ Rainwater harvesting structures shall be installed at construction camps and plant sites to promote sustainable use of water.</li> <li>➤ Awareness programs shall be conducted for laborers and staff on responsible water use and conservation practices.</li> <li>➤ Records of daily water consumption shall be maintained as part of regular reporting.</li> </ul>		Permission for water source; Installation of Rainwater harvesting structure	
11	Coffer dam to make dry working space for bridge work	Change in the flow pattern and quality of water, effect on local habitat	<ul style="list-style-type: none"> <li>➤ Selecting the right location for the cofferdam to minimize its impact on the environment.</li> <li>➤ Using environmentally friendly materials to construct the cofferdam eg. Biodegradable/ reusable materials can be used instead of concrete.</li> <li>➤ Restoring the environment after construction. This may involve replanting vegetation and removing any debris.</li> </ul>	Contractor	Worksite inspection record; Restoration completion record	MPWD/PMC/CSC
12	Noise from vehicles,	Noise from construction vehicles, plant and	<ul style="list-style-type: none"> <li>➤ Construction operations should be undertaken primarily during day</li> </ul>	Contractor	Noise level test report; PPE usage	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
	plants and equipment	equipment will lead to noise pollution and cause health and safety issues	<p>time to minimize noise impacts.</p> <ul style="list-style-type: none"> <li>➤ Fitness and PUC of the vehicles and equipment's need to be ensured.</li> <li>➤ No noisy construction activities will be permitted around educational institutions/ health centers (silence zones) and up to 100 m from other sensitive receptors.</li> <li>➤ Noise level monitoring shall be carried out as per the monitoring schedule. In case there is increase in noise level, preventive measures should be taken to reduce the noise level.</li> <li>➤ Noise barriers and Hearing Protection devices (earplugs or earmuffs) should be provided</li> </ul>		record; Complaint register; vehicles, plants and equipment maintenance records.	
13	Blasting	Unmanaged blasting result in health and safety issues and accidents.	<ul style="list-style-type: none"> <li>➤ The Contractor will inform well in advance and obtain permission as is required from all Government Authorities, public bodies and private parties;</li> <li>➤ Blasting will be carried out only with permission of Engineer-in-charge. All the statutory laws and regulations, rules etc., pertaining to acquisition, transport, storage, handling, and use of explosives will be strictly followed.</li> </ul>	Contractor	Approved Blasting management Plan; Blasting permission; Incident log. Geotagged photos.	MPWD/PMC/CSC

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			➤ Blasting management plan shall be developed and should be approved by the concerned authority. The same shall be strictly followed by the contractor.			
14	Loss of trees and Plantation works	Cutting of trees can lead to loss of biodiversity.	<ul style="list-style-type: none"> <li>➤ Clearing and uprooting should be avoided beyond that which is directly required for construction activities.</li> <li>➤ Kerosene / LPG should be preferably used to avoid felling of the trees or provide community kitchen for the labour camps for cooking.</li> <li>➤ Camps and storage yards shall be located in the areas already devoid of vegetation or having little vegetation</li> </ul>	Contractor	Tree felling register; Plantation record;	MPWD/PMC/CSC
15	Terrestrial Flora and Fauna	Construction activities and workers may cause harm to flora and fauna.	<ul style="list-style-type: none"> <li>➤ All the workers will need to be oriented and monitored by the contractor so as not to cause any harm to the flora and fauna.</li> <li>➤ Hunting and fuel wood collection will be strictly prohibited</li> </ul>	Contractor	Worker awareness attendance; Wildlife sighting log	MPWD/PMC/CSC
16	Aquatic Fauna	Construction activities and workers may cause harm to fauna.	<ul style="list-style-type: none"> <li>➤ Any works affecting aquatic habitat will be done during low flow (when water depth is less than 5 m) and when banks would be dry.</li> <li>➤ Where any GI wire mesh gabions</li> </ul>	Contractor	Work timing records; Site inspection checklist	MPWD/PMC/CSC



Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>are used; all GI wire ends need to be folded inside.</p> <p>➤ Ensure that no construction activities will be carried out during monsoon and the fish breeding season.</p>			
17	Occupational Health and Safety	When Occupational Health and Safety are compromised the associated risks from accidents and incidents could affect health and safety of the workers and others on construction/ project sites. Improper first aid facilities on the sites could affect health and safety of workers and others.	<p>➤ The Contractor would prepare OHS plan and other required plans as per the WBs guidelines.</p> <p>➤ All the laborers to be engaged for construction works shall be screened for health and adequately treated before issue of work permits.</p> <p>➤ Periodic health check-up of construction workers.</p> <p>➤ Prevention of mosquito breeding need to be ensured at the project site and other ancillary areas</p> <p>➤ The contractor's Environment and Safety personnels, shall ensure implementation of CESMP including Occupational health and safety issues at the camp, construction work sites</p> <p>➤ Avoiding collection of stagnant water. Adequate drainage, sanitation and waste disposal will be provided at workplaces.</p>	Contractor	Approved OHS plan; OHS training log; PPE checklist; Awareness programme and Health inspection reports	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<ul style="list-style-type: none"> <li>➤ All workers and staff should be provided with Personal Protective Equipment (PPE) appropriate to their job on-site and their use shall be ensured.</li> <li>➤ All construction sites should be barricaded properly.</li> <li>➤ Smoking should be prohibited near areas of fire or explosion risk.</li> <li>➤ Sufficient supply of potable water should be ensured for all workers and employees on-site.</li> <li>➤ Ensure a FA room at the camp and first aid kits are available in all work areas.</li> <li>➤ Safe working techniques will be followed up and all the workers will be trained.</li> <li>➤ An Emergency Response system in case of any incidence will be developed and implemented.</li> <li>➤ The Contractor will conduct awareness programmes on EHS, HIV/AIDS and other sexually transmitted diseases for workers at least once in a quarter and the record of such training programme must be recorded.</li> <li>➤ Conduct regular safety audits on</li> </ul>			

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Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			safety measures adopted during construction.			
18	Community Health and Safety	The safety aspects like (i) safety of road users including pedestrians and cyclists (ii) safety of cattle; (iii) safety of local community (iv) unsafe/ hazardous traffic conditions due to construction vehicle movement need to be considered during the construction stage. Children are most vulnerable to injury due to vehicular accidents.	<ul style="list-style-type: none"> <li>➤ Plants and equipment will be installed sufficiently away from the settlements.</li> <li>➤ Proper caution signage, barricading, delineators, lightings etc. will be installed at construction zone and temporary diversions.</li> <li>➤ Hard barricading will be provided at construction zone near habitation area and public roads, and the same will be maintained throughout the construction period.</li> <li>➤ Proper traffic management will be ensured near roads of the Construction zone.</li> <li>➤ Road safety education will be imparted to drivers running construction vehicles. In case of negligent driving, suitable action will be taken.</li> <li>➤ Speed restrictions shall be imposed on project vehicles to control speeding.</li> <li>➤ Installation of temporary speed bumps to control speed near</li> </ul>	Contractor	Safety signage installed; Community complaint register; Traffic control records	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>designated pedestrian crossing areas/school areas/ market places/ religious places/ human habitations.</p> <ul style="list-style-type: none"> <li>➤ The general public/ residents shall not be allowed to any of the risk areas of the project, e.g., excavation sites, construction sites and areas where heavy equipment is in operation.</li> <li>➤ In the consideration of risk at civil works, each labour should be covered under ECA 1923 insurance until completion of work.</li> </ul>			
19	Emergency Response system	Absence may result to increased incidents, injury, economic loss etc.	<ul style="list-style-type: none"> <li>➤ <b>Develop and implement ERS</b></li> <li>➤ <b>Train personnel</b>      <b>Establish communication channels</b></li> <li>➤ Systematic planning and training for emergencies.</li> </ul>	Contractor	Approved ERP; Emergency drill and training report; Incident response record	MPWD/PMC/CSC
20	Health Management – Communicable Diseases	The water fringe areas provides suitable habitats for the growth of vectors of various diseases, which is likely to increase the incidence of water-borne diseases.	<ul style="list-style-type: none"> <li>➤ There would be possibility of the transmission of communicable diseases due to migration of labour population from other areas at the construction site.</li> <li>➤ Agreement shall be made with nearby health centre or hospital for emergency treatment.</li> <li>➤ Special Measures for COVID 19 should be strictly followed at the</li> </ul>	Contractor	Health screening record; Awareness session log; Medical report; Agreement with nearby hospital	MPWD/PMC/CSC

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Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			camp and construction site.			
21	Risk of Natural Hazards	The project area is at risk from floods and Earthquakes.	<ul style="list-style-type: none"> <li>➤ Protection of Agriculture Land near roads/ bridges.</li> <li>➤ The mitigation measures should be adopted as per norms of State Disaster Management Authority, Government of Meghalaya.</li> </ul>	Contractor	Site assessment report; Record of Compliance with SDMA norms	MPWD/PMC/CSC
22	Risk of Force Majeure  Combine with previous	These unforeseen risks can have both adverse environmental and social impacts	<ul style="list-style-type: none"> <li>➤ All reasonable precaution will be taken to prevent danger of the workers and the public from fire, flood, drowning, etc.</li> <li>➤ All necessary steps will be taken for prompt first aid treatment of all injuries likely to be sustained during the course of work.</li> <li>➤ Contractor has to prepare a response plan before start of construction works</li> </ul>	Contractor	Force majeure preparedness plan; Emergency contact list	MPWD/PMC/CSC
23	Hygiene	Impacts related to unhygienic surroundings	<ul style="list-style-type: none"> <li>➤ At every workplace, good and sufficient water supply shall be maintained to avoid waterborne diseases to ensure the health and hygiene of workers.</li> <li>➤ Adequate drainage, mobile toilets shall be provided at workplace.</li> <li>➤ Preventive Medical care shall be provided to workers.</li> <li>➤ Proper Hygiene shall be maintained</li> </ul>	Contractor	Sanitation inspection record; Hygiene logbook	MPWD/PMC/CSC
24	Traffic	Unplanned and	<ul style="list-style-type: none"> <li>➤ Before start of the construction,</li> </ul>	Contractor	Approved TMP;	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
	Management	unmanaged traffic diversion and detours can result in public nuisance.	<p>proper traffic management plan will be prepared and submitted to MPWD for approval. Secure assistance from local police for traffic control during the construction.</p> <ul style="list-style-type: none"> <li>➤ Necessary signage and barricading will be provided for safety of road users.</li> <li>➤ Contractor will ensure that no construction materials and debris are lying on the road. It will be collected and disposed of properly.</li> <li>➤ Unnecessary parking and sound pollution to be strictly avoided near settlements and sensitive receptor such as schools, hospital and cultural centers.</li> <li>➤ The contractor will ensure that the diversion/ detour is always maintained in running conditions, particularly during the monsoon to avoid disruption to traffic flow.</li> </ul>		Signage/barricade checklist; Traffic incident register; geotagged photos	
25	GBV-SEAH Risks	GBV-SEAH risks may arise due to labor influx	<ul style="list-style-type: none"> <li>➤ Ensure labor camps are away from settlement areas</li> <li>➤ Ensure that every worker working in the project has been given an orientation on the Worker's Code of</li> </ul>	Contractor	Signed CoC register; GBV training log; GBV complaint record	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>Conduct, especially on GBV and SEAH, and has signed the Code of Conduct.</p> <ul style="list-style-type: none"> <li>➤ Conduct periodic awareness programs targeted at women laborers and women and children of communities residing close to the work sites for reporting incidents of GBV- SEAH</li> <li>➤ Ensure complaints of GBV- SEAH are recorded and addressed with urgency. Ensure that name(s) of complainant(s) are kept in confidence and enable anonymous reporting of complaints.</li> <li>➤ Activate GBV Grievance Redressal Committee immediately on receipt of any GBV- SEAH complaint. Take action on recommendation of the GBV Grievance Redressal Committee within 24 hours of submission of the report.</li> </ul>			
26	Chance Finds	There is a possibility of Cultural relics, Chance finds at the construction sites. Without proper	<ul style="list-style-type: none"> <li>➤ If any cultural remains of geologic or archaeological interest are found, CSC and MPWD shall be immediately informed of such</li> </ul>	Contractor	Chance find report; Notification records	MPWD/PMC/CSC

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		plan these artefacts may be misused by contractor/ workers.	discovery and carry out the instructions for dealing with the same.			
27	Compliance to Labour Welfare Laws and reporting	Workplace accidents and injuries, unsafe working condition, loss of productivity etc.	<ul style="list-style-type: none"> <li>➤ Establish a policy and ensure the compliance within the organization, from the top to the lowest-level employee, understands the importance of complying with labour laws and reporting.</li> <li>➤ Employees should be trained on their rights and responsibilities under labour laws.</li> <li>➤ Employees should have a way to report violations of labour laws without fear of retaliation. This could be a hotline, an email address, or a suggestion box.</li> <li>➤ Investigating and taking action on violations. This could include disciplinary action against the violator, or even legal action.</li> <li>➤ Employees should be kept updated on the organization's compliance with labour laws. This could be done through regular training sessions, newsletters, or other communication channels.</li> </ul>	Contractor	Labour law compliance record; Training attendance record	MPWD/PMC/CSC
28	Labour Influx	Strain on infrastructure,	➤ Proper plan for labour influx by	Contractor	Labour License	MPWD/PMC/CSC



Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
		such as housing, healthcare, and education; social tension, as new arrivals compete with locals for jobs and resources.	investing in infrastructure and social services. ➤ Governments can regulate the flow of labour to ensure that it is orderly and sustainable. ➤ Local communities can engage with new arrivals to help them understand the local culture and customs. ➤ Maximum use of local labours		and registration records; Local labour hiring records.	
29	GRM	<b>Increased impunity, conflict and violence; Loss of trust and confidence</b>	➤ <b>Establish a grievance redressal mechanism</b> ➤ <b>Ensure that the mechanism is impartial and independent</b> ➤ <b>Provide adequate support to people who use the mechanism</b> ➤ <b>Communicate effectively with people about the mechanism</b>	Contractor	GRM register; Grievance resolution records	MPWD/PMC/CSC
30	Monitoring and Reporting (Monthly/ Quarterly)	Monitoring environmental attributes like (Air, Water, Noise & soil microbiology) and proper reporting are important for the successful ESMP implementation	➤ The parameters to be monitored, frequency and duration of monitoring as well as the locations to be monitored will be as per Monitoring Plan prepared. ➤ Regular submission of CESMP implementation monitoring report	Contractor	Monthly/quarterly ESMP compliance report; Monitoring data records	MPWD/PMC/CSC
	<b>Operation Phase</b>					

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1	Debris and Waste from Clearing/ Closure of Construction Site, Labor Camps, Disposal Sites, and Borrow Areas	Land and soil contamination due to improper waste disposal; Aesthetic degradation; Health risks to nearby communities	<ul style="list-style-type: none"> <li>➤ Contractor shall prepare and implement a Site Restoration Plan approved by the Engineer.</li> <li>➤ On completion of works, all temporary structures, debris, and wastes shall be cleared.</li> <li>➤ Disposal pits and sanitation trenches shall be filled, compacted, and sealed.</li> <li>➤ Topsoil removed during construction shall be re-spread to aid vegetation regrowth.</li> <li>➤ Native grass or trees shall be planted to stabilize restored areas and improve aesthetics.</li> </ul>	Contractor	Site clearance restoration records and closure NOC; Geotagged photos	MPWD
2	Soil Erosion due to Runoff over Steep Slopes and Embankments	Loss of fertile topsoil; Siltation of nearby water bodies; Slope instability or road damage	<ul style="list-style-type: none"> <li>➤ Regularly inspect slopes and embankments for erosion signs.</li> <li>➤ Implement bioengineering measures like turfing, hydroseeding, and vegetation planting.</li> <li>➤ Provide stone pitching, retaining walls, or gabions where needed.</li> <li>➤ Maintain effective drainage systems to reduce concentrated runoff.</li> </ul>	Contractor	Reports on Erosion inspection; implementation of mitigation measures; Drain maintenance log	MPWD
3	Water Pollution from Road Runoff and Drainage into Water	Deterioration of surface and groundwater quality; Sediment and oil	<ul style="list-style-type: none"> <li>➤ Conduct regular water quality monitoring during operation phase.</li> </ul>	Contractor	Water quality monitoring	

**Upgradation of Weiloj - Mawsynram Road upto Phlangwanbroi for Meghalaya Logistics and Connectivity Improvement Project (MLCIP), funded by the World Bank**

**Environmental And Social Impact Assessment Report**

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
	Bodies	contamination in nearby streams or waterbodies	<ul style="list-style-type: none"> <li>➤ If pollutants exceed prescribed limits, install silt traps, or sedimentation chambers.</li> <li>➤ Ensure roadside drains are cleaned and desilted regularly.</li> <li>➤ Conduct public awareness to discourage waste disposal into water bodies.</li> </ul>		results; Drain cleaning records	MPWD
4	Dust Generation from Vehicular Movement	Deterioration of ambient air quality; Nuisance to roadside residents and vegetation; Reduced visibility	<ul style="list-style-type: none"> <li>➤ Establish and maintain roadside plantation to serve as dust barriers.</li> <li>➤ Maintain smooth road surfaces to minimize dust generation.</li> <li>➤ Install signage discouraging over-speeding, which increases dust levels.</li> </ul>	Contractor	Air quality results; Plantation survival record	MPWD
5	Air Pollution from Vehicular Emissions	Increased levels of NO <sub>x</sub> , SO <sub>2</sub> , CO, and PM; Health impacts on local population; Deterioration of roadside vegetation	<ul style="list-style-type: none"> <li>➤ Conduct ambient air quality monitoring at sensitive locations.</li> <li>➤ Maintain green buffers along the corridor.</li> <li>➤ Organize awareness campaigns for drivers on emission reduction and vehicle maintenance.</li> </ul>	Contractor	Air quality results; Plantation survival record ; Awareness records	MPWD
6	Noise Pollution from Increased Traffic Movement	Noise nuisance to residents; Disturbance to schools, hospitals, and wildlife	<ul style="list-style-type: none"> <li>➤ Conduct periodic noise level monitoring.</li> <li>➤ Provide noise barriers, dense plantation near sensitive receptors.</li> <li>➤ Enforce “No Horn” zones near</li> </ul>	Contractor	Noise monitoring results; Maintenance records	MPWD

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**Environmental And Social Impact Assessment Report**

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>schools and hospitals.</p> <ul style="list-style-type: none"> <li>➤ Maintain road surface to minimize noise due to uneven pavement.</li> </ul>			
7	Road Safety and Accident Risks	Traffic congestion; Increased likelihood of road accidents; Risk to pedestrians and local communities	<ul style="list-style-type: none"> <li>➤ Install and maintain proper signage, reflectors, and road markings.</li> <li>➤ Ensure adequate lighting at intersections and pedestrian zones.</li> <li>➤ Provide speed control measures and pedestrian crossings in settlement areas.</li> <li>➤ Conduct community road safety awareness programs.</li> </ul>	Contractor	Accident record; Safety audit report; Awareness records	MPWD
8	Maintenance Waste from Roadside Maintenance, Drain Cleaning, or Repairs	Soil and water contamination from indiscriminate disposal; Visual pollution and clogging of drains	<ul style="list-style-type: none"> <li>➤ Collect and dispose of maintenance waste at designated locations.</li> <li>➤ Prohibit dumping into drainage channels or low-lying areas.</li> <li>➤ Reuse or recycle suitable materials (e.g., asphalt, concrete, metal).</li> </ul>	Contractor	Waste logbook; Disposal records	MPWD

## CAPACITY DEVELOPMENT & TRAINING

To enhance the capabilities for implementation and monitoring of the Environmental and Social Management Plan (ESMP), it is recommended that structured training programs be conducted for all contractor and project personnel. These trainings will ensure compliance with regulatory requirements, improve awareness, and build competence in managing environmental and social (E&S) risks.

### On-Boarding Phase

#### a. Induction Training

- Mandatory for all personnel before starting work.
- Covers Contractor's Environmental and Social Management Plan (C-ESMP), relevant national and international Environmental, Social, Health, and Safety (ESHS) regulations, and good practices.

#### b. Specialized Training

- Tailored training for personnel assigned to specific roles (e.g., environmental officer, safety officer, waste management supervisor).
- Delivered during the mobilization stage to ensure readiness for assigned responsibilities.

## IMPLEMENTATION PHASE

- **Ongoing Toolbox Talks:**  
Conducted daily or weekly to address evolving risks, reinforce safety practices, and maintain continuous awareness among workers.
- **Supplemental Training:**  
Provided after incidents or when new risks are identified. Designed to prevent recurrence and ensure the workforce remains updated on new safety/environmental requirements.
- **Routine Quarterly Training:**
- Organized by the contractor every three months to:
  - Review E&S compliance status and progress.
  - Share lessons learned from the previous quarter.
  - Develop action plans to address identified gaps or challenges.
  - Ensure alignment with sub-project E&S objectives and promote continuous improvement.

Table: Given below is the specialized training outline for contractor

Sl. No.	Training Title	Content Summary	Target Group	Purpose	Schedule / Stage
1	Code of Conduct Induction	Sensitization on local issues, introduction to the Code of Conduct, labor camp management	All workers	Ensure awareness of expected behavior, local sensitivities, and compliance with	Onboarding (before deployment)

				regulations	
2	Health, Safety, and Environmental Hygiene	Safety procedures, first aid, environmental hygiene practices	All workers	Reduce occupational hazards and promote safe practices	Onboarding
3	Health and Safety Induction	Special focus on road safety, occupational health, and safety concerns	All workers	Educate on health and safety requirements	Onboarding and as needed
4	Toolbox Sessions	Task-specific safety measures and procedures for work environments	All workers	Reinforce safety protocols and reduce risks	Daily / Weekly
5	Equal Employment	Emphasis on equal employment opportunities and non-discrimination	All workers and management	Ensure ethical and fair employment practices	Onboarding and as needed
6	Social and Cultural Norms of Tribal Communities	Orientation on local cultural practices, traditions, and norms	Workers	Promote respect and awareness of tribal culture	Ongoing / as part of Code of Conduct
7	SEA/SH Prevention	Awareness on Gender-Based Violence (GBV), Sexual Exploitation, Abuse, Harassment, unsafe migration, and human trafficking	All workers	Prevent and address SEA/SH incidents	Induction / Toolbox Talks / Ongoing
8	HIV/AIDS & STD Awareness	Programs on HIV/AIDS, STDs, and links to SEA/SH risks	All workers and local communities	Promote awareness and prevention of health risks	Ongoing
9	Safe Handling of Hazardous Materials	Safety procedures for handling, storage, and disposal of hazardous substances	Workers involved in hazardous tasks	Ensure safe handling and reduce chemical risks	Onboarding and as needed
10	PPE Usage	Correct selection and use of Personal Protective Equipment (PPE)	All workers	Protect workers from occupational hazards	Onboarding and as needed
11	GRM and SEA/SH Reporting	Mechanisms for grievance redressal and confidential SEA/SH incident reporting	All workers and local communities	Ensure accessible, safe, and effective grievance mechanisms	Ongoing

These training programmes are expected to impart in-depth knowledge from experienced professional working at geographically distant locations. However, these training programmes are only indicative and can be considered in coordination with the respective institutes in geographically distant areas of the Indian sub-continent

## **PENALTY CLAUSE FOR NON – COMPLIANCE**

<b>Penalties for non-compliance of ESMP</b>
<p><b>Contractor's Responsibilities:</b></p> <ul style="list-style-type: none"> <li>• Implement all assigned mitigation measures as per the ESMP and contract documents</li> <li>• Address grievances raised by the public during project implementation</li> <li>• Undertake regular reporting to the CSC/PMC and E&amp;S</li> </ul>
<ul style="list-style-type: none"> <li>• Any non-compliance in implementing the above responsibilities will attract penalties as detailed in the clause.</li> <li>• <b>Major non-compliances</b> <ul style="list-style-type: none"> <li>a) Failure to obtain clearances/ permissions/ NoC/ Registrations/ Consent under statutory environment and labour regulations</li> <li>b) Unaddressed public complaints within the Contractor's scope, formally registered and communicated, within the time period set by CSC/PMC/E&amp;S</li> <li>c) Inadequate safety arrangements or compromising occupational safety/serious hazards posing high risk levels to lives of personnel on site or conditions leading to possible suspension of work until safety is ensured, significant degradation of environment and continuous disturbances in settlements as determined by CSC/PMC/E&amp;S</li> <li>d) Reoccurrence of any minor non-compliances</li> </ul> </li> <li>• <b>All non-compliances, which are not major lapses, will be categorized as minor lapses</b></li> </ul>
<p><b>Penalty for lapses:</b></p> <ul style="list-style-type: none"> <li>• A penalty amount of Rs. 5,000 per day or otherwise fixed by the MPWD for each minor non-compliance with CESMP</li> <li>• A penalty amount of Rs. 10,000 per day or otherwise fixed by the MPWD for each all-major non-compliance with CESMP. The amount shall be released only if the identified non-compliances are rectified within the duration specified by the MPWD/CSC/PMC. Duration specified shall consider the environmental and social damage/risks associated with non-compliances. Such specified duration shall not be more than 15 days.</li> <li>• Reoccurrence of the minor non compliances shall be treated as major lapses • Reoccurrence of all major non compliances, a penalty of Rs. 50,000 shall be levied for each such non - compliance.</li> </ul>

### ANNEXURE 3.3: DETAILS OF CONSTRUCTION MATERIALS

Sr. NO.	Descriptions	Unit	Quantity	Rate	Amount in Rs.
1	Clearing and Grubbing Road Land. Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150 mm in thickness.(2.3 ii A)	Hect	14.21	52646	747972.00
2	Excavation in Hilly Area in Soil by Mechanical Means Excavation in soil in hilly area by mechanical means including cutting and trimming of side slopes and disposing of excavated earth with all lifts and lead upto 1000 metres (3.29)	cum	49003.90	255	12495996.00
3	Excavation in Hilly Area in Ordinary Rock by Mechanical Means not Requiring Blasting. Excavation in hilly area in ordinary rock not requiring blasting by mechanical means including cutting and trimming of slopes and disposal of cut material with all lift and lead upto 1000 metres (3.30)	cum	72064.57	355	25582921.00
4	<b>Construction of Subgrade and Earthen Shoulders</b> Construction of subgrade and earthen shoulders with approved material obtained from borrow pits with all lifts & leads, transporting to site, spreading, grading to required slope and compacted to meet requirement of Table 300-2 <b>(3.18)</b>	cum	65410.10	678	44348048.00
5	Granular Sub-Base with Coarse Graded Material (Table:- 400- 2) Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per Clause 401. For Grading- I Material (4.2 i)	cum	38317.03	2612	100084084.00



Sr. NO.	Descriptions	Unit	Quantity	Rate	Amount in Rs.
5	Cement Treated Crushed Rock or combination as per Clause 403.2 and Table 400.4 in Sub- base/ Base Providing, laying and spreading Material on a prepared sub grade, adding the designed quantity of cement to the spread Material, mixing in place with rotavator, grading with the motor grader and compacting with the road roller at OMC to achieve the desired unconfined compressive strength and to form a layer of sub-base/base. (4.6 ii)	cum	35402.80	4060	143735370.00
6	Appraisal Interlayer (AIL) Water Bound Macadam Grading-  III Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tonnes in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density. By Mechanical Means: (4.10)	cum	15842.63	3348	53041125.00
7	Prime Coat: Providing and applying primer coat with bitumen emulsion on prepared surface of granular base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means. (5.1 i)	sqm	156283.38	62	9689570.00
8	Tack Coat : Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.25 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom. (5.2 i)	sqm	312566.76	19	5938768.00

9	Dense Graded Bituminous Macadam: Providing and laying dense graded bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonne per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5 percent by weight of total mix of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification Clause 507 complete in all respects. (i) for Grading II (19 mm nominal size)	cum	8622.68	11142	96073925.00
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Sr. NO.	Descriptions	Unit	Quantity	Rate	Amount in Rs.
10	<b>Bituminous Concrete</b> : Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 percent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification Clause : 509 complete in all respects <b>for Grading II (10 mm nominal size) (5.7 I ii)</b>	cum	4742.69	11755	55750368.00
11	<b>Kilo Metre Stone:</b> Reinforced cement concrete M15 grade kilometre stone of standard design as per IRC:8- 1980, fixing in position including painting and printing etc <b>(8.12)</b>				
	<b>Ordinary Kilometer stone (Precast)</b>	Nos	23.00	3829	88067.00
	<b>Fifth Kilometer stone (Precast)</b>	Nos	6.00	6508	39048.00
	<b>Hectometer stone (Precast)</b>	Nos	110.00	1104	121440.00
12	<b>Road Marking</b> Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes <b>(8.11)</b>	sqm	11471.72	2606	29895302.00
13	<b>Metal Beam Crash Barrier Type - A, "W"</b> : Providing and erecting a "W" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 70 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 1.8 m high, 1.1 m below ground/road level, all steel parts and fitments to be galvanised by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a spacer of channel section 150 x 75 x 5 mm, 330 mm long complete as per Clause 810 <b>(8.17 A)</b>	sqm	7112.00	5075	36093400.00

14	Providing and fixing of retro- reflectorised cautionary, mandatory and informative sign as per IRC :67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing (8.4)				
	90 cm equilateral triangle	Nos	50	9634	481700
	60 cm equilateral triangle	Nos	40	6206	248240
	60 cm circular	Nos	30	8450	253500
	80 mm x 60 mm rectangular	Nos	25	11931	298275
	60 cm x 45 cm rectangular	Nos	29	8221	238409
	60 cm x 60 cm square	Nos	22	9233	203126

Sr · N O.	Descriptions	Unit	Quantity	Rate	Amount in Rs.
15	Direction and Place Identification signs up to 0.9 sqm size board. Providing and erecting direction and place identification retro-reflectorized sign as per IRC:67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminum sheeting, 2 mm thick with area not exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing (8.5)	Nos	10	17177	171770
16	Direction and Place Identification signs with size more than 0.9 sqm size board. Providing and erecting direction and place identification retro-reflectorized sign as per IRC :67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminum sheeting, 2 mm thick with area exceeding  0.9 sqm supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm, 2 Nos. firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing (8.6)	Nos	10	17810	178100
17	Road Delineators Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide stripes, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and confirming to IRC-79 and the drawings. (8.13)	Nos	250	2426	606500
18	Construction of Semi Pucca R/wall of Av. Height 3.0m	Mtr	3463.00	15640.10	54161666.30
19	Construction of Semi Pucca B/wall of Av. Height 2.55m	Mtr	724.00	10423.90	7546903.60

Sr · N O.	Descriptions	Uni t	Quantity	Rate	Amount in Rs.
20	Construction of PCC Edge wall of Av. Height 1.50m	Mt r	600.00	8924.0 0	5354400.0 0
21	Construction of Parapet wall	No s	5334.00	2664.0 0	14209776. 00
22	Construction of Pucca Drain	Mt r	6290.00	3833.4 0	24112086. 00
23	Construction of Channel Drain	Mt r	24616.0 0	966.80	23798748. 80
24	Construction of Paver Block	Mt r	12580.0 0	620.00	7799600.0 0
25	Construction of Passenger Shelter	Mt r	25.00	400000	10000000. 00
26	Cross Drainage Structures (Slab Culverts)				
	Excavation in foundations	Cu m	1021.55	131	133823.05
	Cement Concrete (1:3:6) PCC M-10 Foundation & Plinth	Cu m	63.09	7659	483206.31
	Cement Concrete (1:2.5:5) PCC M-15 Foundation & Plinth	Cu m	295.17	7835	2312656.9 5

Sr. NO.	Descriptions	Unit	Quantity	Rate	Amount in Rs.
	Cement Concrete (1:2.5:5) PCC M-15 Sub Structure	Cum	159.07	7835	1246313.45
	Cement Concrete (1:1.5:3) RCC M-20 Super Structure	Cum	61.96	11282	699032.72
	Wearing Coat M- 30 Grade	Sqm	51.80	20393	1056357.40
	Tor Steel Reinforcement for RCC Work.	MT	4.46	101978	454821.88
27	QUANTITY CALCULATION FOR 1-ROW HP CULVERT				
	Excavation for Structures Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material. (10.1 ii B)	cum	8433.36	131	1104770.68
	Providing/Laying for plain/reinforced concrete in open foundations complete as per drawing and technical specifications clause 802,803,1202 & 1203 PCC grade M-10 (1:3:6) nominal mix using 40mm down size	cum	378.92	7659	2902142.15
	Providing/Laying for plain/reinforced concrete in foundation and substructure complete as per drawing and technical specifications clause 802,804,1202 & 1203 PCC grade M-15 (1:2.5:5) nominal mix using 40mm-20mm down size aggregate.	cum	4933.33	7835	38652666.44
	Providing/Laying Plain/Reinforced cement concrete in sub- structure complete as per drawing and technical specifications clause 802, 804, 805, 806, 807, 1202 and 1204 PCC Grade M-20 (1:2:4) nominal mix.	cum	11.16	9552	106600.32
	Providing/Laying cement concrete pipe NP3 for culverts on first class bedding of granular material in single row including fixing collar with cement mortar 1:2 clause 1106	Mtr	930.00	9985	9286050.00
	Back filling with stones behind abutment, wing walls and return walls complete as per drawing and technical specification clause	cum	446.40	1433	639691.20

Sr. NO.	Descriptions	Unit	Quantity	Rate	Amount in Rs.
	1204.3.8				
28	QUANTITY CALCULATION FOR BOX CULVERT				
	Excavation for Structures Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material. (10.1 ii B)	Cu m	14272.99	131	1869761.95
	Back filling behind abutments, wing walls and return walls with selected granular material of approved quality including all material, labour, equipment carriage etc. all complete as per drawing and Technical Specifications Clause 305.	Cu m	1475.78	2319	3422336.58



Sr. NO.	Descriptions	Unit	Quantity	Rate	Amount in Rs.
	Back filling with filter media behind abutments, wing walls, & return walls, including all material, labour, equipment carriage etc. all complete as per drawing and Technical Specifications Clauses 305, 309 & 2502.	Cu m	3229.44	1564	5050844.16
	Plain/Reinforced Cement Concrete (M-15) in Open Foundation complete as per Drawing and Technical Specifications.	Cu m	979.69	8646	8470374.81
	Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications. RCC Grade M20 (Using Penetron Admixture@ 3kg/cum)	Cu m	2412.03	9552	23039729.66
	Plain cement concrete/Reinforced cement concrete including centering and shuttering but excluding reinforcement all complete as per drawing and Technical Specifications Sections 1500 & 1700 in bridges, flyover and culverts.				
	(i) M-30 grade in foundation	Cu m	1115.26	11986	13367554.30
	(ii) M-30 grade in Sub-structure	Cu m	1687.74	13211	22296785.98
	(iii) M-30 grade in Super-structure	Cu m	259.20	14615	3788208.00
	Reinforced cement concrete including reinforcement complete as per drawings and Technical Specifications Sections 1500,800, 1700 & 2703. M-30 grade concrete in RCC Railling	Mtr	512.00	3114	1594368.00
	HYSD/TMT bar reinforcement complete as per drawings and Technical Specifications Section 1600.	MT	306.22	101978	31227784.74
	Providing and fixing drainage spouts for bridges as per Drawing and Technical Specifications Clause 2705.	Nu m	256.00	8005	2049280.00
	Weep holes as per specifications	Nu m	3998.72	564	2255278.08

	Providing and laying boulders apron on river bed for protection against scour with stone boulders weighing not less than 40 kg each complete as per drawing and Technical specification.		105.53	2106	222236.39
	Flexible Apron :Construction of flexible apron 1 m thick comprising of loose stone boulders weighing not less than 40 kg beyond curtain wall.		1612.80	1403	2262758.40
Total Project Cost in Rupees =					943383638



## ANNEXURE 4.1: BIODIVERSITY METHODOLOGY

### SECONDARY/DESKTOP DATA COLLECTION

Secondary data collection complemented primary field efforts by providing historical and contextual insights into the biodiversity of project district. The approach included:

1. Literature Reviews and Consultations:
  - a. Reviewed peer-reviewed articles, biodiversity reports, and government publications relevant to the region.
  - b. Consulted databases such as the IUCN Red List, ZSI records, and previous Environmental Impact Assessments (EIAs) conducted in nearby areas.
2. Use of Historical Biodiversity Records:
  - a. Incorporated species data from earlier surveys and studies conducted in project district.
  - b. Verified and updated records based on field observations to ensure data accuracy.

Subsequently, comprehensive tools such as Web-Based Sources and the following list (Below Table 1) of sources are used for the secondary data collection.

**Table 1: Tools/Sources for identifying critical habitats**

SI No.	Indicators	Tools	References
1	Natural Habitat/ Modified Habitat	Global Forest Watch Land Cover Layer	<a href="https://www.globalforestwatch.org/">https://www.globalforestwatch.org/</a>
2	Land Use Land Cover	Land Cover data by ESRI and Impact Observatory	Environmental Systems Research Institute, California
3	PAs, Conservation Reserve, Community Reserve, Reserve Forest & Eco-sensitive Zone	Parivesh portal	<a href="https://stgdev.parivesh.nic.in/kya-dev/#/">https://stgdev.parivesh.nic.in/kya-dev/#/</a>
4	Tiger Reserve & Corridor	Download boundary file and overlay the project area	<a href="https://ntca.gov.in/dss/#decision-support-system">https://ntca.gov.in/dss/#decision-support-system</a>
5	Elephant Reserve	Elephant Reserves of India: An Atlas	<a href="https://moef.gov.in/wp-content/uploads/2023/11/PE-Elephant-Reserve-of-India-an-atlas.pdf">https://moef.gov.in/wp-content/uploads/2023/11/PE-Elephant-Reserve-of-India-an-atlas.pdf</a>
6	Ramsar Site	Ramsar Sites Information Services	<a href="https://rsis.ramsar.org/">https://rsis.ramsar.org/</a>
7	Key Biodiversity Area/Important Bird Area	Key Biodiversity Area	<a href="https://www.keybiodiversityareas.org/sites/search">https://www.keybiodiversityareas.org/sites/search</a>
8	Schedule Species (I-IV), Wildlife (Protection) Act, 1972	List of schedule species list (I - IV)	Wild Life (Protection) Amendment Act, 2022

Primary data collection:

1. Primary data collection involved direct fieldwork conducted during September to assess the biodiversity of the direct impact area of the project road. Key activities and followed methods included in the below Table 2.

**Table 2: Primary data collections methods and indicators**

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

#### **Meetings with Local government officials:**

1. Various interactions and meetings were conducted with Forest Officials, biodiversity officers & other officials of PWD responsible for the project road. Meetings with forest department officials were done to request information about their working plan circles and their management of protected areas and to discuss about animal corridors if present in the vicinity of the project road.
2. Additionally, discussions were held with inhabitants near the project site, engaging various individuals to understand the current status of fauna along the road and nearby protected areas. The conversations focused on gathering information about the presence of wildlife, the frequency of sightings along the roadside, and in nearby community forests. Questions were also asked regarding illegal activities, such as poaching of fauna and unauthorized logging of timber trees.

#### **Data Analysis Methods**

1. Collected data was analyzed using the following methods:

#### **Species Categorization:**

- a. Species were classified based on their taxonomic groups (mammals, birds, amphibians, reptiles, etc.).
- b. Conservation statuses were assigned using IUCN Red List categories and Wildlife Protection Act (WPA) schedules.

**Threat Assessment:**

- a. Identified species at risk due to habitat fragmentation, road construction, and human disturbances.
- b. Assessed habitat quality and connectivity using geographic data and field observations.

**Habitat Mapping:**

- a. Mapped key biodiversity hotspots and critical habitats along the proposed road alignment.
- b. Spatial data mapping- Ecological sensitive areas - proximity to respected PAs has been identified based on GIS SHP files obtained from forest department, topo sheets and satellite imagery.

## **ANNEXURE 4.2: DETAILED LIST OF FLORA AND FAUNA**

List of trees (Source: Primary and Secondary data)

Sl. No.	Common Name	Scientific Name	IUCN Status	Family	Source
1.	Ficus recemosa (Cluster Fig)	<i>Ficus racemosa</i>	NL	Moraceae	Primary
2.	Amla	<i>Phyllanthus emblica</i>	LC	Phyllanthaceae	Primary
3.	Amoora	<i>Aglaia spectabilis</i>	LC	Meliaceae	Primary
4.	Areca palm	<i>Areca catechu</i>	LC (Decreasing)	Arecaceae	Primary
5.	Arjun tree	<i>Terminalia arjuna</i>	NL	Combretaceae	Primary
6.	Baheda	<i>Terminalia bellirica</i>	LC	Combretaceae	Primary
7.	Bamboo (Tulda)	<i>Bambusa tulda</i>	NL	Poaceae	Primary
8.	Banana (wild)	<i>Musa balbisiana</i>	LC	Musaceae	Primary
9.	Bando lata (climber)	<i>Spatholobus parviflorus</i>	LC	Fabaceae	Primary
10.	Bhelu	<i>Tetrameles nudiflora</i>	LC	Tetramelaceae	Primary
11.	Black Plum	<i>Syzygium cumini</i>	LC	Myrtaceae	Primary
12.	Black Siris	<i>Albizia odoratissima</i>	LC	Fabaceae	Primary
13.	Bonsum	<i>Phoebe goalparensis</i>	NL	Lauraceae	Primary
14.	Burflower tree (Kadamba)	<i>Neolamarckia cadamba</i>	LC	Rubiaceae	Primary
15.	Chamkathal	<i>Artocarpus chaplasha</i>	LC	Moraceae	Primary
16.	Chorai	<i>Vitex peduncularis</i>	LC	Lamiaceae	Primary
17.	Cotton tree	<i>Bombax ceiba</i>	LC	Malvaceae	Primary
18.	Dog Teak	<i>Dillenia pentagyna</i>	LC	Dilleniaceae	Primary
19.	Drumstick tree	<i>Moringa oleifera</i>	LC	Moringaceae	Secondary
20.	Dulloo bamboo	<i>Schizostachyum dullooa</i>	NL	Poaceae	Primary
21.	Elephant rope tree	<i>Sterculia villosa</i>	LC	Malvaceae	Primary
22.	Gamhar	<i>Gmelina arborea</i>	LC	Lamiaceae	Primary
23.	Golden shower	<i>Cassia fistula</i>	LC	Fabaceae	Secondary
24.	Guava	<i>Psidium guajava</i>	LC	Myrtaceae	Secondary
25.	Hairy fig	<i>Ficus hispida</i>	NL	Moraceae	Primary
26.	Indian Bael tree	<i>Aegle marmelos</i>	NT	Rutaceae	Primary
27.	Indian mahogany	<i>Cedrela toona</i>	LC	Meliaceae	Primary
28.	Indian trumpet flower	<i>Oroxylum indicum</i>	LC	Bignoniaceae	Primary
29.	Jackfruit	<i>Artocarpus heterophyllus</i>	NL	Moraceae	Primary
30.	Khasi pine	<i>Pinus kesiya</i>	LC	Pinaceae	Primary
31.	Lychee	<i>Litchi chinensis</i>	VU	Sapindaceae	Secondary
32.	Mango	<i>Mangifera indica</i>	DD	Anacardiaceae	Secondary
33.	Mohaneem (Neem)	<i>Azadirachta indica</i>	LC	Meliaceae	Secondary

Sl. No.	Common Name	Scientific Name	IUCN Status	Family	Source
34.	Peepal tree	<i>Ficus religiosa</i>	LC	Moraceae	Primary
35.	Pongam Tree	<i>Pongamia pinnata</i>	LC (Stable)	Fabaceae	Secondary
36.	Tamarind tree	<i>Tamarindus indica</i>	LC (Stable)	Fabaceae	Secondary
37.	Tree bean	<i>Parkia timoriana</i>	LC	Fabaceae	Primary
38.	Wild guava	<i>Careya arborea</i>	LC	Lecythidaceae	Primary
39.	Woolly Rosebay	<i>Wrightia arborea</i>	LC	Apocynaceae	Primary
40.	Zinghal	<i>Stereospermum colais</i>	LC	Bignoniaceae	Primary

Source: District working plan

#### List of Shrubs (Source: Primary and Secondary data)

Sl. No.	Common Name	Scientific Name	IUCN Status	Family	Source
1.	Bogang	<i>Clerodendrum buchananii</i>	Not Listed	Lamiaceae	Primary
2.	Orange Chinese hat plant	<i>Holmskioldia sanguinea</i>	Not Listed	Lamiaceae	Secondary
3.	Siam Weed	<i>Eupatorium odoratum</i>	Not Listed	Asteraceae	Primary
4.	Lantana	<i>Lantana camara</i> L.	Not Listed (Invasive)	Verbenaceae	Secondary
5.	Ronga bahak	<i>Phlogacanthus thyrsoformis</i>	Not Listed	Acanthaceae	Primary
6.	Castor bean	<i>Ricinus communis</i> L.	LC	Euphorbiaceae	Secondary
7.	Indian Snakeweed	<i>Stachytarpheta indica</i> (L.) Va	Not Listed	Verbenaceae	Secondary

Source: District working plan

#### List of Herbs

Sl. No.	Common Name	Scientific Name	IUCN Status	Family	Source
1.	Chick weed	<i>Ageratum conyzoides</i> L.	NL (Invasive)	Asteraceae	Primary
2.	Bluemink	<i>Ageratum houstonianum</i>	NL	Asteraceae	Secondary
3.	Alligator weed	<i>Alternanthera philoxeroides</i>	NL (Invasive)	Amaranthaceae	Secondary
4.	Pineapple	<i>Ananas comosus</i> (L.)	LC	Bromeliaceae	Secondary
5.	Beggar Tick	<i>Bidens pilosa</i> L.	LC	Asteraceae	Secondary
6.	Feather celosia	<i>Celosia argentea</i> L.	LC	Amaranthaceae	Secondary
7.	Siam weed	<i>Chromolaena odorata</i> (L.)	NL (Invasive)	Asteraceae	Primary
8.	Redflower	<i>Crassocephalum</i>	NL	Asteraceae	Secondary

Sl. No.	Common Name	Scientific Name	IUCN Status	Family	Source
	ragleaf	<i>crepidioides</i> (Benth.)			
9.	Gallant soldier	<i>Galinsoga parviflora</i>	LC	Asteraceae	Secondary
10.	Fringed quickweed	<i>Galinsoga quadriradiata</i>	NL	Asteraceae	Secondary
11.	Pennsylvania cudweed	<i>Gamochaeta pensylvanica</i>	LC	Asteraceae	Primary
12.	Jom lakhut	<i>Hellenia speciosa</i>	LC	Costaceae	Primary
13.	Cogon grass	<i>Imperata cylindrica</i>	LC	Poaceae	Primary
14.	Staghorn clubmoss	<i>Lycopodiella cernua</i>	LC	Lycopodiaceae	Secondary
15.	Congress grass	<i>Parthenium hysterophorus</i> L.	NL (Invasive)	Asteraceae	Secondary
16.	Stinking cassia	<i>Senna tora</i>	LC	Fabaceae	Secondary
17.	Arrowleaf sida	<i>Sida rhombifolia</i> L.	LC	Malvaceae	Secondary

Source: District working plan

#### List of Grass species (Source: Primary and Secondary data)

Sl. No.	Common Name	Scientific Name	IUCN Status	Family	Source
1.	Bermuda Grass / Durva	<i>Cynodon dactylon</i>	LC	Poaceae	Primary
2.	Giant reed	<i>Arundo donax</i> L.	NL	Poaceae	Primary
3.	Mint / Pudina	<i>Mentha arvensis</i>	LC	Lamiaceae	Primary
4.	Wild Ginger	<i>Zingiber zerumbet</i>	LC	Zingiberaceae	Primary
5.	Turmeric / Haldi	<i>Curcuma longa</i>	NL	Zingiberaceae	Primary
6.	Gotu kola / Indian Pennywort	<i>Centella asiatica</i>	LC	Apiaceae	Primary
7.	Broom Grass / Tiger Grass	<i>Thysanolaena maxima</i>	LC	Poaceae	Primary

Source: District working plan

#### List of Fern

Sl. No.	Common Name	Scientific Name	Family	Source
1	Walking maidenhair fern	<i>Adiantum philippense</i>	Pteridaceae	Secondary
2	Tree fern	<i>Alsophila latebrosa</i>	Cyatheaceae	Secondary
3	Bird's nest fern	<i>Asplenium nidus</i>	Aspleniaceae	Secondary
4	Creeping fern	<i>Bolbitis heteroclita</i>	Dryopteridaceae	Secondary
5	Dhekia	<i>Diplazium esculentum</i>	Athyriaceae	Secondary
6	Staghorn clubmoss	<i>Lycopodiella cernua</i>	Lycopodiaceae	Secondary



Sl. No.	Common Name	Scientific Name	Family	Source
7	Lace fern	Odontosoria chinensis	Lindsaeaceae	Secondary
8	Giant Vine Fern	Stenochlaena tenuifolia	Blechnaceae	Secondary
9	Downy maiden fern	Thelypteris dentata	Thelypteridaceae	Secondary
10	Bracken fern	Pteridium aquilinum	Dennstaedtiaceae	Secondary
11	Rabbit's foot fern	Davallia solida	Davalliaceae	Secondary
12	Bird's claw fern	Ceratopteris thalictroides	Pteridaceae	Secondary
13	Common maiden fern	Adiantum capillus-veneris	Pteridaceae	Secondary
14	Water fern	Marsilea minuta	Marsileaceae	Secondary
15	Forked fern	Dicranopteris linearis	Gleicheniaceae	Secondary
16	Climbing fern	Lygodium flexuosum	Lygodiaceae	Secondary
17	Hairy fern	Pteris vittata	Pteridaceae	Secondary
18	Sensitive fern	Onychium japonicum	Pteridaceae	Secondary
19	Silver back fern	Athyrium filix-femina	Athyriaceae	Secondary
20	Tongue fern	Asplenium ruta-muraria	Aspleniaceae	Secondary

Source: District working plan

## List of Fauna

### List of Bird species

Sl. No.	Common Name	Scientific Name	IUCN Status	WPA 1972 Schedule	Migration / Resident Status	Source
1	Black Drongo	<i>Dicrurus macrocercus</i>	LC	IV	Resident	Secondary
2	Blue-throated Barbet	<i>Psilopogon asiaticus</i>	LC	IV	Resident	Secondary
3	Common Myna	<i>Acridotheres tristis</i>	LC	IV	Resident	Primary
4	Common Tailorbird	<i>Orthotomus sutorius</i>	LC	IV	Resident	Secondary
5	Emerald Dove	<i>Chalcophaps indica</i>	LC	IV	Resident	Primary
6	Great Barbet	<i>Psilopogon virens</i>	LC	IV	Resident	Secondary
7	House Sparrow	<i>Passer domesticus</i>	LC	IV	Resident	Secondary
8	Indian Pond Heron	<i>Ardeola grayii</i>	LC	IV	Resident	Secondary
9	Jungle Myna	<i>Acridotheres fuscus</i>	LC	IV	Resident	Secondary
10	Red-vented Bulbul	<i>Pycnonotus cafer</i>	LC	IV	Resident	Secondary
11	Shikra	<i>Accipiter badius</i>	LC	IV	Resident	Secondary
12	Spotted Dove	<i>Spilopelia chinensis</i>	LC	IV	Resident	Secondary
13	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	LC	IV	Resident	Secondary
14	Oriental White-eye	<i>Zosterops palpebrosus</i>	LC	IV	Resident	Secondary
15	Asian Koel	<i>Eudynamis</i>	LC	IV	Resident	Primary

Sl. No.	Common Name	Scientific Name	IUCN Status	WPA 1972 Schedule	Migration / Resident Status	Source
		<i>scolopaceus</i>				
16	Common Hoopoe	<i>Upupa epops</i>	LC	IV	Winter Migrant	Secondary
17	Rufous Woodpecker	<i>Micropternus brachyurus</i>	LC	IV	Resident	Secondary
18	Common Iora	<i>Aegithina tiphia</i>	LC	IV	Resident	Secondary
19	Scarlet Minivet	<i>Pericrocotus flammeus</i>	LC	IV	Resident	Secondary
20	Bronzed Drongo	<i>Dicrurus aeneus</i>	LC	IV	Resident	Secondary
21	Black-hooded Oriole	<i>Oriolus xanthornus</i>	LC	IV	Resident	Secondary
22	Rufous Treepie	<i>Dendrocitta vagabunda</i>	LC	IV	Resident	Secondary
23	Barn Swallow	<i>Hirundo rustica</i>	LC	IV	Winter Migrant	Secondary
24	Asian Pied Starling	<i>Gracupica contra</i>	LC	IV	Resident	Secondary
25	Paddy Field Pipit	<i>Anthus rufulus</i>	LC	IV	Resident	Secondary
26	Oriental Turtle Dove	<i>Streptopelia orientalis</i>	LC	IV	Resident	Secondary
27	Red-collared Dove	<i>Streptopelia tranquebarica</i>	LC	IV	Resident	Secondary
28	Green Bee-eater	<i>Merops orientalis</i>	LC	IV	Resident	Secondary
29	White Wagtail	<i>Motacilla alba</i>	LC	IV	Winter Migrant	Secondary
30	Grey Wagtail	<i>Motacilla cinerea</i>	LC	IV	Winter Migrant	Secondary
31	Citrine Wagtail	<i>Motacilla citreola</i>	LC	IV	Winter Migrant	Secondary
32	Common Stonechat	<i>Saxicola torquatus</i>	LC	IV	Resident	Secondary
33	Crimson Sunbird	<i>Aethopyga siparaja</i>	LC	IV	Resident	Secondary
34	Purple Sunbird	<i>Cinnyris asiaticus</i>	LC	IV	Resident	Secondary
35	Jungle Owlet	<i>Glaucidium radiatum</i>	LC	IV	Resident	Secondary
36	Jungle Babbler	<i>Turdoides striata</i>	LC	IV	Resident	Secondary
37	Greater Necklaced Laughing Thrush	<i>Garrulax pectoralis</i>	LC	IV	Resident	Secondary
38	Black-throated	<i>Aethopyga saturata</i>	LC	IV	Resident	Secondary

Sl. No.	Common Name	Scientific Name	IUCN Status	WPA 1972 Schedule	Migration / Resident Status	Source
	Sunbird					
39	Green-tailed Sunbird	<i>Aethopyga nipalensis</i>	LC	IV	Resident	Secondary
40	Purple-rumped Sunbird	<i>Leptocoma zeylonica</i>	LC	IV	Resident	Secondary
41	Ruby-cheeked Sunbird	<i>Chalcoparia singalensis</i>	LC	IV	Resident	Secondary
42	Scarlet-backed Flowerpecker	<i>Dicaeum cruentatum</i>	LC	IV	Resident	Primary
43	Plain Prinia	<i>Prinia inornata</i>	LC	IV	Resident	Secondary
44	Oriental Pied Hornbill	<i>Anthracoceros albirostris</i>	NT			
45	Wreathed Hornbill	<i>Rhyticeros undulatus</i>	VU			
46	Indian Peafowl	<i>Pavo cristatus</i>	LC			

Source: District working plan

#### List of Mammals, Reptiles (Source : Primary and Secondary data)

Sl. No.	Common name	Scientific name	IUCN status	Schedule status (WPA 2022)	Source
<b>Mammals</b>					
1.	Rehsum Macaque	<i>Macaca mulata</i>	LC	NS	Secondary
2.	Large Indian Civet	<i>Viverra zibetha</i>	LC	II	Secondary
3.	Masked Palm Civet	<i>Paguma larvata</i>	LC	II	Secondary
4.	Irrawaddy Squirrel	<i>Callosciurus pygerythrus</i>	LC	NS	Secondary
5.	Western Hoolock Gibbon	<i>Hoolock hoolock</i>	EN		
6.	Bengal Slow Loris	<i>Nycticebus bengalensis</i>	EN		
7.	Clouded Leopard	<i>Neofelis nebulosa</i>	VU		
8.	Asian Elephant	<i>Elephas maximus</i>	EN		
9.	Sambar Deer	<i>Rucervus unicolor</i>	VU		
10.	Assam Macaque	<i>Macaca assamensis</i>	NT		
<b>Reptiles</b>					
1.	Common Garden Lizard	<i>Calotes versicolor</i>	NE	NS	Secondary
2.	Bronze Skink	<i>Eutropis macularia</i>	LC	NS	Secondary
3.	White-spotted Supple Skink	<i>Lygosoma albopunctata</i>	LC	NS	Secondary
4.	Banded Krait	<i>Bungarus fasciatus</i>	LC	NS	Secondary
5.	Common Kukri Snake	<i>Oligodon arnensis</i>	LC	NS	Secondary
6.	Snail-eater	<i>Pareas monticola</i>	LC	NS	Secondary
7.	Chinese Pangolin	<i>Manis pentadactyla</i>	CR		

Sl. No.	Common name	Scientific name	IUCN status	Schedule status (WPA 2022)	Source
8.	Indian Pangolin	<i>Manis crassicaudata</i>	EN		
<b>Amphibians</b>					
1	Asian Common Toad	<i>Duttaphrynus melanostictus</i>	LC	Schedule IV	Secondary
2	Khasi Hills Tree Frog	<i>Polypedates leucomystax</i>	LC	Not Listed	Secondary
3	Shillong Stream Frog	<i>Amolops shillongensis</i>	NL	Not Listed	Secondary
4	Shillong Bush Frog	<i>Raorchestes shillongensis</i>	LC	Not Listed	Secondary
5	Khasi Hills Toad	<i>Bufoides meghalayanus</i>	CR		
<b>Butterflies</b>					
1	Fringed Dawnfly	<i>Capila penicillatum</i>	NL	Not Listed	Secondary
2	Common Mormon	<i>Papilio polytes</i>	LC	Not Listed	Secondary
3	Common Rose	<i>Pachliopta aristolochiae</i>	LC	Not Listed	Secondary
4	Swallowtail	<i>Papilio machaon</i>	NL	Not Listed	Secondary
5	Tailed Jay	<i>Graphium agamemnon</i>	NL	Not Listed	Secondary
6	Blue Tiger	<i>Tirumala limniace</i>	NL	Not Listed	Secondary
7	Common Crow	<i>Euploea core</i>	LC	Not Listed	Secondary
8	Common Tiger	<i>Danaus genutia</i>	NL	Not Listed	Secondary
9	Plain Tiger	<i>Danaus chrysippus</i>	NL	Not Listed	Secondary
10	Great Orange Tip	<i>Hebomoia glaucippe</i>	NL	Not Listed	Secondary
11	Common Grass Yellow	<i>Eurema hecabe</i>	NL	Not Listed	Secondary

Source: District working plan

## **ANNEXURE 5.1: DUMPSITE STABILIZATION PLAN**

### **1. Introduction**

The MLCIP road project involves widening, cutting, slope trimming, excavation for retaining walls, and construction of culverts/bridges. These activities will generate excavated soil, rock fragments, and construction spoils (collectively referred to as muck). Proper muck management is crucial in Meghalaya due to steep terrain, fragile geology, and high rainfall that increase erosion and landslide risks.

### **2. Quantity & Sources of Muck**

Excavation will mainly occur along road cuttings, drainage works, and foundations for retaining/breast walls. The proposed road construction activity will involve a cut volume of 120,107.61 m<sup>3</sup> and a fill volume of 61,265.62 m<sup>3</sup>. This indicates that the excavation requirement is nearly double the filling requirement, resulting in a surplus of approximately 58841.990 m<sup>3</sup> of excavated material.

### **3. Criteria for Muck Disposal Site Selection**

The following criteria shall guide the selection of muck disposal sites:

- **Proximity to Work Sites** – Disposal sites should be located within 2–3 km of the excavation area to minimize fuel consumption, traffic congestion, and road safety risks from muck transport.
- **Slope Stability** – Sites shall be located on naturally stable and gently sloping terrain (preferably <25°) and away from landslide-prone or erosion-prone areas.
- **Distance from Water Sources** – A minimum buffer of 50 m from streams/drains and 100 m from rivers/lakes shall be maintained to prevent siltation and contamination.
- **Avoidance of Habitation & Agriculture** – Disposal shall not be carried out near settlements, schools, or agricultural land to avoid livelihood and health impacts.
- **Non-Forest/Non-Encroachment Land** – Sites should preferably be on barren, community, or government land, avoiding forest land unless prior approval is obtained.
- **Approval & Community Consent** – All disposal sites must be approved by the Village Employment Council (VEC) / traditional institutions under KHADC/JHADC/GHADC, and endorsed by the State PWD/PIU.

- **Accessibility & Safety** – Sites should be accessible by haul roads without requiring major additional cutting, and safe for vehicle maneuvering.

The details for the muck disposal sites are presented in Table below:

**Table: Details for the muck disposal site**

S.No.	Location with GPS	Distance from WMP road (m)	Area of disposal site (ha)	Quantity of Muck to be disposed (cu.m)	Environment Sensitivity (If any)
1	Umnongrim village at Ch 24+800 km	400	1.70	20594.696	No specific environmental sensitivity noted
2	Mawsynram at Ch 37+200 km	10	2.70	33539.934	To minimize environmental impacts, all efforts will be made to avoid cutting trees, and the site will be managed to preserve existing vegetation.
3	Phlangwanbroi at Ch 48+000	10	0.30	4707.36	No specific environmental sensitivity noted

#### 4. Methodology of Muck Disposal

Utilization priority: Maximum use of excavated material in road embankment, shoulder filling, and construction of retaining/breast walls.

Disposal management include:

- Dumping muck in designated sites at slope  $\leq 30^\circ$ .
- Layer-wise compaction using machinery.
- Retaining walls or gabion walls constructed at toe of disposal sites.
- Drainage channels with weep holes for safe water passage.
- Temporary fencing to prevent spillage and encroachment.

## **5. Rehabilitation of Muck Disposal Sites**

### ***Engineering Measures***

- Construction of breast walls/retaining walls.
- Compaction of dumped muck in layers (500–700 mm).
- Surface levelling and provision of drainage.

### ***Biological Measures***

- Covering muck with topsoil.
- Bamboo crib wall
- Plantation of native species.
- Turfing of slopes to minimize erosion.
- Community-based maintenance through Village Employment Councils/ Self-Help Groups.

## **6. Monitoring & Compliance**

Regular monitoring will be conducted by PIU/PMC to ensure muck disposal is done only at designated sites. Compliance will be ensured with Meghalaya State Pollution Control Board (MSPCB) and MoRTH/IRC environmental guidelines. Geo-tagging of muck disposal sites under MLCIP will also be carried out.

## **ANNEXURE 5.2: DETAILS OF UTILITIES**



				Inside 10m		
Sr. No.	Chainage		Category	LHS	RHS	Total
	From	To				
1	22+500	23+000	Electric Pole	14	1	15
2	23+000	24+000	Electric Pole	13	1	14
3	24+000	25+000	Electric Pole	23	2	25
4	25+000	26+000	Electric Pole	28	0	28
5	26+000	27+000	Electric Pole	25	0	25
6	27+000	28+000	Electric Pole	21	1	22
7	28+000	29+000	Electric Pole	16	0	16
8	29+000	30+000	Electric Pole	18	0	18
9	30+000	31+000	Electric Pole	32	0	32
10	31+000	32+000	Electric Pole	20	0	20
11	32+000	33+000	Electric Pole	27	2	29
			Light Pole	4	1	5
12	33+000	34+000	Electric Pole	19	1	20
13	34+000	35+000	Electric Pole	26	5	31
14	35+000	36+000	Electric Pole	0	25	25
15	36+000	37+000	Electric Pole	1	22	23
16	37+000	38+000	Electric Pole	32	9	41
17	38+000	39+000	Electric Pole	8	43	51
18	39+000	40+000	Electric Pole	0	51	51
19	40+000	41+000	Electric Pole	34	29	63
20	41+000	42+000	Electric Pole	38	0	38
21	42+000	43+000	Electric Pole	16	2	18
22	43+000	44+000	Electric Pole	9	10	19
23	44+000	45+000	Electric Pole	12	3	15
24	45+000	46+000	Electric Pole	8	0	8
25	46+000	47+000	Electric Pole	17	0	17
26	47+000	48+000	Electric Pole	33	0	33
27	47+000	48+765	Electric Pole	18	0	18
				512	208	720

## ANNEXURE 5.3: GBV RISK CATEGORISATION

### GBV Risk Categorization for the project road

Section B: Project Context		Marks	Details
1	Is project in a humanitarian area of the country? Add notes on any latest humanitarian and emergency situation	2.5	<ul style="list-style-type: none"> <li>Yes</li> </ul> <p>Natural Disasters (In project district: food in May 2025). Socio-Economic Factors.(Social Vulnerability due to ST population) Healthcare Access (for remote and vulnerable communities)</p>
2	Level of infrastructure construction, upgrading or rehabilitation entailed in the project	0.5	<ul style="list-style-type: none"> <li>Upgradation of road</li> </ul>
3	According to the guidance from the labour influx note, rate your project as high, medium or low risk related to the level of labour influx. If there is no labour influx, choose the low-risk option. This determination is a self-judgement based on project parameters, using the labour influx note guidelines.	0.5	Low
4	Information on consultations undertaken with women's groups, groups that advocate for children and adolescent rights, and other stakeholders.	2	--
5	Information on (if any) military or paid security forces being contracted as part of the project	0	--
6	Assess information on Poverty in the project area	1.5	Poverty in Meghalaya is multifaceted, characterized by structural economic issues, social inequalities, and vulnerability to natural disasters. Effective interventions will require a comprehensive understanding of these dimensions, focusing on sustainable development, education, health, and economic opportunities tailored to the needs of different communities and demographic groups.
7	Check if project in hard-to-supervise areas? (for instance, very remote or geographically diffuse projects)	2	--
8	Assess the project construction near school route or other pedestrian access that women and girls use for their daily activities	2.5	<p>1-Distance to School :-</p> <ul style="list-style-type: none"> <li>Jawahar Navodaya Vidyalaya (Under Construction):- 75m from center point, at chainage (32+100) RHS.</li> </ul>

Section B: Project Context		Marks	Details
			<ul style="list-style-type: none"> <li>SSA School:- 20m, at chainage (44+220) LHS</li> <li>SSA School:- 6m, at (47+150) RHS</li> </ul> <p>2-Safety of Routes-Yes Note-Vehicle Movement is very Low</p> <p>3-Availability of Transportation: No Note- Limited public transportation within Mawsynram. There is no organized public transportation system. Getting around requires hired taxis.</p>
9	Check if the project is equipped to monitor GBV and SEA risks across the full span of the work	0.5	Yes
10	Check whether female workers are in close proximity to male workers with limited supervision	1	No
<b>Total risk assessment rating</b>		<b>13</b>	<b>Moderate</b>

**Note:** The combination of low, medium, and high scores results in the project's overall risk assessment being categorized as "Moderate," with a total score of 13. High scores results in the project's overall risk assessment being categorized as "Low," with a total score of 6.

The risk score is calculated on a scale of 0 to 25. Projects that score 0-12.25 are considered "Low" risk; 12.5-16 "Moderate" risk; 16.25-18 "Substantial" risk, and 18.25-25 "High" risk.

#### WORLD BANK (GOOD PRACTICE NOTE)

According to the World Bank's GBV risk categorization, the "Moderate" risk category falls within a score range of 12.5 to 16. The table above illustrates the project's risk categorization based on 10 questions, each carrying a weight of 2.5. The scoring system assigns a "0" for low risk and a "2.5" for the highest risk.

Consultations conducted highlight several challenges in the area, which require attention, particularly in the fields of basic accessibility, such as education, healthcare, and markets, underscoring the need for improved road infrastructure. While most villages have sanitation facilities, some still lack adequate toilet facilities. Regarding education, the villages offer basic facilities; however, in some areas, access to high schools is limited, and transportation becomes a challenge due to the absence of public transport along the road stretch. Similarly, medical facilities are available but not easily accessible due to the lack of transportation options. This situation demonstrates that while essential services are available within the area, they remain inaccessible to many due to transportation constraints.

The labour influx for the project is expected to be moderate, as workers from outside may be required and will stay on-site during the construction phase. This could potentially cause some discomfort for the local community, particularly for women and children living in the surrounding areas.

Although the road spans over hilly terrain, regular supervision can be done during the construction phase which reflects positive perspective of the project. Also, during the construction phase, access facilities to the schools would be provided and also is accessible either by foot or local auto rickshaw services. The project would be equipped with monitoring facilities GBV and SEA risks along with the avoidance of close proximity of female workers with the male workers mandated to be implemented by the contractors. The most remote or interior road stretches are categorized as "Moderate risk," while road stretches near urban areas fall under the "Low risk" category.

## **ANNEXURE 5.4 GENDER-BASED VIOLENCE (GBV) ACTION PLAN**

For

Meghalaya Logistics and Connectivity Improvement Project (MLCIP) Corridor funded by the World Bank

Submitted To



Meghalaya Infrastructure Development Finance Corporation (MIDFC) Ltd.  
House No. L/A-56, Lower Nongrim Hills, Top Floor,  
Meghalaya Basin Development Authority (MBDA) Building,  
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## **Gender-Based Violence (GBV) Action Plan for Road Projects under the Meghalaya Logistics and Infrastructure Connectivity Project (MLICP):**

### *Executive Summary – GBV Action Plan:*

#### **Purpose & Scope**

The GBV Action Plan (GBV-AP) establishes mandatory measures to prevent, mitigate, and respond to Gender-Based Violence (GBV) — including Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) — linked to road construction and associated civil works in Meghalaya. It applies to:

- Project-affected communities,
- Workers (contractors, subcontractors, labour camps),
- Service providers and stakeholders.

The plan aligns with World Bank Good Practice Notes (2018, 2022) and Indian laws (POSH Act, POCSO Act, DV Act, IPC provisions).

#### **Key Risks Identified**

- Labour influx of male-dominated workforce → SEA/SH risks.
- Remote sites, night works, poor lighting → heightened assault risks.
- Inadequate gender-sensitive facilities (WASH, transport).
- Child protection risks under POCSO Act.
- Weak referral services and under-reporting due to stigma.

#### **Core Prevention & Mitigation Measures**

##### **At PIU level:**

- Adoption and disclosure of GBV-AP.
- Contract clauses requiring GBV compliance.
- Codes of Conduct (CoC) signed by all workers and visitors.

##### **At Contractor level:**

- Worker induction on GBV/SEA/SH.
- POSH-compliant workplace redress mechanisms.
- Gender-segregated, safe accommodation and WASH facilities.
- Lighting, safe transport, restricted visitor access.
- Community awareness campaigns in Khasi, English.
- Zero tolerance of child labour; child protection protocols.

#### **Survivor-Centred Response**

- **Trained GBV focal persons** at PIU and contractor level.
- Immediate safety, psychological first aid, and confidential referrals.
- Referral network mapped (health, police, legal aid, NGOs, shelters).
- Costs for emergency medical, psychosocial support, and safe shelter covered by project budget.

#### **SEA/SH-Sensitive Grievance Redress Mechanism (GRM)**

- Multiple safe channels (toll-free phone, WhatsApp, boxes, female-only options).
- Confidential handling, no retaliation.
- Secure case records, anonymised reporting.
- Independent audits annually.

#### **Capacity Building**

- Training for PIU, contractors, workers, and community leaders.
- Refreshers every 6–12 months and during staff turnover.

#### **Monitoring & Indicators**

- % workers signing CoC and trained.
- Number of GBV/SEA/SH cases reported and referred within 72 hours.
- Functional GRM response times.
- Availability of gender-sensitive WASH and lighting at worksites.
- Community awareness sessions held.
- Quarterly reporting to PIU and World Bank; immediate notification of severe cases.

#### **Institutional Roles & Resourcing**

- PIU: Overall coordination, monitoring, reporting.
- Contractors: Site-level implementation, compliance, training.
- NGOs/Service Providers: Support for referral services and survivor care.
- Authorities (Police, Health, Legal Services): Provide statutory response.
- Budget lines: Training, IEC, focal staff, survivor support, safe infrastructure, monitoring/audits.

#### **Conclusion**

The GBV Action Plan provides a comprehensive framework to prevent, mitigate, and respond to gender-based violence, sexual exploitation, and harassment. By integrating prevention measures, victim-centered response mechanisms, grievance redress systems, capacity building, and robust monitoring, the plan ensures that both workers and project-affected communities are protected. Overall, the GBV-action plan strengthens social safeguards, enhances project accountability, and fosters a safe, inclusive, and equitable environment for all



stakeholders involved in the MLCIP.

### **1. Purpose & scope:**

This GBV Action Plan (GBV-AP) sets out mandatory prevention, mitigation and response measures for road construction works in Meghalaya where World Bank financing (or Bank-aligned safeguards) and Indian law apply. It covers project-affected communities, workers (contractor staff, labour camps), subcontractors, service providers and other project stakeholders across all civil works packages.

Key objectives:

- Prevent and reduce GBV (including Sexual Exploitation and Abuse — SEA — and Sexual Harassment — SH) associated with civil works and associated influx.
- Provide survivor-centered, timely and safe response and referrals.
- Ensure compliance with World Bank Good Practice Notes on GBV/SEA/SH and with Indian legislation (POSH, POCSO, Domestic Violence Act, IPC provisions).

### **2. Applicable policy & legal framework:**

- World Bank: Good Practice Note — *Addressing Gender-Based Violence in Investment Project Financing involving Major Civil Works* (GPN, 2018) and related ESF/SEA-SH guidance (2022). These set out risk-based requirements for assessment, mitigation, monitoring, and survivor-centered response.
- **India (national law):**
  - Sexual Harassment of Women at Workplace (Prevention, Prohibition & Redressal) Act, 2013 (POSH) — obligations for workplace prevention and redress (Internal Complaints Committee etc.).
  - Protection of Children from Sexual Offences (POCSO) Act, 2012 — mandatory reporting and child-sensitive procedures for offences against minors.
  - Protection of Women from Domestic Violence Act, 2005 — civil remedies and support services for survivors.
  - Indian Penal Code (notably sections on rape, sexual assault and trafficking), and Criminal Law (Amendment) Acts which expanded definitions and penalties.

These laws, together with World Bank guidance, require a survivor-centred, confidential, timely response and preventive measures such as codes of conduct, worker training, and site/community mitigation measures.

### **3. Risk profile**

- Influx of outside workers and truckers increased SEA/SH and tensions with local communities.
- Remote construction sites and night works with poor lighting elevated risk of assault.
- Male-dominated workforce and lack of female facilities sexual harassment and unsafe sanitation access.
- Child exposure near camps and worksites risk under POCSO.
- Weak/no confidential reporting channels or fear of retaliation under-reporting.
- Limited local referral services (health, psychosocial, medico-legal) in remote areas.

#### ***4. Prevention & mitigation measures (minimum required measures):***

##### **4.1 Project-wide (Owner / PIU responsibilities):**

- GBV-AP adoption: PIU to adopt and publicly disclose this GBV-AP and ensure contract clauses require contractor compliance. (Incorporate into ESMF/ESCP).
- Codes of Conduct (CoC): Mandatory CoC for all project staff, contractors, suppliers and visitors that prohibit GBV/SEA/SH and set out sanctions. All staff sign before mobilisation. (Annex A: sample CoC).
- Contractual obligations: All construction contracts must include GBV-AP obligations: training, safe accommodation, gender-segregated sanitation, GRM accessible to survivors, and reporting obligations. Contractors' non-compliance leads to sanctions/disqualification per World Bank practice.

##### **4.2 Site-level (Contractor responsibilities):**

- **Worker management & workplace safeguards:**
  - Pre-employment checks, code of conduct acknowledgement, worker induction covering GBV/SEA/SH and local cultural sensitivity.
  - Establish workplace sexual harassment redress mechanisms in line with POSH for female employees (Internal Complaints Committee or facility-level arrangement).
  - Gender parity in recruitment where feasible; recruit female staff for site safety focal roles.
- **Accommodation & camp management**
  - Separate, lockable sleeping quarters for women and men; separate WASH (toilet/shower) facilities with lighting and locks; secure water and food distribution; supervision to prevent exploitation.
  - No unauthorised visitors; visitor sign-in and buddy system for movement at night.
- **Infrastructure & site security:**
  - Safe access routes, adequate lighting around camps, work sites, access roads and public toilets; secure fencing where needed.
  - Safe transport to/from work with driver CoC and seat allocation that prevents isolated travel of women at night.
- **Community risk mitigation:**
  - Time-constrained works (limit night work near villages), work scheduling to reduce congregation of workers near sensitive community areas (schools, markets).
  - Community awareness campaigns on GBV risks, rights and available services; engagement with women's groups, panchayats and customary leaders.
- **Child protection:**
  - Zero-tolerance for child labour; protocols to prevent children's access to worksites; community awareness regarding POCSO obligations and reporting.

#### **4.3 Information, Education & Communication (IEC):**

- Visible IEC materials in local languages (Khasi, English) with messages on GBV prevention, how to report, contact points, and confidentiality assurances.
- IEC at community meetings, contractor inductions and with transport operators.

#### **5. Survivor-centered response & referral pathway:**

All responses must follow survivor-centred principles: safety, confidentiality, choice, non-discrimination, informed consent, and do no harm.

##### **5.1 Immediate on-site response**

- Trained GBV focal person (PIU and contractor) receives initial disclosures, ensures immediate safety, provides first-line psychosocial support (PFA), and with consent initiates referrals. Avoid taking statements that are forensic in nature unless survivor requests/consents.

##### **5.2 Referral network (establish before works begin):**

- Map local health facilities capable of clinical management of rape/assault (medico-legal exam), police stations, POCSO Special Juvenile Police Units (for minors), Protection Officers under DV Act, legal aid clinics, NGOs providing GBV/psychosocial support and shelters. Maintain updated contact list in each district/package. (**Annex B: Referral checklist template**).

##### **5.3 Reporting & mandatory obligations:**

- For GBV incidents involving children, the POCSO Act mandates reporting to police/Authorities — follow legal obligations while protecting the child's best interests.
- Maintain confidentiality: information only shared on a need-to-know basis and with survivor consent, except where law requires mandatory reporting (e.g., POCSO).
- Provide information on legal rights and options, safe transport to services, and cover costs for emergency medical care, psychosocial support and temporary safe shelter (project to establish a budget line).

#### **6. Grievance Redress Mechanism (GRM) — SEA/SH sensitive:**

- Multiple reporting channels: in-person (PIU/GRM desk), toll-free phone number, WhatsApp, suggestion boxes near public places, and female-only channels. Ensure anonymity option.
- Safe intake & triage: Trained staff record basic info, assess risk, and fast-track SEA/SH/child protection cases to a GBV referral team.
- Confidential handling: SEA/SH cases reported through GRM should trigger confidential escalation to the GBV focal person and PIU manager; no public disclosure.
- No retaliation clause: Protect complainants/workers from retaliation; immediate interim measures (reassignment, temporary suspension of alleged perpetrator) while respecting due process.
- Record keeping: Secure, encrypted records with restricted access; aggregate, anonymised data used for monitoring.
- External oversight: Annual audit of GRM handling and quality of response (third-party where appropriate).

### ***7. Capacity building & training:***

- PIU & contractor management: 1–2 days training on GBV risks, survivor-centered response, referral pathways, mandatory reporting, confidentiality and monitoring.
- Front-line staff & security personnel: focused training on CoC, safe conduct, non-coercive behaviour, and immediate response protocols.
- Community stakeholders: orientation workshops for village leaders, women's groups, schools on GBV prevention, how to support survivors, and POCSO awareness.
- Regular refreshers: at least every 6–12 months and on staff turnover.

### ***8. Monitoring, indicators & reporting:***

PIU to include GBV indicators in regular monitoring and in the Project's ESMF. Key indicators:

- Number of GBV/SEA/SH incidents reported (disaggregated by type, sex, age).
- Number of reported incidents receiving referral and services within 72 hours.
- Number of staff/contractor workers trained on GBV (by sex).
- Number of worksites with adequate lighting and gender-segregated WASH facilities.
- GRM response times and case closure rates.
- Number of community awareness events and participants (disaggregated by sex/age).

**Reporting:** Quarterly summary to PIU and World Bank task team; immediate reporting (within 72 hours) of severe incidents to the Bank in accordance with ESF/World Bank requirements.

### ***9. Institutional responsibilities & resourcing:***

#### **9.1 Roles:**

- Project Implementing Unit (PIU) (Social/GBV focal point): overall GBV-AP coordination, disclosure, oversight of contractors, GRM management, monitoring & reporting.
- Contractor: implement site-level prevention & mitigation measures; maintain confidential incident log; ensure accommodation and transport safety; train workers.
- Third-party service providers/NGOs: provide PSS, legal aid and referrals where government services are limited.
- District Authorities / Police / Health Facilities: receive referrals and provide medico-legal, police investigation and protection services.

#### **9.2 Budgeting**

Allocate dedicated GBV budget lines in each package for:

- Training and IEC materials;
- Staffing (GBV focal points; helpdesk);
- Survivor support (medical, PSS, temporary shelter, legal aid);

- Site infrastructure improvements (lighting, WASH);
- Monitoring, third-party audits and rapid response contingency (emergency funds).

**10. Confidential recordkeeping & data protection:**

- Store GBV case records on secure servers with restricted access; anonymise data used for monitoring.
- No identifying information to be shared in public disclosure documents.
- Follow applicable Indian privacy/data protection rules; obtain survivor consent before sharing any case details except where mandatory reporting applies.

**11. Community engagement & culturally sensitive measures:**

- Engage customary institutions, village councils, women's self-help groups and local NGOs early — co-design awareness and mitigation measures in Khasi and English.
- Use local female mobilisers and translators for outreach to women and girls.
- Respect local cultural protocols while aligning with survivor rights and legal obligations.

**12. Incident management workflow:**

1. Receipt of disclosure/complaint (GRM / direct to GBV focal person).
2. Initial triage & safety assessment (within 24 hours).
3. Immediate safety & medical referrals (within 24–72 hours).
4. Offer first-line psychosocial support (PFA) and information on options.
5. If incident involves child — follow POCSO mandatory reporting and child protection protocols.
6. Document (confidential) and monitor case, provide survivor support, and implement interim measures to prevent retaliation.
7. Closure & anonymised reporting; lessons learned to PIU for risk reduction.

**12.1 Next steps / actions required from PIU (checklist)**

1. Adopt and disclose this GBV-AP publicly.
2. Complete package-level GBV risk assessments and referral mapping for each project district in Meghalaya.
3. Insert GBV obligations and CoC into tender documents and contracts.
4. Recruit/appoint GBV focal persons in PIU and ensure contractor focal persons.
5. Develop and fund the project-level survivor emergency fund.
6. Begin capacity building for PIU, contractors and local stakeholders, and roll out IEC.
7. Establish GRM channels (including anonymous reporting) and test them before major civil works start.

8. Start monthly monitoring and quarterly reporting (anonymised) and share relevant escalations with the Bank as required.

### ***13. Gender Distribution of Project-Affected Persons:***

The gender distribution of Project-Affected Persons (PAPs) of 10 project-affected households shows a nearly balanced composition, with a slightly higher proportion of males. Out of a total of 66 PAPs, 37 individuals (56%) are male, while 29 individuals (44%) are female. The gender distribution of PAPs is presented in **Table** below.

**Table : Gender Distribution of Project-Affected Persons (PAPs)**

Gender	Project Road	
	Project Affected Persons	Percentage
Male	37	56.0
Female	29	44.0
<b>Total</b>	<b>66</b>	<b>100.0</b>

Source: EIS primary survey – 2025

### ***14. Conclusion***

The GBV Action Plan provides a structured framework to prevent and respond to risks of sexual exploitation, abuse, and harassment in Meghalaya Road projects. By embedding accountability in contracts, strengthening referral pathways, and ensuring continuous monitoring, the project commits to a zero-tolerance approach to GBV and to safeguarding the dignity and rights of women, children, and vulnerable groups in Meghalaya.

## **Annexure A: Code of Conduct on Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH)**

### **1. Purpose:**

This Code of Conduct (CoC) aims to prevent, mitigate, and address Gender-Based Violence (GBV), including Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH), in connection with the Meghalaya Road Projects. All contractor staff, sub-contractors, consultants, suppliers, and project-related personnel are required to understand, sign, and comply with this CoC.

### **2. Key Principles**

#### **All personnel shall:**

- Treat women, men, children, and communities with respect, dignity, and fairness.
- Not use language, gestures, or behaviour that is sexually suggestive, abusive, or offensive.
- Maintain a zero-tolerance approach to GBV, SEA, SH, child abuse, and exploitation.
- Respect the cultures, traditions, and laws of Meghalaya while upholding human rights and gender equality.
- Uphold confidentiality and non-retaliation in reporting and responding to GBV/SEA/SH.

### **3. Prohibited Behaviours**

#### **All personnel are strictly prohibited from:**

1. Engaging in SEA/SH or any form of GBV against community members, co-workers, or others.
2. Sexual activity with children (anyone under 18 years) regardless of consent — strictly prohibited under Indian law (POCSO Act, 2012).
3. Sexual relationships with community members in exchange for money, goods, employment, or services.
4. Sexual harassment in the workplace, including unwelcome advances, comments, or physical conduct (covered under POSH Act, 2013).
5. Violence, threats, or intimidation against colleagues, community members, or survivors of GBV/SEA/SH.
6. Possession, distribution, or consumption of illegal substances on project sites or camps.
7. Use of children for labour or involving them in hazardous work.

### **4. Required Conduct**

#### **All personnel must:**

- Attend mandatory training on GBV/SEA/SH, child protection, and respectful workplace behaviour.
- Sign and acknowledge this CoC before commencing work.
- Report any suspected or actual violations immediately to the GBV Focal Person, GRM channel, or designated authority.
- Support survivor-centered response — ensuring confidentiality, safety, and dignity of survivors.
- Cooperate fully in any investigation or disciplinary process.



## **5. Responsibilities of Managers and Supervisors**

### **Managers and supervisors must:**

- Ensure that all workers understand and comply with this CoC.
- Promote a respectful workplace and address complaints promptly.
- Take immediate disciplinary action for any CoC violations.
- Ensure safe, gender-segregated living, sanitation, and working conditions at camps and worksites.

## **6. Sanctions for Non-Compliance**

### **Violations of this CoC will result in disciplinary measures, which may include:**

- Verbal or written warning;
- Suspension without pay;
- Termination of employment/contract;
- Referral to law enforcement agencies under Indian Penal Code, POSH Act (2013), POCSO Act (2012), or Domestic Violence Act (2005), as applicable.

## **7. Acknowledgment**

I have read and understood this Code of Conduct. I agree to abide by its terms at all times during my involvement in the Weilo-Mawsynram-Phlangwanbroi Project. I understand that failure to comply will result in disciplinary action and may lead to termination of my employment and/or legal prosecution.

Name of Worker: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Employer/Contractor: \_\_\_\_\_

## **Annexure B:**

### **(B1) Package-Level GBV Risk Assessment**

#### **1. Context and Risk Factors**

- Geographic context: East Khasi Hills is a predominantly rural, hilly, and forested area with scattered villages and limited road connectivity. Road works will involve camp-based labour near remote settlements.
- Labour influx risk: Medium–High. Contractors are likely to bring in male-dominated workforces from outside Meghalaya (Assam, Bihar, UP, etc.), increasing the risk of SEA/SH and community tensions.
- Demographics & social norms: High proportion of indigenous Khasi population, matrilineal system but still strong male decision-making in public domains.
- Local GBV prevalence: Underreporting is common due to stigma and reliance on traditional dispute mechanisms. Women’s SHGs and church-based groups are active but formal services are limited.
- Children & adolescents: Vulnerable to risks from worker interaction near schools/market areas; risk of exploitation in exchange for money, gifts, or alcohol.

## **2. Risk Rating**

- SEA/SH risk: High (due to labour influx, weak formal services, low reporting).
- Workplace sexual harassment risk: Moderate (few women workers expected, but risks exist).
- Child protection risk (POCSO): High (schools located near worksites, children often present on roadsides).
- Community backlash/stigma: Moderate–High (fear of reputational damage leads to underreporting).

## **3. Mitigation Priorities**

- Mandatory Codes of Conduct and repeated training for all workers.
- Strong community awareness in Khasi language on GBV/SEA/SH risks and reporting channels.
- Safe camp design (segregated sanitation, lighting, no alcohol zones).
- Engagement of women's SHGs, and church leaders as community allies.
- Partnership with NGOs in East Khasi Hills for survivor support; emergency transport for referrals.
- SEA/SH-sensitive Grievance Redress Mechanism (confidential, female focal points).

**(B2) Referral Contact Sheet – East Khasi Hills, Meghalaya**

*(To be displayed at worksites and GRM desks; in English & Khasi versions for accessibility)*

Service Type	Institution/Provider	Location & Contact	Notes
Police (Women/Child Protection)	Mawsynram Police Station:	Landline: 03637-242320; Mobile: 7005200944. Location: Dongrum, Mawsynram, East Khasi Hills.	
Child Protection (POCSO, Juvenile Unit)	District Child Protection Unit (DCPU), East Khasi Hills:	Address: Hopkinson Road, Lachumiere, Shillong-793001.	Emergency: 100.
Health – Emergency & Medico-Legal	Mawsynram CHC	Location: Mawsynram, East Khasi Hills.  State Ambulance/Emergency: 108 (24x7)	For medico-legal: Refer to CHC or Ganesh Das Government Hospital (Shillong) for forensic support.
Psychosocial Support & Counselling	Special Cell for Women (Shillong Police)	Social Welfare Dept: 0364-2500195.	
Legal Aid	Meghalaya State Legal Services Authority (MSLSA):	Helpline: 15100 (toll-free). Address: Shillong	Entitled groups include women, children, SC/ST; apply via district offices.
Shelter / Safe Home	Iohlynti One Stop Centre (Shillong):	Swadhar Greh (Social Welfare): Shelter for distressed women/children; short/long-term stay. Contact via Dept: 0364-2500195.	
Women Helpline (24x7)	National Women Helpline: 181 (toll-free, multilingual support).	Shillong	
Childline (24x7)	Childline India: 1098 (toll-free, nationwide).	Through the DCPU	

**Advices for Contractors & PIU**

- Display this contact sheet in labour camps, site offices, and GRM desks in English and Khasi language.
- GBV focal person must ensure confidential referral with survivor consent.

- Keep emergency transport budget ready to transfer survivors to Hospital or NGO services.
- Regularly update phone numbers and verify service availability.

**Annexure C: GBV Incident Intake Form & Triage Checklist:**

*(Confidential – Do not disclose without survivor consent, except where legally mandated)*

**Section 1: Survivor Safety & Immediate Needs (Triage)**

*(To be completed as soon as a survivor discloses an incident)*

- Is the survivor in immediate danger? ☐ Yes ☐ No
- Does the survivor need urgent medical attention (within 72 hours)? ☐ Yes ☐ No
- Is the survivor under 18 years old (POCSO Act applies – mandatory police reporting)? ☐ Yes ☐ No
- Does the survivor require emergency shelter? ☐ Yes ☐ No
- Is safe and confidential transport available? ☐ Yes ☐ No

**Immediate Action Taken (tick):**

- ☐ Survivor referred to hospital
- ☐ Survivor referred to police
- ☐ Survivor referred to psychosocial counsellor
- ☐ Survivor provided temporary safe accommodation
- ☐ Survivor given information on rights and options

**Section 2: Basic Incident Details**

*(Record only minimum necessary information. Do NOT pressure survivor for details.)*

- Date of disclosure: \_\_\_\_ / \_\_\_\_ / \_\_\_\_
- Location of disclosure: \_\_\_\_\_
- Name of focal person receiving disclosure: \_\_\_\_\_
- Survivor sex/age: ☐ Female ☐ Male ☐ Other | Age: \_\_\_\_
- Survivor consent to referral? ☐ Yes ☐ No (explain options)
- Type of incident (tick all that apply, per survivor's words):
  - ☐ Sexual Harassment
  - ☐ Sexual Exploitation / Abuse (SEA)
  - ☐ Physical Assault
  - ☐ Child Sexual Abuse (POCSO)
  - ☐ Domestic Violence
  - ☐ Other (specify): \_\_\_\_\_
- Alleged perpetrator: ☐ Worker (contractor) ☐ Community Member ☐ Other
- Incident date (if provided): \_\_\_\_ / \_\_\_\_ / \_\_\_\_

- Incident location (general, no detail): \_\_\_\_\_

### **Section 3: Survivor's Choices & Consent**

- Survivor wants to:
  - ☐ Report to Police
  - ☐ Seek medical care
  - ☐ Seek counselling
  - ☐ Request safe shelter
  - ☐ Take no action now
- Survivor consent for information sharing (tick):
  - ☐ Health facility
  - ☐ Police
  - ☐ NGO counsellor
  - ☐ Legal aid
  - ☐ None

*Signature/thumbprint of survivor (if willing):* \_\_\_\_\_

*Signature of GBV focal person:* \_\_\_\_\_

#### **Section 4: Referral Actions Taken**

- Referred to: \_\_\_\_\_
- Referral date/time: \_\_\_\_ / \_\_\_\_ / \_\_\_\_ at \_\_\_\_ hrs
- Escort/transport provided: ☐ Yes ☐ No
- Costs covered from emergency fund: ☐ Yes ☐ No
- Follow-up scheduled: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

#### **Section 5: Confidential Recordkeeping**

- Case ID (non-identifying code): \_\_\_\_\_
- File kept in: ☐ Locked cabinet ☐ Secure digital (password protected)
- Access restricted to: PIU GBV focal person + authorised personnel only.
- Survivor informed of confidentiality? ☐ Yes ☐ No

#### **Guidance Notes for Focal Persons**

- Use survivor's own words; avoid judgment.
- Do not probe or force details.
- Always prioritise safety, confidentiality, and informed consent.
- If survivor is a minor (<18), you are legally obliged to report to police under the POCSO Act (2012).
- Share only with relevant referral service providers.
- Provide emotional support: listen, believe, and reassure.

## **Annexure D: Sample Contract Clauses on GBV/SEA/SH**

### **1. Contractor Obligations**

- The Contractor shall adopt and implement the GBV Action Plan as part of the project Environmental & Social Management Plan (ESMP).
- The Contractor shall designate at least one trained GBV/SEA/SH focal person at site level.
- The Contractor shall ensure that all workers (including subcontractors and labour suppliers) sign and adhere to the Code of Conduct (Annex A).

### **2. Worker Training & Awareness**

- All workers must attend mandatory GBV/SEA/SH induction training prior to commencing work.
- The Contractor shall conduct quarterly refresher sessions on:
  - Zero tolerance for SEA/SH
  - Workers' rights under Indian law (POSH Act, POCSO, IPC, Labour Codes)
  - Reporting and referral pathways (Annex B & C).

### **3. Prohibited Conduct**

The Contractor shall ensure that all workers refrain from:

- Sexual harassment, exploitation, or abuse of any person.
- Engaging in sexual activity with persons under 18 years (irrespective of consent – strict liability under POCSO Act).
- Sexual relations with project-affected persons in exchange for money, goods, or services.
- Any form of violence, coercion, or intimidation against workers, community members, or survivors.

### **4. Reporting & Response**

- The Contractor shall establish a confidential grievance redress mechanism (GRM) with channels for anonymous reporting.
- The Contractor shall immediately notify the PIU/Employer's GBV focal person of any reported incident, while safeguarding survivor confidentiality.
- The Contractor shall facilitate survivor referral to medical, psychosocial, legal, and protection services as per the Referral Pathway (Annex B).

### **5. Accountability & Sanctions**

- Failure of Contractor or subcontractor staff to comply with the Code of Conduct or GBV clauses will result in disciplinary measures, including:
  - Formal warning
  - Suspension without pay
  - Immediate termination of employment

- Reporting to police authorities where legally required.
- The Employer may impose financial penalties for each confirmed GBV/SEA/SH case linked to Contractor personnel, up to 10% of contract value, in addition to legal liability.
- Repeated non-compliance may result in contract termination.

## **6. Employer Oversight**

- The Employer (PIU/Project Authority) shall:
  - Monitor Contractor's compliance with GBV Action Plan during site supervision.
  - Include GBV performance in monthly and quarterly progress reviews.
  - Require Contractor to submit confidential GBV compliance reports.
- Independent audits of GBV measures may be conducted at any stage.

## **7. Budget Provisions**

The Contractor shall allocate sufficient budget to cover:

- Worker training sessions
- Translation and dissemination of Codes of Conduct
- Engagement of GBV focal persons
- Support for safe transport and survivor referral
- Emergency funds for immediate survivor needs (within ethical guidelines).

## **8. Legal Compliance**

- All Contractor actions shall comply with Indian Legislations:
  - POSH Act, 2013 (Sexual Harassment of Women at Workplace Act)
  - POCSO Act, 2012 (Protection of Children from Sexual Offences)
  - IPC Sections 354, 376, 509 (sexual offences)
  - Bonded Labour and Child Labour (Prohibition & Regulation) Acts
  - Relevant Meghalaya state labour laws.
- In case of conflict between national law and World Bank requirements, the higher standard shall prevail.



## Annexure E: GBV Risk Monitoring Framework

### 1. Objectives

- Track implementation of the GBV Action Plan at package level.
- Ensure accountability of Contractor, PIU, and stakeholders.
- Provide early warning of risks and gaps in prevention/response.
- Report compliance to the World Bank, PIU, and State Authorities.

### 2. Roles & Responsibilities

Agency	Responsibility
Contractor GBV Focal Person	Maintain records, conduct worker training, track Code of Conduct compliance, report incidents (confidential).
PIU GBV Specialist	Verify contractor reports, conduct site audits, coordinate with service providers, report to World Bank.
Third-Party Monitor / NGO Partner	Independent verification, community consultations, survivor support follow-up.
World Bank Task Team	Oversight, compliance checks, technical guidance.

### 3. Monitoring Indicators

Domain	Indicator	Frequency	Source of Verification
Contractor Compliance	% of workers who signed Code of Conduct	Monthly	Contractor HR records, random checks
	% of subcontractors oriented on GBV	Quarterly	Training registers
	Number of GBV focal persons appointed & trained	Quarterly	Appointment letters, training reports
Capacity Building	% of workers receiving induction on GBV/SEA/SH	Monthly	Training attendance sheets
	Number of community awareness sessions conducted	Quarterly	PIU/NGO reports
Incident Reporting & Response	Number of GBV complaints received via GRM (disaggregated by type)	Monthly	GRM register (confidential)
	% of cases referred to health, police, legal, or counselling services within 24–48 hrs	Quarterly	Referral Contact Sheet (Annex B)
	% of survivors who report satisfaction with support services (anonymous feedback)	Semi-annual	NGO surveys
Accountability & Sanctions	Number of workers sanctioned for GBV violations	Quarterly	Contractor HR disciplinary records
	Amount of financial penalties imposed for GBV non-compliance	Annual	PIU reports
Community Engagement Audit & Oversight	% of community members aware of GRM and referral pathways	Semi-annual	Focus group discussions, surveys
	Number of PIU site inspections	Quarterly	PIU field visit reports

	including GBV monitoring		
	Independent audit findings on GBV Action Plan implementation	Annual	Third-party audit report

#### 4. Reporting Framework

- Contractor GBV focal person → submits monthly GBV compliance note to PIU.
- PIU GBV Specialist → consolidates into quarterly GBV report for World Bank.
- Third-party monitor/NGO → provides independent verification reports twice a year.
- Annual consolidated report → submitted to World Bank including lessons learned and corrective actions.

#### 5. Risk Levels & Triggers

Risk Level	Trigger Examples	Required Action
Low	No incidents reported, >80% workers trained, CoC signed	Routine monitoring
Moderate	1–2 minor cases of harassment reported; gaps in training coverage	Corrective Action Plan by Contractor within 30 days
High	>2 confirmed SEA/SH incidents; repeated contractor non-compliance	Financial penalties, management review, intensified monitoring
Critical	Systemic cover-ups, failure to report, survivor backlash	Suspension of contract payments, possible termination, legal escalation

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#### 6. Confidentiality & Ethics

- Survivor data must never be disclosed without consent.
- Reports should contain aggregated data only (no personal identifiers).
- Monitoring team must be trained on Do No Harm, GBV principles, and survivor-cantered approach.

## **ANNEXURE 5.5 LABOUR MANAGEMENT PLAN (LMP)**

**For**

### **Meghalaya Logistics and Infrastructure Connectivity Project (MLICP)**

#### **1. Introduction:**

The Labour Management Plan (LMP) outlines the framework for managing labour-related issues in the Meghalaya Logistics and Infrastructure Connectivity Project (MLICP). The objective is to ensure compliance with applicable national labour laws, safeguard worker rights, prevent exploitation, and promote safe, fair, and equitable working conditions. The plan applies to direct workers, contracted workers, community workers, and primary supply workers engaged under the project.

#### **2. Objectives:**

- Ensure fair treatment, non-discrimination, and equal opportunity for all workers.
- Protect workers' rights as per Indian legislations and international standards (World Bank ESS2).
- Provide safe and healthy working conditions.
- Prevent the use of child labour and forced labour.
- Establish a functional grievance redressal mechanism (GRM) for workers.
- Strengthen capacity of contractors and sub-contractors for compliance.

#### **3. Applicable Legal Framework:**

The project will comply with the following labour laws:

1. Payment of Wages Act, 1936 – timely and fair wage payment.
2. Minimum Wages Act, 1948 – ensure minimum wages for construction workers.
3. Equal Remuneration Act, 1976 – equal wages and non-discrimination.
4. Contract Labour (Regulation & Abolition) Act, 1970 – registration, welfare measures, and licensing for contractors.
5. Payment of Gratuity Act, 1972 – terminal benefits after minimum service.
6. Employees' Provident Fund & Miscellaneous Provisions Act, 1952 – PF contributions and benefits.
7. Payment of Bonus Act, 1965 – bonus to eligible workers.
8. Maternity Benefit Act, 1961 – leave and benefits for women employees.

9. Child Labour (Prohibition & Regulation) Act, 1986 – prohibition of child labour below 14 years.
10. Inter-State Migrant Workmen (Regulation of Employment & Conditions of Service) Act, 1979 – facilities for migrant workers.
11. Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 – welfare, safety, health, and cess collection.

#### **4. Labour Use in the Project:**

The project will engage different categories of labour:

- Direct Workers: Staff hired by the Project Implementing Unit (PIU), PMU, and consultants.
- Contracted Workers: Workers engaged by civil works contractors and sub-contractors.
- Primary Supply Workers: Labour involved in material supply (stone, sand, cement, bitumen, etc.).
- Community Workers (if applicable): Local villagers engaged in small-scale work or maintenance.

#### **5. Labour Influx and Local Norms:**

- Most labour will be drawn from local communities.
- Limited skilled/semi-skilled labour may migrate from outside Meghalaya.
- Contractors must ensure registration of inter-state migrant workers as per law.
- Customary land and village institutions will be consulted to ensure harmony with local governance and community values.
- Peak manpower requirement: ~50 personnel.
- Skilled workers (machine operators, concrete casting crew) mainly migrant workers.
- ~60–70% of workforce to be sourced locally; remaining skilled workers, supervisors, and engineers from outside.
- Workers accommodated in construction camp.
- Manpower mobilization aligned with construction schedule.

#### **6. Key Labour Risks:**

- Influx of outside labour creating pressure on local resources.
- Occupational Health and Safety (OHS) risks due to construction activities.
- Risk of child labour or bonded labour.
- Gender-based violence (GBV), sexual exploitation, and harassment (SEAH).
- Wage disputes and delayed payments.
- Lack of access to grievance redressal for contract workers.

## **7. Labour Management Procedures:**

### **7.1 Recruitment and Employment:**

- Priority to local labour as per community norms.
- Transparent recruitment through contractors, avoiding middlemen.
- Maintain worker registers with demographic and employment details.
- Written contracts/appointment letters for all workers.

### **7.2 Wages and Benefits:**

- Payment of wages electronically/bank transfer wherever feasible.
- Equal pay for equal work for men and women.
- Wage slips issued monthly.
- Contribution to PF/ESI as per eligibility.

### **7.3 Working Conditions and Hours:**

- Working hours not to exceed 8 hours/day and 48 hours/week.
- Weekly rest, overtime payment as per law.
- Rest shelters and drinking water at worksites.

### **7.4 Occupational Health & Safety (OHS):**

- Compliance with Building and Other Construction Workers Act, 1996.
- Provision of PPE (helmets, gloves, masks, boots, safety harnesses).
- First aid kits and trained personnel on-site.
- Mandatory safety induction and periodic training.
- Accident reporting and compensation mechanism.

### **7.5 Prohibition of Child and Forced Labour:**

- Contractors must certify non-engagement of child labour below 18 years in hazardous work.
- Forced or bonded labour is strictly prohibited.

### **7.6 Gender and Inclusion Measures:**

- Equal wages and opportunities for women workers.
- Provision of separate toilets, changing rooms, and crèche facilities (if >50 female workers).
- Sensitization on gender-based violence (GBV), harassment, and zero-tolerance policy.

### **7.7 Worker Grievance Redressal Mechanism (GRM):**

- A separate Workers' GRM within the project GRM.
- Accessible to all categories of workers (direct, contracted, supply).

- Confidential handling of complaints, especially GBV/SEAH.
- Multiple channels: complaint box at site, hotline, community liaison officer.
- Timely resolution and feedback to complainants.

#### **8. Roles and Responsibilities:**

- PIU / PMU: Overall monitoring of LMP compliance, reporting to funding agency/World Bank.
- Contractors: Implementation of labour welfare and OHS measures; maintain registers; ensure legal compliance.
- Supervision Consultants: Monitor contractor compliance, conduct site inspections.
- Village Institutions: Support monitoring of labour influx, community safety, and conflict resolution.

#### **9. Training and Capacity Building:**

- Induction training on workers' rights, OHS, GBV/SEAH, and GRM.
- Regular refresher training for workers and supervisors.
- Awareness campaigns in collaboration with local institutions.

#### **10. Monitoring and Reporting:**

- Contractors to submit monthly reports on labour use, wage payments, accidents, grievances.
- PIU/PMC to carry out quarterly compliance monitoring.
- Labour audits to verify adherence to laws and LMP provisions.

#### **11. Code of Conduct (CoC):**

All workers will sign a Code of Conduct, covering:

- Prohibition of sexual harassment, exploitation, and abuse.
- Respect for local culture and customs.
- Zero tolerance for alcohol/drug use at work sites.
- Respectful behaviour with community members.

#### **12. Budget:**

Contractors shall include costs for labour welfare, OHS, training, and GRM in the bid. PIU will allocate resources for monitoring and capacity-building.

**Annexure – 1: Standard Contract Clauses for Labour Management and Compliance:**

**1. General Provisions:**

- The Contractor shall comply with all applicable labour laws of India and World Bank's ESS2 on Labour and Working Conditions.
- The Contractor shall ensure fair treatment, non-discrimination, and equal opportunity for all workers, including women, persons with disabilities, and socially vulnerable groups.
- No child labour (below 18 years in hazardous work) or forced labour shall be employed.

**2. Recruitment and Employment:**

- Priority shall be given to hiring local workers from within the project area in consultation with traditional institutions.
- All workers shall be registered with complete demographic details.
- Written employment contracts shall be issued to all workers, specifying wages, working hours, benefits, and conditions.

**3. Wages and Benefits:**

- The Contractor shall pay wages not less than those prescribed under the Minimum Wages Act, 1948, and as notified by the Government of Meghalaya.
- Wages shall be paid at least once every month, preferably through bank transfers.
- Equal pay for equal work shall be ensured for men and women workers.
- Wage slips shall be provided to workers with details of payments and deductions.
- Mandatory contributions (EPF, ESI, Bonus, etc.) shall be made in accordance with applicable laws.

**4. Working Conditions:**

- No worker shall be required to work for more than 8 hours per day and 48 hours per week, except with overtime compensation as per law.
- Workers shall be entitled to one day of rest every seven days.
- The Contractor shall provide:
  - Adequate drinking water, sanitation facilities (separate for men and women), and rest shelters.
  - Proper accommodation for migrant workers, where applicable.
  - Medical facilities including first aid, doctor-on-call, and emergency transport.

**5. Occupational Health and Safety (OHS):**

- The Contractor shall comply with the Building and Other Construction Workers Act, 1996 and other safety regulations.

- All workers shall be provided with Personal Protective Equipment (PPE) such as helmets, gloves, boots, safety belts, and masks at no cost.
- Safety induction and regular training shall be provided to workers.
- Accident/incident registers shall be maintained, and accidents shall be reported immediately to the Engineer/PIU.
- Compensation for injury or death shall be provided in line with the Employees' Compensation Act, 1923.

#### **6. Gender Equality and Inclusion:**

- Women workers shall not be discriminated against in wages, work allocation, training, or promotions.
- Separate toilets, washing facilities, and changing rooms shall be provided for women.
- Where more than 50 female workers are employed, the Contractor shall provide crèche facilities as per the Maternity Benefit Act, 1961.
- Sensitization programs on Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and Sexual Harassment at Workplace shall be conducted.

#### **7. Grievance Redressal Mechanism (GRM):**

- The Contractor shall establish a workers' grievance mechanism at the site with multiple options (complaint box, helpline, community liaison officer).
- Grievances shall be resolved within 7 working days and escalated to PIU if unresolved.
- Special confidential channels shall be available for GBV/SEA-related complaints.

#### **8. Code of Conduct (CoC):**

- All workers (including sub-contractors and suppliers) shall sign a Code of Conduct covering:
  - Prohibition of sexual harassment, exploitation, and abuse.
  - Respect for local customs, culture, and community norms.
  - No alcohol, drugs, or violence at worksites.
  - Zero tolerance for child labour and forced labour.

#### **9. Monitoring and Reporting:**

- The Contractor shall submit **monthly labour reports** including:
  - Number of workers employed (by category, gender, origin – local/migrant).
  - Wage payments and deductions.
  - OHS compliance, accidents/incidents.
  - Grievances received and resolved.



- The PIU/Supervision Consultant shall have unrestricted access to worksites, labour camps, and records for monitoring compliance.

**10. Sanctions for Non-Compliance:**

- Non-compliance with these provisions shall attract penalties, including:
  - Withholding of payments.
  - Deduction of costs incurred by PIU in ensuring compliance.
  - Termination of contract for repeated violations.

## **Annexure – 2: Sample Code of Conduct (CoC) for Workers and Supervisors:**

### **Purpose:**

This Code of Conduct sets standards of behaviour expected from all workers, supervisors, contractors, and sub-contractors engaged in the Meghalaya Road Projects. Compliance is mandatory.

### **Commitments of All Workers:**

#### **1. Compliance with Laws and Rules:**

- I will comply with all Indian labour laws, project labour management rules, and site safety regulations.

#### **2. Respect for Local Communities and Culture:**

- I will respect the customs, traditions, and cultural practices of the local communities.
- I will not trespass or misuse community resources without consent.

#### **3. Prohibition of Child Labour and Forced Labour:**

- I will not employ or support the use of child labour (under 18 years in hazardous work).
- I will not participate in or allow forced or bonded labour.

#### **4. Safe Work Practices:**

- I will wear and use the personal protective equipment (PPE) provided to me.
- I will follow safety instructions and report unsafe conditions or accidents immediately.

#### **5. Gender Equality and Non-Discrimination:**

- I will treat women and men equally in work and wages.
- I will not discriminate against anyone based on caste, ethnicity, religion, gender, or disability.

#### **6. Prohibition of Sexual Exploitation and Abuse (SEA)/GBV:**

- I will not engage in sexual harassment, exploitation, or abuse of any person.
- I understand that sexual relations with minors (below 18 years) are strictly prohibited and punishable under law.
- I will not exchange money, goods, or services for sexual favours.

#### **7. Prohibition of Drugs, Alcohol, and Violence:**

- I will not consume or be under the influence of drugs or alcohol at the workplace.
- I will not engage in fighting, intimidation, or violent behaviour.

#### **8. Grievance Reporting:**

- I will raise concerns and grievances through the established Worker Grievance Redress Mechanism (GRM).
- I will cooperate in resolving grievances fairly.

**Acknowledgement:**

I, the undersigned, have read and understood this Code of Conduct. I agree to comply with it throughout my employment on the Road Projects. I understand that violations may result in disciplinary action, including termination of employment or legal action.

**Worker's Name:** \_\_\_\_\_

**Designation/Role:** \_\_\_\_\_

**Signature/Thumbprint:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Contractor's Representative (Witness):** \_\_\_\_\_

## **ANNEXURE 5.6: OCCUPATIONAL HEALTH AND SAFETY PLAN (OHSP)**

### **1. INTRODUCTION:**

The Occupational Health and Safety Plan (OHSP) provide guidelines for managing workplace health and safety risks during the construction and operation of MLCIP Projects. It ensures compliance with relevant Indian legislations and World Bank/IFC Environmental and Social Standards (ESS2 & ESS4). The Plan aims to safeguard workers, contractors, communities, and road users from occupational accidents, injuries, and diseases.

### **2. OBJECTIVES:**

Prevent workplace accidents, injuries, and occupational diseases.

Ensure safe working conditions for all project personnel.

Comply with national legal requirements and international OHS standards.

Establish procedures for emergency response, accident reporting, and corrective action.

Promote health awareness and capacity-building of workers.

### **3. ROLES AND RESPONSIBILITIES:**

Project Implementation Unit (PIU):

- ✓ Ensure contractor compliance with OHS requirements.
- ✓ Monitor safety performance through site inspections and audits.

Contractor:

- ✓ Prepare and implement site-specific OHS plans.
- ✓ Appoint a Safety Officer for each package.
- ✓ Provide Personal Protective Equipment (PPE) to all workers.
- ✓ Maintain records of accidents, near misses, and corrective actions.

Construction Supervision Consultant (CSC):

- ✓ Verify contractor compliance.
- ✓ Conduct joint safety inspections with PIU and Contractor.
- ✓ Provide training and awareness sessions.

Workers:

- ✓ Follow safety protocols and wear PPE at all times.
- ✓ Report unsafe conditions and accidents immediately.

#### 4. HAZARD IDENTIFICATION AND RISK MANAGEMENT:

Key Occupational Hazards:

- ✓ Working at height (bridges, culverts, hill slopes).
- ✓ Roadside excavation, tunneling, and blasting in hilly terrain (If applicable).
- ✓ Exposure to dust, noise, and vibrations.
- ✓ Manual handling and lifting of heavy materials.
- ✓ Vehicle and machinery movement.
- ✓ Electrical hazards from temporary connections.
- ✓ Extreme weather conditions (heavy rainfall, landslides).

Risk Control Measures (Hierarchy of Controls):

- ✓ Elimination – Avoid hazardous practices where possible.
- ✓ Substitution – Use less hazardous materials/processes.
- ✓ Engineering Controls – Guardrails, barricades, warning signs.
- ✓ Administrative Controls – Work permits, job rotation, shift planning.
- ✓ PPE – Helmets, safety shoes, gloves, ear plugs, masks, reflective jackets.

#### 5. HEALTH AND SAFETY PROCEDURES:

General Site Safety:

- ✓ Fencing and barricades around construction sites.
- ✓ Clear signage in English, Khasi (local languages).
- ✓ Adequate lighting at night.
- ✓ Safe drinking water, sanitation, and first aid facilities.

Personal Protective Equipment (PPE):

- ✓ Mandatory: Safety helmet, safety shoes, reflective jacket.

- ✓ Task-based: Gloves, ear protection, eye protection, dust masks, harness.
- ✓ Contractor responsible for supply, training, and replacement.

**Traffic and Road Safety:**

- ✓ Prepare a Traffic Management Plan (TMP).
- ✓ Warning signs, flagmen, and speed limits near work zones.
- ✓ Separate entry/exit for construction vehicles.
- ✓ Awareness campaigns for communities and school children.

**Machinery and Equipment Safety:**

- ✓ Regular maintenance and inspection.
- ✓ Operator licenses and training.
- ✓ Emergency shut-off procedures.

**Emergency Preparedness and Response:**

- ✓ Emergency contact numbers displayed at site.
- ✓ Site-specific Emergency Response Plan (ERP).
- ✓ Fire extinguishers at key locations.
- ✓ First Aid kits with trained first aiders.
- ✓ Tie-ups with nearest Primary Health Centre (PHC)/hospital.

**Occupational Health:**

- ✓ Pre-employment and periodic medical check-ups.
- ✓ Health awareness on communicable diseases (TB, HIV/AIDS, COVID-19).
- ✓ Separate facilities for men and women workers.
- ✓ Safe accommodation (if labor camps are established).

**6. TRAINING AND CAPACITY BUILDING:**

Induction training for all workers before mobilization.

Tool-box talks (daily/weekly on-site briefings).

Specialized training: Working at height, First aid and firefighting, Electrical safety, Defensive driving.

## **7. INCIDENT REPORTING AND MONITORING:**

All incidents (accidents, near misses, unsafe acts) must be reported within 24 hours.

Contractor maintains Incident Register.

CSC/PIU investigates major accidents and ensures corrective action.

Monthly OHS performance reports submitted to PIU.

## **8. MONITORING INDICATORS:**

Indicator	Monitoring Method
Number of accidents and near misses	Incident Register & Reports
Percentage of workers provided with PPE	Site Inspections
Number of safety trainings/tool-box talks conducted	Training Records
Number of safety audits and inspections	Audit Reports
Compliance with OHS standards	Monthly Reports

## **9. BUDGETARY PROVISION:**

Contractor must allocate a specific budget for OHS, covering PPE, signage, first aid, training, and worker insurance.

## **10. DOCUMENTATION AND RECORD KEEPING:**

OHS Policy and Procedures.

Worker orientation and training records.

Medical check-up reports.

Accident/incident investigation reports.

OHS monthly compliance checklists.

**ANNEXURES: OHS FORMS AND CHECKLISTS:**

***Annexure 1: Accident / Incident Reporting Form:***

Date & Time of Incident	
Location of Incident	
Name(s) of Injured Person(s)	
Nature of Injury / Illness	
Description of Incident	
Immediate Action Taken	
Witness Name(s) & Contact	
Reported By / Signature	

***Annexure 2: Safety Audit Checklist:***

Checklist Item	Yes/No	Remarks
Are all workers provided with appropriate PPE?		
Is PPE being worn correctly?		
Are barricades/signages in place at hazardous areas?		
Are first aid kits available and updated?		
Are fire extinguishers accessible and functional?		
Is site housekeeping maintained?		
Are emergency contact numbers displayed?		
Are tool-box talks conducted regularly?		

***Annexure 3: Toolbox Talk Register:***

Date	Topic Discussed	Trainer's Name	Workers Attended (Signatures)
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*Upgradation of Weilo - Mawsynram Road upto Phlangwanbroi for Meghalaya Logistics and Connectivity Improvement Project (MLCIP), funded by the World Bank*

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT**


**Annexure 4: Medical Check-up Register:**

Worker Name	Date of Check-up	Type of Check-up (Pre-employment/Periodic)	Findings / Remarks	Doctor's Signature

**Annexure 5: Training Attendance Sheet:**

Date	Training Topic	Trainer's Name	Worker Name	Signature

**Annexure 6: Monthly OHS Performance Reporting Format:**

Contractor: \_\_\_\_\_

Package No.: \_\_\_\_\_

Reporting Month: \_\_\_\_\_

Submitted To: PIU (through CSC)

Date of Submission: \_\_\_\_\_

**Section A: Workforce Details:**

Indicator	This Month	Cumulative (Project to Date)
-----------	------------	------------------------------

Total number of workers employed		
Number of new workers inducted with safety orientation		
Number of skilled operators/drivers licensed		

**Section B: Training and Awareness:**

Indicator	This Month	Cumulative
Number of safety inductions conducted		
Number of toolbox talks conducted		
Number of safety trainings/workshops conducted		
Number of awareness campaigns (HIV/AIDS, GBV, Road Safety)		

**Section C: Health and Medical:**

Indicator	This Month	Cumulative
Number of pre-employment medical check-ups		
Number of periodic health check-ups		
Number of health awareness sessions conducted		

**Section D: Incidents and Accidents:**

Indicator	This Month	Cumulative
Number of fatal accidents		
Number of non-fatal accidents		
Number of near misses reported		
Number of lost workdays due to injury		

**Section E: Safety Compliance:**

Indicator	This Month	Cumulative
Percentage of workers provided with PPE		
Number of safety inspections conducted		
Non-compliance issues identified		
Corrective actions implemented from previous inspections		

**Section F: Summary:**

- Key Safety Achievements: \_\_\_\_\_
- Major Issues/Challenges: \_\_\_\_\_
- Corrective Actions Planned for Next Month: \_\_\_\_\_

**Prepared By (Contractor Safety Officer):** \_\_\_\_\_

**Verified By (CSC Safety Specialist):** \_\_\_\_\_

**Reviewed By (PIU):** \_\_\_\_\_

**Occupational Health, Safety, and Environmental (OHSE) Compliance Inspection Checklist**

	Inspection Items	Implemented?		N/A	Actions to be Taken
		Yes	No		
<b>1.00</b>	<b>General</b>				
1.01	All employees have completed Occupational Health and Safety orientation (induction training)				
1.02	Hazard communication has been implemented				
1.03	Housekeeping acceptable				
1.04	Proper PPE being issued and utilized				
1.05	All construction and emergency signs posted				
1.06	Risk assessment conducted, discussed with all employees, documented and available on site				
1.07	Proper entrances and egress at all work fronts				
1.08	OHS Register and reporting mechanism exists				
<b>2.00</b>	<b>Environment</b>				
2.01	Measures to prevent water pollution in place (clear storm water drains etc.)				
2.02	Water from cleaning of equipment directed to specific locations.				
2.03	Adequate measures taken to prevent contamination of surface water, groundwater and soil by the effluents from storage areas, including raw materials, chemicals, and wastes.				
2.04	Fuel storage tank well bunded to contain spill in case of tank failure.				
2.05	Fuelling done away from waterways.				
2.06	Spill kit is available and adequately stocked				
2.07	All site staff trained in emergency spill response.				
2.08	Waste properly managed on the site.				
2.09	Hazardous materials stored appropriately with Material Safety Data Sheet's kept nearby.				
2.10	Dust control measures in place.				
2.11	Construction site watered to minimize dust generated				
2.12	Stockpiles of dusty materials covered or watered				
2.13	All vehicles carrying dust materials covered or watered.				
2.14	Proper management of excavated soils.				

	Inspection Items	Implemented?		N/A	Actions to be Taken
		Yes	No		
2.15	Adequate odor control measures taken.				
2.16	Are plant and equipment well maintained? (any black smoke observed, please indicate the plant/equipment)				
<b>3.00</b>	<b>Site clean and tidy</b>				
3.01	Chemical waste properly stored and labelled				
3.02	Separate labelled containers/areas provided for facilitating recycling and waste segregation				
3.03	Waste removed offsite regularly				
3.04	Is there any waste burnt on site?				
3.05	Are proper measures to control oil spillage during maintenance or to control other chemicals spillage? (e.g. provide drip trays)				
3.06	Are drip trays free of oil and water?				
3.07	Are oil drums and plants/equipment provided with drip trays?				
<b>4.00</b>	<b>Excavation and Trenches</b>				
4.01	All construction and emergency signs posted				
4.02	Barricades present				
4.03	Other underground utility lines mark out				
4.04	Protective systems in place i.e., shoring, shielding and sloping where applicable				
4.05	Proper Ladder available in excavations				
4.06	Excavated soils and equipment away from cut trenches at least one meter away				
<b>5.00</b>	<b>Electrical Safety</b>				
5.01	Do electrical devices have a current inspection and coding?				
5.02	Is electrical equipment properly maintained?				
5.03	Is equipment properly grounded?				
5.04	Are fuses provided?				
5.05	Are electrical dangers posted?				
5.06	Are proper fire extinguisher(s) provided?				

*Upgradation of Weilo - Mawsynram Road upto Phlangwanbroi for Meghalaya Logistics and Connectivity Improvement Project (MLCIP), funded by the World Bank*

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT**

	Inspection Items	Implemented?		N/A	Actions to be Taken
		Yes	No		
5.07	Are terminal boxes equipped with required covers, and is the cover used?				
5.08	Are circuits labelled in terminal boxes?				
5.09	Are all electrical distribution boards IP rated.				
5.10	LOTO system in place				
5.11	Do electrical circuit has ELCB in place				
<b>6.00</b>	<b>Scaffolding</b>				
6.01	Is erecting the scaffold properly supervised?				
6.02	Are all structural members free from defects, and do they meet safety factors?				
6.03	Are all scaffold connections secured?				
6.04	Are scaffolds erected on solid footing?				
6.05	Is scaffold tied to structure?				
6.06	Are working areas free of dirt, debris, snow, ice, and grease?				
6.07	Are employees protected from falling objects?				
6.08	Is scaffold plumb and square, with cross-bracing?				
6.09	Are guard rails, intermediate rails, and toe boards in place?				
6.10	Is the work platform is 100% Covered				
6.11	Are ropes and cables in good condition?				
6.12	Is fall protection available and in use?				
<b>7.00</b>	<b>Demolition</b>				
7.01	Is an engineering survey provided in writing?				
7.02	Does documentation show operations planned ahead?				
7.03	Is shoring of adjacent structures complete?				
7.04	Are utilities marked and shut off?				
7.05	Are hazardous materials or chemicals removed from any pipes, tanks, or equipment?				
<b>8.00</b>	<b>Fire prevention</b>				

	Inspection Items	Implemented?		N/A	Actions to be Taken
		Yes	No		
8.01	Are an adequate number and types of fire extinguisher(s) available at labour camps, construction camps, etc?				
8.02	Is fire prevention/extinguisher training performed?				
8.03	Are inspections of fire extinguishers performed periodically?				
8.04	Is the telephone number of the fire department posted?				
8.05	Are fire extinguisher(s) provided on appropriate equipment?				
8.06	Are flammable liquids stored in approved containers and correctly labelled?				
8.07	Are flammable liquids properly stored?				
8.08	Is a fire alarm available?				
8.09	Is a fire evacuation plan established?				
8.10	Are fuel supplies protected from accidental impact?				
8.11	Is fire training given to appropriate personnel?				
8.12	Is equipment shut down prior to refueling?				
8.13	Is equipment properly grounded to fuel trucks before refueling?				
8.14	Are no-smoking signs posted and enforced?				
8.15	Are hydrants clear and access to public thoroughfare open?				
<b>9.00</b>	<b>Hoists, Cranes, and Derricks</b>				
9.01	Are annual inspections completed?				
9.02	Have operators been properly tested, and are their physical exams current?				
9.03	Are daily inspections completed by operators?				
9.04	Are outriggers used?				
9.05	Are power lines deactivated or removed, or are warning signs posted with  at least 3M of clearance from overhead power lines				
9.06	Are hoists designed by a competent professional engineer?				
9.07	Is proper loading for capacity at lifting radius?				
9.08	Is equipment operated in accordance with the manufacturer's instructions?				

	Inspection Items	Implemented?		N/A	Actions to be Taken
		Yes	No		
9.09	Does a competent person inspect the crane?				
9.10	Is equipment properly lubricated and maintained?				
9.11	Is load testing accomplished?				
9.12	Are signal workers properly trained and placed where needed?				
9.13	Are alarms working and audible?				
<b>10.00</b>	<b>Welding and cutting</b>				
10.01	Are all welding and cutting operators qualified?				
10.02	Are screens and shields in place?				
10.03	Is oxygen and acetylene stored properly?				
10.04	Are bottles not in use secured with caps in place?				
10.05	Is proper eye protection and PPE used?				
10.06	Are fire extinguisher(s) located near operations?				
10.07	Is a "hot work" permit completed and posted in areas requiring a permit?				
10.08	Are valves shut off and regulators backed off each night?				
10.09	Are flashback arresters placed on hoses (O2 and fuel gas)?				
10.10	Is electrical equipment grounded?				
10.11	Is the area inspected for fire hazards?				
10.12	Are gas lines and power cables protected and in good				
10.13	Is proper ventilation ensured?				
10.14	Is there a welding permit program?				
<b>11.00</b>	<b>Power Tools</b>				
11.01	Is proper housekeeping conducted where tools are used?				
11.02	Are inspections and proper maintenance of tools performed?				
11.03	Are tools grounded properly or double-insulated?				
11.04	Are tool guards in place and used correctly?				
11.05	Are damaged or malfunctioning tools tagged out until repaired or replaced?				
11.06	Are tools in compliance with local laws and ordinances?				



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**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT**

	Inspection Items	Implemented?		N/A	Actions to be Taken
		Yes	No		
11.07	Are all operators qualified?				
11.08	Are tools protected from unauthorized use?				
11.09	Is competent instruction and supervision provided?				
11.10	Are cords included in electrical inspection?				
<b>12.00</b>	<b>Traffic Management</b>				
12.01	Area Traffic Management plan is documented and implemented				
12.02	Are traffic signage properly posted and adequate				
12.03	Are there trained personnel i.e., flag men to direct traffic				
12.04	Is there proper delineation of the work front				
12.05	Area traffic diversion signals well luminated during night time				
<b>13.00</b>	<b>Barricades</b>				
13.01	Placed for work site perimeter				
13.02	Placed for all excavations				
13.03	Placed for swing radius of crane or other equipment				
13.04	Placed for drop areas of construction materials				
<b>14.00</b>	<b>Hygiene and Sanitation</b>				
14.01	Drinking water is provided in clean vessels				
14.02	Toilets are available and adequate				
14.03	Hand washing facilities available with soap				
14.04	Toilet range between 1 unit per 6 persons to 1 unit for 15 persons				
14.05	1 urinal units to 15 persons				
14.06	Shower/ Bathroom facilities – 1 unit to 15 persons to 1 unit per 6 persons				
14.07	Separate kitchen facilities. No cooking in living room				
<b>15.00</b>	<b>HIV, AIDS and STIs</b>				
15.01	Awareness campaigns conducted				
15.02	Covid 19 prevention measures implemented				
15.03	Condoms being distributed				
15.04	Employees showing signs and symptoms of				

	Inspection Items	Implemented?		N/A	Actions to be Taken
		Yes	No		
	covid 19 are allowed to seek medical assistance				
<b>16.00</b>	<b>Policies and Procedures</b>				
16.01	Contractors' health and safety Management Plan is available on site				
16.02	All employees are aware of safe systems of work and the incident management procedure				
16.03	Method statements are available				
<b>17.00</b>	<b>First Aid</b>				
17.01	First Aid kit is available and adequately stocked				
17.02	There is at least one trained first aider on site				
17.03	First aid kit inspection is being conducted				
<b>18.00</b>	<b>Incident Management</b>				
18.01	Incident Management Procedure is available				
18.02	All incidents are reported, documented and investigated accordingly				
18.03	CAPA (Corrective Action and Preventive Action) is being implemented accordingly				
18.04	Emergency contact numbers i.e., health centers/ambulance, safeguards team, first aiders, utility providers, police etc. are available on site				
<b>19.00</b>	<b>Trainings</b>				
19.01	Employees received HSE induction training				
19.02	Training records are available and properly documented				
19.03	Employees involved in high risks activities have received special training				

## **ANNEXURE 5.7: CLIMATE DISASTER RISKS ASSESSMENT**

### **1. Changing Rainfall Patterns**

- Extreme rainfall events are increasing in East Khasi Hills, consistent with regional climate trends, intensifying risks of flash floods and landslides.
- Despite its high rainfall, variability is emerging: erratic monsoon events threaten agriculture, water availability, and infrastructure.
- Local rainfall trends indicate occasional deficits during peak monsoons, affecting traditional jhum cultivation and water-dependent livelihoods.

### **2. Forest Vulnerability & Biodiversity**

- A significant portion of East Khasi Hills' forests show high vulnerability to climate and human pressures, with NDVI analyses indicating localized forest degradation.
- Key concerns include loss of forest cover, declining carbon stocks, and pressures on biodiversity hotspots, particularly in high-altitude and northern areas.

### **3. Localized Vulnerability Hotspots**

- Block-level analysis in East Khasi Hills identifies several highly vulnerable areas, driven by limited rural credit, low household incomes, constrained health and education services, and dependence on forest resources.
- These vulnerabilities compound exposure to climate-induced hazards, particularly landslides and soil erosion in steep terrain.

### **4. Socioeconomic and Ecological Impacts**

- Agriculture, largely rain-fed, faces crop failures due to erratic rainfall and shifting monsoon patterns.
- Water resources, including streams and catchments, are under stress, affecting hydropower potential and domestic supply.
- Forest-dependent livelihoods and eco-tourism are disrupted due to forest degradation, biodiversity loss, and changing climatic conditions.

### **5. Potential impacts of Climate Change trend on road transport infrastructure**

Due to the uneven climatic behaviour, it is essential that climate mitigation and adaptation plans to combat the impacts of climate change are factored in the development process to avoid economic burden of adaptation in the long run, and gain from new opportunities that will be thrown up along the way. The Potential impacts of Climate Change trend on road transport infrastructure are provided in Table below:

**Table: Potential impacts of Climate Change trend on road transport infrastructure**

Climate Trend / Parameter	Observed Pattern	Impact on Road Infrastructure
High Rainfall	10,000–11,800 mm (Mawsynram)	<ul style="list-style-type: none"> <li>- Erosion of road embankments and landslides in hilly terrains.</li> <li>- Structural damage to culverts and bridges.</li> </ul>
Low Rainfall	<ul style="list-style-type: none"> <li>- Significant drop in annual rainfall</li> <li>- Reduced annual rainfall correlates with reduced soil moisture and vegetation</li> </ul>	<ul style="list-style-type: none"> <li>- Dry soil conditions may cause cracks in asphalt roads.</li> <li>- Lower soil stability, leading to uneven settling of road foundations.</li> <li>- Loss of vegetation can weaken slopes and lead to landslides in hilly areas like East Khasi Hills.</li> <li>- Roads may face increased dust and reduced traction due to dry conditions.</li> </ul>
Rising Temperatures	<ul style="list-style-type: none"> <li>- Maximum temperature rising from 20.4°C to 23.5°C</li> </ul>	<ul style="list-style-type: none"> <li>- Higher temperatures cause thermal expansion of road materials, leading to surface cracks.</li> <li>- Softening of asphalt during hot days can cause deformation and rutting.</li> </ul>
Landslide Risk	<ul style="list-style-type: none"> <li>- Frequent rainfall and runoff events increase landslide susceptibility in the district's terrain</li> </ul>	<ul style="list-style-type: none"> <li>- Roads in hilly areas may face closures due to landslides.</li> <li>- Increased repair costs for damaged road sections and disrupted connectivity to remote areas.</li> </ul>

## 6. Adaptation and Mitigation Measures

To build resilience and protect communities and ecosystems in project area, the following measures are recommended:

- **Slope and Road Stabilization:** Retaining walls, bioengineering techniques, and slope stabilization to prevent landslides.
- **Infrastructure Resilience:** Use of geotextiles, reinforced pavements, and climate-resilient road materials to withstand heavy rainfall.
- **Drainage and Flood Management:** Construction of culverts, roadside drains, and floodwater channels in low-lying areas to manage runoff.
- **Water Resource Management:** Catchment restoration, rainwater harvesting, and climate-resilient irrigation systems.
- **Monitoring & Early Warning:** Regular maintenance, periodic inspection of roads, and landslide early warning systems.
- **Sustainable Livelihood Support:** Promotion of climate-resilient farming practices, biodiversity-friendly land use, and financial inclusion measures for local communities.
- Community forest is located along the project road corridor at chainages 38+300, 40+400, and 46+150. However, as all construction activities will remain confined within the existing Right of Way (RoW), no adverse impact on these community forest is anticipated.

## ANNEXURE 7.1: SUMMARY OF CONSULTATIONS

Table 1: Suggestions from stakeholders for design input in DPR

Sl. No.	Key issues from stakeholder on existing road condition	Suggestions from stakeholders for Incorporation in project
1	<b>Insufficient Road Width:</b> The current road network is too narrow, making it difficult for vehicles, particularly large ones like buses and trucks. This leads to congestion, delays, and increased accident risks, especially in hilly regions where sharp turns and steep inclines exacerbate the problem. Emergency vehicles also face difficulties in reaching remote areas due to road congestion.	<b>Road Expansion and Traffic Regulation:</b> Where feasible, widen the roads and introduce traffic management measures such as one-way systems, designated passing zones, and controlled vehicle movement in high-risk areas. Implement lane discipline through clear road markings and enforce speed limits to ensure safe and smooth traffic flow. Explore alternative routes for heavy vehicles to ease congestion in densely populated areas.
2	<b>Deteriorating Road Conditions:</b> Many road stretches suffer from potholes, uneven terrain, and partial pavement, making driving hazardous. These poor conditions worsen during heavy rains, leading to vehicles skidding, accidents, and increased maintenance costs for drivers. The lack of proper road foundation in some areas leads to premature deterioration.	<b>Resilient Road Construction:</b> Utilize high-quality, weather-resistant materials such as reinforced asphalt or concrete to improve durability. Implement a preventive maintenance program that includes periodic road resurfacing, pothole repairs, and regular inspections.
3	<b>Absence of Traffic-Calming Measures:</b> High-speed driving through densely populated zones such as schools, marketplaces, and residential areas significantly increases the risk of pedestrian accidents. The lack of speed bumps, zebra crossings, and designated pedestrian walkways further endangers people, particularly children and the elderly.	<b>Speed Control Strategies:</b> Install speed bumps, rumble strips, and designated pedestrian crossings in high-traffic zones. Place traffic signs warning drivers to slow down near schools, hospitals, and marketplaces. Conduct community awareness programs on road safety and responsible driving. Deploy traffic enforcement personnel in high-risk areas to ensure compliance.
4	<b>Lack of Proper Signage and Road Markings:</b> Many critical road sections such as intersections, curves, pedestrian crossings, and accident-prone zones lack clear signage, leading to confusion among drivers and pedestrians. Poorly visible or missing lane markings result in erratic driving behavior and unsafe road conditions, especially at night.	<b>Improved Road Signage:</b> Deploy reflective and highly visible road signs indicating speed limits, pedestrian crossings, sharp turns, and road hazards. Clearly mark lanes and install guiding arrows at intersections to ensure proper navigation. Place electronic or solar-powered signboards where visibility is low. Conduct periodic maintenance to ensure signs remain visible and intact.
5	<b>Ineffective Drainage Infrastructure:</b> The absence of a proper drainage system results in waterlogging, road erosion, and hazardous driving conditions during the monsoon season. Standing water on roads damages road surfaces and creates a breeding ground for mosquitoes, increasing health risks.	<b>Storm water Drainage Development:</b> Construct well-planned drainage channels along roads to prevent water stagnation. Implement regular desilting and cleaning of drainage systems to keep them functional. Use permeable road surfaces in flood-prone areas to improve water absorption. In hilly regions, incorporate slope-based drainage solutions to redirect excess rainwater safely.

**Table 2: Summary of consultations with Project Affected Parties from local community**


Sl. No.	Summary of Issues	Suggestions / Responses provided
1	<ul style="list-style-type: none"> <li>Given that villagers are entirely dependent on nearby forests for fuel, food, and building materials, how will the potential for localized resource depletion be managed with the commencement of construction?</li> <li>What measures will be put in place to ensure that the community's reliance on these resources is not negatively impacted, and how will sustainable alternatives be provided to prevent further environmental strain?</li> </ul>	<ul style="list-style-type: none"> <li>Farmers were informed that if their agricultural land gets affected by the project, they will be compensated as per established procedure.</li> <li>Community was assured that they will be provided with access to nearby forest areas for resources such as firewood, water and forest resources.</li> </ul>
2	<ul style="list-style-type: none"> <li>Lack of accessibility and poor connectivity in rural areas make agriculture less attractive, especially for older individuals.</li> <li>Limited transportation, poor access to resources, and communication barriers hinder farming.</li> <li>The ageing population in agriculture leads to a shortage of younger farmers, as the current generation views farming as physically demanding and financially unstable. Many young people migrate to cities for better opportunities, while the sector faces challenges like low profitability, limited access to credit, and outdated farming practices.</li> <li>These factors contribute to a growing reluctance to continue farming, requiring improvements in infrastructure, financial support, and modern agricultural practices to sustain the sector.</li> </ul>	<ul style="list-style-type: none"> <li>Participants were informed that vocational training for the youth in rural areas can improve their employability and offer alternative livelihoods.</li> <li>The community can be connected with these schemes, identifying local training needs, creating awareness, and coordinating with training providers.</li> </ul>
3	<ul style="list-style-type: none"> <li>The land governance system of villages restricts non-tribals from buying land or settling permanently</li> </ul>	<ul style="list-style-type: none"> <li>No steps will be taken up which disturbs the socio-economic fabric of the community during project implementation. Every decision regarding land acquisition and other related matters will be taken up jointly in consultation with the council.</li> </ul>
4	<ul style="list-style-type: none"> <li>Absence of local land records register makes resolving disputes challenging.</li> </ul>	<ul style="list-style-type: none"> <li>Authorities informed that local tribal leaders and community members try their best to create a transparent framework for land use and access.</li> <li>Community will be further made aware during project for land related</li> </ul>

Sl. No.	Summary of Issues	Suggestions / Responses provided
		<p>processes and timely communication from local authorities and contractors.</p> <ul style="list-style-type: none"> <li>The project will have a dedicated grievance redress mechanism that will handle all the grievances of the communities. The platform will ensure that there is time to time update which is shared with the community through the grievance redressal cell.</li> </ul>
5	<ul style="list-style-type: none"> <li>Community raised the point that Land issues in East Khasi Hills are entirely at the discretion of the council. They should also be made part of the land acquisition process during project implementation.</li> </ul>	<ul style="list-style-type: none"> <li>Community was informed that project authorities will carry out FPIC to understand concerns of individual members of the community and also engage with the council early in the road construction project planning process to ensure that land use decisions and approvals align with their policies and regulations, fostering collaboration and mutual understanding of the community.</li> <li>Establish a clear framework for land tenure and rights that incorporates council's approval process, ensuring that all stakeholders, including non-tribals, are informed about requirements for land access related to the project.</li> <li>Integrate traditional rehabilitation policy that considers community needs and values when acquiring land for the project, ensuring that affected individuals receive fair compensation and support.</li> </ul>
6	<ul style="list-style-type: none"> <li>How will the needs of school-going children be carefully considered and addressed during the construction phase of the project, particularly in relation to any potential disruptions to their daily routines, transportation, and access to education? What measures will be put in place to minimize any negative impacts on their schooling during this period?</li> </ul>	<ul style="list-style-type: none"> <li>During the construction phase of the project, the project authorities will ensure that school-going children face minimal disruption to their daily routines, especially in terms of transportation.</li> <li>Project authorities will collaborate with the Village-level councils to identify potential challenges and address them effectively. Additionally, project authorities will engage with school authorities to ensure a seamless transportation plan for children during the road construction period.</li> </ul>
7	<ul style="list-style-type: none"> <li>Will the construction affect any cultural, historical, or heritage sites in the area? How will the project ensure that the local cultural practices and traditions are respected?</li> </ul>	<ul style="list-style-type: none"> <li>Contractor will ensure that no such significant sites are affected. If any are identified, appropriate measures will be taken to preserve them. Local communities will be consulted during the planning process, and cultural practices will be considered in the road design and construction to ensure that they are respected.</li> <li>Labor Management Procedures will stipulate measures for sensitization of</li> </ul>

Sl. No.	Summary of Issues	Suggestions / Responses provided
		labors vis a vis local cultural practices and traditions. This will be monitored by contractor throughout the project.



Table 3: Summary of Consultation With Institutions

Sl. No.	Area	Date	Name of stakeholder	Outcomes of consultation	Suggestions (from consultations) for integration into project design	Photograph
1	DPR Consultant	25-08-2025	DPR Consultants	<ul style="list-style-type: none"> <li>Preliminary observations from an 26.42km site visit were presented, along with information requirements.</li> <li>Current data for Existing Right of Way (ERoW) and Proposed Right of Way (PRoW) is unavailable.</li> <li>PRoW will be considered as 12 meters, in accordance with relevant codes for state highways.</li> <li>A topographic survey has been conducted within a 60-meter width.</li> </ul>	<ul style="list-style-type: none"> <li>Incorporate the 12-meter Proposed Right of Way (PRoW) into the design to ensure compliance with relevant codes for state highways.</li> <li>Utilize the data from the topographic survey conducted within a 60-meter width to inform the design process and address any topographical challenges.</li> <li>Develop flexible design options that can accommodate variations in the PRoW, ensuring that any potential adjustments can be made without significant delays.</li> <li>Consider the inclusion of safety features such as guardrails and proper signage to enhance road safety along the newly proposed road alignment.</li> <li>Plan for ecological assessments to ensure that the road design minimizes environmental impacts, especially in sensitive areas identified during the site visit.</li> <li>Allow for future expansion possibilities in the design to accommodate potential increases in traffic volume and road usage over time.</li> <li>Engage with local communities to gather input and address concerns regarding the design, particularly in relation to access and land.</li> </ul>	 <p>Latitude: 25.58179 Longitude: 91.884458 Elevation: 1510.9±2.04 m Accuracy: 2861 m Time: 25-08-2025 16:48 Note: Discuss/review Powered by NoteCam</p>



**ANNEXURE 7.2 STAKEHOLDER ENGAGEMENT PLAN**

**For**

**Upgradation of Weilo - Mawsynram Road  
upto Phlangwanbroi for**

**Meghalaya Logistics and Connectivity  
Improvement Project (MLCIP),  
funded by the World Bank**

**November 2025**

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## **INTRODUCTION/PROJECT DESCRIPTION**

1. Meghalaya stands as a vital gateway in India's northeastern landscape, stitching together the Barak and Brahmaputra Valleys like a lush green bridge of hills and clouds. Road transport forms the lifeline of this mountainous state, carrying more than 80 percent of its freight and virtually all passenger movement. Yet, for nearly half of its people, reliable all-weather roads remain a distant promise, and aging timber bridges continue to restrict mobility, like weary sentinels struggling under modern demands.
2. To address the challenges mentioned above holistically, the Government of Meghalaya, with financing and technical support from the World Bank, has conceptualized a project titled the Meghalaya Logistics and Corridor Improvement Project (MLCIP). MLCIP aims to provide efficient, resilient, and safe connectivity to key regional, rural corridors and economic centers in Meghalaya by applying best practices in resource management, reducing greenhouse gas (GHG) emissions, improving road safety, and implementing an asset management system. The state aims to significantly increase agriculture's economic contribution and per capita income by improving market access through an efficient, all-weather transport and logistics infrastructure and services network. The improved network will enhance market access and logistics efficiency, reduce average cost/time for select agriculture and horticulture products along key economic corridors, and strengthen institutional capacity for managing efficient, climate-resilient, and safe transport and logistics infrastructure.
3. The project envisions:
  - Upgrading existing roads to intermediate standards, with context-appropriate paved shoulders.
  - Reconstructing and strengthening culverts and bridges to ensure durability and safety.
  - Constructing new bridges and cross-drainage structures to secure all-weather connectivity and climate resilience.

### **Project Development Objective (PDO)**

4. The Project Development Objective (PDO) is to enhance the climate and disaster resilience of critical public infrastructure specifically roads and bridges and strengthen agro-logistics infrastructure and services.

### **Project Components**

5. The MLCIP will be implemented in Meghalaya and comprises the following components

**Component 1. Climate-Resilient Roads, Bridges and Road Safety:** Upgrading of selected 740 km roads and 347.5 m of bridges with climate-resilient features against flooding and landslides, including: (i) upgradation of damaged road sections to intermediate lane width; (ii) stabilizing hillside slopes by providing weep holes and applying civil and bio-engineering solutions; (iii) enhancing the resilience of side drains, culverts and bridge structures; protecting valley-side slopes; and widening the road formation; (iv) constructing innovative, climate-resilient bridge structures.

**Component 2. Agro-Logistics Infrastructure and Service:** Developing a green rural freight and public transportation system including: (a) establishing rural transportation hubs, including truck bays, loading and unloading ramps, container bays, sheds, container yards, offices, refreshment areas, taxi/bus bays, and installing solar panels within the compound of the hubs; (b) establishing a freight

terminal integrated with a district logistics park; (c) establishment of ropeways for transporting farm products from hills; (d) geo-referenced multipurpose bus/taxi/truck stops at farm-product collection points and habitation clusters; (e) high-speed internet/fiber optics connectivity to hubs and multipurpose bus/taxi stops at collection points; and (f) provision of roadside amenities and marketplaces.

**Component 3. Institutional Strengthening:** Training programs, workshops, and exposure visits; development of technical manuals, SOPs, and guidelines; inclusion of local knowledge and traditional practices; building the institutional capacity of line departments and community organizations.

**Component 4. Contingent Emergency Response Component (CERC)** The CERC will support PWD/MIDFC in case of an Eligible Crisis or Emergency in responding promptly and effectively to it as per the Contingent Emergency Response Manual. Following an eligible crisis or emergency, the Recipient may request the Bank to re-allocate project funds to support emergency response and reconstruction.

6. The MLCIP is being prepared under the Environmental and Social Framework (ESF World Bank's Environmental and Social Framework (ESF).

#### OBJECTIVE/ DESCRIPTION OF SEP

7. The overall objective of this SEP is to define a program for stakeholder engagement, including public information disclosure and consultation throughout the entire project cycle. The SEP outlines the ways in which the implementing agencies (Public Works Department, Department of Agriculture, Meghalaya Basin Development Authority) will communicate with stakeholders and includes a mechanism by which people can raise concerns, provide feedback, or make complaints about project activities or any activities related to the project. The details are given in *Annexure -I*

#### STAKEHOLDER IDENTIFICATION AND ANALYSIS

8. Stakeholder identification is the process of determining all individuals, groups, or institutions that may be directly or indirectly affected by the project or that may influence its outcomes. Categorization ensures that stakeholders are grouped according to their level of impact, interest, and influence, which helps design tailored engagement strategies.

#### METHODOLOGY

9. In order to meet best practice approaches, the project will apply the following principles for stakeholder engagement:

- **Openness and life-cycle approach:** Public consultations for the sub projects will be arranged during the whole life cycle, carried out in an open manner, free of external manipulation, interference, coercion, or intimidation.
- **Informed participation and feedback:** Information will be provided to and widely distributed among all stakeholders in an appropriate format; opportunities are provided for communicating stakeholder feedback, and for analyzing and addressing comments and concerns.
- **Inclusiveness and sensitivity:** Stakeholder identification is undertaken to support better communications and build effective relationships. The participation process for the projects is inclusive. All stakeholders at all times are encouraged to be involved in the consultation process. Equal access to information is provided to all stakeholders. Sensitivity to

stakeholders' needs is the key principle underlying the selection of engagement methods. Special attention is given to vulnerable groups that may be at risk of being left out of project benefits, particularly women, the elderly, persons with disabilities, displaced persons, and migrant workers and communities, and the cultural sensitivities of diverse ethnic groups.

10. For the MLCIP, the following stakeholders have been identified and analyzed per project component. These stakeholders include affected parties, other interested parties and disadvantaged/vulnerable individuals or groups.

### ***Affected Parties***

11. **Project-Affected People (PAPs):** Individuals, households, and communities residing in the project area who may be positively or negatively impacted (e.g., landowners, tenants, shopkeepers, transport users). Affected parties are local communities, community members, and other individuals or groups who may experience direct impacts from the project i.e. families residing in areas where project interventions (e.g., road construction, corridor development) are planned; Khasi communities whose land, resources, or livelihoods may be affected, Women, elderly, persons with disabilities, and marginalized households who may face disproportionate impacts; Village councils, clan leaders, and traditional authorities involved in local governance and decision making, Individuals or groups dependent on forests, rivers, or other natural resources in the project area for livelihood, cultural, or religious purposes; Traders, transport operators, and service providers whose activities may be affected during construction or operation.

**Table 1: List of affected parties**

<b>Component 1:</b> Climate-Resilient Roads, Bridges and Road Safety	<ul style="list-style-type: none"> <li>• Titleholders, including residential owners, commercial property owners, and tenants whose assets or land may be affected.</li> <li>• Non-titleholders such as squatters, encroachers, and street vendors along the right of way (RoW) whose properties or incomes may be temporarily or permanently affected by land procurement or construction activities.</li> <li>• Land users with cultivated land or other uses along the existing RoW who may be impacted.</li> <li>• Rural road users, pedestrians, residents, and communities that may face temporary inconvenience or restricted access due to construction works</li> <li>• Village Councils (Dorbar Shnong) whose community owned lands or assets may be affected.</li> <li>• Religious and Indigenous Faith Institutions whose religious structures or land may be affected.</li> </ul>
<b>Component 2:</b> Agro-Logistics Infrastructure and Service	<ul style="list-style-type: none"> <li>• Marginal and small farmers, entrepreneurs, Self-Help Groups (SHGs), and Farmer Producer Groups (FPGs) who are expected to benefit from the agricultural development initiatives.</li> <li>• Rural road users, residents and communities that may be temporarily inconvenienced by construction works.</li> </ul>
<b>Component 3:</b> Institutional Strengthening	<ul style="list-style-type: none"> <li>• Exposure visits to similar projects, institutions, or regions to exchange knowledge, share best practices, and adopt innovative approaches.</li> <li>• Preparation of standardized manuals, operating procedures, and guidelines to ensure consistency, efficiency, and sustainability in project planning, implementation, and monitoring.</li> </ul>

### ***Other Interested Parties***

- Local associations, cooperatives, self-help groups, and civil society organizations/NGOs working on environmental protection, social inclusion, human rights, and indigenous peoples'

welfare;

- Academic and research institutions, universities, and think tanks providing technical expertise;
- Religious and cultural institutions;
- Line departments and agencies such as the Revenue Department, Meghalaya State Pollution Control Board, Forest Department, Horticulture Department, Social Welfare Department, Labour Department, District Child Protection Unit, MBMA etc.;
- Industries, traders, and businesses along the corridors;
- NGOs and CBOs working in the project areas;
- Media
- The general Public.

### Stakeholders in Community Development

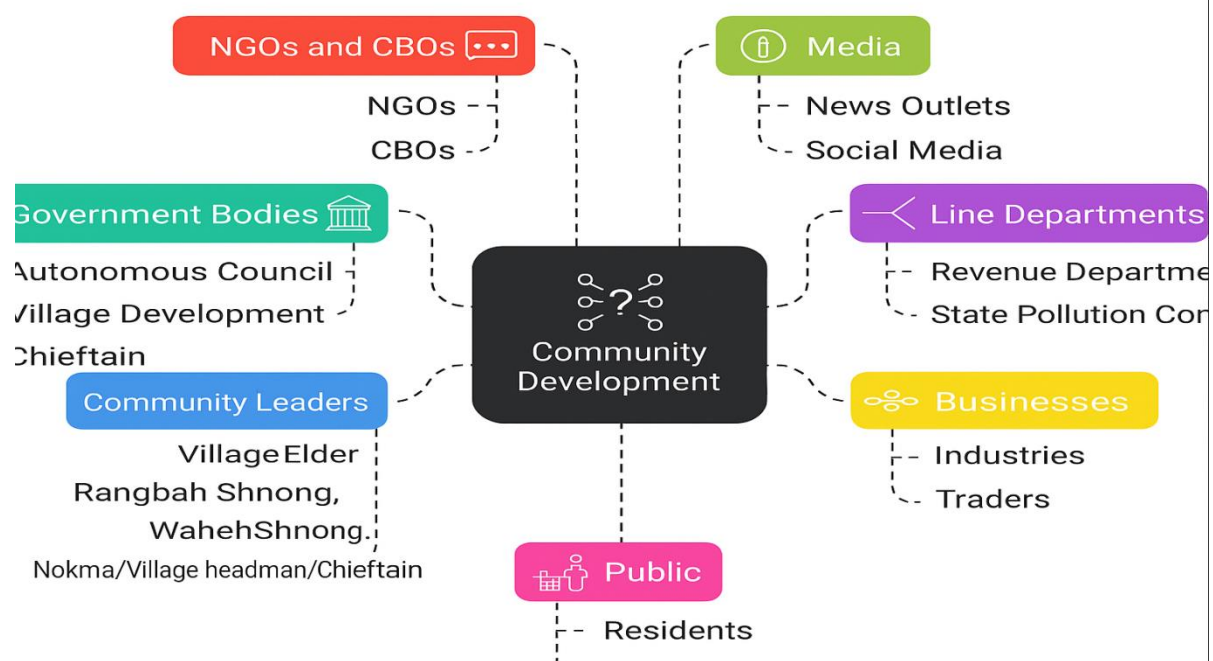


Figure 1: Stakeholders in Community Development

#### Disadvantaged/vulnerable individuals or groups

12. Within the Project, the vulnerable or disadvantaged groups may include but are not limited to the following:

Table - 2: Vulnerable Groups

<b>Component 1:</b> Climate-Resilient Roads, Bridges and Road Safety	<ul style="list-style-type: none"> <li>Affected parties that belong to the vulnerable category: <b>elderly people, persons with disabilities, ethnic and religious minorities, children, and refugees, Women headed households, scheduled caste, scheduled tribe, and below poverty line (BPL) category</b>— who may be disproportionately impacted due to land procurement.</li> </ul>
----------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



	<ul style="list-style-type: none"> <li>Persons with disabilities (PWD), elderly who are likely to be affected due to temporary restriction in access.</li> <li>Indigenous communities (Khasi) whose customary lands, traditional territories, and natural resources may be affected, requiring FPIC procedures under ESS7</li> </ul>
<b>Component 2:</b> Agro-Logistics Infrastructure and Service	<ul style="list-style-type: none"> <li>Rural women and girls: Often primary users of public transport for market access, education, or healthcare; they may face safety risks, harassment, or exclusion from new green systems</li> <li>Low-income farmers and small-scale traders: Rely on freight for goods transport; vulnerable to increased costs or disruptions during transition</li> <li>Indigenous or ethnic minority communities: In rural project areas, they could be displaced or lose traditional access routes</li> </ul>
<b>Component 3:</b> Institutional Strengthening	<ul style="list-style-type: none"> <li>Women in technical or institutional roles: Often underrepresented in transport/rural development sectors; training may exclude them due to childcare burdens, location biases, or gender norms, perpetuating inequities in manual/SOP creation.</li> <li>Ethnic minorities or indigenous staff/community representatives: May face language/cultural barriers in training; guidelines could ignore their traditional knowledge, leading to non-inclusive policies.</li> <li>Persons with disabilities in institutional teams: Training formats (e.g., in-person workshops) might not accommodate mobility or accessibility needs, excluding them from skill-building and manual development.</li> </ul>


13. Vulnerable groups within the communities affected by the project will be further confirmed and consulted through dedicated means, as appropriate. Description of the methods of engagement that will be undertaken by the project is provided in the following sections.

## STAKEHOLDER ENGAGEMENT PROGRAM

### *Summary of stakeholder engagement done during project preparation*



14. During project preparation, the following public consultation meetings were conducted:

**Table 3: Stakeholder Consultation Summary**

Sl. No.	Area	Date	Name of stakeholder	Outcomes of consultation	Suggestions (from consultations) for integration into project design	Photograph
3.	Mawsynram	20-08-2025	4 Men 1 Woman	<ul style="list-style-type: none"> <li>Participants appreciated the project and acknowledged its positive impact on the community.</li> <li>Requested fair compensation and support in case of any demolitions affecting their properties or livelihoods.</li> <li>Strong support from the local community for the project</li> </ul>	<ul style="list-style-type: none"> <li>Construct smoother roads to enhance accessibility and improve transportation.</li> <li>Ensure fair compensation and support for individuals affected</li> </ul>	




*Upgradation of Weiloi - Mawsynram Road upto Phlangwanbroi for Meghalaya Logistics and Connectivity Improvement Project (MLCIP), funded by the World Bank*

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT**

Sl. No.	Area	Date	Name of stakeholder	Outcomes of consultation	Suggestions (from consultations) for integration into project design	Photograph
4.	Phlangwanbroi	20-08-2025	Commuters: 8	<ul style="list-style-type: none"> <li>Participants raised concerns emphasizing the need for better illumination for safety.</li> <li>Need of aped breakers &amp; Zebra Crossing for safety of pedestrians.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure the installation of adequate streetlights throughout the village to improve safety and visibility, particularly at night.</li> <li>Speed breaker and Zebra crossing required near L P S School.</li> </ul>	 <p>Latitude: 25.253812 Longitude: 91.499397 Elevation: 1059.17±7.73 m Accuracy: 13.21 m Time: 20-08-2025 14:29 Note: 47+150 Phlangwanbroi</p>
<b>key informant interview</b>						
3.	Mawsynram	20.09.2025	PAH	<ul style="list-style-type: none"> <li>Participants appreciated the project and acknowledged its positive impact on the community.</li> </ul>	<ul style="list-style-type: none"> <li>Construct smoother roads to enhance accessibility and improve transportation.</li> </ul>	 <p>Latitude: 25.299778 Longitude: 91.581704 Elevation: 1435.06±10.6 m Accuracy: 5.906 m Time: 20-09-2025 11:53 Note: 34+670</p>



*Upgradation of Weilo - Mawsynram Road upto Phlangwanbroi for Meghalaya Logistics and Connectivity Improvement Project (MLCIP), funded by the World Bank*

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT**


Sl. No.	Area	Date	Name of stakeholder	Outcomes of consultation	Suggestions (from consultations) for integration into project design	Photograph
						 <p>Latitude: 25.296426 Longitude: 91.580821 Elevation: 1438.9±2.41 m Accuracy: 6.521 m Time: 20-09-2025 12:23 Note: 43+690</p>
4.	Phlangwanbroi	20.09.2025	PAH	<ul style="list-style-type: none"> <li>• Limited local opportunities, inadequate skill development platforms, and lack of structured guidance</li> </ul>	<ul style="list-style-type: none"> <li>• Integrate capacity-building and skill development components</li> </ul>	 <p>Latitude: 25.256378 Longitude: 91.607292 Elevation: 1087.9±2.5 m Accuracy: 3.79 m Time: 20-09-2025 13:15 Note: 45+690</p>
<b>FGD with Youths</b>						
3.	Mawsynram	16.09.2025	Youth (8 nos.)	<ul style="list-style-type: none"> <li>• Limited local opportunities, inadequate skill development platforms, and lack of structured guidance</li> <li>• Migration remains a major coping strategy, but often comes with social and economic risks</li> </ul>	<ul style="list-style-type: none"> <li>• Integrate capacity-building and skill development components</li> <li>• Encourage microenterprise development by promoting small-scale livelihood opportunities</li> </ul>	 <p>Latitude: 25.286518 Longitude: 91.575796 Altitude: 1306.2±1.19 m Accuracy: 20.0 m Time: 16-09-2025 15:34 Note: FPIC2 @ WMP FGD youths</p>

*Upgradation of Weiloi - Mawsynram Road upto Phlangwanbroi for Meghalaya Logistics and Connectivity Improvement Project (MLCIP), funded by the World Bank*

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT**

Sl. No.	Area	Date	Name of stakeholder	Outcomes of consultation	Suggestions (from consultations) for integration into project design	Photograph
4.	Mawsynram	16.09.2025	Youth (7 nos.)	<ul style="list-style-type: none"> <li>• Promote skill-building, entrepreneurship,</li> <li>• Better road connectivity for transportation of goods and services</li> </ul>	<ul style="list-style-type: none"> <li>• Establish feedback and monitoring mechanisms through the Stakeholder Engagement Plan (SEP)</li> <li>• Integrate capacity-building and skill development components</li> </ul>	
<b>FGD with Women</b>						
2.	Mawsynram	16.09.2025	Women (7 nos.)	<ul style="list-style-type: none"> <li>• Women are eager to contribute economically but are constrained by limited opportunities, social barriers, and lack of structured support</li> <li>• There is a pressing need for inclusive, women-centric interventions that promote local entrepreneurship, skills, and connectivity</li> </ul>	<ul style="list-style-type: none"> <li>• Integrate women-focused skill development initiatives</li> <li>• Strengthen participation of women's Self-Help Groups (SHGs) in project-related awareness, monitoring, and plantation maintenance programs.</li> </ul>	
<b>Consultation with DPR consultant</b>						



Sl. No.	Area	Date	Name of stakeholder	Outcomes of consultation	Suggestions (from consultations) for integration into project design	Photograph
2.	DPR Consultant	25-08-2025	DPR Consultants	<ul style="list-style-type: none"> <li>▪ Preliminary observations from an 26.42km site visit were presented, along with information requirements.</li> <li>▪ Current data for Existing Right of Way (ERoW) and Proposed Right of Way (PRoW) is unavailable.</li> <li>▪ PRoW will be considered as 12 meters, in accordance with relevant codes for state highways.</li> <li>• A topographic survey has been conducted within a 60-meter width.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Incorporate the 12-meter Proposed Right of Way (PRoW) into the design to ensure compliance with relevant codes for state highways.</li> <li>▪ Utilize the data from the topographic survey conducted within a 60-meter width to inform the design process and address any topographical challenges.</li> <li>▪ Develop flexible design options that can accommodate variations in the PRoW, ensuring that any potential adjustments can be made without significant delays.</li> <li>▪ Consider the inclusion of safety features such as guardrails and proper signage to enhance road safety along the newly proposed road alignment.</li> <li>▪ Plan for ecological assessments to ensure that the road design minimizes environmental impacts, especially in sensitive areas identified during the site visit.</li> <li>▪ Allow for future expansion</li> </ul>	 <p>Latitude: 25.58179 Longitude: 91.884458 Elevation: 1510.9±2.04 m Accuracy: 2861 m Time: 25-08-2025 16:48 Note: Discuss/review</p> <p>Powered by NoteCam</p>

Sl. No.	Area	Date	Name of stakeholder	Outcomes of consultation	Suggestions (from consultations) for integration into project design	Photograph
					possibilities in the design to accommodate potential increases in traffic volume and road usage over time.	

*Summary of project stakeholder needs and methods, tools, and techniques for stakeholder engagement*

15. The Stakeholder Engagement Plan below outlines the engagement process, methods, including sequencing, topics of consultations and target stakeholders. The World Bank and the Borrower do not tolerate reprisals and retaliation against project stakeholders who share their views about Bank-financed projects.

*Stakeholder engagement plan*

**Table: 4 Stakeholder Engagement Plan**

Project Stage	Estimated Date/Time Period	Topic of consultation / message	Method used	Target Stakeholders	Responsibilities
Preparation and Implementation stage	During Environmental and Social Impact Assessment (ESIA) and thereafter quarterly	<ul style="list-style-type: none"> <li>- Present the project and receive feedback on project activities, timelines of civil works, and physical restrictions, if any.</li> <li>- Consult on key risks and impacts</li> <li>- Prior information on Work plan and Work schedules</li> <li>- Share details on GBV/ SEA/SH prevention and mitigation measures.</li> <li>- Give information on Grievance Redressal Mechanism</li> </ul>	<ul style="list-style-type: none"> <li>• Community consultations</li> <li>• Public Meetings</li> <li>• Site visits</li> </ul>	General Public	MPWD and ESIA Consultant

Project Stage	Estimated Date/Time Period	Topic of consultation / message	Method used	Target Stakeholders	Responsibilities
Preparation stage	During ESIA, and thereafter monthly till disbursement is completed.	<ul style="list-style-type: none"> <li>- Present the project and receive feedback on project activities,</li> <li>- Consult on key risks and impacts</li> <li>- Seek Free, Prior, and Informed Consent (FPIC) as per the World Bank ESS7 (Annex 4)</li> <li>- Compensation and R&amp;R provisions as per the Entitlement matrix including payment modalities and disbursement status.</li> <li>- Give information on Grievance Redressal Mechanism</li> </ul>	<ul style="list-style-type: none"> <li>• Meaningful consultations (Refer to 4.3)</li> <li>• Surveys</li> <li>• Focus Group Meetings/ Discussions</li> <li>• Village level meetings</li> <li>• Site visits</li> </ul>	Affected Parties	MPWD and ESIA Consultant
Preparation stage	During ESIA and Detailed Project Report (DPR) preparation	<ul style="list-style-type: none"> <li>- Present the project and receive feedback on key risks and challenges related to activities</li> <li>- Propose special provisions in place for vulnerable groups. E.g. Additional assistance for ST, BPL and WHH under entitlement matrix.</li> <li>- Measures to address temporary restriction to access during construction period.</li> <li>- Specific design interventions for persons with disabilities, women, children and elderly to ensure universal accessibility.</li> <li>- Benefits provided under the project for small and marginal farmers and women entrepreneurs.</li> <li>- Give information on Grievance Redressal Mechanism in an accessible manner.</li> </ul>	<ul style="list-style-type: none"> <li>• Focus Group Meetings/ Discussions</li> <li>• One-on-one interviews</li> </ul> <p>(Using tools and methods to ensure accessibility and full participation)</p>	<p>Vulnerable groups</p> <p>BPL, Women headed households, Persons with disabilities, elderly, Children along with their guardians</p>	ESIA Consultant MPWD
Preparation and Implementation stage	During ESIA and thereafter twice a year	<ul style="list-style-type: none"> <li>- Present the project design, scope, approach, benefits, timelines, progress</li> <li>- Process related to public engagement and entitlements prior to alignment of land for developmental activities</li> </ul>	Consult with Heads of Traditional	Autonomous District Council, Village	MPWD



Project Stage	Estimated Date/Time Period	Topic of consultation / message	Method used	Target Stakeholders	Responsibilities
		<ul style="list-style-type: none"> <li>- Seek Free, Prior, and Informed Consent (FPIC) as per the World Bank ESS7 for initiating the activities.</li> <li>- Give information on Grievance Redressal Mechanism</li> </ul>	Institutions, Village Elders, Executive Members of the Village Councils (Dorbar Shnongs).	Development Council (Dorbar Shnongs).	
Preparation stage	During ESIA, and thereafter monthly till disbursement is completed.	<ul style="list-style-type: none"> <li>- Present the project design, scope, approach, benefits, timelines, progress</li> <li>- Process related to land requirement for the project</li> <li>- Disbursement of compensation and R&amp;R</li> <li>- Any prior permission required for initiating the activities</li> <li>- Give information on Grievance Redressal Mechanism</li> </ul>	<ul style="list-style-type: none"> <li>- One-on-one interviews</li> <li>- Official letter or notification</li> <li>- Approvals by the district administration</li> <li>- Workshops and trainings</li> </ul>	District Administration	MPWD
Preparation stage	During ESIA	<ul style="list-style-type: none"> <li>- Present the project design, scope, approach, benefits, timelines, progress</li> <li>- Any prior permission required for initiating activities in tribal areas</li> <li>- Give information on Grievance Redressal Mechanism</li> </ul>	<ul style="list-style-type: none"> <li>- One-on-one interview</li> <li>- Official letter or notification</li> <li>- Approvals by the department</li> <li>- Workshops</li> </ul>		MPWD

Project Stage	Estimated Date/Time Period	Topic of consultation / message	Method used	Target Stakeholders	Responsibilities
			and trainings		
Implementation stage	During construction phase on monthly basis, till completion of civil works	- Compliance on relevant labour norms applicable for construction related activities	- Site inspections Compliance reports and records submission Workshops and trainings	Contractor	MPWD
Implementation stage	Prior to commencement of civil works and thereafter as and when reports are required.	- Compliance on relevant environmental norms applicable for construction related activities - Required permissions, certificates, etc. to be sought	- Official letter or notification - Compliance reports and records submission and approvals by MSPCB Workshops and trainings	Meghalaya State Pollution Control Board	MPWD
Preparation stage	During ESIA	- Present project information and planned activities - Give information on Grievance Redressal Mechanism	- Face to face and virtual meetings Workshops and	Other Line departments- Social Welfare, Police and transport officials	MPWD

Project Stage	Estimated Date/Time Period	Topic of consultation / message	Method used	Target Stakeholders	Responsibilities
			trainings		
Implementation stage	During construction phase on daily basis, till completion of civil works	<ul style="list-style-type: none"> <li>- Occupational and community health and safety requirements as per ESMP and LMP</li> <li>- Workers' code of conduct and other measures to manage SEA/SH risks</li> <li>- Give information on workers' Grievance Redressal Mechanism</li> </ul>	<ul style="list-style-type: none"> <li>- Face to face trainings</li> <li>- Toolbox trainings for workers</li> </ul> <p>Signages in construction sites and camps</p>	Labor Contractors and workers	Supervision Consultants and Contractors
Preparation and Implementation stage	During ESIA and thereafter twice a year.	<ul style="list-style-type: none"> <li>- Present project information and planned activities</li> <li>- Give information on workers' Grievance Redressal Mechanism</li> <li>- Feedback and support in SEA/SH risk management</li> </ul>	<ul style="list-style-type: none"> <li>- One on one interviews</li> <li>- Face-to-face or virtual meetings, webinars</li> <li>- Seminar and workshops</li> </ul>	Autonomous District Council, Village Development Council (Dorbar Shnongs).	MPWD
Preparation and Implementation stage	As and when required.	<ul style="list-style-type: none"> <li>- Present project information and planned activities</li> <li>- Outputs and outcomes of the project</li> <li>- Role and support required from media Success stories</li> </ul>	<ul style="list-style-type: none"> <li>- Press Release/ Notes</li> <li>- Monthly Health Bulletins</li> <li>- Inputs for OpEds</li> <li>- Short films/</li> </ul>	Media	MPWD

Project Stage	Estimated Date/Time Period	Topic of consultation / message	Method used	Target Stakeholders	Responsibilities
			Reels/Posts for social media Social Media platforms of Meghalaya Government		

*Strategy to incorporate the view of vulnerable groups*

16. The project will implement differentiated engagement measures for groups requiring special attention including women-headed households, persons with disabilities, elderly persons, economically disadvantaged families, and all indigenous communities. Engagement will ensure accessibility through sign language interpretation, large print materials, accessible meeting venues, flexible timing to accommodate care responsibilities, and culturally appropriate protocols respecting traditional governance structures. These targeted consultations will ensure that the perspectives, concerns, and priorities of vulnerable groups are meaningfully incorporated into project planning and decision-making.

17. To ensure that all stakeholders especially vulnerable groups can participate meaningfully and access information, the project will adopt the following measures:

**Table 5: Strategy to incorporate the views of vulnerable groups**

Vulnerable Group	Measures
Women headed households, and women entrepreneurs	<ul style="list-style-type: none"> <li>Ensuring gender balance in engagement teams is critical to fostering trust and creating an environment where all participants, particularly women, feel comfortable sharing their perspectives.</li> <li>Surveys as well as other stakeholder engagement activities will be designed to accommodate women in unpaid care work, ensuring that they have the opportunity to participate fully in discussions. Flexible scheduling, accessible formats, and supportive measures such as childcare or safe transport will be provided to enable their meaningful engagement.</li> <li>For all in-person community engagement activities, provisions will be made for childcare, safe transport, and secure meeting venues to ensure that participants—particularly women and caregivers—can attend and participate fully. These measures aim to remove practical barriers and create a safe, accessible, and enabling environment for engagement.</li> <li>Gender-segregated consultations and other targeted approaches will be employed to provide women and girls with safe and enabling spaces for participation. These measures aim to encourage open dialogue, ensure that their perspectives are freely expressed, and promote equitable inclusion in project decision-making.</li> </ul>
Affected parties belonging to BPL categories	<ul style="list-style-type: none"> <li>All consultations will be scheduled during non-business or off-hours to accommodate participants' availability, ensuring that community members, particularly women and those engaged in work or care giving, can participate fully in the engagement process.</li> </ul>
Elderly and people with existing medical conditions	<ul style="list-style-type: none"> <li>The project will identify stakeholders with specific needs who may be at higher risk of being excluded or adversely affected, including women-headed households, persons with disabilities, the elderly, marginalized farmers, and economically disadvantaged groups.</li> <li>Information will be provided in an accessible and user-friendly manner to ensure that all stakeholders, including those with literacy or visual challenges, can understand and engage with project-related content. Measures will include - large print materials and clear, legible fonts; plain and simple local languages</li> <li>All consultations will be conducted in comfortable, accessible, and well-lit venues to ensure participants can engage effectively. Venues will be chosen to accommodate persons with disabilities, the elderly, and other vulnerable groups, providing safe and welcoming environments for open dialogue.</li> </ul>
Persons with disabilities	<ul style="list-style-type: none"> <li>Information will be provided in accessible formats to ensure inclusion of persons with disabilities and those using assistive technologies. Ensuring accessibility measures are</li> </ul>

Vulnerable Group	Measures
	<p>implemented where needed, based on the specific requirements of participants</p> <ul style="list-style-type: none"> <li>All stakeholder engagement activities will consider and account for gender, age, disability, socio-economic status, and other dimensions of identity and vulnerability. This ensures that consultations are inclusive, that the perspectives of marginalized groups are captured, and that project design and mitigation measures address the needs of those most at risk of exclusion or adverse impacts.</li> </ul>
Indigenous Communities	<ul style="list-style-type: none"> <li>FPIC procedures conducted through traditional institutions following customary protocols <ul style="list-style-type: none"> <li>Consultations in local languages (Khasi) with cultural interpreters</li> <li>Respect for traditional decision-making timelines and consensus-building processes</li> <li>Integration of customary law and traditional knowledge systems</li> <li>Consultation with Village Councils, Rangbah Shnong, and Village Elders</li> </ul> </li> </ul>

18. The project road has Khasi community, governed by customary laws and traditional institutions. FPIC ensures that their collective rights and decision-making processes are respected; Constitutional protections (Sixth Schedule) also require consultation and consent from Autonomous District Councils and local communities; World Bank ESS7 (Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities) mandates FPIC when projects may affect customary lands, cultural heritage, or cause relocation. Therefore meaningful consultations will be conducted with affected tribal households, Heads of Traditional Institutions, Rangbah Shnong /village headmen, and Village Development Committee (VDC) chairpersons in a culturally appropriate manner and will include FPIC procedures where project activities affect customary lands or traditional territories. These consultations will take into account the following factors:

- Early Engagement** – Consultations will begin early in the project planning process to gather initial views on the project proposal and inform project design.
- Encouraging Feedback** – Stakeholder input will be actively solicited to inform project design and identify and mitigate environmental and social risks and impacts.
- Ongoing Process** – Engagement will be continuous throughout the project lifecycle.
- Prior Disclosure of Information** – Relevant, transparent, objective, meaningful, and easily accessible information will be shared in advance, in culturally appropriate formats and the relevant local language, ensuring stakeholders have adequate time for meaningful consultation.
- Responsive Approach** – Feedback from stakeholders will be considered and addressed systematically.
- Inclusive Engagement** – Efforts will be made to support active and inclusive participation of all project-affected parties.
- Free from Manipulation or Coercion** – Consultations will be conducted without external interference, discrimination, intimidation, or coercion.
- Documentation and Disclosure** – All consultations will be documented and disclosed by the Meghalaya Public Works Department (MPWD) to ensure transparency and accountability.

#### *Reporting back to stakeholders*

19. Stakeholders will be kept informed as the project develops, including reporting on project environmental and social performance and implementation of the stakeholder engagement plan and Grievance Mechanism, and on the project's overall implementation progress.

- Internal Reporting:** The Project Management Unit (PMU) and implementing agencies will maintain comprehensive records of all stakeholder engagement activities, including meeting

minutes, attendance sheets, feedback received, and grievances addressed.

- **External Reporting:** Periodic reports on stakeholder engagement will be shared with government authorities, funding agencies, and local communities, highlighting consultation activities, issues raised, and actions taken.
- **Public Disclosure:** Summaries of stakeholder engagement outcomes will be made available through community notice boards, offices of the DPIUs, and digital platforms to ensure transparency.

## RESOURCES AND RESPONSIBILITIES FOR IMPLEMENTING STAKEHOLDER ENGAGEMENT ACTIVITIES

### Resources

20. The **Meghalaya Public Works Department (MPWD)** will have overall responsibility for overseeing stakeholder engagement activities. The day-to-day implementation of these activities will be carried out by the **Environmental and Social Cell (E&S Cell)**, which is part of the MPWD's Project Implementation Unit.

21. The **MPWD** holds ultimate responsibility for the implementation of the Stakeholder Engagement Framework and Plans, ensuring that engagement activities are conducted in a timely, inclusive, and culturally appropriate manner, and that feedback is integrated into project planning and decision-making.

**Table 6: Stakeholder Engagement Activities**

Agency/ Individual	Role and Responsibility
MPWD	<ul style="list-style-type: none"> <li>• <b>Mobilization of External Expertise</b> - Engage external consultants for conducting Environmental and Social Impact Assessments (ESIAs) and preparing site-specific Environmental and Social Management Plans (ESMPs), Resettlement Action Plans (RAPs), and Indigenous Peoples Development Plans (IPDPs). Undertake Free, Prior, and Informed Consent (FPIC) processes based on meaningful consultations with relevant stakeholders.</li> <li>• <b>Technical Expertise for Vulnerable Groups</b> - Mobilize technical expertise to ensure safe and culturally appropriate consultations with vulnerable groups or on sensitive topics, as required.</li> <li>• <b>Approval and Oversight of Stakeholder Engagement Plan</b> - Review and approve the content of the draft Stakeholder Engagement Plan (SEP), including any revisions.</li> <li>• <b>Approval of Information, Education, and Communication (IEC) Materials</b> - Approve all IEC materials prior to release, including communication materials, PowerPoint presentations, posters, leaflets, brochures, and media inserts (TV, radio, or online).</li> <li>• <b>Authorization of Stakeholder Engagement Events</b> - Approve and authorize all stakeholder engagement events and the disclosure of materials required to support these events, ensuring alignment with the SEP and cultural appropriateness.</li> </ul>
MPWD	<ul style="list-style-type: none"> <li>• Provide overall guidance, oversight, and monitoring of the Stakeholder Engagement Plan (SEP) to ensure that engagement activities are conducted effectively, inclusively, and in a culturally appropriate manner. This includes tracking progress, addressing gaps, ensuring compliance with project policies and safeguards, and providing technical and operational support to the implementing teams.</li> <li>• Prepare and provide appropriate Information, Education, and Communication (IEC) and other communication materials tailored to different stakeholder categories. These materials will ensure that relevant project information is clearly and effectively conveyed, taking into account stakeholders' literacy levels, languages, cultural contexts, and specific information</li> </ul>

Agency/ Individual	Role and Responsibility
	<p>needs.</p> <ul style="list-style-type: none"> <li>Finalize the timing, duration, and sequence of all SEP-related information disclosure and stakeholder engagement activities. This ensures that consultations and information sharing are conducted at times that maximize stakeholder participation and allow sufficient time for meaningful feedback, particularly for vulnerable and marginalized groups.</li> <li>Organize orientation and capacity-building sessions for MPWD staff to ensure a clear understanding of the Stakeholder Engagement Plan (SEP) and the requirements for its operationalization. This will enable staff to effectively implement engagement activities, follow culturally appropriate consultation practices, and respond to stakeholder feedback in line with project policies and safeguards.</li> </ul>
CSC/ PMC/ MPWD	<ul style="list-style-type: none"> <li>Participate directly in all face-to-face stakeholder meetings or identify suitable representatives to ensure effective engagement. This ensures that stakeholders have a direct point of contact, that consultations are properly facilitated, and that feedback is accurately recorded and addressed.</li> <li>Review and sign off on the minutes of all stakeholder engagement events to ensure accuracy and completeness. They will also maintain an up-to-date stakeholder database, capturing details of participants, feedback received, and follow-up actions, to support monitoring, reporting, and continuous improvement of stakeholder engagement activities.</li> <li>Ensure the active participation and inclusion of stakeholders from vulnerable groups, such as women-headed households, persons with disabilities, the elderly, marginalized farmers, and economically disadvantaged households. Special efforts will be made to remove barriers to their engagement and ensure their perspectives are meaningfully considered in project planning and decision-making.</li> </ul>

22. The stakeholder engagement activities will be documented through:

- During the ESIA, a record of stakeholder engagement carried out with — description of the stakeholders consulted, a summary of the feedback received, and a brief explanation of how the feedback was taken into account, or the reasons why it was not— will be documented in the ESIA, ESMP, RAP, IPDP and other E&S instruments prepared.
- During implementation, stakeholder engagement activities will be documented in the MIS tool prepared under MLCP project for E&S risk management.

23. The budget for the SEP is as follows.

**Table 7: The budget for SEP**

Budget Category	Quantity	Unit Cost (INR)	Duration	Total (INR)	Remarks
<b>1. Staff &amp; Field Support</b>					
Community Liaison Officers (3 persons)	3	50,000/month	36 months	<b>54,00,000</b>	Slight salary optimization
Social/Communication Consultant	1	60,000/month	24 months	<b>14,40,000</b>	Consultant only during active implementation
Staff Travel & Local Transport	24 months	15,000/month	24 months	<b>3,60,000</b>	Only during engagement phases
<b>Subtotal:</b>				<b>72,00,000</b>	
<b>2. FPIC Meetings &amp; Community Consultations</b>					



Budget Category	Quantity	Unit Cost (INR)	Duration	Total (INR)	Remarks
FPIC I, II, III (combined logistics)	3 meetings	35,000/meeting	One-time	<b>1,05,000</b>	Hall, refreshments, PA
Cluster Village Consultations	18 events	5,000/event	24 months	<b>90,000</b>	Only priority villages
<b>Subtotal:</b>				<b>1,95,000</b>	
<b>3. Information &amp; Awareness Materials</b>					
Posters & GRM Leaflets	6,000 copies	60/copy	One-time	<b>3,60,000</b>	Key locations, not mass printing
Community Radio & Social Messaging	18 months	15,000/month	18 months	<b>2,70,000</b>	Phased messaging only
<b>Subtotal:</b>				<b>6,30,000</b>	
<b>4. Trainings &amp; Capacity Building</b>					
ESMP + Worker Safety + GRM Training	6 sessions	35,000/session	24 months	<b>2,10,000</b>	PIU + Contractor combined
Women SHG & Youth Livelihood Orientation	6 sessions	15,000/session	24 months	<b>90,000</b>	Targeted groups only
<b>Subtotal:</b>				<b>3,00,000</b>	
<b>5. Monitoring &amp; Feedback</b>					
Mid-Term & Endline Survey (Combined Effort)	1 package	<b>3,50,000</b>	Project-wide	<b>3,50,000</b>	One consultant, not two
<b>6. GRM Implementation</b>					
GRC Training	6 sessions	30,000/session	24 months	<b>1,80,000</b>	Reduced frequency
Suggestion Boxes	50 units	2,500/unit	One-time	<b>1,25,000</b>	Only strategic points
GRM Signages & Hotline Info Boards	Lump sum	—	One-time	<b>1,50,000</b>	
<b>Subtotal:</b>				<b>4,55,000</b>	
<b>7. Contingency / Miscellaneous</b>	Lump sum	—	—	<b>2,00,000</b>	Capped & controlled
<b>Revised Grand Total:</b>				<b>92,30,000</b>	<b>≈ INR 9.23 million</b>

*Note:* \* Salary costs can be indicative.

#### *Management functions and responsibilities*

24. MPWD will be responsible to carry out the Stakeholder Engagement activities. At the same time the PMC supports the Project Management Unit (PMU) in overall coordination, planning, and supervision of the project. Preparing and reviewing designs, drawings, DPRs, and bid documents. Ensuring compliance with environmental and social safeguard instruments (ESMF, ESMP, RAP, SEP, LMP, etc.). Where as The CSC provides field-level supervision, quality assurance, and compliance monitoring during construction. Supervising contractor's performance and ensuring adherence to technical specifications and timelines. Monitoring implementation of Environmental, Health, Safety, and Social (EHS&S) measures on-site. Supporting the Environmental and Social Cell and PIUs in verifying ESMP and labour management compliance.

25. The stakeholder engagement activities will be documented through:
- During the ESIA, a record of stakeholder engagement carried out with — description of the stakeholders consulted, a summary of the feedback received, and a brief explanation of how the feedback was taken into account, or the reasons why it was not— will be documented in the ESIA, ESMP, RAP-IPDP and other E&S instruments prepared.
  - During implementation, stakeholder engagement activities will be documented through MoMs, written consents, videography, geo tagged photos, attendance sheets and the monitoring app prepared by E&S Cell of the MPWD.

## Grievance Redressal Mechanism

26. A Grievance Redressal 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 main objective of a Grievance Redressal Mechanism is to assist to resolve complaints and grievances in a timely, effective, and efficient manner that satisfies all parties involved. For Sexual Exploitation Abuse/ Sexual Harassment (SEA/SH): The MPWD 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).

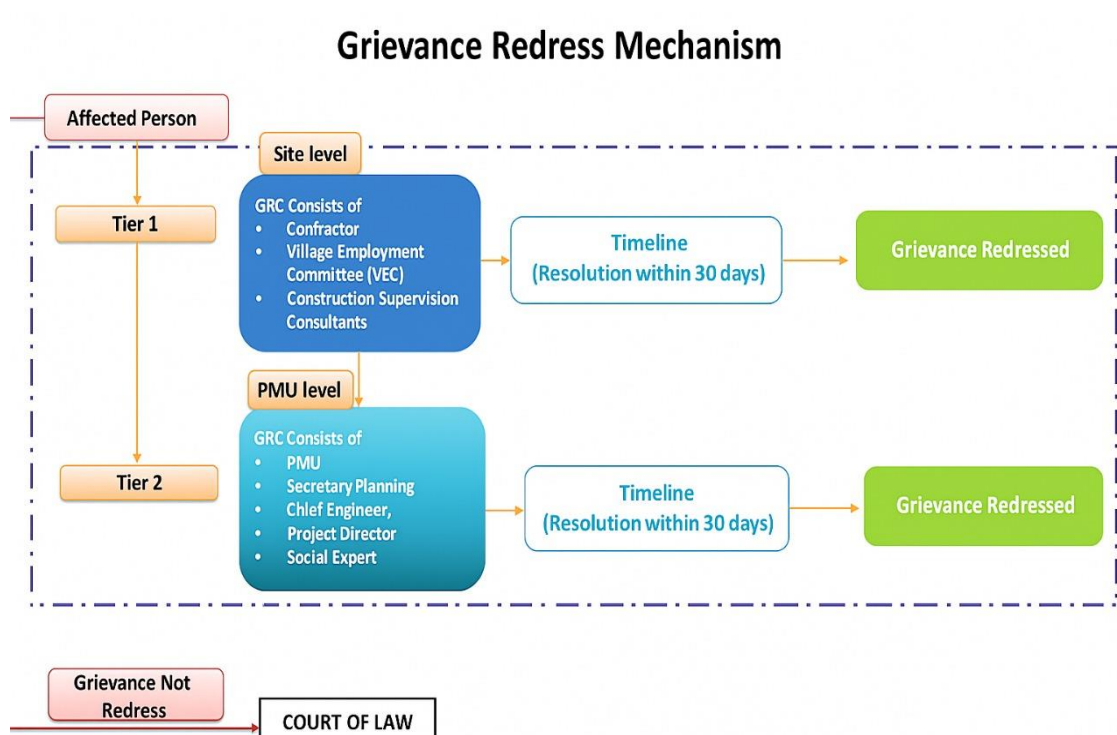


Figure 2: Grievance Redressal Mechanism

*Description of Grievance Redressal Mechanism*

**Table 8: Description of Grievance Redressal Mechanis**

Step	Description of process (e.g.)	Timeframe	Responsibility
GRM implementation structure	<p>Grievances under the Project can be submitted through the online grievance register integrated with Helpline and online portal through emails or the CM Connect Helpline no.</p> <p>Additionally, grievance can also be submitted directly to officials or through letters/emails to the Grievance Redressal Committees (GRCs) formed at the PMU, and site level.</p> <p>If grievance is not resolved at site level GRC within 30 days (depending on the nature of the grievance) the grievance is forwarded to level PMU GRC.</p> <p>When no resolution is made at level (PMC) GRC which need to be resolved within 30 days of receiving the complaint. The process will go to Court of Law.</p>	Throughout the project lifecycle	MPWD
Grievance uptake	<p>Grievances can be submitted via the following channels:</p> <ul style="list-style-type: none"> <li>• Suggestion boxes in divisional and sub-divisional offices.</li> <li>• Toll free Helpline number</li> <li>• Web portal (<a href="https://www.mpwd.in">https://www.mpwd.in</a>)</li> <li>• E-mail, post and in-person to Site Divisional and State level grievance redressal committee.</li> </ul>	During construction and operation stage	Public Works Department, Department of Agriculture, & MBMA.,
Sorting, processing	<p>Any complaint received is immediately forwarded to the site level official (AEs/ supervision consultants/ contractors); logged in the online grievance register; categorized according to the following complaint types: land/ asset related disputes, environment related, construction related disputes, SEA/SH, worker/employment specific, and others.</p> <p>For Sexual Exploitation Abuse/ Sexual Harassment (SEA/SH): The MPWD 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).</p>	Upon receipt of complaint	Person-in-charge of Online Portal, E&S experts at the Divisional level, E&S Cell, GRMCs

Step	Description of process (e.g.)	Timeframe	Responsibility
Acknowledgement and follow-up	<p>Receipt of the grievance is acknowledged to the complainant by issuance of a unique identification number (UIN) which will be sent to the complainant through a phone call or SMS within 3 working days.</p> <p>If the complaint is received through Portal or Helpline number, operator will log the complaint and acknowledge its receipt immediately.</p>	Within 3 days of receipt	Person-in-charge of Online Portal, Designated E&S Officers at the Divisional level, E&S Cell, GRMCs
Verification, investigation, action	Investigation of the complaint is led by GRC at site. A proposed resolution is formulated by site level GRC and communicated to the complainant through SMS in the registered mobile number.	Within 7 working days	GRC at site level composed of contractor, PMC, local representative from the community,
Monitoring and evaluation	Data on complaints are collected in project portal and reported to the PMU; and reported to the World Bank every quarter.	Upon receipt of complaint/ quarterly basis	CSC/PMC and E&S Cell
Provision of feedback	Feedback from complainants regarding their satisfaction with complaint resolution is collected through SMS or verbally, once the complaint is resolved.	Upon redressal of complaint	Person-in-charge of Online Portal, E&S experts at the Divisional level, ESMC, GRCs
Training	<p>Training needs for staff/consultants in the PMU, GRC, Contractors, and Supervision Consultants are as follows:</p> <ul style="list-style-type: none"> <li>- Grievance management and documentation</li> <li>- Stakeholder engagement and documentation</li> <li>- Gender sensitization and handling of grievances related to SEA/SH</li> </ul>		E&S Cell, MPWD
If relevant, payment of reparations following complaint resolution	<p>Payment of reparations following complaint resolution will be documented and signed by both parties on receipt of the amount.</p> <p>[Note: Payment of reparation related to employee accidents and fatalities will be undertaken as per the requirements of the Employee Compensation Act, 1923.]</p>	Throughout out the project lifecycle	MPWD
Appeals process	If the complainants are not satisfied with the proposed resolution of the complaint, they can escalate the complaint to the GRCs at the PMU level. The complainants are also free to approach the court of law		SITE at the PMU and divisional level

Step	Description of process (e.g.)	Timeframe	Responsibility
	at any time of their own will at any stage, and accessing the country's legal system can run parallel to accessing the Grievance Redressal Mechanism and is not dependent on the negative outcome of the Grievance Redressal Mechanism . 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.		

The Grievance Redressal Mechanism will provide appeals process if the complainant is not satisfied with the proposed resolution of the complaint. 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. At the Site Level, the site engineers from the DPIUs, Designated E&S Officers of the DPIUs are also included.

27. 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.

28. Recourse for Sexual Exploitation Abuse/ Sexual Harassment (SEA/SH): The MPWD 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 MPWD 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. Additionally, SEA/SH referral pathways will be established and communicated to all staff at the PMU, divisional office and site levels including contractors. Further, all contractors have been 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 workers.

## **MONITORING AND REPORTING**

### Summary of how SEP implementation will be monitored and reported

29. The SEP will be monitored based on both qualitative reporting (based on progress reports) and quantitative reporting linked to results indicators on stakeholder engagement and grievance performance.

30. SEP reporting will include the following:

- (i) Progress reporting on the Stakeholder Engagement commitments under the Environmental and Social Commitment Plan (ESCP).
- (ii) Cumulative qualitative reporting on the feedback received during SEP activities, in particular (a) issues that have been raised that can be addressed through changes in

project scope and design, and reflected in the basic documentation such as the Project Appraisal Document, Environmental and Social Assessment, Resettlement Action Plan- Indigenous Peoples Development Plan (RAP-IPDP), or SEA/SH Action Plan, if needed; (b) issues that have been raised and can be addressed during project implementation; (c) issues that have been raised that are beyond the scope of the project and are better addressed through alternative projects, programs or initiatives; and (d) issues that cannot be addressed by the project due to technical, jurisdictional or excessive cost-associated reasons. Minutes of meetings summarizing the views of the attendees can also be annexed to the monitoring reports.

- (iii) Quantitative reporting based on the indicators included in the SEP.

## Reporting back to stakeholder groups

31. The SEP will be revised and updated as necessary during project implementation.
32. *Quarterly* summaries and internal reports on public grievances, enquiries, and related incidents, together with the status of implementation of associated corrective/preventative actions will be collated by responsible staff and referred to the project managers.
33. Specific mechanisms to report back to the stakeholders include the following: annual reports, newsletters and articles disclosed on the MPWD's websites and workshops. This reporting back to the stakeholders will be done on an annual basis.

Table 9: Reporting back to stakeholder groups

Stakeholder (Group or Individual)	Summary of Feedback	Response of Project Implementation Team	Follow-up Action / Next Steps
<b>Local Communities (PAPs, Village Representatives, Dorbar Shnong)</b>	Communities expressed strong support for the proposed road upgrading, recognizing its potential to improve connectivity and local development. Requested construction of roadside drains, footpaths, retaining/breast walls, bus waiting sheds, public toilets, and safety measures. Highlighted the need for boundary walls for schools/churches and proper muck disposal.	Project team clarified that the road will be upgraded within the existing Right of Way (RoW), minimizing land requirement. Assured that fair compensation and assistance will be provided in line with State laws and World Bank safeguards. Requests for community amenities and protection works have been noted for integration into the Detailed Project Report (DPR) and Environmental & Social Management Plan (ESMP).	Final design drawings with incorporated site-specific improvements to be shared with local representatives and Dorbar Shnong before construction. Feedback to be reflected in DPR/ESMP. Disclosure and joint verification to occur prior to commencement of works.
<b>Commuters and Daily Road Users</b>	Requested road safety measures including streetlights, zebra crossings, proper signage, and speed control measures near markets, schools, and settlements. Requested waiting sheds at key junctions.	Project design to include safety features such as lighting, signage, pedestrian crossings, and waiting sheds at strategic points. Community will be consulted to finalize locations.	Safety design plan to be disclosed in community meetings. Safety signage, speed control measures, and lighting to be installed during construction.
<b>Youth Groups</b>	Expressed concerns about limited employment opportunities and migration due to lack of local jobs. Requested preference for local youth in project-related employment and demand for vocational/skill development linked to construction and post-construction activities. Emphasized promotion of eco-tourism and agro-based livelihoods through improved road connectivity.	Project team committed to prioritizing local youth for unskilled and semi-skilled work opportunities. Agreed to coordinate with government skill development programs and promote entrepreneurship among local youth.	Youth to be linked with skill training and entrepreneurship support through government schemes. Monitor local employment during implementation. Integrate youth-focused livelihood actions in ESMP.
<b>Women Groups / SHG Members</b>	Women expressed need for enhanced livelihood opportunities, better access to finance, market linkages, and training in weaving, agro-processing, and poultry. Requested safer mobility, improved lighting near schools and markets, and better transport connectivity.	Women's needs integrated under the Gender Action Plan and Indigenous Peoples Development Plan (IPDP). Women-focused livelihood programs, SHG enterprise support, and awareness on government schemes will be implemented. Road design to include safety provisions near schools and public spaces.	Conduct women-specific training and livelihood sessions with support from ICDS/NRLM. Ensure pedestrian safety and visibility improvements in populated stretches. Monitor women's participation during project implementation.
<b>Traditional</b>	Requested continuous consultation and	Project team acknowledged the traditional	Maintain regular coordination meetings

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<b>Governance Institutions (Dorbar Shnong / Village Councils)</b>	involvement in decisions on camp sites, borrow areas, and construction worker behavior monitoring. Provided formal consent (NOCs) for the project with conditions for environmental protection and community safety.	institutions as key partners and assured their continued engagement in all stages of implementation. Labour Management Plan and Code of Conduct for workers to be strictly enforced with village monitoring support.	with Dorbar Shnong. Activate Grievance Redress Committee (GRC) with community participation. Include local leaders in environmental and social monitoring.
<b>Environmentally Sensitive Areas (Law Adong / Protected Forest Zones)</b>	Villagers emphasized the need to avoid disturbance to Law Adong (Unclassed forest on community land) and to take precautionary measures near water sources and ecological zones. Requested clear boundary demarcation and pollution control during construction.	ESIA team assured strict environmental safeguards including protective fencing, boundary marking, and no-work buffer around protected forests. Drinking water sources to be monitored regularly during construction.	DPR and ESMP to include site-specific environmental management measures. Contractors to be oriented on ecological protection protocols before mobilization. Periodic environmental monitoring to be conducted.
<b>Vulnerable Households</b>	Requested support to minimize livelihood disruption and maintain access during construction.	Vulnerable households to be prioritized for assistance under entitlement provisions of RPF/IPDP.	Social team to verify vulnerable households list, provide required assistance, and monitor during construction phase.
<b>Government Representatives / Engineering &amp; Consultant Teams (PWD, ESIA, DPR, ESMF)</b>	Emphasized the need for coordinated communication, transparent disclosure of designs, and adherence to safeguard commitments.	Project Implementation Unit (PIU) confirmed multi-stakeholder coordination and alignment with safeguard policies. Regular review meetings to ensure compliance.	Periodic inter-agency coordination meetings to review safeguard compliance, address grievances, and tra

**Annexure 1**

Sl. No.	Location / District	Road Location / Name / Project Stretch	Date of Consultation	No. of Participants	Key Stakeholders Consulted	Key Issues and Suggestions Raised by Participants	Response / Action by Project Implementation Team (PIT)	Follow-up Actions / Next Steps	Timeline / Responsibility (Tentative)
1	Mawsynram, East Khasi Hills District	Mawsynram–Weiloi–Phlangwanbroi Road	04.09.2025 & 09.09.2025 (FPIC–I)	53	Project-Affected Persons (PAPs), Village Headmen (Rangbah Shnong),	Concerns on displacement, livelihood loss, and protection of community property; request for proper junction planning,	Project team clarified minimal land requirement within existing RoW, assured fair compensation where required, and inclusion of community	Integrate site-specific improvements (footpaths, breast wall, public toilet relocation) in DPR and ESMP. Share	Sept–Oct 2025 / PWD (Roads), DPR Consultant



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						construction of footpaths and fencing, relocation of unhygienic public toilet, and provision of breast wall for slope protection.	infrastructure requests in DPR. Environmental and social mitigation to be incorporated in ESMP.	final plans with Dorbar Shnong for verification.	
2	Mawsynram, East Khasi Hills District	Mawsynram–Weiloi–Phlangwanbroi Road	<b>16.09.2025</b> (FPIC–II)	39	Local Residents, Youth Groups, Women SHGs, ESIA Team, DPR Team	Issues raised during transact walk: protection of Law Adong forests, need for boundary demarcation, precaution near water sources, muck disposal site management, and construction of breast/retaining walls in settlements and steep slopes.	PIT assured strict adherence to environmental safeguards; Law Adong areas to be avoided; water sources to be protected; slope stabilization measures to be added in design.	DPR/ESMP to include forest protection buffers, muck disposal plan, and slope protection works. Continuous coordination with Dorbar Shnong during construction.	Oct–Nov 2025 / ESIA & DPR Consultants under PIU supervision
3	Mawsynram, East Khasi Hills District	Mawsynram–Weiloi–Phlangwanbroi Road	<b>08.10.2025</b> (FPIC–III)	33	Local Residents, Youth Groups, Women SHGs, ESIA Team, DPR Team	Participants reconfirmed consent following disclosure of final designs and ESIA findings. Requested streetlights, roadside drains, bus sheds, safety near public structures (toilets, schools), and slope protection. No dissent recorded.	PIT confirmed inclusion of streetlights, drainage, and safety structures in DPR. Community consent formally documented with signatures.	Implement agreed community infrastructure and safeguards. Maintain regular coordination meetings.	Nov 2025 – Jan 2026 / PIU & Contractors under supervision of EE, Mawsynram

**Annexure 2: Monitoring and Reporting on the SEP**

Key evaluation questions	Specific Evaluation questions	Potential Indicators	Data Collection Methods
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Key evaluation questions	Specific Evaluation questions	Potential Indicators	Data Collection Methods
<b>GRM.</b> To what extent have project-affected parties been provided with accessible and inclusive means to raise issues and grievances? Has the implementing agency responded to and managed such grievances?	<ul style="list-style-type: none"> <li>• Are project affected parties raising issues and grievances?</li> <li>• How quickly/effectively are the grievances resolved?</li> </ul>	<ul style="list-style-type: none"> <li>• Usage of GRM and/or feedback mechanisms</li> <li>• Requests for information from relevant agencies.</li> <li>• Use of suggestion boxes placed in the villages/project communities.</li> <li>• Number of grievances raised by workers, disaggregated by gender of workers and worksite, resolved within a specified time frame.</li> <li>• Number of Sexual Exploitation, and Abuse/Sexual Harassment (SEA/SH) cases reported in the project areas, which were referred for health, social, legal and security support according to the referral process in place. (if applicable)</li> <li>• Number of grievances that have been (i) opened, (ii) opened for more than 30 days, (iii) resolved, (iv) closed, and (v) number of responses that satisfied the complainants, during the reporting period disaggregated by category of grievance, gender, age, and location of complainant.</li> </ul>	Records from the implementing agency and other relevant agencies
<b>Stakeholder engagement impact on project design and implementation.</b> How have engagement activities made a difference in project design and implementation?	<ul style="list-style-type: none"> <li>• Was there interest and support for the project?</li> <li>• Were there any adjustments made during project design and implementation based on the feedback received?</li> <li>• Was priority information disclosed to relevant parties throughout the project cycle?</li> </ul>	<ul style="list-style-type: none"> <li>• Active participation of stakeholders in activities</li> <li>• Number of actions taken in a timely manner in response to feedback received during consultation sessions with project affected parties.</li> <li>• Number of consultation meetings and public discussions where the feedback and recommendation received is reflected in project design and implementation.</li> <li>• Number of disaggregated engagement sessions held, focused on at-risk groups in the project.</li> </ul>	<p>Stakeholder Consultation Attendance Sheets/Minutes</p> <p>Evaluation forms</p> <p>Structured surveys</p> <p>Social media/traditional media entries on the project results</p>

Key evaluation questions	Specific Evaluation questions	Potential Indicators	Data Collection Methods
<b>Implementation effectiveness.</b> Were stakeholder engagement activities effective in implementation?	<ul style="list-style-type: none"> <li>• Were the activities implemented as planned? Why or why not?</li> <li>• Was the stakeholder engagement approach inclusive of disaggregated groups? Why or why not?</li> </ul>	<ul style="list-style-type: none"> <li>• Percentage of SEP activities implemented.</li> <li>• Key barriers to participation identified with stakeholder representatives.</li> <li>• Number of adjustments made in the stakeholder engagement approach to improve projects' outreach, inclusion and effectiveness.</li> </ul>	<p>Communication Strategy (Consultation Schedule)</p> <p>Periodic Focus Group Discussions</p> <p>Face-to-face meetings and/or Focus Group discussions with Vulnerable Groups or their representatives</p>

### **Annexure 3: Requirements for Free, Prior and Informed Consent (FPIC) aligned with the World Bank ESF and National Laws.**

#### **The essential six steps for conducting successful FPIC**

Step - 1: Send a letter to all stakeholders about FPIC 15 days prior to the meeting.

Step - 2: First round of consultation for the screening and also building awareness and need for FPIC

Step - 3: 2nd round of Consultation is for getting the input on design, draft plan and plan and consent for the project.

Step - 4: To share the Minutes of meetings with representative council, ADC, State government and to obtain NOC from autonomous council.

Step - 5: To conduct 3rd round of consultation on draft disclosed documents (ESMF, ESMP, RAP, IPDP, LMP, JCP, and Design) to seek their feedback and also outcome from previous consultation.

Step- 6: Seeking written consent for overall project (From ADC, Village Concill, Rangbah Shnong).

The procedure outlined below for FPIC is as per the requirements of World Bank ESS7 and with reference to the MPWDs ESMF.

Requirements	World Bank ESF (ESS 7)	National Laws (India)	Measures to be Adopted
Application of Free, Prior and Informed Consent (FPIC)	FPIC is required in circumstances where the project will: have adverse impacts on land and natural resources under traditional ownership or customary use; cause relocation of Indigenous Peoples; or have significant impacts on Indigenous Peoples' cultural heritage (ESS7 Paras 25–26).	The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013 (RFCTLARR), Forest Rights Act 2006 (FRA), and AMASR Act 1958 mandate community consent in Scheduled Areas for land acquisition and cultural heritage protection.	FPIC will be undertaken at all road stretches where customary or community land and resources are affected. The requirement extends beyond Scheduled Areas to all Indigenous communities under the Sixth Schedule districts of Meghalaya.

Risk Identification for FPIC	Borrower engages independent social specialists to identify risks and potential impacts to Indigenous communities (Para 24 of ESS7).	Rule 5 of RFCTLARR Rules 2015: Independent organization to conduct Social Impact Assessment (SIA).	coordination with traditional institutions, local authorities, and project implementation agencies to ensure full participation and culturally appropriate decision-making by affected communities.
Whose Consent is Needed	Consent is the collective support of affected Indigenous Peoples reached through a culturally appropriate process (Para 26 of ESS7).	Consent of Gram Sabha required in Scheduled Areas; if not constituted, Panchayats or Autonomous District Councils can provide consent (Section 41(3) of RFCTLARR).	For Meghalaya, FPIC will be obtained through the Heads of Traditional Institutions such as the Dorbar Shnong ensuring at least 50% participation and one-third women attendees.
Documentation Process	Borrower documents mutually agreed processes for good-faith negotiations and outcomes, including dissenting views (Para 25(c) of ESS7).	RFCTLARR (SIA and Consent) Rules 2014 require signed records and resolutions of Gram Sabha meetings with terms and conditions of consent (Rule 17).	FPIC documentation will include: minutes of meetings, signatures of attendees, video/photo records, consent resolutions, Records will be disclosed publicly at village and district levels.
Validity of Consent	FPIC valid when collective consent is confirmed through transparent and inclusive process; if FPIC cannot be ascertained, project elements cannot proceed (Paras 25(d) and 27).	Resolution without explicit consent considered invalid (Rule 17(7) of RFCTLARR Rules 2014).	Only subprojects receiving documented community consent will proceed; others will be redesigned or relocated in consultation with communities.

**Annexure - 4**

**Photo documentation of Stakeholder Consultation**

*Upgradation of Weilo - Mawsynram Road upto Phlangwanbroi for Meghalaya Logistics and Connectivity Improvement Project (MLCIP), funded by the World Bank*

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT**



Photograph of 1st round FPIC meeting held on 04.09.2025 and 09.09.2025 at Mawsynram village





*Upgradation of Weiloi - Mawsynram Road upto Phlangwanbroi for Meghalaya Logistics and Connectivity Improvement Project (MLCIP), funded by the World Bank*

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT**



Photograph of 16th round FPIC meeting held on 16.09.2025 at Mawsynram Village



Photograph of 1st round FPIC meeting held on 08.10.2025 at Mawsynram Village

## **ANNEXURE 7.3: MOM FOR 1st, 2nd and 3rd FPIC**

### **Minutes of meeting (MoM) of 1<sup>st</sup> FPIC**

#### **Minutes of the 1st Free, Prior, and Informed Consent (FPIC) Meeting**

**Project Name:** Upgradation of Weiloï, Mawsynram up to Phlangwanbroi Road  
**Location of Consultation:** Office of the Executive Engineer, PWD, Mawsynram  
**District:** East Khasi Hills  
**Block:** Mawsynram  
**Village:** Mawsynram  
**Date:** September 4, 2025 and September 9, 2025  
**Attendees:** 53 participants, including 4 village representatives (headmen, village secretary, women, and youth groups), PWD Executive Engineer (EE) Mawsynram, Assistant Executive Engineer (AEE) Mawsynram, and Enviro Infra Solution (EIS) representative.

#### **OPENING OF THE MEETING**

The meeting commenced with a welcome address by the Executive Engineer, PWD (Roads), Mawsynram, who chaired the session. The EE highlighted the importance of community participation and inclusivity in the planning and execution of the World Bank-funded project.

The Executive Engineer (EE) emphasized the relevance of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), adopted by the UN General Assembly on September 13, 2007, which ensures that Free, Prior, and Informed Consent (FPIC) is a critical process for involving indigenous and local communities in development projects. The FPIC process promotes transparency, trust, and respect for community rights by ensuring communities are fully informed and consulted before project activities begin.

The EE also introduced the Grievance Redressal Mechanism (GRM), explaining that it will serve as the first point of contact for community grievances related to the project. The GRM will involve community representatives, women, youth, contractors, and government officials to address concerns efficiently.

#### **VIEWS FROM ENVIRO INFRA SOLUTION (EIS): ESIA CONSULTANTS**

The EIS representative stressed the importance of thoroughly assessing both social and environmental impacts of the project, underscoring the need for the FPIC process. They highlighted the necessity of implementing safety measures, particularly at junctions near markets, schools, and other public areas. The representative concluded by emphasizing the value of community participation and invited representatives to share their views, comments, suggestions, and questions regarding the project.

#### **COMMUNITY REPRESENTATIVES' COMMENTS AND SUGGESTIONS**



1. **Mawsynram Assistant Headman:** Raised concerns about the junction at Chainage (CH) No. 34+900, a high-traffic area, especially during school hours and community events. This junction serves as a main entrance to Mawsynram, the block and constituency headquarters. The assistant headman also noted the resolution of encroachment issues and emphasized potential livelihood impacts. (Further details to be reviewed during site visits.)
2. **Shiagar and Umnongwei Village Representatives:** Highlighted the importance of springs in their villages, which have served as a water source for centuries, and urged special attention to avoid impacts during construction.  
**Response:** The EE assured that the springs would not be directly affected, though minor temporary disruptions may occur during construction.
3. **Executive Member, Mawsynram:** Expressed concerns about the Mawsynram market area, particularly its footpaths and railings at CH No. 34+900.
4. **Rangbah Shnong, Wahmawpat:** Raised concerns about the impact on the water supply junction at CH No. 26+600.
5. **Weilo i Village Headman:** Noted that the Weilo i village junction is a congested area with residences, shops, and pedestrian activity. He suggested proper planning for footpaths and drainage systems to address these challenges.
6. **Village Secretary, Wahmawpat:** Requested that the stone shed (Mawsynrang) at Wahmawpat be preserved, as it serves as a natural shelter for farmers, students, and villagers.

**Response by EE:** Acknowledged the comments, concerns, and suggestions, committing to address them through site visits and detailed planning to incorporate necessary measures.

## **POST-MEETING SITE VISIT**

A site visit was conducted in the presence of Mawsynram village representatives and the Junior Engineer (JE), PWD Mawsynram. The visit focused on the Mawsynram market entrance at CH No. 34+900, identified as a high-traffic area requiring careful planning, as raised by the assistant headman. The JE emphasized the need for proper design to address traffic and pedestrian concerns at this junction.

## **SUGGESTIONS**

1. **Footpaths and Fencing at CH No. 34+900:** Community representatives proposed constructing footpaths and proper fencing on both sides of the road from CH No. 34+700 to CH No. 34+900 and beyond, as needed for pedestrian safety. A shop owner at CH No. 34+900 expressed willingness to donate land for road improvements, recognizing the long-term benefits for the community.

2. **Relocation of Public Toilet at CH No. 34+900:** The public toilet at the Mawsynram market entrance causes foul odors and unhygienic conditions. Representatives suggested relocating it a few meters away from the entrance to address these issues while maintaining accessibility.
3. **Breast Wall at CH No. 34+600:** Representatives recommended constructing a breast wall on the right side of the road at CH No. 34+600 for both aesthetic enhancement and to prevent soil erosion or other environmental impacts.

## **ACTION POINTS**

1. PWD to conduct site visits to address concerns raised about specific junctions and areas, including CH No. 34+900, CH No. 26+600, and the springs at Shiagar and Umnongwei.
2. PWD to organize follow-up consultations based on submitted resolutions.
3. Formation of the GRM committee by the second FPIC consultation to address grievances related to land, impacts, or other concerns.

## **CLOSING REMARKS**

The meeting concluded with the EE thanking attendees for their active participation and reinforcing the importance of community collaboration for the project's success. The representatives expressed their commitment to supporting the project while ensuring their concerns are addressed through ongoing consultations.

## **ENCLOSURES**

- Attendance Sheet
- Photographs



FPIC Meeting with the

*Upgradation of Weiloi - Mawsynram Road upto Phlangwanbroi for Meghalaya Logistics and Connectivity Improvement Project (MLCIP), funded by the World Bank*

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT**






Stakeholders at the Office of the Executive Engineer, Mawsynram.



Entrance to the Market Area

*Upgradation of Weilo - Mawsynram Road upto Phlangwanbroi for Meghalaya Logistics and Connectivity Improvement Project (MLCIP), funded by the World Bank*

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT**

 <p>Latitude: 25.302237 Longitude: 91.582166 Altitude: 1376.2x4.57 m Accuracy: 3.798 m Time: 04-09-2025 12:50 Note: FPOC1 Weilo Mawtsynram up to Phlangwanbroi ch.34x408</p>	<p>Market Area</p>
 <p>Latitude: 25.299527 Longitude: 91.58175 Elevation: 1419.78x6.73 m Accuracy: 6.407 m Time: 04-09-2025 12:09 Note: 34x100 public toilet req for roadwork</p>	<p>Public Toilet</p>
 <p>Latitude: 25.300504 Longitude: 91.582022 Altitude: 1388.92x7.72 m Accuracy: 7.584 m Time: 04-09-2025 12:51 Note: FPOC1 Weilo Mawtsynram up to Phlangwanbroi ch.34x408</p>	<p>Public Toilet</p>



Recommendation of a Breast Wall at this particular juncture.



### Attendance sheet for 1<sup>st</sup> FPIC

Attendance sheet

Name of the Project Road: Upgradation of Weilo - Mawsynram Rd upto Phlangwanbroi

Location of consultation: MAWSYNRAM.

District: EAST KHASI HILLS Block/Municipality: MAWSYNRAM. Village: Mawsynram

Date: 04/09/2025. Type of consultation: FPIC - 1

S.No.	Name	Designation	Contact Number	Signature
1.	D.J. DIENGDOH	EXECUTIVE ENGINEER	9863062460	<i>[Signature]</i>
2.	M.S. POHSNEM	A.E.E, MAWSYNRAM	7005322128	<i>[Signature]</i>
3.	S. Shabaz	J.E, Mawsynram	9436119574	<i>[Signature]</i>
4.	R.H. Rapsang	Asst. Headman	6009371990	<i>[Signature]</i>
5.	P. Dohling	Secretary, Mawsynram	9366969964	<i>[Signature]</i>
6.	D. Syiemlieh	Range Officer	9402572421	<i>[Signature]</i>
7.	S. Khasi	Range Officer	9366802014	<i>[Signature]</i>
8.	A. Solition	EC Members	7005975921	<i>[Signature]</i>
9.	T.W. Myrthong	EC Member	9615609163	<i>[Signature]</i>
10.	Mrs B. Rani	Member	9563249325	<i>[Signature]</i>
11.	Mrs. P. Disias	DO	8178065572	<i>[Signature]</i>
12.	M. B. Nohary	DO	9612613291	<i>[Signature]</i>
13.	Mr. B. Nohary	Secretary	9863235401	<i>[Signature]</i>
14.	Mr. W. Syiemlieh	Asst Secretary	9774375039	<i>[Signature]</i>
15.	Mr. D. Syiemlieh	Asst. Secretary	7005948057	<i>[Signature]</i>
16.	Mrs. W. Laloo	E.C. Member	9856404859	<i>[Signature]</i>
17.	Mr. B. Nohary	Asst. Secretary	7085560197	<i>[Signature]</i>
18.	Mr. P. Nohary	E.C. Member	936249949	<i>[Signature]</i>
19.	Helarius Syiemlieh	E.I.S	6009322570	<i>[Signature]</i>
20.	A.J. Blah	J.E, Mawsynram	88373-67115	<i>[Signature]</i>
21.	Khasi Syiemlieh	Asst. Headman	9436576173	<i>[Signature]</i>

1

S.No.	Name	Designation	Contact Number	Signature
1.	Priyanka Singh	Member E.L. Kumbhakmat	9366937589	Priyanka
2.	Kishankang Bhaskari	Secretary village council Kumbhakmat	6009514874	Kishankang
3.	Wardington Dandkari	headman Kumbhakmat	74005823745	W.D.
4.	Brat Singh Dandkari		8730992682	Brat
5.	Kyuman Chaudhary	Headman Mansurabad	8787416481	Kyuman
6.	Kenes Horylail	Mansurabad president v.o	8837454099	Kenes
7.	Shalinda Korday	Secretary v.o Mansurabad	8837498957	Shalinda
8.	Asidna Kynsary	Secretary Mansurabad	9612948650	A. Kynsary
9.	Domborlong Rani	Secretary Mansurabad Village	9612509725	Domborlong
10.	Misli Singh Rani	headman Mansurabad	7006970903	Misli
11.	Jefferson Singh	headman Mansurabad	6009832412	Jefferson
12.	Joumal Bhaskari	headman Lachhman	8787806144	Joumal
13.	Rajul	Secretary Lachhman	84156766450	Rajul
14.	M.S. Palsman	A.E.E.	7005388128	M.S. Palsman
15.	Helarius Singh	EIS	6009322570	Helarius
16.	D.J. Diendeh	EK	9863062460	D.J. Diendeh

Upgradation of Weiloi - Mawsynram Road upto Phlangwanbroi for Meghalaya Logistics and Connectivity Improvement Project (MLCIP), funded by the World Bank

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT

Free, Prior, Informed, Consent (FPIC) Meeting held on 9<sup>th</sup> September, 2025 at the O/o Executive Engineer, P.W.D (Roads) Mawsynram Division, Mawsynram for the proposed Project "Up-gradation of Road from Weiloi to Phlangwanbroi funded under World Bank.

Sl No.	Name	Designation	Mobile No.	Signature
1	D.J. Diengdol	EX	9863062460	
2	M.S. Pohsnuem	A.E.E.	7005388128	
3	G. Khabou	S.E	9436119574	
4	Wandington Dewkhaid	Headman	7005823745	
5	Brakking Dewbam	Headman	8730992682	
6	Donborang Rani	Secretary	9612509225	
7	Aisidora Rinsang	Secretary V.O	9612948650	
8	Shabinda Ronsong	President V.O	8837498957	
9	Kitboklang Prahkasiej	Secretary of Village Council	6009514874	
10	Priarson Shylla	Member EC	9366937589	
11	Kyrmor Shangdia	Headman	8782416481	
12	Jefferson Syiahch	Headman	6609832412	
13	Ni Sherooy Myrlhom	Headman	985970907	
14	Kensjones Nonglaet	Headman	8837454079	
15	Prol	Headman	8416076619	
16	Samuel Khawmies	Headman	8787806144	
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Minutes of meeting (MoM) of 2<sup>nd</sup> FPIC

Minutes of 2<sup>nd</sup> Free Prior Inform Consent – (FPIC)

Name of Project Road: Updragation of Weiloi, Mawsynram up to Phlangwanbroi Road

Location of Consultation: Mawsynram

District: East Khasi Hills

Block: Mawsynram

Village: Mawsynram

Date: 16<sup>th</sup> Sep 25



The Second Free Prior Informed Consent (FPIC) meeting concerning the Upgradation of Weilo-Mawsynram to Phlangwanbroi Road was successfully convened at Mawsynram. This gathering served as a crucial platform for stakeholders to discuss project details, address community concerns, and ensure transparent communication. The meeting was presided over by the Executive Engineer (EE) of Mawsynram, with active participation from key officials including the Assistant Executive Engineer (AEE), the Sub-Divisional Officer (SDO), and representatives from consultancy firms such as Enviro Infra Solutions (ESIA Consultants), KOBA Engineering Services Pvt Ltd (DPR Consultants), and Satra Consultancy (ESMF Consultants). Additionally, the event saw involvement from local village representatives, encompassing village headmen, women, and youths, fostering an inclusive environment. In total, **39 dedicated participants** contributed to the discussions, highlighting the community's engagement with the proposed infrastructure development.





The proceedings of the meeting were structured methodically to cover all essential aspects. It began with the chairperson formally reading out the minutes from the previous FPIC 1 meeting to refresh everyone's memory and maintain continuity. This was followed by a comprehensive presentation of the Detailed Project Report (DPR), an in-depth session on the Environmental and Social Impact Assessment (ESIA), and an informative discussion on the Grievance Redress Mechanism (GRM). To further encourage participatory input, the meeting incorporated two dedicated group discussions: one exclusively for the women's group to voice their specific perspectives, and another for the youths' group to share their insights and suggestions. What follows is a detailed overview of each session and activity that took place during this productive meeting, ensuring all viewpoints were captured and considered.

- **Reading of the Minutes of FPIC 1:** The session opened with the careful recitation of the minutes from the first FPIC meeting. To ensure full comprehension among all attendees, especially those who might not be fluent in the official language, the Executive Engineer took the time to explain the key points in detail, providing translations into the local Khasi language as needed. This step was vital in building








trust and consensus. After this thorough review, the participants unanimously agreed to move forward with the remaining agenda items, setting a collaborative tone for the rest of the meeting.

- DPR Presentation:** The DPR team delivered an engaging and informative presentation of the Detailed Project Report, utilizing both physical manuals for reference and a laptop for visual aids to illustrate chainage-wise locations along the proposed road alignment. This allowed for a clear visualization of the project's scope and potential impacts. During the presentation, various observations, concerns, and specific requests were raised by the village representatives, reflecting their deep knowledge of the local terrain and community needs. To address these points effectively and provide clarity on the exact sites mentioned, a post-presentation field visit was promptly organized. This on-site inspection involved the AEE, village representatives, and members of the consultancy teams, enabling real-time assessments. Furthermore, the field visit extended to evaluating suitable locations for muck disposal, ensuring that environmental considerations were integrated from the outset.

CH No	Descriptions	Pictures
38+300	The beginning of <b>Law Adong</b> (protected forest) of Laitsohum village. Representatives requested precautionary measures during construction to preserve the ecological balance and prevent any unintended damage to this vital natural resource.	
40+400	End point of protected forest of Laitsohum village, marking the boundary where construction activities must transition carefully to avoid encroachment.	

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42+250	Start point of Mawrapad village <b>Law Adong</b> , an area of significant cultural and environmental importance to the local community.	
42+300	End point of Law Adong of Mawrapad village, requiring similar protective strategies as outlined for other protected zones.	
44+500	1st muck dumping site inspection, evaluated for its suitability in terms of environmental impact and accessibility during the project phase.	
45+300	Precaution to be taken during construction as there is a drinking water source available at the site, emphasizing the need for pollution prevention measures to safeguard community health.	
45+700	Request for breast wall at RHS	
45+750	Request for breast wall at RHS as there is a settlement above, highlighting concerns for resident safety and property protection.	
45+800	Precaution plus request for breast wall as settlement above	

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**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT**

46+000	Precaution to be taken as drinking water source available, therefore a request was made for regular monitoring during the construction phase.	
46+150	Law Adong of Mawkasai village, a protected forest area that demands careful planning to minimize disturbance to flora and fauna.	
47+000	End point of Lawadong	
45+000	Request for retaining wall	
47+000	Water tank of Mawsawa village and request for retaining wall as RHS	
48+000	Request for footpaths at LHS	

The table above meticulously outlines some of the key points and concerns articulated by the village representatives during the DPR presentation. These issues were not only noted but also actively explored and addressed through the subsequent site visit, which helped in validating the concerns and proposing practical solutions.

Note: It is imperative that the identified sites receive appropriate attention and necessary actions from the DPR team, particularly if they have not yet been incorporated into the existing Detailed Project Report. Moreover, special care must be exercised regarding the locations of water sources to prevent any contamination or disruption during construction activities. Similarly, the Law Adong areas, which are designated as protected forests, require stringent precautionary measures to uphold environmental integrity and comply with regulatory standards throughout the project's execution.

**Session on Environmental and Social Impact Assessment (ESIA):** Led by the Team Leader from the EIS consultancy, this session delved deeply into the critical importance of harmonizing environmental protection with social welfare considerations, acknowledging that construction activities could lead to temporary disruptions. Participants were educated on various aspects, including the mandatory monitoring of pollution emissions from machinery to ensure compliance with established environmental parameters. The discussion also covered the strategic placement and operation of water and waste treatment facilities to mitigate any adverse effects. A strong emphasis was placed on implementing robust safety measures, such as the construction of boundary walls, installation of traffic signals, development of footpaths, and efficient drainage systems to enhance overall project safety. To provide a balanced view, the session wrapped up by outlining potential short-term challenges, including temporary air and noise pollution, road blockades that might affect daily commutes, and possible delays in project timelines due to unforeseen circumstances. Conversely, the long-term benefits were highlighted extensively, such as the creation of local employment opportunities, enhancement of livelihood activities through better connectivity,

improved  
efficiency

in the





transportation of goods and services, and the broader socio-economic development that would extend not only to the directly impacted villages but also to surrounding communities, fostering regional growth.

**Session on Grievance Redress Mechanism (GRM):** Facilitated by the Gender Expert from the ESMF consultancy, this session offered a thorough introduction to the Grievance Redress Mechanism, explaining its fundamental components and operational framework in accessible terms. Attendees were informed about the types of potential grievances that could emerge during the construction phase, ranging from environmental concerns to social disruptions. The GRM committee's composition was detailed, stressing the inclusion of village representatives—with a particular focus on ensuring female representation to address gender-specific issues—alongside officials from the Public Works Department (PWD) and the project contractor. This multi-stakeholder approach aims to promote fairness and efficiency in handling complaints. The mechanism is structured across three progressive levels to ensure resolution:

1. Tier 1 GRM: Serving as the initial point of contact, where all grievances are registered, discussed, and ideally resolved through local dialogue and consensus-building.
2. Tier 2: For cases that remain unresolved at the village level, escalation to this tier involves higher administrative intervention to provide impartial solutions.
3. Tier 3: As a final resort, if the issue persists, it can be referred to the judicial system for legal adjudication, ensuring ultimate accountability.

## Attendance

**Attendance sheet**

Name of the Project Road: *Weiloi Mawsynram up to Phlangwanbroi Village.*

Location of consultation: *Mawsynram Village.*

District: *East Khasi* Block/Municipality: *Mawsynram* Village: *Mawsynram*

Date: *16/9/25* Type of consultation: *FPIC-2*

S.No.	Name	Designation	Contact Number	Signature
1.	<i>RALYN LYNDOH</i>	<i>SENKYNTHRI</i>	<i>8014485098</i>	<i>[Signature]</i>
2.	<i>BARILYN SHYLA</i>	<i>"</i>	<i>9485020687</i>	<i>[Signature]</i>
3.	<i>Mrs. Bikel Rame</i>	<i>- do -</i>	<i>9863249325</i>	<i>[Signature]</i>
4.	<i>Mrs. Pikel Pielas</i>	<i>- do -</i>	<i>8178065572</i>	<i>[Signature]</i>
5.	<i>Vijai K. Sen</i>	<i>(DPA consultant) (KORBA)</i>	<i>9897315238</i>	<i>[Signature]</i>
6.	<i>Chandra Shekhar</i>	<i>KORBA (DPR Cons) Env. Exp.</i>	<i>8618389536</i>	<i>[Signature]</i>
7.	<i>Sunagati Bhattacharya</i>	<i>KORBA DPR consultant Socio-cum-P&amp;R Exp.</i>	<i>9339752140</i>	<i>[Signature]</i>
8.	<i>Mr. B. Murbaniang</i>	<i>SSS Mawsynram</i>	<i>9863235441</i>	<i>[Signature]</i>
9.	<i>Sande B. Raynang</i>	<i>SSS MSR</i>	<i>986358552</i>	<i>[Signature]</i>
10.	<i>Wenkitbekhang Syiemlieh</i>	<i>SSS MSR</i>	<i>9485160153</i>	<i>[Signature]</i>
11.	<i>T. W. Myrthony</i>	<i>Secretary DRC</i>	<i>9615609163</i>	<i>[Signature]</i>
12.	<i>H. M. Basang</i>	<i>Secy. Mawsynram DRC</i>	<i>9366708987</i>	<i>[Signature]</i>
13.	<i>N. Dewkhaid</i>	<i>Headman Konbat Malai</i>	<i>70095823745</i>	<i>[Signature]</i>
14.	<i>Kitbok Pdahtasij</i>	<i>Secretary Konbat Malai</i>	<i>6009514874</i>	<i>[Signature]</i>
15.	<i>Sikael Naniang</i>	<i>Secretary Phlangwanbroi</i>	<i>7005721904</i>	<i>[Signature]</i>
16.	<i>Samuel Khunmar</i>	<i>Representative Mawsynram</i>	<i>8787206144</i>	<i>[Signature]</i>
17.	<i>Khreng K. Phih</i>	<i>EC member</i>	<i>8119942039</i>	<i>[Signature]</i>
18.	<i>Olinwiler Murbaniang</i>	<i>Secretary Mawsynram</i>	<i>8413897438</i>	<i>[Signature]</i>
19.	<i>Arborlang Khayngdel</i>	<i>Headman Mawkasain</i>	<i>7630927673</i>	<i>[Signature]</i>
20.	<i>Spei K. Murbaniang</i>	<i>Headman Weiloi</i>	<i>9366802014</i>	<i>[Signature]</i>
21.	<i>Trickyshah Nymicun</i>	<i>EC member Weiloi</i>	<i>6009071177</i>	<i>[Signature]</i>

Pg 1.

Attendance sheet

Name of the Project Road: <sup>Weiloi</sup> Mawsynram up to Phlangwanbroi  
 Location of consultation: Mawsynram  
 District: Block/Municipality: Mawsynram Village: Mawsynram  
 Date: <sup>East Khasi Hills</sup> 16/9/25 Type of consultation: FPIC-2

S.No.	Name	Designation	Contact Number	Signature
22	Tyng Shaini	Member - Shingonoi	9866332683	[Signature]
23	Mistang Myrthay	Headman Phlangwanbroi	700570903	[Signature]
24	Khaw Shaitay	Piupai Boko Phlangwanbroi		[Signature]
25	Santosh Shaimoi	Team leader ESIA	9818022344	[Signature]
26	M.S. Palsnem	A.E.E.	7005328128	[Signature]
27	Rahul Kumar	Team leader ESMP	7627440857	[Signature]
28	A.J. Bhal	J.E.	8837367115	[Signature]
29	G. Gahay	J.E.	9436119579	[Signature]
30	Sachin / Prit	SDI	7932313821	[Signature]
31	Kynash Shydia	Headman Mawpyn	8987416461	[Signature]
32	P. Nylait	Senior Manager	9863993432	[Signature]
33	P. Jarnad	Manager Mawpyn	9233268324	[Signature]
34	D.K. Nylait	"	9837454099	[Signature]
35	M.K. Shydia	"		[Signature]
36	Mistang Myrthay	Headman Phlangwanbroi	700570903	[Signature]
37	Tyng Shaini Shaitay	Member Phlangwanbroi	9366332683	[Signature]
38	Sikot Shaitay	"		[Signature]
39	Heleno Shydia	EIS	600232750	[Signature]



## Minutes of meeting (MoM) of 3<sup>rd</sup> FPIC

**Name of Project Road:** Updragation of Weilo, Mawsynram up to Phlangwanbroi Road

**Location of Consultation:** Mawsynram Community Hall

**District:** East Khasi Hills

**Block:** Mawsynram

**Village:** Mawsynram

**Date:** 8<sup>th</sup> October 25

The Third FPIC was conducted at Mawsynram community hall on the 8<sup>th</sup> Oct 25. The meeting was chaired by Mawsynram Executive Engineer. Total 33 no of representatives including village headman, women representatives attended the meeting.

The meeting was majorly an updating and discussion on the previous FPIC meeting that has been conducted and explanation of draft DPR from DPR consultant and likely impacted structures by ESIA team.



Form the meeting orientation on the design from the DPR in which explanation on the length BT surface from 3.75m to 5.5m with 1.5m shoulders. Additionally in buildup areas slap cover drain will be provided.

Display of likely affected structures: EIS team displayed total 13 identified structures out of which 9 structures are of the private owned structures which include 1 compound wall at Weilo, 2 semi permanent shop, 1 stairs which is access to house at Mawsynram, 1 carpentry shop at Mawrapad village and 4 temporary shop at Kenbahmalai. As for the community owned structures, 3 compound walls guarding the footpaths at Mawsawa village and 1 compound wall at Phlangwanbroi village. 1 stairs of the community store houses, but private owned land (Representatives requested for a railing to be provided at the store house for safety purposes at Mawsawa village. market of the impacted structures, the names and contact numbers of the concern structures is being taken.



During the meeting, representative 1 questioned on the weather the breast wall have been included in the required area have been put up.



Respond: As per requirements, the requirements have to be added.

The FPIC 3 meeting at WMP read ended with the taking of verbal consent from all the representatives, for going ahead with the project.

All the village representatives have given their consent for the project. As the mark of giving the consent, all the representatives have raised up their hands.

Post meeting site visit

SL No	Ch No	Description	Geo tag Photograph
1	31+300	The particular site the latest road maintenance have been done during the period Dec 24 to Jan 25 nevertheless, the road have been damaged due to geological issues. Assessment has been made on the type of soil at the particular site, while special provision for retaining the quality of the road	<p>Latitude: 25.074423 Longitude: 92.814982 Altitude: 1,178.204 m Bearing: 33.75° Date: 08/10/2025 14:47 Note: EPC-3.000011-001</p>



		is to be implemented.	
2	33+500	Request street light and a stand shed at a particular junction as is one of the center point.	
3	33+520	The particular site to the RHS has structure like the PHE water tank and office. If there is a requirements of hill cutting at the particular site, a breast wall needs to be put up for retaining and protecting the above structures	
4	33+750	Request for streetlight at the particular junction, the entrance point of the Mawjyngbuin cave.	
5	31+600	Request for streetlight. The starting of Mawsynram market. Stretches to about 400 meters.	
6	31+500	Request for street light at main junction of Mawsynram market. Stretches to about 400 meters.	
7		During the meeting, concern raised by the village headman on the possibility of impact to the public toilet, on assessment at site along the staff PWD, it is found the structure is 5.5 meters away from the center point. Recommendation: To provide proper safety measures	

**Upgradation of Weiloi - Mawsynram Road upto Phlangwanbroi for Meghalaya Logistics and Connectivity Improvement Project (MLCIP), funded by the World Bank**

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT**

	at the junction of the public toilet.	
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**Muck Dumping Site**

8		The area is of more than 44 thousand sq feet in which it is suitable for muck dumping as there is no settlement nor water body or major plantation at the particular site. The site is recommended for dumping with caution to fill at the center of the land as to avoid issues of soil carried away. NOC from concern authority needs to be taken	
9		The particular site is adjacent to the play ground. Recommended for the soil to be dumped at the sides of the ground as it will leveled up the space to the convenience of the spectator's accommodation.	

**Attendance**

Attendance sheet

Name of the Project Road: W M P

Location of consultation: Mawsynram Community Hall

District: East Khasi Hill Block/Municipality: Mawsynram Village:

Date: 08/10/25 Type of consultation: FPC - 2

S.No.	Name	Designation	Contact Number	Signature
1	Mr. B. J. Singh	C.E., PWD(R)		
2	Mr. P. K. P. P.	A.E., PWD(R)	9005389128	M. P. P.
3	Mr. A. J. P. P.	J.E., PWD(R)	88393-67115	
4	Mr. A. K. Singh	Headman, Mawsynram	9863327197	
5	Mr. A. K. Singh	Headman, Mawsynram	7630927673	
6	Mr. P. K. P. P.	Secretary, PWD(R)	6009514834	
7	Mr. P. K. P. P.	Secretary, PWD(R)	6009514834	
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100	Mr. P. K. P. P.	Secretary, PWD(R)	6009514834	

Attendance sheet

Name of the Project Road: Weiloi, Mawsynram, up to Phlangwanbroi (W M P)

Location of consultation: Mawsynram Community Hall

District: East Khasi Hill Block/Municipality: Mawsynram Village: Mawsynram

Date: 08/10/25 Type of consultation: FPC - 3

S.No.	Name	Designation	Contact Number	Signature
24	Mr. P. K. P. P.	Secretary, PWD(R)	9566508014	
25	Mr. P. K. P. P.	Secretary, PWD(R)	9566508014	
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## **ANNEXURE 8.1: PERFORMANCE INDICATORS**

Environmental and social components identified of significance in affecting the environment and social conditions at critical locations have been suggested as performance indicators (PIs). For example, near the construction site, a thick layer of dust over the nearby vegetation/leaf is an indication that the dust control measures are not effective. The performance indicators shall be evaluated under three heads as;

- Environmental condition indicators to determine efficacy of environmental management measures in control of air, noise, water and soil pollution.
- Environmental and social management indicators to determine compliance with the suggested environmental and social management measures.
- Social monitoring indicators such as payment of compensation/assistance, no. of grievances resolved, no. of women engaged in livelihood activities, no. of local workforce employed etc.
- Operational performance indicators have also been devised to determine efficacy and utility of the proposed mitigation measures.
- Stakeholder Engagement and Consultation Indicators will evaluate the effectiveness of meaningful consultations conducted throughout the project lifecycle to ensure the transparency and accountability of the project.

The performance indicators and monitoring plans prepared for the road section are presented in **Table 1**.

Details of the performance indicative parameters for each of the component have to be identified and reported during all stages of the implementation.

**Table 1: Performance Indicators**

Sl. No.	Description of Item	Indicator	Stage	Responsibility
1	<ul style="list-style-type: none"> <li>No. of sites for which Restoration Plans have been prepared</li> <li>No. of Site Restored and Rehabilitated</li> <li>No. of Sites handed over</li> </ul>	Quarries	Pre-Construction	Contractor/CSC/PMC
2	Quantity of Debris and Spoils to be disposed off <ul style="list-style-type: none"> <li>No. of locations Approved for Debris disposal</li> <li>Quantity disposed off at each location</li> <li>No. of locations for which Rehabilitation works have been completed</li> </ul>	Disposal sites	Construction	Contractor/CSC/PMC
3	<ul style="list-style-type: none"> <li>No. of location/s identified for the Construction camp and Construction Plant sites</li> <li>No. of location/ s approved</li> <li>Lay-out/s Approved</li> <li>No. of sites for which Site Restoration and Rehabilitation has been completed</li> </ul>	Construction Camps and Plant Sites	Pre-Construction and Construction	Contractor/CSC/PMC
4	<ul style="list-style-type: none"> <li>No. of Trees to be Cut</li> <li>No. of Trees cut</li> </ul> % Progress on the tree removal	Tree cutting	Pre-Construction	MPWD and Forest Department
5	No. of Locations identified for temporary storage areas for storage of the excavated materials to be used in embankment and sub grade	Storage of excavated materials	Pre-Construction and Construction	Contractor
5	Before the onset of monsoon all the debris/excavated material shall be cleaned from the work sites and disposed of at the pre-identified approved locations.	Silting of Water bodies	Construction	Contractor/CSC/PMC
6	Implementation of enhancement measures for Noise Barrier at sensitive locations	Enhancements	Construction	Contractor/CSC/PMC
7	Drainage <ul style="list-style-type: none"> <li>Length (by type) No. of Locations</li> </ul>	Work sites	Construction	Contractor/CSC/PMC
8	Safety Provisions <ul style="list-style-type: none"> <li>Signage (by type and no.)</li> <li>Crash barriers</li> <li>Footpath</li> </ul>	Work sites	Construction	Contractor/CSC/PMC
9	Soil erosion prevention measures			

Sl. No.	Description of Item	Indicator	Stage	Responsibility
	<ul style="list-style-type: none"> <li>Construction of retaining walls</li> <li>Downstream at culvert locations (No. of Locations &amp; length)</li> </ul>	Work sites	Construction	Contractor/CSC/PMC
10	No. of HIV awareness sessions conducted	Registers/Reports/Geotagged Photos	Construction	Contractor/CSC/PMC
11	No. of safety awareness sessions conducted	Registers/Reports/Geotagged Photos	Construction	Contractor/CSC/PMC
12	Accidents/Incidents <ul style="list-style-type: none"> <li>No of accidents/incidents recorded</li> </ul>	Along sub-project road	During construction	Contractor/CSC/PMC
13	Environmental parameter monitoring in accordance with the frequency and duration of monitoring as well as the locations as per the Monitoring Plan	Air Quality Noise Quality Soil Quality Water Quality Report and geotagged photos.	Construction and Operation stage	Contractor through NABL Accredited agency.
14	No. of Training Sessions Organized for <ul style="list-style-type: none"> <li>Departmental Staff</li> <li>Contractors</li> <li>Combined</li> </ul> No. of People Trained <ul style="list-style-type: none"> <li>Departmental Staff Contractors</li> </ul>	Training Imparted	Construction /Operational stage	CSC/PMC/MPWD
15	No. of awareness sessions for educating the public about road safety and other environmental aspects (Such as waste dumping, preservation of enhanced sites, pollution and health impacts etc.)	-	Construction/ Operation Stage	CSC/PMC/MPWD
16	No. of Trees Planted (Total) <ul style="list-style-type: none"> <li>No. of Trees Planted along Roadsides</li> <li>No. of Trees planted at other locations (such as camps, debris disposal sites and plant areas)</li> <li>No. of trees planted at enhancement sites</li> </ul>	Roadside and other plantation areas	Post construction stage	Contractor/MPWD
17	Survival Rate Trees Planted (Average) <ul style="list-style-type: none"> <li>Compensatory Afforestation</li> <li>Roadside Plantation</li> <li>Other locations (such as camps, debris disposal sites and plant areas)</li> </ul>	Roadside and other plantation areas	Post construction stage	Contractor/CSC/PMC/MPWD



Sl. No.	Description of Item	Indicator	Stage	Responsibility
	Enhancement sites)			
18	Land, structure & Livelihood compensations paid	Number of PAPs compensated; amount disbursed as per RAP/IPDP	Construction stage	MPWD/ Village Councils as per existing Customary Laws.
19	Vulnerable groups	Type of consultations undertaken; Compensations paid in time.	Construction stage	MPWD/ Village Councils as per existing Customary
20	Grievance Mechanism	Number of complaints resolved within stipulated time; No of RTI applications filed; SEA/SH complaints filed.	Construction stage	Project Grievance Committee/ Site Grievance committee/CSC/PMC/MPWD
21	Stakeholder Engagement and Meaningful Consultations	Number and frequency of consultations held at different project stages. Level of participation from diverse stakeholder groups, Extent to which stakeholder concerns and suggestions have been integrated into decision-making, mitigation measures, Documentation.	Continuous	Contractor/CSC/PMC/MPWD