Government of Meghalaya

PUBLIC WORKS DEPARTMENT
MEGHALAYA INTEGRATED TRANSPORT PROJECT (MITP)

SOCIAL AND ENVIRONMENTAL STUDY REPORT FOR BRIDGE NO-01

CONSULTANCY SERVICES FOR PREPARATION OF DESIGNS AND DPRs OF MAJOR AND MINOR BRIDGES TO BE CONSTRUCTED AS A REPLACEMENT OF EXISTING SEMI-PERMANENT TIMBER BRIDGES (SPT) IN STATE OF MEGHALAYA - ADDITIONAL 5 Nos OF BRIDGES

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LEA ASSOCIATES SOUTH ASIA PVT. LTD., *India*

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1 INTRODUCTION

Meghalaya Integrated Transport Project (MITP) has been launched by Government of Meghalaya, with the aim of improving transport connectivity and efficiency and enhancing transport sector management in Meghalaya. MITP also includes rehabilitation / up-gradation / improvement of existing roads including that of urban roads of major towns of the State and construction of missing links / bypasses / Bridges in the State of Meghalaya.

The programme is being coordinated at State level by the Meghalaya Public Works Department (PWD Roads), National Highway Division In the name of "Engagement of Consultancy for preparation of design and DPRs of Major and Minor Bridges to be constructed as a replacement of existing Semi Permanent Timber Bridges (SPT) in the State of Meghalaya. For the management & administration of the project, a dedicated Project Management Unit (PMU) has been established in Meghalaya Infrastructure Development Finance Corporation (MIDFC) at Shillong, headed by a Project Director and supported by other staff responsible to implement the project.

The World Bank is participating in MITP program by providing technical assistance and lending operations. Currently, the Bank is supporting the program with Financing of MITP Meghalaya PWD Roads Project with the objective of enhancing the systems and processes of the programme which contributes to the finance of civil works expenditures, institutional strengthening which will support a technical assistance program designed to strengthen the capacity of relevant agencies to implement the program.

This report includes the Social and Environmental study done for the respective bridge locations.

2 SOCIAL STUDY

2.1 INTRODUCTION

The objective of the chapter is to understand the feasibility of the selected bridges under the project across the state of Meghalaya. This includes analysing the project locations, understanding the legal Acts, Policies and World Bank guidelines and comprehending the suggestions and views of the community.

2.2 PROJECT INTERVENTIONS

The list of various project bridges across the South, South-West and West Garo Hills districts of Meghalaya is provided in the tables below. This report pertains to Bridge No. 1 (**NH-51 to Megadop Village**) in Barenapara division and West Garo Hills district.

Table 2-1: Feasibility Bridges

Sr. No.	District	Division	Block	Name of Road	Proposed Length (in m)	Latitude (N)	Longitude (E)
1	**West Garo Hills**	**Barengapara**	**Dalu**	**NH-51 to Megadop Village**	**68**	**25°14'21.01"N**	**90°12'30.54"E**
2	South-West Garo Hills	Tura North	Gambegre	Damalgre Mellim Boldamgre Road	38	25°26'44.50"N	90° 5'35.31"E
3	South-West Garo Hills	Tura North	Rerapara	Damalgre Mellim Boldamgre Road	26	25°29'11.55"N	90° 5'20.49"E
4	South Garo Hills	Barengapara	Dalu	Sonagre-Jijikapara Road	95	25°14'46.10"N	90°16'8.39"E
5	West Garo Hills	Barengapara	Dalu	Kherapara-Chengapara Road	53	25°20'33.77"N	90° 8'52.35"E

2.3 SCOPE FOR SOCIAL ASSESSMENT

As stated earlier social safeguard measures as per the National, State and World Bank policies need to be integrated into the project preparation, implementation and operation stages. The scope for social assessment is to assess the feasibility of the selected bridges (280 mtrs).

In order to understand the feasibility of the project bridge, a social assessment has been conducted. The assessment undertook the followings tasks:

- Reconnaissance Visits in the project Bridge
- Discussions with potential affected population
- Understanding perception about the proposed bridge development
- Exploring the perceived social benefits of the proposed bridge
- Discussions and data collection from multiple Stakeholders, Officials of Forest, Revenue Departments
- Consultations with community
    - ***Issue Based-*** *Potential project Affected People, affected commercial shops, and affected farming.*

Social Assessment for the 5 bridges comprises the following:

- Macro level baseline profile of the Project Bridge traversing Districts;
- Relevance of applicable Legal Acts and Policy Framework;
- Characterisation of the bridge with respect to sensitive social features like impact on land and structures, involuntary resettlement, potential temporary impacts during construction;
- Summary of Community Consultations, and discussions with multiple stakeholders
- Perceived Benefits of permanent bridge replacing SPT bridge to the community
- Broad Social Cost estimates for respective project bridge

2.4 SOCIO-ECONOMIC PROFILE

This section gives a brief note regarding the overall conditions of Meghalaya with detailed descriptions of the project districts. The comprehensive explanation covers gross domestic product (GDP) and annual growth rate, demography, trade, tourism, gender profile, physical infrastructure, economy, poverty, transport & linkages, poverty, agriculture, education and health.

2.5 STATE PROFILE

Meghalaya meaning "abode of clouds" is a state in northeastern India. Meghalaya was formed by carving out two districts from the state of Assam: (a) the United Khasi Hills and Jaintia Hills and (b) the Garo Hills on 21st January 1972.

The state is bound to the south by the Bangladeshi divisions of Mymensingh and Sylhet, to the west by the Bangladeshi division of Rangpur, and to the north and east by India's State of Assam. The state is the wettest region of India, with the wettest areas in the southern Khasi Hills recording an average of 12,000 mm (470 in) of rain a year

Meghalaya is a hilly state in northeastern India. Meghalaya is one of the Seven Sister States of northeast India. Carved from the erstwhile State of Assam, Meghalaya became a full-fledged State on January 21,1972 (Meghalaya was previously part of Assam). The name means “the abode of clouds” in Sanskrit. The state is bounded to the south by the Bangladeshi divisions of Mymensingh and Sylhet, to the west by the Bangladeshi division of Rangpur, and to the north and east by India’s State of Assam. Meghalaya is spread over an area of 22,429 square kilometres, and lies between 20.1° N and 26.5° N latitude and 85.49 °E and 92.52 °E longitude.

Meghalaya comprises of 11 districts spread across Khasi, Garo and Jaintia hills. Figure below illustrates the physical map of the State in Figure 2-1

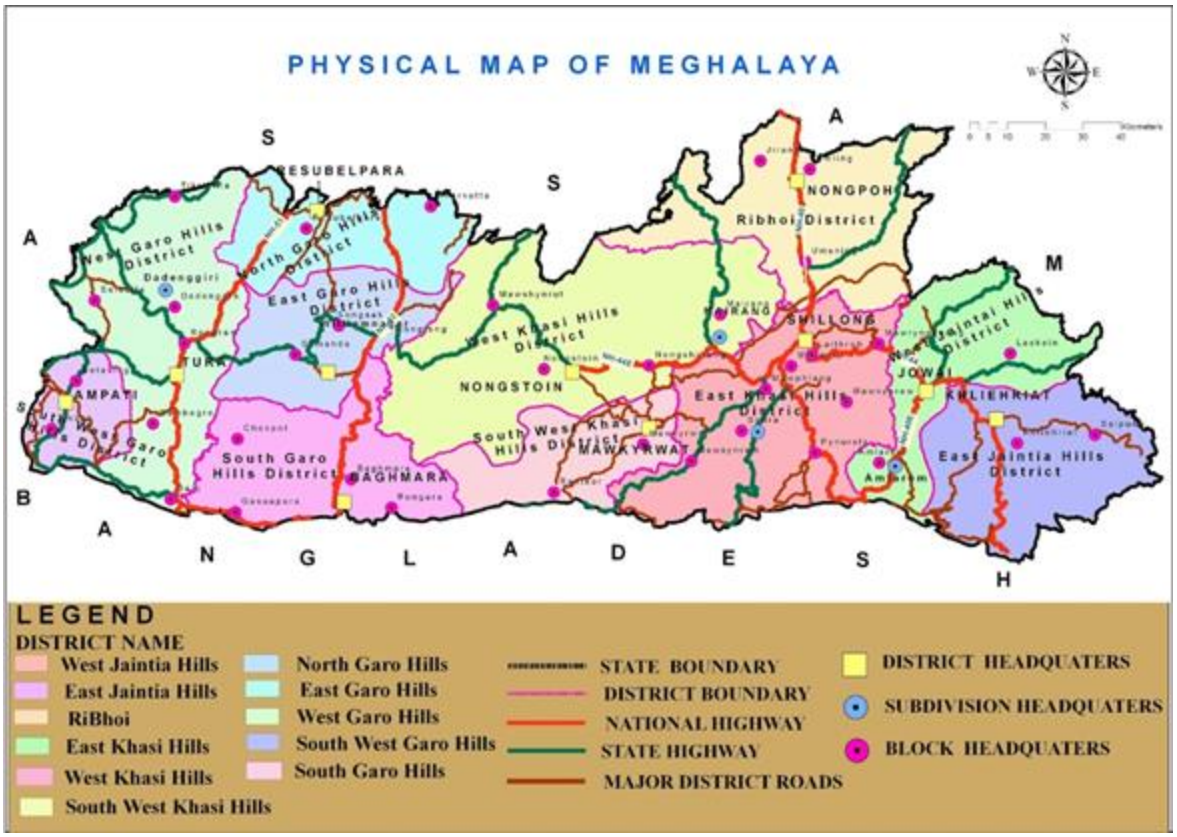


Figure 2-1: Pictorial Depiction of Meghalaya State & Its districts

The State of Meghalaya was carved out of Assam as an autonomous State in April 1970 and was declared a full-fledged State in January 1972. Meghalaya lies between 24^0 58' N to 26^0 07'N latitudes and 89^0 48'E to 92^0 51' E longitudes. Overall, 55 villages and one town falls under north district. Out of the total forest area of 15,657 sq. km in the State only 1,027.20 sq. Km is under the control of State Forest Department, which constitutes only 4.58 % of the total geographical area of the State and 6.56 % of the total forest area of the State. Rest of the area is either private or clan /community owned and is under the indirect control and management of the Autonomous District Councils.

As per details from Census 2011, Meghalaya has population of 29.67 Lakhs, an increase from figure of 23.19 Lakh in 2001 census. Total population of Meghalaya as per 2011 census is 2,966,889 of which male and female are 1,491,832 and 1,475,057 respectively. In 2001, total population was 2,318,822 in which males were 1,176,087 while females were 1,142,735.

With regards to sex ratio, it stood at 989 per 1000 male in 2011 census. The literacy rate of the district is 74.43 percent. Out of the literate population, 75.95 percent of male and 72.89 percent of female are literate.

The road length at the time of creation of Meghalaya in 1970 was only 2786.68 km which has gone up to 7633.00 Km by 31st March 2003, out of which 3691 km is black topped and remaining 3942 km is graveled. The road density has increased from 12.35 km per 100 square kilometer to 34.03 km per 100 square.

Meghalaya is a hilly State in the North Eastern Region of India between the plains of Assam in the North and Bangladesh in the South. The State falls under the temperate zone which favours luxuriant growth of vegetation and thick forests with rich varieties of flora and fauna.

Meghalaya receives the direct influence of the South West Monsoon originating from the Bay of Bengal and Arabian Sea. Generally, monsoon begins sometimes in the month of April and continues till October. The topography, climate and Socio-economic conditions makes the people to depend more on Animal Husbandry activities mainly because of traditional agriculture in hilly areas allows only about 10% of the land in the State. Heavy rainfall in sloppy hills not only causes soil erosion but also makes it acidic by removing the soluble basic part of the soil by the solvent action of the run-off water and loss of productivity. Indiscriminate mining for stones, gravels, coal, etc. diminishes the area under cultivation, forest land and grass cover. Under such situation, livestock and poultry farming is the only alternative avocation on which the villager can fall upon for a subsidiary living.

As per the Census 2011, out of the total working population of 23, 359, 31.39 percent are cultivators, 9.68 percent are agricultural labourers, 1.42 percent are engaged in household industry and remaining 57.59 percent of population is into other economic activities. Out of the total female working population, majority of the workers are cultivators.

The state is the wettest region of India, recording an average of 12,000 mm (470 in) of rain a year. About 70% of the state is forested. Meghalaya has many rivers. Most of these are rainfed and seasonal. The important rivers in the Garo Hills region are Ganol, Daring, Sanda, Bandra, Bugai, Dareng, Simsang, Nitai and the Bhupai.

The total population of Meghalaya as per the 2021 census of India, the total population was 29.67 Lakhs. Total population of Meghalaya as per 2011 census is 2,966,889 of which male and female are 1,491,832 and 1,475,057 respectively. The population of Meghalaya (2021 census) forms — percent of India in 2021.

Recently as per Meghalaya census data, 81.95% houses are owned while 15.62% were rented. In all, 71.29% couples in Meghalaya lived in single family.

Table 2-2: Population Growth of Meghalaya –2001 & 2011

Census Year	Meghalaya Population			Growth Rate (in Percentage)
	Male	Female	Total	
2001	1,176,087	1,142,735	23.19 Lakhs	29.94
2011	1,491,832	1,475,057	29.67 Lakhs	27.95

Source: *Primary Census Abstract, 2001 and 2011*

The Census statistics also shows that the men have always been more in numbers compare to women in Meghalaya. However, 2011 census shows increase in number of female populations in the State and decrease in number of male populations.

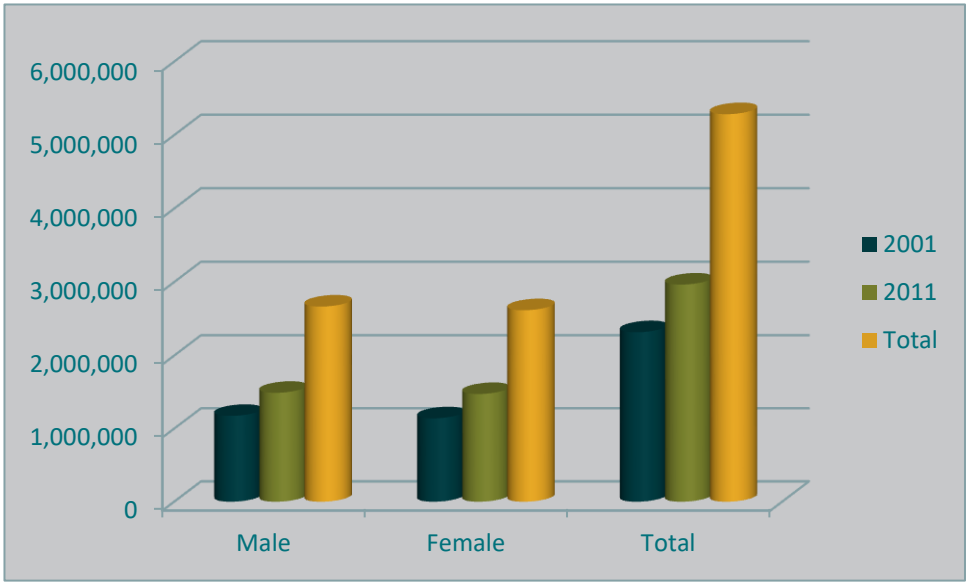


Figure 2-2: Population distribution in Meghalaya (2001 and 2011)

The literate population in the State is 1785005 among which 913879 are male and 871126 are female. The literacy among both male and female have increased in the State from 2001.

The total workers in the State are 1185619 (50 percent to the total population-64 percent are male & 36 percent are female). The main workers in the State are 921575 and marginal workers are 264044. However, almost half of the population of the State is under the category of non-workers (1781270).

As per census 2011, the total scheduled caste population is 28275 (5 percent of the total population). The scheduled caste population comprises of 14,454 male (51 percent) and 13,821 female (49 percent) in the project city. The schedule tribe population in the city is 206360 (34 percent of the total population).

The Scheduled Castes and Scheduled Tribes in Meghalaya as listed in the Constitution (Meghalya) 'Scheduled Castes and Scheduled Tribes Order, 1978 and amendment Act, 2002' are:

- **Scheduled Castes:** Bansphor, Bhuinmali, Dhupi, Hira, Jalkeot, Jhalo, Kaibartta etc.
- **Scheduled Tribes:** Chakma, Dimasa, Garo, Khasi, Jaintia, Hajong, Hmar, Pawi, Lakher etc.

With the average annual rainfall as high as 12,000 mm (470 in) in some areas, Meghalaya is the wettest place on Earth. The western part of the plateau, comprising the Garo Hills region with lower elevations, experiences high temperatures for most of the year. The Shillong area, with the highest elevations, experiences generally low temperatures. The maximum temperature in this region rarely goes beyond 28 °C (82 °F), whereas sub-zero winter temperatures are common. The town of Sohra (Cherrapunji) in the Khasi Hills south of capital Shillong holds the world record for most rain in a calendar month, while the village of Mawsynram, near Sohra (Cherrapunji), holds the record for the most rain in a year.

Meghalaya is basically an agricultural state with about 80% of its population depending entirely on agriculture for their livelihood. Nearly 10% of the geographical area of Meghalaya is under cultivation. Agriculture in the state is characterised by limited use of modern techniques, low yields, and low

productivity. As a result, despite the vast majority of the population being engaged in agriculture, the contribution of agricultural production to the state's GDP is low, and most of the population engaged in agriculture remain poor. A portion of the cultivated area is under the traditional shifting agriculture known locally as Jhum cultivation.

Meghalaya produced 230,000 tonnes of food grains in 2001. Rice is the dominant food grain crop accounting for over 80% of the food grain production in the state. Other important food grain crops are maize, wheat, and a few other cereals and pulses. Besides these, potato, ginger, turmeric, black pepper, areca nut, Bay leaf (Cinnamomum tamala), betel, short-staple cotton, jute, mesta, mustard and rapeseed etc. are some of the important cash crops. Besides the major food crops of rice and maize, the state is renowned for its horticultural crops like orange, lemon, pineapple, guava, litchi, banana, jack fruits and fruits such as plum, pear, and peach.

Tourism is one of the major sectors of the state economy. Meghalaya also offers many adventure tourism opportunities in the form of mountaineering, rock climbing, trekking, and hiking, caving (spelunking) and water sports. The state offers several trekking routes, some of which also afford an opportunity to encounter rare animals. The Umiam Lake has a water sports complex with facilities such as rowboats, paddleboats, sailing boats, cruise-boats, water-scooters, and speedboats. Cherrapunji is a tourist destination in north-east of India. It lies to the south of the capital Shillong. A rather scenic 50-kilometre long road connects Cherrapunji with Shillong.

In terms of education, according to 'All India Survey on Higher Education report, 2018-19', Meghalaya among the States have the highest enrolment ratio at 53.9 percent.

Agricultural operations having limitations in Meghalaya due to its topography, climatic situation and socio-economic conditions claiming only about 10% of the total land for cultivation, livestock and poultry provide the only alternative avocation the villagers fall upon for a subsidiary living. Applications of modern technologies have brought a high hope for commercial livestock and poultry farming as a full time occupation for a decent living. Though the present output of livestock production in the State has been increasing at higher proportion to the growth of human population, the overall availability situation is not encouraging with only 75 grams of milk per person per day is now available in the State. Similarly, availability of eggs per person per year has been estimated at 38 Nos. only as against the NRC recommendation of 180. In case of meat, the availability situation meets the requirement, taking the import from other States into consideration. All these indicate that greater efforts are necessary to bridge the gap between production and the requirement considering the following plus points:-

- Traditional dependency of rural tribal population in livestock for livelihood;
- Food habits of the people are mostly non-vegetarian in nature.
- Absence of any taboo for consumption of chicken meat, pork or beef.
- Absence of sentiments for slaughter of livestock including cattle for meat supply.
- Readiness of the farmers to adopt modern technologies for breeding, feeding, management.
- Availability of favorable markets within the State as well as in the adjoining States.
- Availability of manpower for control of Livestock and Poultry diseases.

Meghalaya has an installed capacity of 356.58 MW for hydroelectric power. The potential for hydropower in the state is estimated to be around 3,000 MW. The natural resources, policy incentives and infrastructure in the state favour investments in the tourism, hydroelectric power, manufacturing and mining sectors. Mineral, horticulture, electronics, IT, agro-processing and tourism have been identified as the thrust sectors for industrial development.

Tribes of Meghalaya: Meghalaya is predominantly a tribal state with 86 per cent of the total population being Scheduled Tribes as described in OP 4.10. Moreover, because these tribal areas are totally different from the mainstream population, the state comes under the Sixth Schedule of the Constitution of India. The tribes of Meghalaya can be classified into three major groups - Garos, Khasis and Jaintias (or Pnars). The other minor tribes include Rabha, Hajong, Koch and Bodo Kachari. The Khasi are the largest tribal group, followed by the Garo and the Jaintia. The most noteworthy feature of the tribes of Meghalaya is matrilineal lineage, whereby lineage is traced through the mother, and property and inheritance are given to the youngest daughter.

Khasi and Jaintia Tribes: The term “Khasi” generally is used to describe a group consisting of the Khynriam, Pnar, Bhoi and War. The people who inhabit the Jaintia Hills are called the Synteng or the Pnar or simply Jaintia; the people who dwell in the upland of the central part of the state or the Khasi Hills are called the Khynriam. On the other hand, the people who reside in the deep valleys and hill-sides of the southern part of the state are called War, while those occupying the low-lying hills on the north are called the Bhoi. Over the years the term “Khasi” has come to be synonymous with those occupying the Khasi Hills of Meghalaya. There are not many differences among the tribes and they observe the matrilineal system and are exogamous in their way of life.

The Khasi and the Jaintia are of common ethnic stock and social and cultural background. The society is matrilineal and lineage is through the mother. This is however, not to say that there is no role of the father in the family– he is the head of the family and a ‘kni’ or maternal uncle in his sister’s house. His earnings before marriage remain part of his mother’s or sister’s which he cannot take away to his wife’s house; while after marriage, his earnings become part of his wife’s household. Among the Jaintias, the practice differs to the extent that the son continues to remain a part of his mother’s or sister’s family (before or after marriage) and all earnings are towards them.

If a wife were to retain the property of her husband, she must vow to never remarry or the property will revert back to her husband’s family. The matrilineal tradition which the Khasis follow is unique with principles emphasized in myths, legends, and origin narratives. Khasi kings embarking on wars left the responsibility of running the family to women and thus their role in society became very deep rooted and respected.

Garo: The Garos are a hill tribe currently inhabiting the Garo Hills district of Meghalaya. It is bounded on the north and west by the district of Goalpara in Assam; on the south by the district of Mymensingh in Bangladesh; and on the east by the Khasi Hills. Historically, they inhabited the outermost end of the mountain promontory which runs out into the rice lands of Bengal. The Garos may be roughly divided into the Plains Garo and the Hills Garo each inhabiting the district to which they owe their name to. The Plains Garos inhabit the plain areas like Mymensingh and it was believed that their ancestors crossed the

Himalayas and settled in the plains at their foot; while the Hills Garos inhabit the hills of low elevation popularly known as the Tura range, rarely rising much above 2000 feet. The Garos, like the Khasis and Jaintias, also follow the matrilineal system. A man may marry as many women as he like, but usually it is limited to three; though for him to remarry, he must obtain the permission of his earlier wives. Originally, the Garos were divided into three katchis or exogamous septs or clans, namely, Momin, Marak, and Sangma. With time, there has been new addition to these clans and new clans like the Arengs, Ebang and Shira has been named as exogamous independent groups. Among the Garos, marriage within the same clan is taboo. The children belong to their mother's clan "machong" or "motherhood"

WEST GARO DISTRICT

West Garo Hills is an administrative district in Garo Hills of the state of Meghalaya in India. Tura town is the administrative headquarters of the district. The district occupies an area of 3714 km². In 2011 its population was 643,291. As of 2011 it is the second most populous district of Meghalaya (out of 7), after East Khasi Hills.

West Garo Hills district is located at the westernmost part of Meghalaya. The district is bounded by East Garo Hills district on the east, by South Garo Hills district on the south-east, Goalpara district of Assam state on the north and north-west and Bangladesh on the south.

According to the 2011 census West Garo Hills district has a population of 643,291, roughly equal to the nation of Montenegro or the US state of Vermont. This gives it a ranking of 514th in India (out of a total of 640). The district has a population density of 173 inhabitants per square kilometre (450/sq mi). Its population growth rate over the decade 2001-2011 was 24.02%. West Garo Hills has a sex ratio of 979 females for every 1000 males, and a literacy rate of 68.38%.

West Garo Hills district is pre-dominantly inhabited by the Garos, a tribe with a matrilineal society belonging to the Bodo family of the Tibeto-Burman race tribes. Other indigenous inhabitants are the Hajongs, Rabhas, Koches, Rajbansis, Meches, Kacharis and Dalus. The district is also inhabited by Bengalis, Assamese, Nepalese, Marwaries, Biharis and people from other parts of India.

The district headquarters of West Garo Hill district is Tura, which is the second largest town in the State after Shillong. The district has one sub- divisions namely: Dadenggre and six development blocks. They are: - Rongram C & RD Block, Dadenggre C & RD Block, Selsella C & RD Block, Tikrikilla C & RD Block, Gambegre C & RD Block and Dalu C & RD Block.

The climate of the district is largely controlled by South-West monsoon and seasonal winds. The West Garo Hills district being relatively lower in altitude to the rest of Meghalaya, experiences a fairly high temperature for most part of the year. The average rainfall is 330 cms. of which more than two-thirds occur during the monsoon, winter being practically dry. The district has mostly dense tropical mixed forest, and a small patch of temperate forest in the higher parts of the Tura range.

2.6 LEGAL POLICY FRAMEWORK

Applicable Acts and Policies relevant in the context of the project are discussed below. The Project Authority will ensure that project activities implemented are consistent with the following regulatory/legal framework.

Table 2-3: Acts and Policies relevant to the Project

Sl. No.	Acts and Policies	Relevance to this project	Applicability
1	The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013	Land required for the project shall be acquired as per the provisions of this Act.	Applicable to all project bridge
2	The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (Meghalaya) Rules, 2017.	They shall come into force on the date of their publication in the official gazette of the State Government.	Applicable to all project bridge
3	OP 4.12 Involuntary Resettlement	This policy aims at avoiding, if not minimizing adverse impacts on the local population due to project and where unavoidable it ensures that those affected improve or at least restore their livelihood.	Applicable to all project bridge
5	The Provision of the Panchayats (Extension to the Scheduled Areas), Avt 1996	Every Gram Sabha shall approve the plans, programmes and projects for social and economic development before such plans, programmes and projects are taken up for implementation by the Panchayat at the village level. Panchayat is responsible for the identification or slection of persons as beneficiaries under the poverty alleviation and other programmes. Gram Sabha or Panchayats at the appropriate level shall be consulted before making the acquisition of land in the scheduled areas for development projects and before re-settling or rehabilitating persons affected by such projects in the scheduled areas.	Applicable to all project bridge

I. The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013

This Act is used for acquisition of land for public purposes. The components of the Acts are (a) Land acquisition, (b) Compensation and (c) Resettlement and Rehabilitation Provisions.

To assess the impact of the projects, SIA to be carried out in all cases of land acquisition in consultation with Panchayat or Municipal corporation with in six months.

Social Impact Management Plan (SIMP) to list out ameliorative measures to address adverse impact. Summary of SIA Report to be issued along with preliminary notification under Section 11.

SIA Report to be evaluated by an independent multi- disciplinary Expert Group:- (i) Two non-official social scientists (ii) Two representatives of local bodies (iii) two experts on rehabilitation (iv) A technical expert in the subject relating to project. Recommendations to be made within two months. The SIA Report will be valid for 12 months.

A notification relating to the land details to be acquired with the name of the land owners as well as the summary of the SIA report, reasons necessitating the displacement of affected persons is to be published (a) in official gazette, (b) in two daily newspapers circulating in the locality, at least one in the regional language , (c) in the panchayat or municipality, (d) uploaded in the website, (e) in the affected area.

The cutoff date is the last date of the publication in any of the system. Land transaction is restricted u/s 11(4) and Collector to ensure updating of the land records within a period of two months u/s 11(5). This notification is valid for 12 months.

Preliminary survey of land is conducted. Objections are heard such as to the area and suitability of land, justification offered for public purpose, findings of SIA.

The administrator shall prepare rehabilitation and resettlement scheme including the rehabilitation colony with details of public amenities and infrastructure facilities. The rehabilitation scheme shall be reviewed by the Collector as well as by R&R Committee constituted u/s 45.

The scheme shall be submitted to the Commissioner R&R for approval of the Government. After approval, it will be made available in the local language of the panchayat/ municipality and uploaded in the website of the appropriate government.

Government shall publish the declaration along with the area identified for resettlement site. The collector shall publish a summary of the R&R scheme and asked the requiring body, to deposit an amount full/part towards cost of acquisition of land.

The validity of the declaration is 12 months from the date of the declaration of publication otherwise the entire proceedings will be lapsed.

Market value is higher of (a) minimum land value as per Indian Stamp Act, 1899 (b) average sale price for similar type of land in the vicinity (c) average sale price already paid or agreed to be paid.

Further, to ensure adequate compensation to the land owners, the market value calculated shall be multiplied by a factor of two in the rural area and by a factor of one in the urban area as specified in the First Schedule. Solatium of one hundred percent of the compensation amount. The calculation process is detailed in the first schedule.

Administrator is responsible for Rehabilitation and Resettlement-Formulation, execution and monitoring of R&R Plan. Commissioner is responsible for Rehabilitation and Resettlement -Supervision of formulation, implementation of R&R Plan and post implementation social audit in consultation with Gram Sabha.

The process of land acquisition consists of important steps which are presented below.

Requisition for Land Acquisition

- Requiring Body to Collector and Commissioner R & R
- Acquisition for Government - Concerned Secretary of the Department/person authorized by State Government
- Company – By Competent Authority

Estimated Cost and Deposit by Requiring Body

- Collector calculates estimated administrative cost for LA.
- Commissioner R & R calculates the cost of carrying out SIA study
- Deposit of the administrative cost

Notification of SIA

- The appropriate government shall, within a period of 15 Days from the date of deposit of the processing fee issue a notification for carrying out SIA Study

Submission of SIA Report

- SIA Report within Six months
- Public Hearing for Social Impact Assessment, S.5;
- Consent of Gram Sabha/affected landowners (PPP/Private Projects)
- Appraisal of SIA Report by an Expert Group, S.7;
- Examination of proposals of LA, SIA Report, Report of Collector (if any) and Expert
- Group Report within two months of Constitution, S.8

Preliminary Notification (PN) - Section-11

- Within one year of date of appraisal of SIA report by Expert Committee (power of
- appropriate Govt. to extend)
- Includes the following
  - Land details
  - Summary of SIA
  - Nature of public purpose
  - Reasons necessitating displacement of affected persons
  - Details of Administration

Land Records Updation-Section 11(5) – Two Months of Section 11(1)

- Delete the entries of dead persons;
- Enter the names of the legal heirs of the deceased persons;
- Take effect of the registered transactions of the rights in land such as sale, gift, partition, etc.
- Make all entries of the mortgage in the land records;
- Delete entries of mortgage in case lending agency issues letter towards full payment of loans
- Make necessary entries in respect of all prevalent forest laws;
- Make necessary entries in case of the Government land;
- Make necessary entries in respect of assets in the land like trees, wells, etc.
- Make necessary entries of share croppers in the land
- Make necessary entries of crops grown or sown and the area of such crops, and
- Any other entries or up-dating in respect of land acquisition, rehabilitation and
- resettlement.

Hearing of Objections - Section 15 (1)- Within 60 days of PN Publication

Objection to the

- Area and suitability of land
- Justification offered for public purpose
- Findings of the SIA Report
- Submission of Report on Objections and recommendations by LAO to Collector
- Decision of Collector is Final

Preparation of Draft R & R Scheme by Administrator

- Preliminary survey of land, S.12
- Conduct of Census and Survey by Administrator by door to door visits and verifying SIA data within two months of PN , section 16 (1) and data on the following

✓ List of likely to be displaced families;
✓ List of infrastructure in the affected area;
✓ List of land holdings in the affected area;
✓ List of trades/business in the affected area;
✓ List of landless people in the affected area;
✓ List of persons belonging to disadvantageous groups –SCs, STs, handicapped persons etc.
✓ List of landless agricultural labourers in the affected area;
✓ List of unemployed youth in the affected area.

- Preparation of draft R & R Scheme, S.16 (2)
- Preparation of Development Plan for SCs/STs
- Draft R&R Scheme to be given wide publicity 16(4)
- Public hearing on Draft R & R & Raising of objections, S. 16 (5)
- Review/approval of draft of R & R Scheme by Collector &Commissioner, S.17
- Finalization & publication of approved R & R Scheme in Gazette/local bodies, S. 18

Possession of Land, Section 38

Power to take possession only after:

- Full payment of compensation (3 months)
- Monetary part of R & R (6 months) from the date of Award;
- Irrigation Projects/Hydel Projects – R & R to complete 6 months before submergence.
- 38(2): Collector to ensure that R & R is completed in all its aspects before displacing the affected families.

Publication of Declaration and Summary of R & R-One year of Section 11 (1)

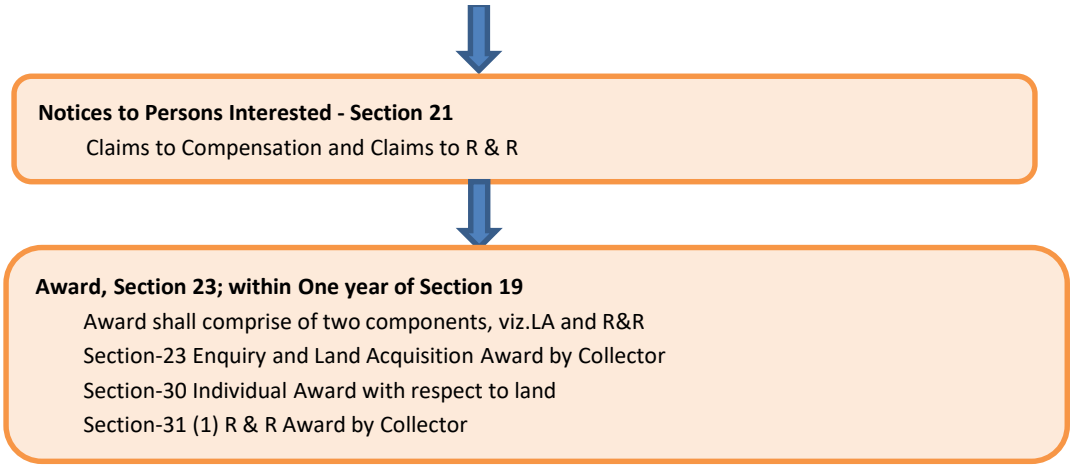
Publication of Declaration and Summary. Includes the following:

Demarcated details of lands with full particulars of all interest holders

Details of land required for 'resettlement area'

Summary of R&R Scheme

Deposit of funds by Requiring body compulsory before final notification



II. The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (Meghalaya) Rules, 2017

The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (Meghalaya) Rules, 2017" were published as required under Section 112 of the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (Act 30 of 2013) vide Meghalaya Government Extra-Ordinary Gazette No. 64 dated 2nd March, 2015.

The Appropriate Government shall, issue a notification in the Official Gazette for carrying out the Social Impact Assessment in accordance with Part B of Form –I of these rules regarding commencement of the Social Impact Assessment Study and the same shall be 4 made available in the local language to the Panchayat, or Municipal Council or the Municipal Corporation, as the case may be, and in the offices of the Collector, the Sub-Divisional Magistrate and the Block Development Officer (BDO).

The notification shall also be published in daily newspapers circulating in the affected area, and also by way of a public notice to be published by affixing it at some conspicuous places in the affected areas and shall also be uploaded on the website of the Government of Meghalaya.

Such notification shall be issued within a period of thirty days after the deposit of the processing fee for carrying out the Social Impact Assessment Study. The Social Impact Assessment Study shall be conducted in consultation with the concerned Panchayat, Municipal Council or Municipal Corporation, at village level and urban area in the affected areas.

Applicable World Bank Policies

The applicability of World Bank's social safeguard policies, particularly relating to Indigenous People (OP 4.10), Physical Cultural Resources (OP 4.11) and Involuntary Resettlement (OP 4.12) were examined in the context of this project. The applicability of the same was examined via field visits and extensive consultations with client and beneficiaries.

Table 2-4: Safeguard policies and their applicability to the project

Safeguard Policies	Applicability	Explanation	Relevance/Implications for SMF
Indigenous Peoples OP/BP 4.10	No	The policy is triggered. As 86% of the state's population is tribal, a comprehensive Social Management Framework cum Indigenous People's Development Plan will be prepared.	Bridge specific Social Assessment will be carried out and IPDP will be prepared if required. SMF includes IPPF.
OP 4.11 Physical Cultural Resources	No	Physical cultural resources are important as sources of valuable scientific and historical information, as assets for economic and social development, and as integral parts of a people's cultural identity and practices. The Bank assists countries to avoid or mitigate adverse impacts on physical cultural resources from development projects that it finances	No Physical Cultural resources are present in the nearby vicinity of the proposed project.
Involuntary Resettlement OP/ BP 4.12	No	OP 4.12 on Involuntary Resettlement is triggered as small parcels of land may be required for road improvement. However, the project will duly engage in appropriate land management activities and be cognizant of cases where any loss of livelihood occurs. In that case appropriate measures will be taken through livelihood ccompensation.	The SIA and ARAP will include standard mitigation methods and procedures, along with appropriate institutional arrangements for screening and reviewing sub-projects and monitoring the implementation of mitigation measures to prevent adverse impacts. The SMF includes RPF.

2.7 PRELIMINARY SOCIAL IMPACT ANALYSIS OF PROJECT BRIDGE

The present social impact assessment is prepared for the entire bridges (240 mtr). Social considerations are always an integral part of development project as it directly impacts and affects the people both positively and negatively. Considering both aspects as important and crucial, social aspects related to the bridge are thoroughly studied, sites visited and community consultations/Focus group discussions are conducted. This is reflected in the sections provided below.

The objectives of the present social assessment are to do the following:

- Establish a baseline for social qualities along project through secondary data analysis and assessment, as well as preliminary site visits and consultations;
- Identify and report social issues captured during the site visits and consultations;
- Relate the proposed interventions with identification[1] of social issues;

[1] Identification of social issues will provide useful information/input for assessing technical and economic feasibility of the project interventions and provide recommendations for modifications in the project design.

- Confirm the feasibility of the bridge construction in terms of social aspects; and
- Accordingly identify survey requirements to be carried out as part of the DPR bridge.

To accomplish these goals, an evaluation of secondary data as well as field surveys were conducted along the project bridge.

2.8 PROPOSED IMPROVEMENTS AND NATURE OF IMPACTS

Social Impact assessment determines the sensitivity of the social attributes of project bridges. This will help to estimate the level of planning required in terms of time, budget and efforts to undertake the proposed bridge development incorporating all the social safeguard measures.

The proposed bridge development leads to significant adverse social impacts. It is not advisable to use the screening exercise for dropping improvement of important project bridges unless the proposed development leads to significant adverse environmental and / or social impacts. Rather it is to be used as a planning tool for fixing priorities for systematic implementation of the proposed development measures.

- Private land and assets

It was observed in the assessment that in the project bridges, no residential, commercial and community assets are likely to be impacted.

- Government Structure

It was observed that no government structures are impacted.

- Community assets

The assessment shows that no community assets are likely to be impacted.

2.9 CONSULTATION FINDINGS

Public Consultations were conducted with various groups to understand the views and suggestions of the people on the project intervention. Public consultation was conducted, in West Garo district with 29 participants. The photographs of the discussion are presented at Annexure 7. Outcome of the consultation and the pictorial depiction is summarized in **Table 2-5 & Table 2-6**

Table 2-5: Summary of Community Consultations

Sl. No.	Consultation	Name of Locations	Outcome
1	West Garo District **Number of Consultations:** 1 **Number of Participants:** 29	• Tibapara/Megadop village	• The bridge is at Bakla River. This bridge is presently in damaged condition due flash flood on 9th June 2022. • The village has the students need to travel to other side of the bridge for study which is again challenging for them. • The existing bridge connects link road to NH-62, so this bridge serves important link for various daily chores. • The village head expressed his happiness about the bridge works being planned and also advised to discuss with the community during later stages. • Community people want this bridge work to start as soon as possible.

Sl. No.	Consultation	Name of Locations	Outcome
			• Suggestion was provided by the community to consider safety measures for the curves at the approach road section.

2.10 PICTORIAL DEPICTION OF PUBLIC CONSULTATION CONDUCTED IN WEST GARO HILLS

Table 2-6: Pictorial Depiction of Community Consultations






2.11 SOCIO-ECONOMIC AND CULTURAL PROFILE

Through literature review, site visits and consultations, focus group discussions and stakeholder consultations, the social benefits of permanent bridge are quite evident.

There are few indicators which have been picked up to understand the easy and community friendly land acquisition process, the grievance reporting system and possible positive impacts of the project on the community.

2.11.1 Community Culture

The Garos are a hill tribe currently inhabiting the Garo Hills district of Meghalaya. The Garos may be roughly divided into the Plains Garo and the Hills Garo each inhabiting the district to which they owe their name to. The Plains Garos inhabit the plain areas like Mymensingh and it was believed that their ancestors crossed the Himalayas and settled in the plains at their foot; while the Hills Garos inhabit the hills of low elevation popularly known as the Tura range, rarely rising much above 2000 feet.

The Garos, like the Khasis and Jaintias, also follow the matrilineal system. A man may marry as many women as he like, but usually it is limited to three; though for him to remarry, he must obtain the permission of his earlier wives. Originally, the Garos were divided into three katchis or exogamous septs or clans, namely, Momin, Marak, and Sangma. With time, there has been new addition to these clans and new clans like the Arengs, Ebang and Shira has been named as exogamous independent groups. Among the Garos, marriage within the same clan is taboo. The children belong to their mother's clan "machong" or "motherhood".

2.11.2 Grievance Redressal Mechanism

Effective grievance redressal mechanism gives an opportunity to the organization to implement a set of specific measures to ensure good governance accountability and transparency in managing and mitigation of environmental and social issue 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 Cell (GRCs), with necessary officers, officials and systems at MIDFC. 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 three tire grievance redressal mechanism, i.e., (1) at the project site level, (2) State level (PMU level) and (3) Judiciaryl evel.

Web based grievance mechanism: In case of grievances received through 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 nature of 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 within 15 days. If response is not received within 15 days, the complaint should be escalated to the Project Director.

Tier I: Under this project, the local VECs and community level organizations will serve as the first- tier mechanism to handle complaint sand grievances. The local Headman will be the focal point who will receive, address, and keep record of the complaints and feedbacks. The grievance focal point will first review the grievances submitted. If grievances or disputes cannot be solved at the VEC ‘s level within 30 days of the submission of the grievances, the issue will be brought to PMU level for mediation. PMU is expected to inform aggrieved persons or parties to disputes of the resolution in 30 days.

Tier II: If the aggrieved person is not satisfied with the verdict of site level grievance cell, he or she can escalate the grievance to state level grievance cell. The tier II cell will be under the Chairmanship of Secretary, Department of Planning. The other members will include Chief Engineer; Project Director and Social Expert of the Project. The second level of grievance cell will provide its view within 30 days of receiving the grievance.

TierIII: The aggrieved person if not satisfied with the verdict given by State level grievance cell, will have the right to approach the Judiciary. Project will help the aggrieved person in all respect if person wants to approach the judiciary. This would include the District Commissioner and Legal courts. If the issue cannot be addressed or is outside the purview of the GRC, then it may be taken by the Office of the District Commissioner or a Legal Court.

Grievance management through Electronic Mode: A simplified mobile based technology feedback system can be used at community level to capture and feed data into the Management Information System of the PMU. A toll-free Helpline number will also be established to make the mechanism widely accessible and gender friendly.

2.11.3 Rural Livelihood Mission

As per the guidelines of NRLM, the Government of Meghalaya has formed a state society in the name – Meghalaya State Rural Livelihoods Society (MSRLS). The society is registered under the Meghalaya Society Registration Act XII of 1983 and was designated as the Nodal Agency for implementing NRLM in the state. The basic purpose of forming this society is to put in place a dedicated and sensitive support structure from the State level down to the sub-district level which will focus on building strong and self-managed institution of the poor at different levels. This will provide the poor a platform for collective action based on self-help and mutual cooperation, build linkages with mainstream financial institutions and Government departments to address the multi-faceted dimensions of rural poverty.

The Programmes and Schemes under Meghalaya State Rural Livelihood Society are as follows:

- Deendayal Antyodaya Yojana-National Rural Livelihoods Mission (DAY-NRLM).
- Mahila Kisan Shashaktkaran Pariyojana (MKSP)
- Start Up Village Entrepreneurship Program (SVEP)
- Livelihoods Intervention for Facilitation of Entrepreneurships.

2.12 MAHATMA GANDHI NATIONAL RURAL EMPLOYMENT GUARANTEE ACT

The Mahatma Gandhi National employment grantee act (MGNREGA) was notified on September 7, 2005 with the main objective to enhance livelihood security in rural areas by providing at least 100 days of guaranteed wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work. The Ministry of Rural Development (MRD), Govt. of India is monitoring the entire implementation of this scheme in association with state governments. This act came into force on February 2, 2006 and was renamed from NREGA to MGNREGA in 2009.

MGNREGA has been initiated with the idea to create durable community assets as well as individual assets so that larger and smaller areas of development are covered. And since its inception activities under various sectors such as flood control, rural connectivity, drought proofing, water conservation, Minor Irrigation Canals, water tank, animal shelter, horticulture plantation & various land development works like land terracing, land development work of CMRHM, extension and creation of playgrounds etc. are taken up.

In the implementation of the project, people having job card and willing to work can be a part of the contractor. This additional project work will help them to generate more income and support their family by raising their standard of living. Employing the workers from locally available labour pool, will help the contractor in reducing the labour cost and this will lead to employment generation as well.

2.13 TOURISM

The living root bridges are one of Meghalaya's most beautiful tangible heritage sites. These sites have recently been added to the tentative UNESCO world heritage site list. They are made of intertwined roots which are a sort of magic, but they aren't imaginary. These bridges have been built for centuries by the indigenous people of the land (Khasis and the Jaintias). They have also been used by these people to cross

the overflowing rivers during the monsoon season. Not only is it a naturally built ecosystem of local flora but it also symbolizes the relationship and knowledge that the local people have over their region and the cultural significance that it holds for them. Under ideal conditions, a root bridge is thought to be able to persist for hundreds of years. These bridges frequently rise 50 to 100 feet in the air. The state's longest living root bridge is said to be a whopping 175 feet in length. There are approximately 100 or so known living root bridges across different villages. Some of the most popular of these living root bridges are in Nongriat, Cherrapunji, Nongbareh and other nearby locations.

Earlier, foreign tourists required special permits to enter the areas that now constitute the state of Meghalaya. However, the restrictions were removed in 1955. Meghalaya is compared to Scotland for its highlands, fog, and scenery. Meghalaya has some of the thickest primary forests in the country and therefore constitutes one of the most important ecotourism circuits in India. The Meghalaya subtropical forests support a vast variety of flora and fauna. Meghalaya has 2 National Parks and 3 Wildlife Sanctuaries.

Meghalaya also offers many adventure tourism opportunities in the form of mountaineering, rock climbing, trekking, and hiking, caving (spelunking) and water sports. The state offers several trekking routes, some of which also afford an opportunity to encounter rare animals. The Umiam Lake has a water sports complex with facilities such as rowboats, paddleboats, sailing boats, cruise-boats, water-scooters, and speedboats.

Cherrapunji is a tourist destination in north-east of India. It lies to the south of the capital Shillong. A rather scenic 50-kilometre-long road connects Cherrapunji with Shillong.

The most visited waterfalls in the state include the Elephant Falls, Shadthum Falls, Weinia falls, Bishop Falls, Nohkalikai Falls, Langshiang Falls and Sweet Falls. The hot springs at Jakrem near Mawsynram are believed to have curative and medicinal properties.

Nongkhnum Island located in the West Khasi Hills district is the biggest river island in Meghalaya and the second biggest in Asia. It is 14 kilometres from Nongstoin. The island is formed by the bifurcation of Kynshi River into the Phanliang River and the Namliang River. Adjacent to the sandy beach the Phanliang River forms a lake. The river then moves along and before reaching a deep gorge, forms a waterfall about 60 meters high called Shadthum Fall.

2.14 PRELIMINARY BUDGET ESTIMATES

A consolidated overview of the budget is provided in this section. The impact on private land and structure is Nil. The proposed treatment will be majorly carried out in the available RoW and most of the approach roads have sufficient land width available. Majority of the impacted land is government land. On average, existing RoW is 10 mtr. to 15 mtr. (5 mtr. to 7.5 mtr. on either side).

Resettlement framework will be formulated based on the principals of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and World Bank Entitlement Matrix.

3 ENVIRONMENT STUDY

This chapter briefly describes the baseline environmental profile of the study area. The chapters will also entails about applicable environmental legal policy framework pertains to the project, categorization of the project corridor, Project wise Environmental characteristics and Environmental Monitoring Budget approach for the project development.

3.1 PROJECT INTERVENTIONS

The list of various project bridges across the South, South-West and West Garo Hills districts of Meghalaya is provided in the tables below. This report pertains to Bridge No. 1 (NH-51 to Megadop Village) in Barengapara division and West Garo Hills district.

Table 3-1: Feasibility Bridges

Sr. No.	District	Division	Block	Name of Road	Proposed Length (in m)	Latitude (N)	Longitude (E)
1	**West Garo Hills**	**Barengapara**	**Dalu**	**NH-51 to Megadop Village**	**68**	**25°14'21.01"N**	**90°12'30.54"E**
2	South-West Garo Hills	Tura North	Gambegre	Damalgre Mellim Boldamgre Road	38	25°26'44.50"N	90° 5'35.31"E
3	South-West Garo Hills	Tura North	Rerapara	Damalgre Mellim Boldamgre Road	26	25°29'11.55"N	90° 5'20.49"E
4	South Garo Hills	Barengapara	Dalu	Sonagre-Jijikapara Road	95	25°14'46.10"N	90°16'8.39"E
5	West Garo Hills	Barengapara	Dalu	Kherapara-Chengapara Road	53	25°20'33.77"N	90° 8'52.35"E

3.2 ENVIRONMENTAL PROFILE OF MEGHALAYA

3.2.1 Physiography

The state of Meghalaya is situated in the northeast region of India, and extends latitude 20°1'N - 26°5'N and longitude 85°49'E - 92°52'E. It extends for about 300 km in length and about 100 km in width. It is bounded on the north and east by the state of Assam and on the south and west by Bangladesh.

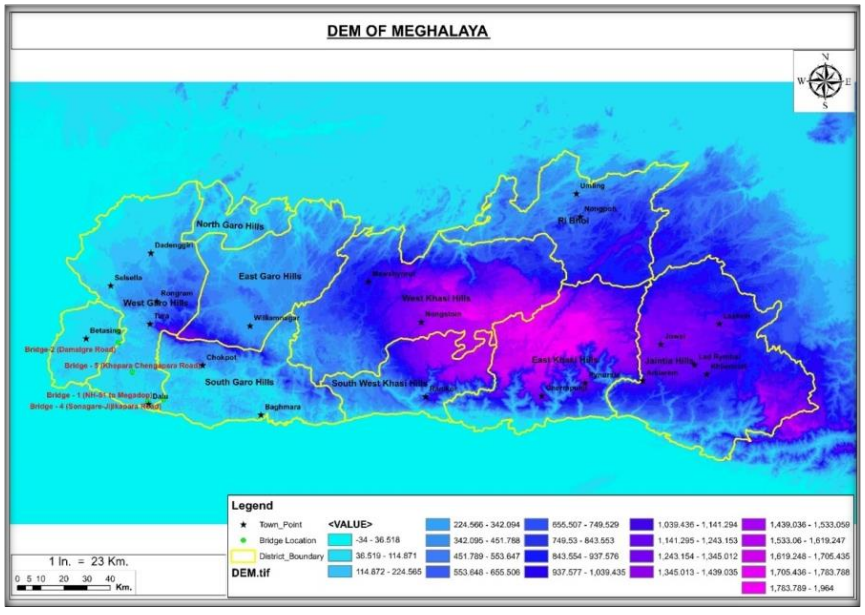


Figure 3-1: DEM Map showing Elevation of the Meghalaya

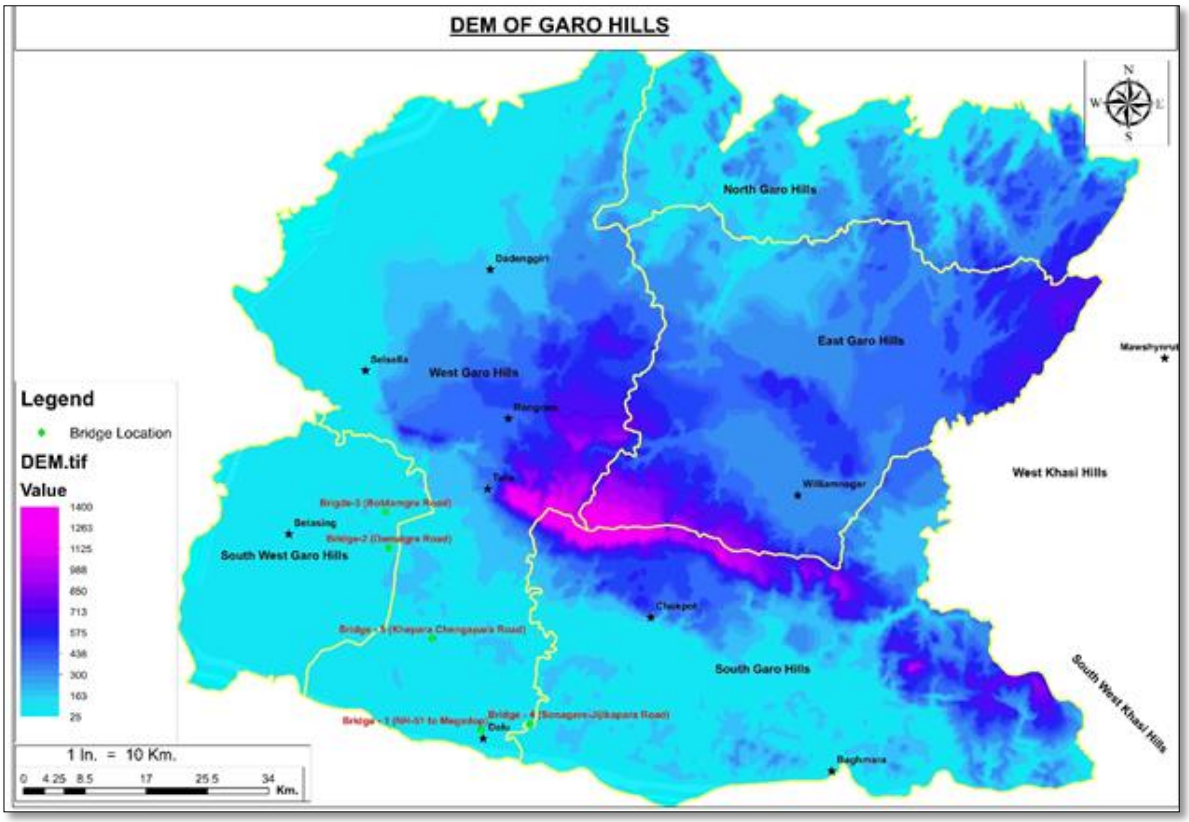


Figure 3-2: DEM Map showing Elevation of the Garo Hills

Meghalaya state is also known as Meghalaya plateau. The state can, broadly, be divided into three physiographic zones, namely:

- Central Plateau Region comprising the Khasi Hills and has the highest elevations between 900-2000mSub-montane region in continuation with the Central Plateau below 900m which gradually merges with the plains in the West and North, namely the Jaintia Hills, and
- Border region which stretches south-wards abruptly from the Central Plateau to the plains in Bangladesh, mainly the Garo Hills region, and is nearly plain.
- The highest point in the state is the Shillong Peak with an altitude of 1961 meters. The project corridors which are following in the north district has snow-fed influenced region.

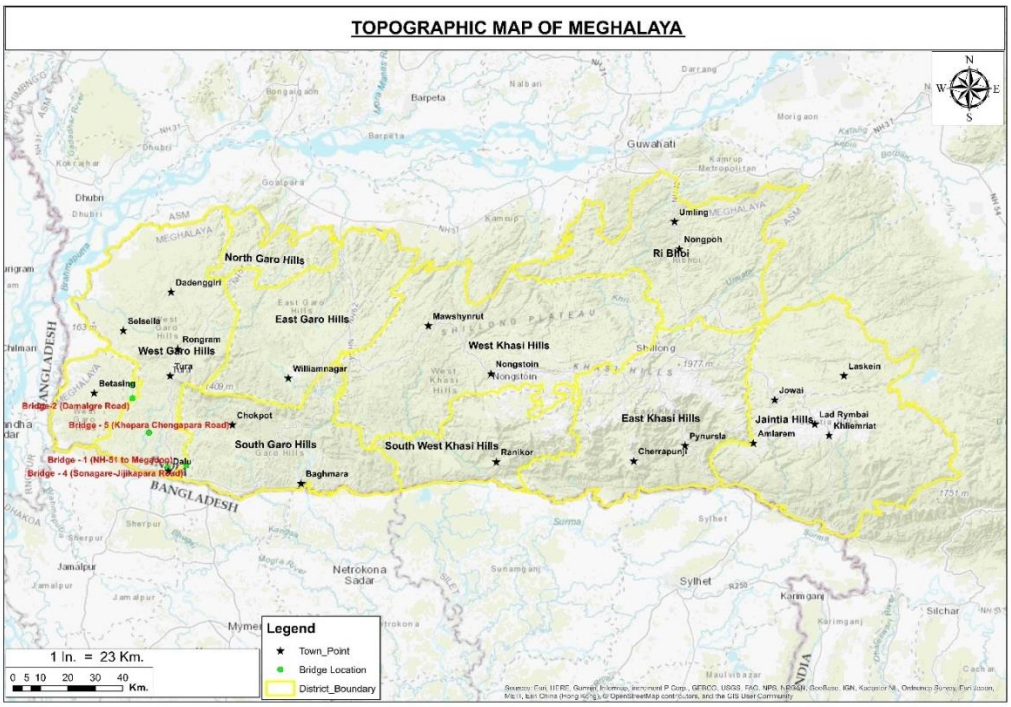


Figure 3-3: Map Showing Topographic of Meghalaya

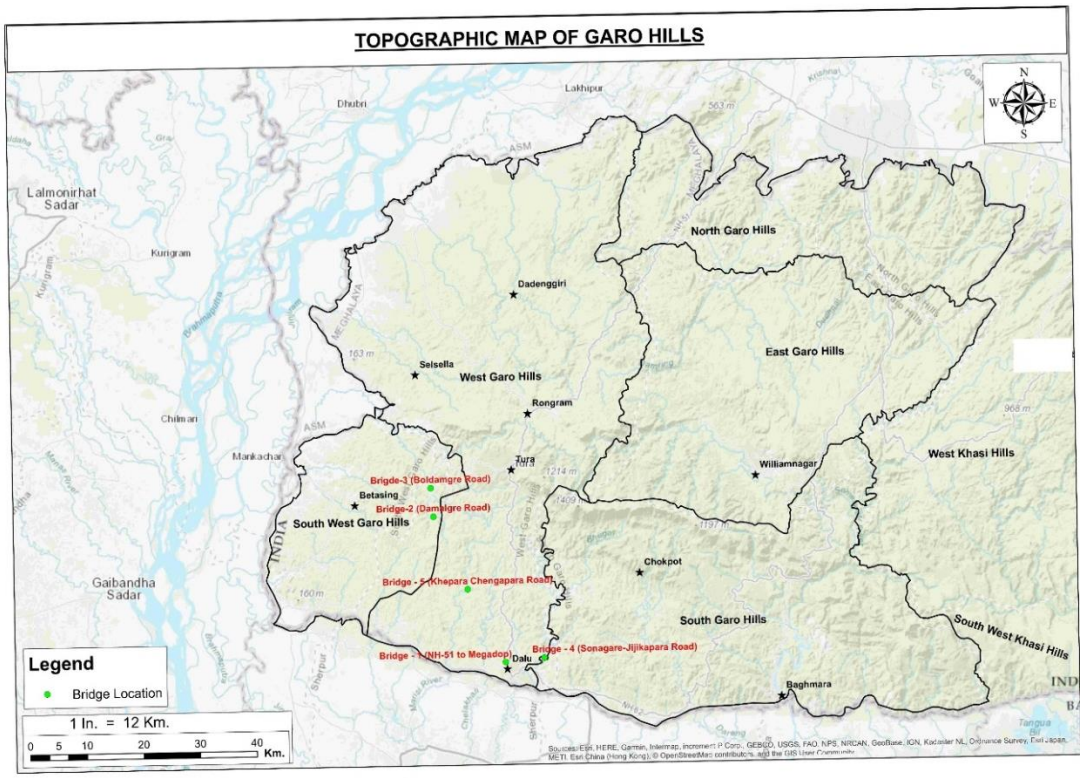


Figure 3-4: DEM Map showing Elevation of the Garo Hills

Soil

The soil of Meghalaya varies from dark brown to dark reddish-brown in colour. The depth of soil varies from 50 to 200 cm in different parts of the state with texture ranging from loamy to fine loamy. The soils are rich in organic carbon with high nitrogen supplying potential, but deficient in phosphorus and potassium. Soil reaction varies from acidic (pH 5.0 to 6.0) to strongly acidic (pH 4.5 to 5.0). Most of the soils occurring on higher altitudes under high rainfall belt are strongly acidic due to intense leaching. There is not much difference in fertility classes of the soils of the state. Four soils fertility classes, namely, High Low Medium (HLM), High Medium Medium (HMM), Medium Medium Low (MML) and Medium Low Medium (MLM) have been established in Meghalaya. (Directorate of Agriculture, Meghalaya)

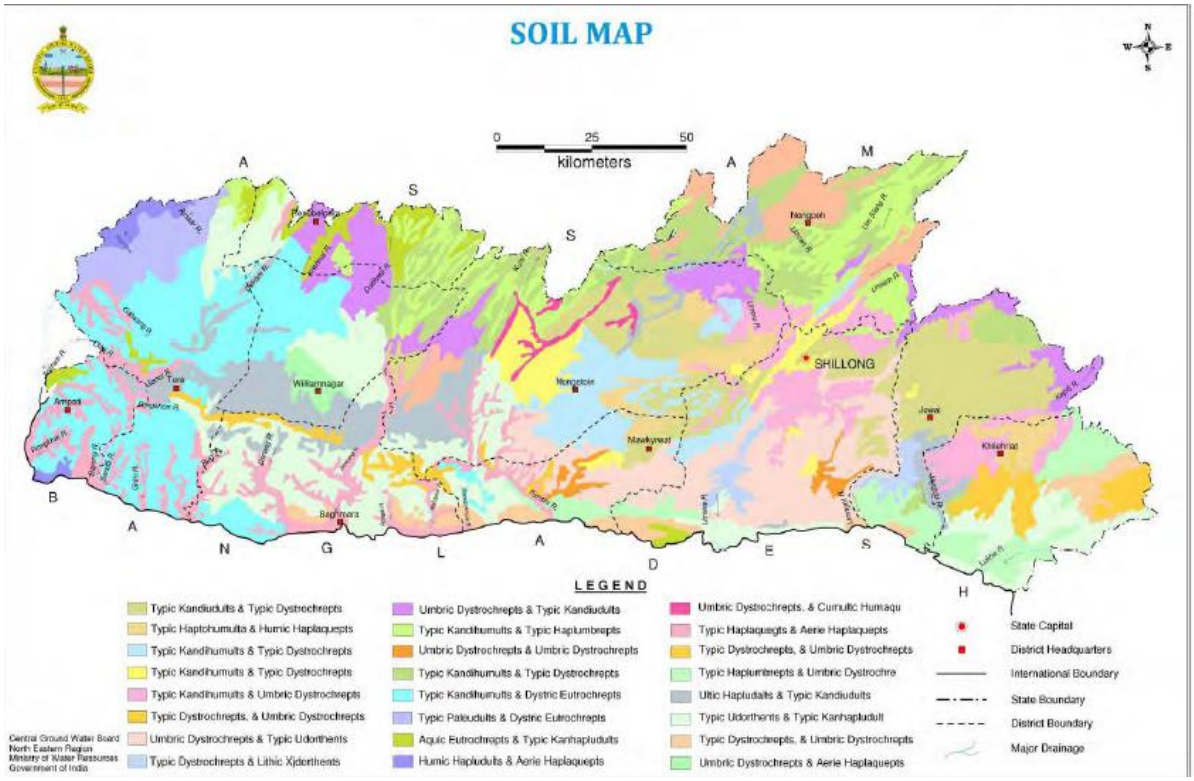


Figure 3-5: Soil Map of Meghalaya

3.2.2 Hazard Profile

Seismicity

The Bureau of Indian Standards has categorized the entire country in various zones depending upon the degree of proneness to earthquakes. The Zone I signify lesser degree while Zone V signifies highest order. The proposed project road falls under the Seismic Zone V, which is susceptible to major earthquakes as per the seismic zone map of India (IS 1893 - Part I: 2002), shown below in Figure. According to GSHAP data, the state of Meghalaya falls in a region of high to very high seismic hazard. As per the 2002 Bureau of Indian Standards (BIS) map, this state also falls in Zone- V The design standard for road shall follow the prevalent BIS standard during construction of the project roads.

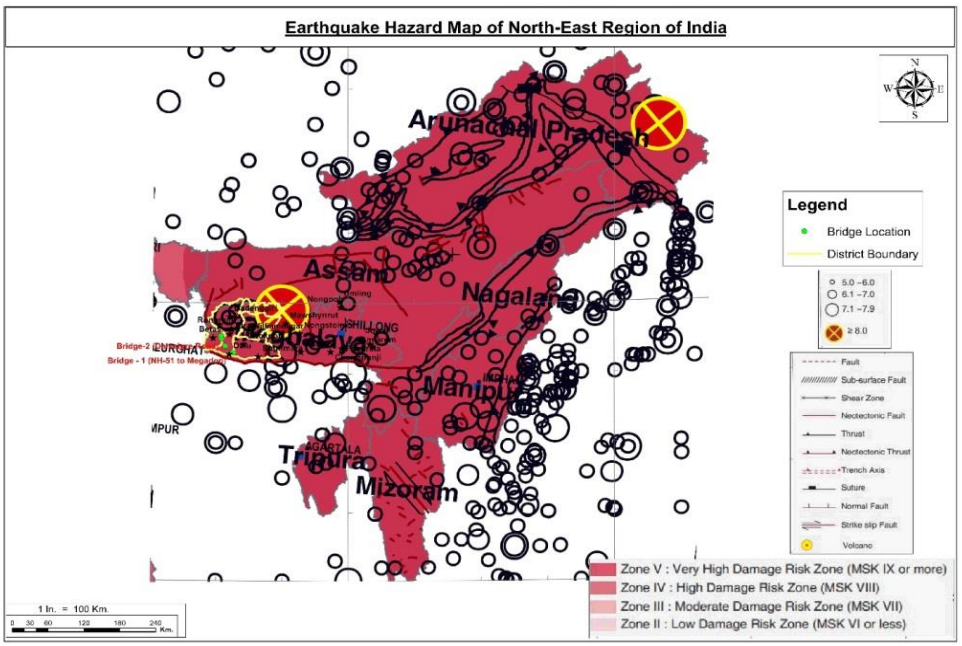


Figure 3-6: Showing Map of North East State

3.2.3 Landslide

Meghalaya being a hilly terrain is prone to landslides. Every year a number of landslides have been reported from various localities. These cause a lot of miseries to public, resulting in loss of lives and properties, disruption of communication network, besides causing economic burden on the society. Landslide is primarily attributed to high slope, immature geology, neo-tectonic activity, heavy rainfall, unplanned and improper land use practice in the State. Landslides generally occur during heavy rains, that is during the months of June to October in Meghalaya. The landslide prone areas of Meghalaya are presented in the map below.

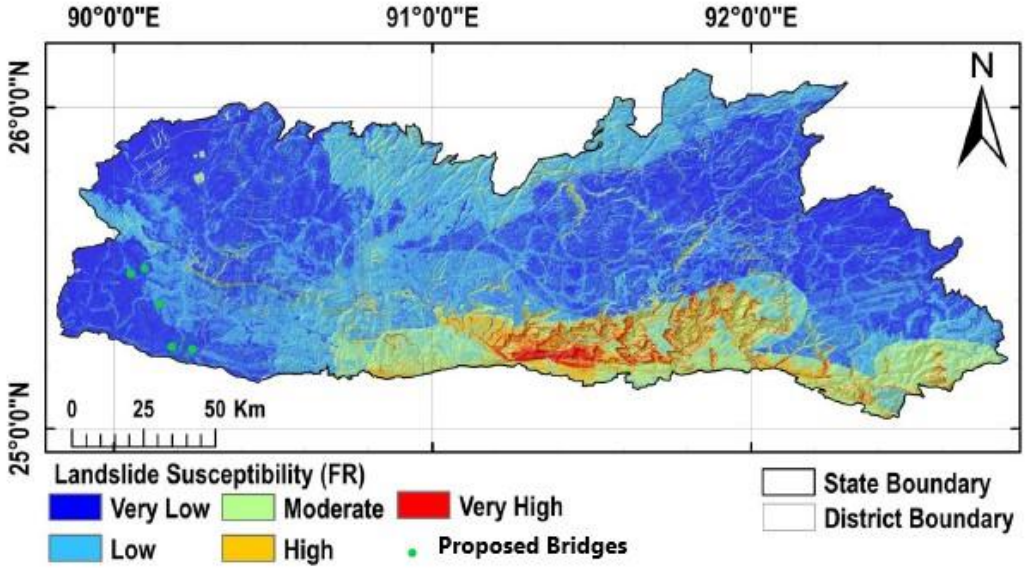


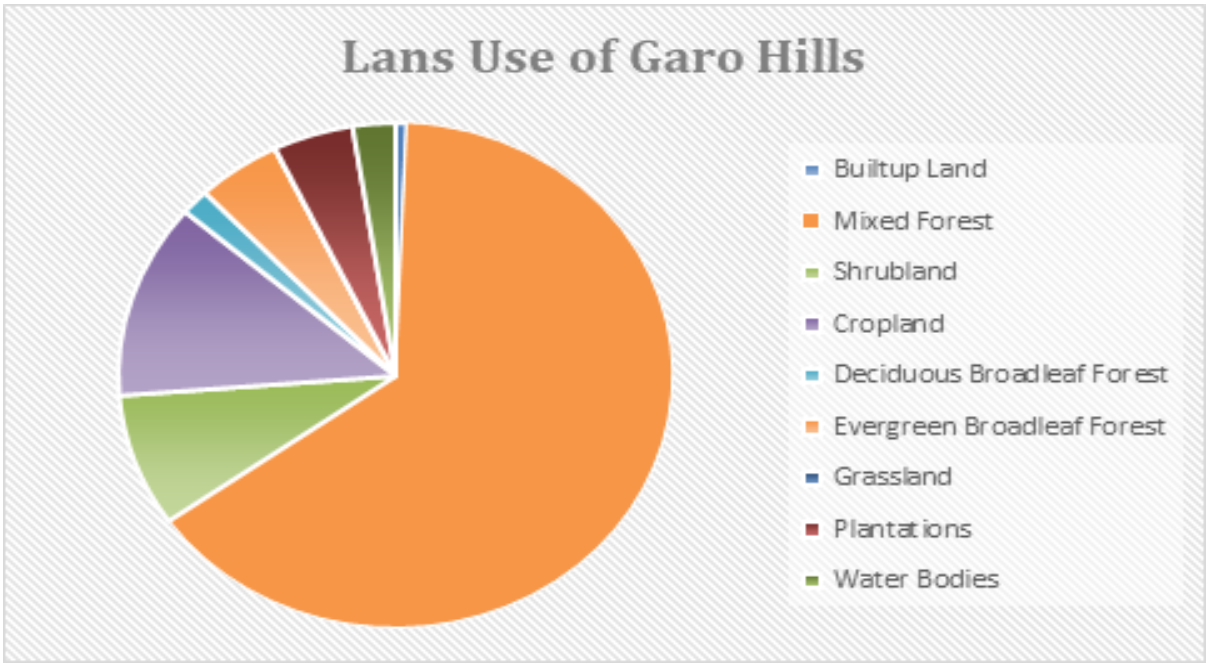
Figure 3-7: Landslide prone location in the project region

3.2.4 Land Use Pattern of Meghalaya

Meghalaya lies between 240 58' North to 260 07' North latitudes and 890 48' East to 920 51' East longitudes. It covers an area of 22,429 sq. km. of which about 70% is endowed with dense forests and rivers cascading down undulating terrain. The State has most of its land covered by hills interspersed with gorges and small valleys.

Most of the land is under rural areas, with Shillong being predominately the main urban settlement. Only 12.74% is net sown area. The principal crop grown in the state is rice covering atleast 80% of the cultivated land, followed by maize and wheat. About 17.4% of the land is under wasteland category, (comprising of scrubland, jhum, abandoned jhum lands and degraded scrub forest, with the highest proportion in the west Khasi hills and Jaintia hills.

The land use of Garo Hills is predominantly Forest followed by crop land.



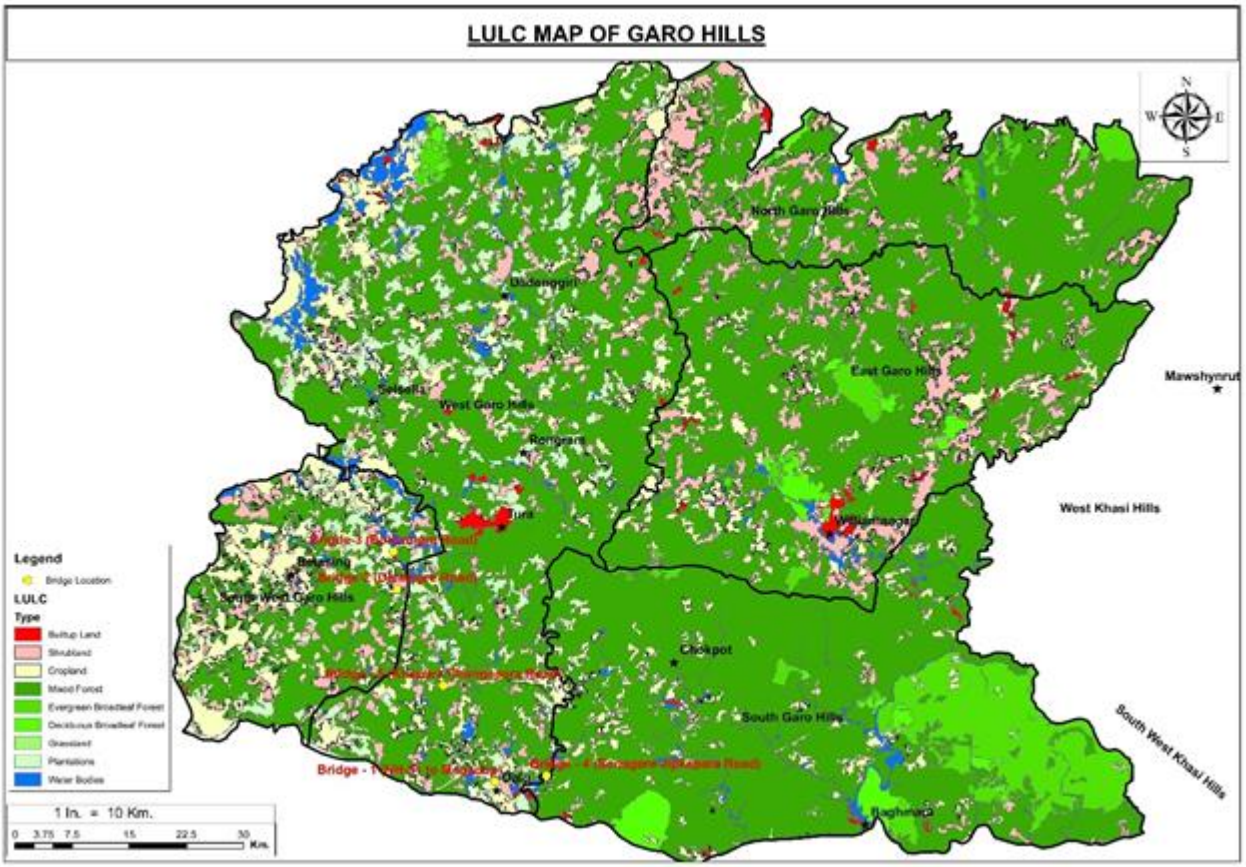


Figure 3-8: Land use map of the Garo Hills

3.2.5 Climate

Climate of Meghalaya plateau is influenced by elevation and distribution of physical relief. On the basis of weather condition, the Meghalaya plateau has 4 distinct seasons. The seasons are:

a) The rainy season from May to early October.
b) The cool season from early October to November.
c) The cold season from December to February.
d) The warm season or hot season from March to April

The salient climatic features of the state are as fallow:

- Average Annual Rainfall - 2000-4000 mm
- Concentration of precipitation - May to October
- Humidity - 67 to 94%
- Cloudiness - Heavily clouded
- Wind - Generally light except rainy season
- Temperature - Summer 23^0C to 25^0C
- Winter 7^0C to 11^0C.

Garo hills experienced higher temperature conditions and humidity from February to October. April and May are the warmest months and January is the coldest month. The Khasi and Jaintia hills experience a moderate climate because of higher elevation. Warm and humid conditions are prevalent in the foothill region in the south and sub-montane region in the north and central uplands. The plateau experiences a temperature of 24oC throughout the year. The southern parts of the plateau have the Cherrapunji - Mawsynram region which receives the heaviest rainfall, an annual average of 12670mm which is the highest amount of rainfall in the world. The Khasi and Jaintia hills receive an average of 7700mm of rainfall and lies in the rain shadow area.

3.2.6 Air environment

Air Quality Parameters are being monitoring twice a week by Meghalaya State Pollution Control Board at 10 locations namely Lumpyngngad (Shillong), 4 1/2 Mile (Shillong), Dawki (West Jaintia Hills), Khliehriat (East Jaintia Hills) Nongstoin (West Khasi Hills) Tura (West Garo Hills), Barik (Shillong), Polo (Shillong), Umiam (Industrial Area), Byrnihat Town (Ri Bhoi). Ambient air quality Index level of representative city from project district has been found well within permissible limit.

As per SPCB, the ambient air quality in the state has been well within the permissible limits as per the provisions of the Air (Prevention and Control of Pollution) Act, 1981. While AQI for majority of the towns are under 'Good' category, two locations in Ri Bhoi district have fallen under 'Satisfactory' category. Proximity of Ri Bhoi district to the National Highway NH6 which is subjected to heavy movement of vehicles can be a reason for these towns to fall under 'Satisfactory' category[1]..

Vehicular pollution is a secondary source of pollution in the state as the traffic density in the entire state is very less. The level of pollution in rural areas is much lower than that of the urban areas. Also the traffic flow in rural areas is much less than that of the urban locations.

3.2.7 Noise environment

Noise is an important environmental attribute in road and bridge projects because vehicular traffic is a source of noise pollution. Noise level was measured before and on Diwali by State Pollution Control Board at the residential, commercial, silence and industrial area in Shillong. The locations are

i. Lumpyngngad (Location A –Board's premises), a residential area.
ii. Police Bazar (Location B - Meghalaya Legislative Assembly office's premises), a commercial area and
iii. Lawmali (Location C – Ganesh Das Hospital premises), a silence zone.
iv. EPIP, Byrnihat (Location-D), an Industrial zone

The result shown in **Table 3-1 to Table 3-4** as Given Below are

Table 3-1: Noise Quality Result at Lumpyngngad on Pre and Post Diwali

Lumpyngngad						
Location A	**Pre Diwali-Day (9.11.2020)**			**On Diwali (14.11.2020)**		
Time Duration	**Lmin**	**Lmax**	**Leq dB (A)**	**Lmin**	**Lmax**	**Leq dB (A)**
18:00 to 19:00 Hr.	50.1	60.3	54.5	51.9	77.0	67.7
19:00 to 20:00 Hr	48.1	56.3	50.9	53.3	72.5	66.7

1 State Pollution Control Board, Meghalaya

20:00 to 21:00 Hr.	46.2	63.7	51.8	53.8	70.4	64.7
21:00 to 22:00 Hr.	41.3	57.2	45.2	50.5	74.8	59.8
22:00 to 23:00 Hr.	41.7	54.1	43.2	42.5	74.6	44.6
23:00 to 24:00 Hr.	40.6	53.4	42.9	42.9	58.3	43.7

Table 3-2: Noise Quality Result at Poloce Bazar on Pre and Post Diwali

Police Bazar						
Location : B	Pre-Diwali Day (9.11.2020)			Diwali Day (14.11.2020)		
Time duration	Lmin	Lmax	Leq dB(A)	Lmin	Lmax	Leq dB(A)
18:00 to 19:00 Hr.	48.8	68.7	52.4	53.0	83.5	59.0
19:00 to 20:00 Hr.	48.6	71.1	52.9	55.4	83.3	63.1
20:00 to 21:00 Hr.	50.8	71.6	53.9	56.5	79.8	66.0
21:00 to 22:00 Hr.	44.8	69.3	48.7	58.2	84.5	67.1
22:00 to 23:00 Hr.	43.1	67.7	46.1	55.6	74.9	62.4
23:00 to 24:00 Hr.	40.8	62.4	43.9	53.2	71.8	60.2

Table 3-3: Noise Quality Result at Lawmali on Pre and Post Diwali

Lawmali						
Location: C	Pre-Diwali Day (9.11.2020)			Diwali Day (14.11.2020)		
Time duration	Lmin	Lmax	Leq dB(A)	Lmin	Lmax	Leq dB(A)
18:00 to 19:00 Hr.	39.5	80.7	49.8	40.4	82.2	59.0
19:00 to 20:00 Hr.	37.6	84.6	47.2	44.7	83.4	60.1
20:00 to 21:00 Hr.	39.2	90.1	50.1	45.3	87.5	62.3
21:00 to 22:00 Hr.	45.3	87.6	42.8	42.6	85.2	56.9
22:00 to 23:00 Hr.	36.1	86.2	44.3	42.3	69.1	50.7
23:00 to 24:00 Hr.	35.4	82.4	43.3	40.2	70.2	45.2

Table 3-4: Noise Quality Result at EPIP, Byrnihat on Pre and Post Diwali

EPIP, Byrnihat						
Location: D	Pre-Diwali Day (9.11.2020)			Diwali Day (14.11.2020)		
Time duration	Lmin	Lmax	Leq dB(A)	Lmin	Lmax	Leq dB(A)
18:00 to 19:00 Hr.	49.0	58.8	52.9	45.5	76.6	55.5
19:00 to 20:00 Hr.	45.3	60.6	51.9	45.5	77.7	56.2
20:00 to 21:00 Hr.	39.3	72.8	50.0	39.6	65.1	51.6
21:00 to 22:00 Hr.	45.5	59.1	46.8	43.1	65.1	50.6
22:00 to 23:00 Hr.	43.1	51.2	46.0	45.4	62.9	53.4
23:00 to 24:00 Hr.	42.6	57.0	45.8	43.6	62.7	51.5

It was observed from the above mentioned table that the Leq on Pre-diwali for all the locations are within the permissible limits of CPCB Standard except for Location -C Lawmali where Leq at night time exceeds the standard (for slience zone) whereas on Diwali the Leq for Location A , B and exceeds the standard limits.

3.2.8 Water Environment

One of the world's wettest regions is found in Meghalaya. Mawsynram and Cherrapunji (Sohra) in the East Khasi Hills district are geographically considered as the rainiest places in the World, with Cherrapunjee, receiving close to 12000 mm of annual rainfall and Mawsynram, a village directly west of Cherrapunji, where rainfall of around 17,800 mm (700 inches) per year. These areas receive rainfall on an average for 160 days in a year, spread over six to eight months between March to October. Paradoxically, even then

the state of Meghalaya is water stressed in some regions during summer months. This is mainly due to topographical and geomorphological conditions apart alterations of the natural land surface by way of development, mining and urbanization. Moreover, the characteristic hilly and steep sloping terrain condition in the area with localized small valleys results in very high surface run-off during the monsoon

The rivers of the State are rainfed and therefore their discharge dwindles during summer. Important rivers in Garo Hills region are Daring, Sanda, Bugi, Dareng and Simsang. In the central and eastern part of the plateau are Umkhri, Digaru, Umngot and Myntdu rivers. The surface water resource is tapped in a number of places by constructing dams across the rivers. The reservoirs, like the Umiam and Kopili, so developed are not only used for irrigation and drinking water but also for generating electricity.

The surface water available in Meghalaya on annual basis is roughly estimated at 63.204 billion cubic metres (BCM) and the estimated replenishable ground water resources estimated as 1.15BCM. According to the Central Ground Water Board (CGWB) 1.04BCM of ground water is potentially available for utilization. Figure 3-9 shows spread to two major river basins Brahmaputra and Meghna, and their sub-basins,

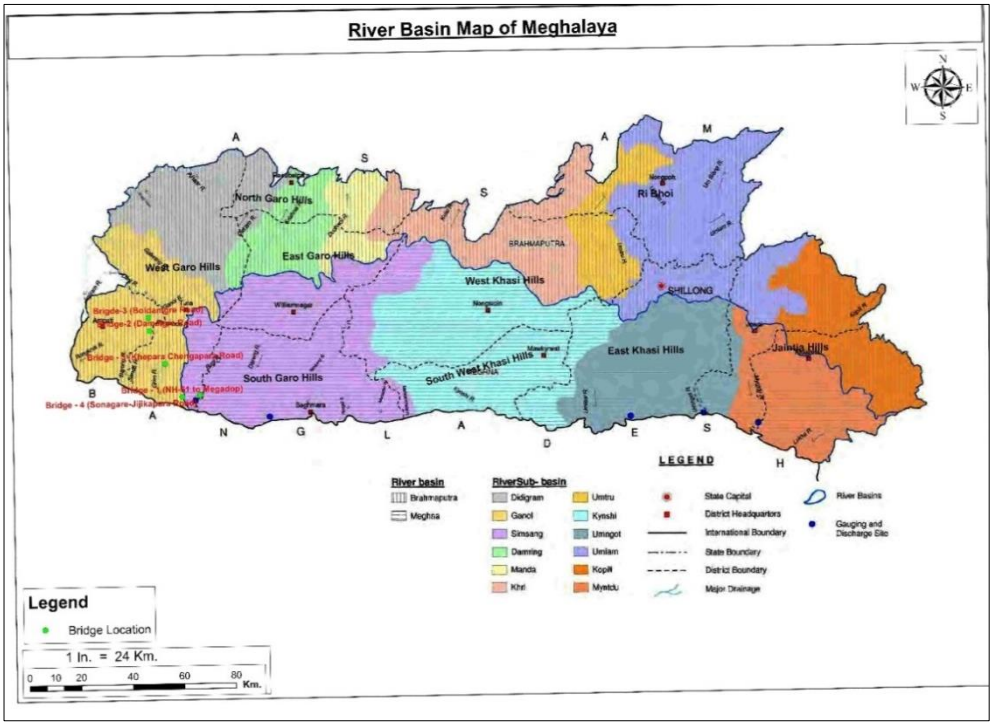


Figure 3-9 : Map Showing River Basin Map of Meghalaya

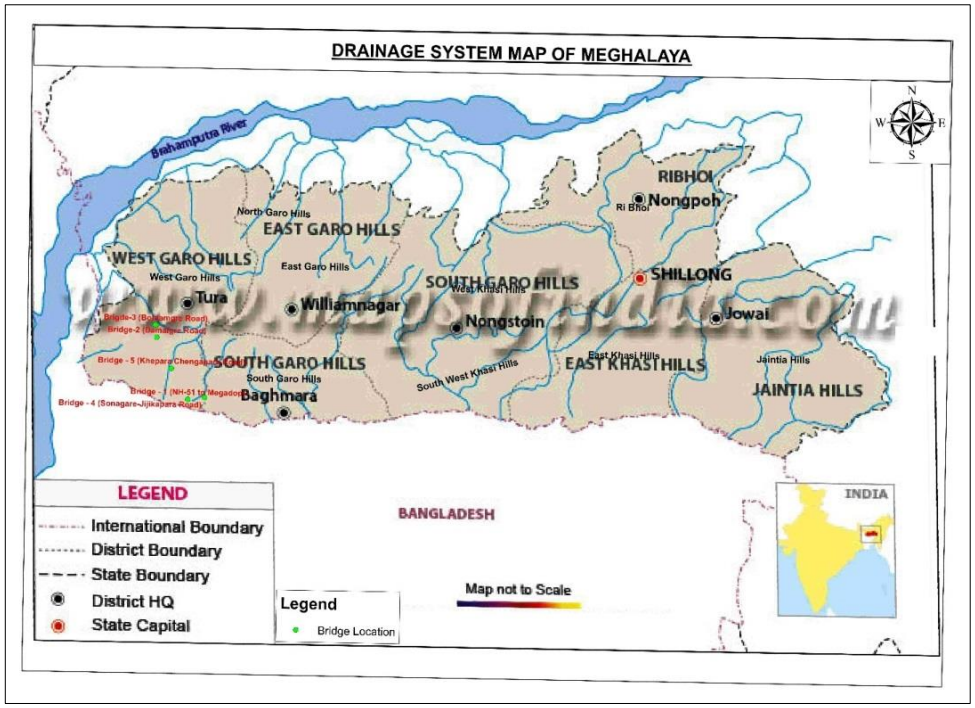


Figure 3-10 : Map Showing Drainage Map of Meghalaya

SPCB Meghalaya has been implementing the National Water Quality Monitoring Programme (NWMP) to regularly monitor the water quality in a systematic manner to know the nature and extent of water quality degradations and the existing quality of water in the water bodies. The SPCB Meghalaya collects water samples from 8 (Eight) sampling stations were located in Garo Hills. In all the monitored locations the pH was observed to be in the normal range of 6.5 to 8.5. The dissolved Oxygen content in all the stations was found to be above 4mg/l, which was the minimum oxygen requirement for propagation of wildlife fisheries etc. The Bio-chemical Oxygen Demand was observed to be below 3mg/l in all the monitored water bodies. The total Coliform count was observed to be moderately high in Simsang & Ganol River. The water quality of all monitored water bodies was relatively satisfactory. [2]

3.2.9 Biological Environment

As per the Forest Survey of India report, Meghalaya rank seventh amongst the Indian states in respect of percentage of geographical area uder forest cover. The forests of Meghalaya are rich in biodiversity and endowed with rare species of orchids and medicinal plants. The forest types in Meghalaya are **Subtropical Pine, Subtropical Broadleaf, Tropical Wet Evergreen, Tropical Semi- Evergreen, and Tropical Moist Deciduous Forests**. The Forest and Tree cover in the State is 79.37 % covering 17,803 Sq.km. Out of total forest area of 17,146 sq km (76.44% of the state's geographical area) only 1145.19 sq km of Forest areas (5.10 % of geographical area) comes directly under the control of the State Forest Department in the form of reserved forest, protected forest, national parks, wildlife sanctuaries and parks & gardens. The rest of the forest areas belong to communities, clan and private people and District Councils. There are three Autonomous District Councils (ADCs) i.e., Khasi Hills Autonomous District Councils, Jaintia Hills Autonomous District Councils and Garo Hills Autonomous District Councils, which have been set up under

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the provisions of the Sixth Schedule to the Constitution of India. These ADCs have the power to make laws with respect to, among others, the management of any forest not being a reserved forest.

The project connecting road section is passing through plain terrain with land use being agriculture and built-up area. There is no forest area located along the alignment of the proposed bridge connecting road section.

The trees to be cut in corridor of impact of road section are along the existing alignment of connecting road and on river bank are thinly distributed. Trees being next to existing road, these are less preferred for habitat or shelter by birds and animals due to human activities.

Field survey has been carried out to identify the number and type of trees to be affected by the proposed improvement work of road alignment. It is envisaged that about 10-15 number of trees are likely to be cut for the implementation project.None of the impacted species are rare endangered species.

Meghalaya is a part of Indo-Burma biodiversity hot spot and identified as key area for biodiversity conservation due to high species diversity and high level of endemism. It has attracted the attention of wildlife enthusiasts and research scholars from all over the country.

Data collected from field clearly shows the subproject area is free of fauna. **No rare endangered species as schedule in wild life Protection Act 1972 has been observed in the project immediate influence zone**. No major issues related to human – animal conflict has been reported during consultation and site visits.

The protected area network in Meghalaya occupies 512.61 Sq.km area The Protected Area Network includes two National Parks, four Wildlife Sanctuaries and one Biosphere Reserve playing an important role in in-situ conservation of biodiversity. The Protected Area Network still support viable population of one of the two closely related Apes found in India, the endangered Western Hoolock Gibbon (*Hoolock hoolock*), and the Bengal Slow Loris (*Nycticebus bengalensis*). Other primates including Stumped-tailed Macaque (*Macaca arctoides*), Assamese Macaque (*Macaca assamensis*), Northern Pig-tailed Macaque (*Macaca leonina*), Rhesus Macaque (*Macaca mulatta*), Capped Langur (*Trachypithecuspileatus*) are also found in these areas. Among the carnivores, the Bengal Tiger (*Panthera tigris*) and the Clouded Leopard (*Neofelisnebulosa*) have become extremely rare while the adaptable Common Leopard (*Panthera pardus*) is still widely distributed. Bears including Sun Bear (*Helarctosmalayanus*), Asiatic Black Bear (*Ursus thibetanus*) and the Sloth Bear (*Melursus ursinus*) are found as well. Smaller cats like the Jungle Cat (*Felis chaus*), Marbled Cat (*Pardofelis marmorata*) and Leopard Cat (*Prionailurus bengalensis*) are still found in these protected areas. Smaller carnivores are also abounding, among them mongoose, badger, binturong, dhole, jackal, weasel, otter, fox and marten.

Consultations were held with the local villagers, livestock herders to gather information on the presence of wildlife and their habitats along the project road. Officials from local forest department were also consulted. Local communities and local forest officials informed that there is no National Parks or Wildlife Sanctuary within 5 km of the proposed alignment. It can be seen from the map (Figure 1.12) of the protected (notified) areas in State of Meghalaya.

There is no identified elephant corridor within the project influence area of this subproject. Further there is no Sacred Groves of Meghalaya are located within the subproject influenced area.

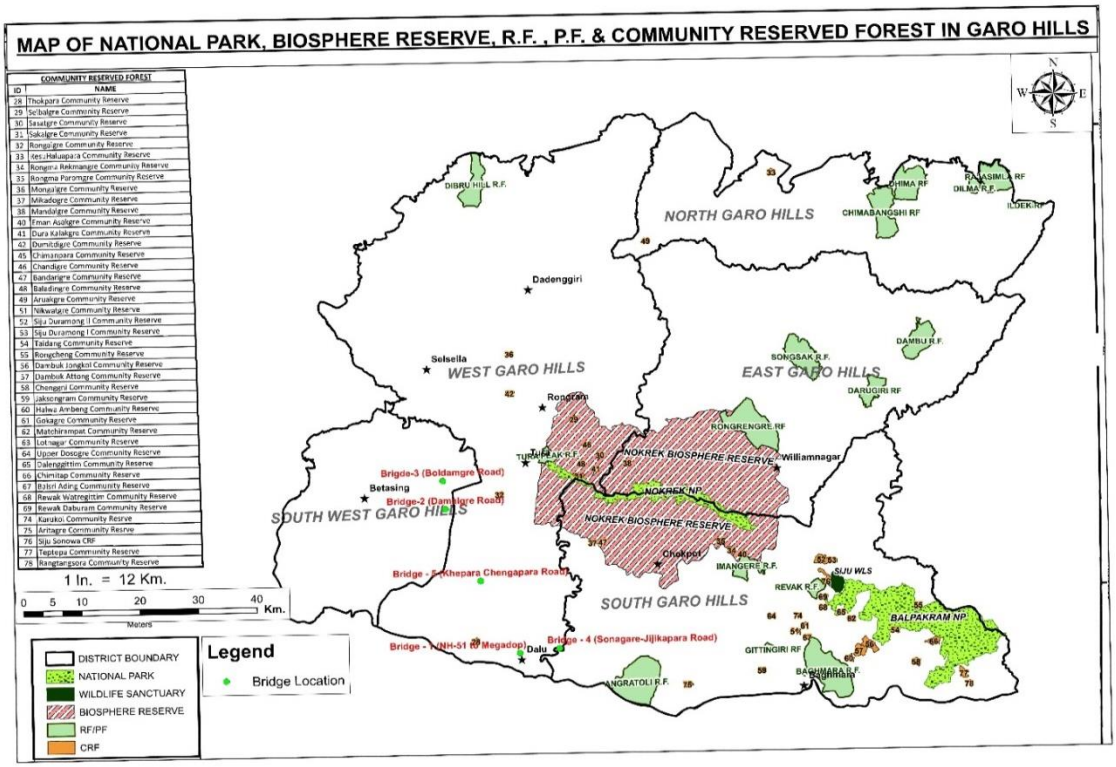

Figure 3-11: Map showing Forest, National Park/ WLs of the Garo Hills

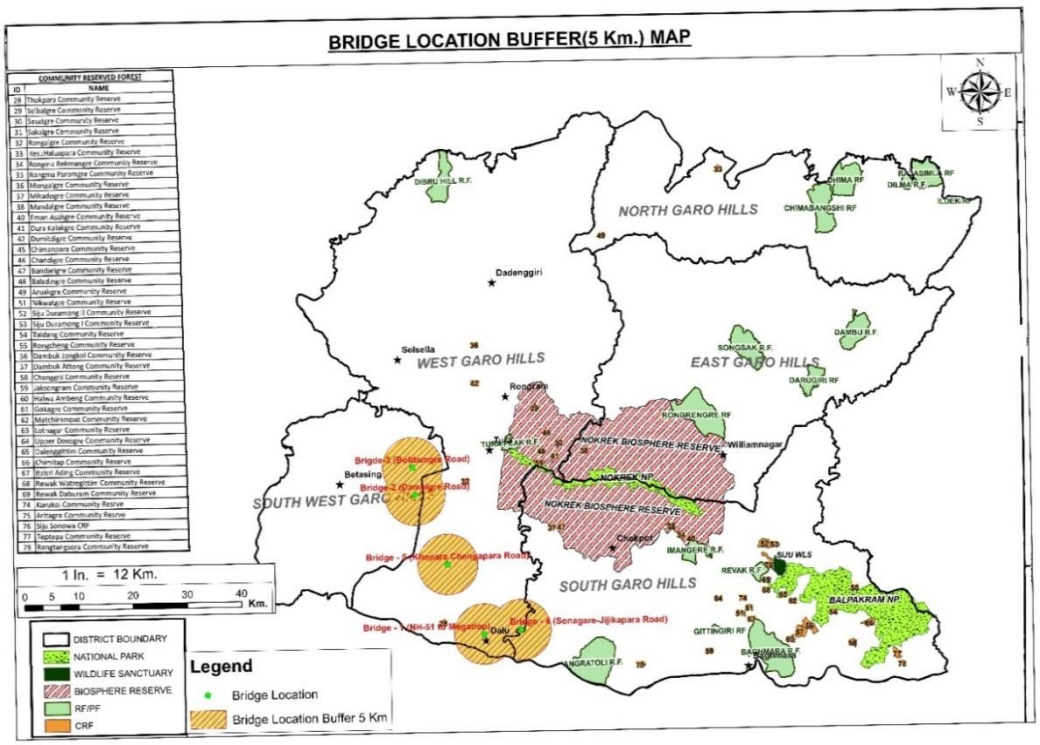

Figure 3-11: 5 KM Buffer zone pertains to forest area / Protected areas

3.2.10 Archaeological Sites

This is a list of Monuments of National Importance as officially recognized by Archaeological Survey of India is listed below in Table below, there are also state protected monuments, archaeological sites that have been recognized by the ASI in Meghalaya, in the West Garo Hills, these include excavated temples, Buddhist Stupa and a Fortress. There is no archaeological and historical monument is located along project alignment.

Table 3-5: Protected Archaeological and Historic Sites

Sl. No	Name of monuments/ sites	Location	District
1.	Megalithic Bridge between Jaraem and Syndai	Um-Nyakaneth	Jaintia Hills
2.	Megalithic Bridge known as Thulum-wi between Jowai and Jarain	Maput	Jaintia Hills
3.	Megalithic Bridge on the Um-Kumbeh	Um-Kumbeh	Jaintia Hills
4.	Stone memorial of U.Mawthaw - dur-briew	Nartiang	Jaintia Hills
5.	Tank, Syndai	Syndai	Jaintia Hills
6.	Stone memorial of U-Mawthoh-dur, Bhoi	Bhoi	East Khasi Hills
7.	Scott's Memorials	Cherrapunji	East Khasi Hills
8.	Manipur Memorial	Shillong	East Khasi Hills

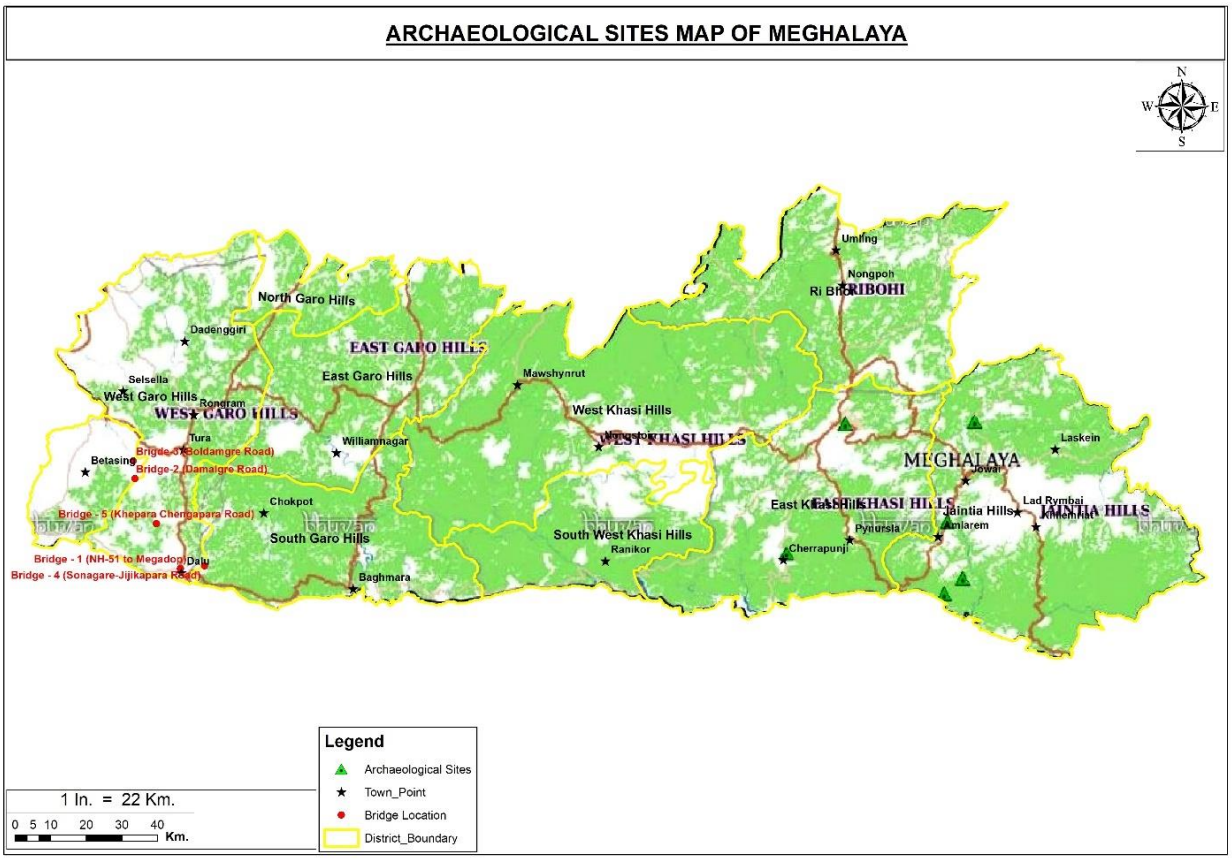

Figure 3-11: Archaeological Monuments of Meghalaya

3.3 APPLICABLE ENVIRONMENTAL LAWS AND REGULATION

The Government of India has laid down various policy guidelines, regulations, acts and legislations pertaining to sustenance and protection of environment and its various components. The policy, legal and regulatory requirements that are relevant to the environmental and social aspects of the proposed project shall comply with the policy, legal and regulatory requirements of the Government of India (GoI,) respective State Governments and World Bank's policies. The following are the key regulations in India applicable for various development Projects.

Table 3-6 : Applicable Environmental National and State Requirements

Sl. No.	Policy/Act/Rule	Project relevance	Requirement	Competent Authority	Responsible Agency for Obtaining Clearance
1.	Environmental (Protection) Act, 1986 amended 1991 and associated rules / notifications	The Environment (Protection) Act is an umbrella legislation on control of pollution (the Water Actand the Air Act) by enacting a general legislation for environment Protection.	The Act and the Rules framed under the act defines the standards for emission and discharges. All the equipment machinery which would be used in the project has to comply with the emission and or discharge standards specified.	MoEFCC	Contractor
2.	EIA Notification 14th Sep-2006 & amendments thereafter	To ensure and regulate the all-new development work which is listed in EIA Schedule	That the construction of a bridge or similar activity covering a build-up area ≥ 1,50,000 sq.mtrs and or covering an area of ≥ 50 hectares, would be covered under Entry 8(b) of the Schedule to the Regulation of 2006. As the built-up area is less than the mentioned above Hence EIA clearance not required	District Level Expert Appraisal Committee/ District Level Impact Assessment Authority	MPWD
3	The Forest Conservation Act 1980 and The Forest Conservation Rules 1981	The central government enacted The Forest (Conservation) Act in1980 to stop largescale diversion of forest land for non-forest use.	The proposed alignment does not pass through any forest area hence no clearance is required.	The Forest Department, Government of Meghalaya and MoEF &CC	MPWD

Sl. No.	Policy/Act/Rule	Project relevance	Requirement	Competent Authority	Responsible Agency for Obtaining Clearance
4	Wildlife (Protection) Act, 1972 amended 1993 and Rules 1995; Wildlife (Protection) Amendment Act, 2002	The act was enacted to protect wild animals and birds through the creation of National Parks, Sanctuaries, Conservation Reserve, Tiger Reserve.	The present alignment does not pass through any wild life sanctuary. Not Applicable	Wildlife Division, Government of Meghalaya/ MoEF &CC	MPWD
5	Cutting of road side trees	The Forest (Conservation) Act 1980 (Amended 1988) and Rules 1981 (Amended 2003) and Environmental Protection Act of 1986 and as amended Meghalaya Forest Regulation (Application and Amendment) Act, 1973 The Meghalaya Tree (Preservation) Act, 1976	Permit from Autonomous District Councils Garo/Khasi/Jaintia Hills / Forest Department	Autonomous District Councils / State Department of Forests	MPWD
6	Ancient Monuments & Archaeological Sites and Remains Act, 1958	The act has been enacted to prevent damage to archaeological sites identified by Archaeological Survey of India	The present alignment does not encroach within legally marked boundary of any national and state protected heritage sites. Not Applicable	Archaeological Dept. GOI and GoM	MPWD
7	Construction and Demolition Waste Management Rules, 2016	Rules to manage construction waste resulting from construction, remodeling, repair and	Construction and demolition waste generated from the project construction shall be managed and disposed as per the rules.	State Pollution Control Board	The Contractor

Sl. No.	Policy/Act/Rule	Project relevance	Requirement	Competent Authority	Responsible Agency for Obtaining Clearance
		demolition of any civil structure.			
8	Municipal Solid Wastes Management Rules, 2016	Rules to manage municipal solid waste generated; provides rules for segregation, storage, collection, processing and disposal.	Solid waste generated during construction stage at construction camp shall be managed and disposed in accordance with the Rules.	State Pollution Control Board	The Contractor
9	Establishing stone crusher, hot mix plant, wet mix plant and Diesel Generator Sets and construction vehicles	Water Act of 1974, Air Act of 1981, Noise Rules of 2000 and Environmental Protection Act of 1986 and as amended Central Motor Vehicle Act, 1988 and Central Motor Vehicle Rules,1989	Consent-for-establishment	State Pollution Control Board	The Contractor
10	Operating stone crusher, hot mix plant, wet mix plant and Diesel Generator Sets	Water Act of 1974, Air Act of 1981, Noise Rules of 2000 and Environmental Protection Act of 1986 and as amended	Consent-for-operation	State Pollution Control Board	The Contractor
11	Use and storage of explosive for quarry blasting work	India Explosive Act 1984	Explosive licence for use and storage	Chief Controller of Explosives	The Contractor
12	Storage of fuel oil, lubricants, diesel etc. at construction camp	Manufacture storage and Import of Hazardous Chemical Rules 1989 Hazardous and other	Permission for storage of hazardous chemical	State Pollution Control Board or Local Authority (DM/DC)	The Contractor

Sl. No.	Policy/Act/Rule	Project relevance	Requirement	Competent Authority	Responsible Agency for Obtaining Clearance
		Wastes (Management and Transboundary Movement) Rules, 2015			
13	Quarry operation	State Minor Mineral Concession Rules, The Mines and Minerals (Regulation and Development) Act (MMRD Act), 1957, The Meghalaya Minor Minerals Concession Rules 2016	Quarry Lease Deed and Quarry License	State Department of Mines and Geology	The Contractor
14	Extraction of ground water	Ground Water Rules of 2002	Permission for extraction of ground water for use in road construction activities	State Ground Water Board	The Contractor
15	Use of surface water for construction	-	Permission for use of water for construction purpose	Irrigation Department	The Contractor
16	Engagement of labour	Labour Act	Labour license	Labour Commissioner	The Contractor

3.3.1 Applicable Safeguard Policies of World Bank

As the Project is seeking financing from the World Bank and therefore the Bank's safeguard Policies pertains to environmental and social safeguards are also applicable to this Project. The operational Policies of World Bank applicable to the project under are as follows:

Table 3-7 : Operational Policy of World Bank

WB Safe Guard Policy	Subject Category	Triggered Or Not	Reason For Its Applicability	Mitigation Measures	Documentation
OP 4.01	Environmental Assessment	Triggered	Umbrella policy	All necessary mitigation measures to be incorporated.	EIA required.
OP 4.04	Natural Habitats	Not Triggered	Eco-sensitive-Forestry and wildlife related issues	Avoidance of fragmentation of designated habitat (protected area)	Minimization of habitat loss, establishing and maintaining habitat through compensatory afforestation

WB Safe Guard Policy	Subject Category	Triggered Or Not	Reason For Its Applicability	Mitigation Measures	Documentation
OP 4.36	Forestry	Not Triggered	No Forest Land will be diverted for the project.	Only Tree cutting permission required for private trees from Autonomous District Councils.	Not Applicable
OP 4.09	Pest Management	Not Triggered	Not Applicable	Not Applicable	Not Applicable
OP 4.12	Involuntary Resettlement	Triggered	Involuntary Resettlement is triggered as small parcels of land may be required for road improvement. However, the project will duly engage in appropriate land management activities and be cognizant of cases where any loss of livelihood occurs. In that case appropriate measures will be taken through livelihood compensation.	The SIA and ARAP will include standard mitigation methods and procedures, along with appropriate institutional arrangements for screening and reviewing sub-projects and monitoring the implementation of mitigation measures to prevent adverse impacts.	SIA and ARAP
OP 4.10	Indigenous people	Triggered	The policy is triggered. As 86% of the state's population is tribal, a comprehensive Social Management Framework cum Indigenous People's Development Plan will be prepared.	Road specific Social Assessment will be carried out and IPDP will be prepared if required. SMF includes IPPF.	SMF includes IPPF.
OP 4.11	Physical Cultural Resources	Not Triggered	No Protected monuments are located within project influence area	Not Required	Not Applicable

3.4 CATEGORIZATION OF PROJECT CORRIDORS

To reflect the significance of potential impacts and identify the level of assessment and institutional resources required for the safeguard management under the project, the corridor wise categorization of project has been worked out and presented in ensuing sections. The criteria of Environmental and Social categorization of project based on the World Bank Operational Policies is displayed as below:

Table 3-8 : Conditions of categorization as per World Bank Operational Policies

Safeguard Categorization of World Bank	Proposed Bridge
Category A: A proposed project is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities	Bridge-1 is not traversing through Natural Habitat (legal protected areas –Wild life sanctuary).

subject to physical works. ***An environmental impact assessment (EIA), including an environmental management plan (EMP), is required.***	
Category B: The proposed project's potential adverse environmental impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. ***An initial environmental examination (IEE), including an EMP, is required.***	**All bridges will be categorized as Category B.** Bridge-1 is not passing through Forest Area. However, tree felling approval will be required for the proposed bridge and approach roads from Autonomous District Council

3.4.1 Clearance Requirements

EIA Notification, 2006

The EIA notification dated 14thSeptember, 2006 imposes certain restrictions and prohibitions on new projects or activities, or on the expansion or modernization of existing projects or activities based on their potential environmental impacts as indicated in the schedule to the notification, being undertaken in any part of India, unless prior environmental clearance has been accorded in accordance with the objectives of National Environment Policy as approved by the Union Cabinet on 18thMay, 2006.

As per the Schedule-I of EIA, Notification 2006; construction of bridges/flyover are not listed under list of Project or Activities requiring Environmental Clearance.

The National Green Tribunal

The National Green Tribunal in original application No. 137 of 2014 in the Matter of Vikrant Kumar Tongad Versus Union of India & Others pronounced on 12th Feburary, 2015:

"That the construction of a bridge or similar activity covering a build-up area ≥ 1,50,000 sq.mtrs and or covering an area of ≥ 50 hectares, would be covered under Entry 8(b) of the Schedule to the Regulation of 2006.

The proposed bridge/alignment is not passing through any kind of Forest Area. Therefore, forest clearance is not required for the proposed project

3.4.4 Applicability of Wildlife Clearance

No forest land will be required from wildlife sanctuary for the implementation of the project. No wildlife sanctuary is located within 10 km radius of the project road. Therefore, no clearance required under Wildlife Protection Act, 1972**.**

Based on the above criteria, Bridge wise Environmental Sensitive analysis and categorization of corridors has been done and presented in table below.

Table 3-9: Categorization of Bridge

		FEASIBILITY OF BRIDGE- 1							
Sl.no.	Bridge	District	Block	Name Of The Road	Length (in m)	Category	Proximity To Pa[3]	Categorization	Tentative Approval Required
SUB TOTAL OF (Km)									
1	Bridge	West	Dalu	NH-51 to	68	Cat B	More than	World Bank	Tree cutting required from District

	FEASIBILITY OF BRIDGE- 1								
Sl.no.	Bridge	District	Block	Name Of The Road	Length (in m)	Category	Proximity To Pa[3]	Categorization	Tentative Approval Required
	1	Garo Hills		Megadop Village			20 Km	CAT B	Autonomous Council
					More sensitive, categorized as World Bank CAT A, needs tree/ forest approval, EIA Approval from central EAC, Wild life Approval				
					Less sensitive, categorized as World Bank CAT B, needs tree/ forest approval, EIA Approval from SEAC, Wild life Approval				
					Preferable roads, categorized as World Bank C, only need tree cutting approvals				

3.5 BRIDGE-1 & SENSITIVITY TO ENVIRONMENT

Bridge no. 1, located in a village called Tibapara, Dalu block of West Garo Hills district. The structure is located along the road from NH-51 to Megadop Village, Barengapara division. The coordinate of the bridge is 25°14'21.01"N; 90°12'30.54"E.

Table 3-10 : Corridor Characteristics

Sl.no.	Bridge Details	
1.	District	West Garo Hills
2.	Bridge Length	68 m
3.	Terrain	Plain
4.	Bridge Elevation	28 msl,
5.	Carriageway Configuration	7.5m
6.	Width of Footpath	1.5
7.	Overall Width of the Deck	12
8.	Proposed	Steel Truss/ W-Type Bridge design will be carried out as per guidelines given in IRC
9.	Forests / environmentally sensitive areas	No Forest in the alignment
10.	Trees within approach road or Bridge	10-15 trees
11.	Potential Impact on Private Land	Nil
12.	Potential Resettlement Impact	Nil
13.	Religious Structures Affected	None
14.	Heritage trees, sacred grooves	0
15.	River/Canal Name	Bakla RIver
16.	Other features / issues if any Landslide:	None
Sample photographs of the Bridge		

Approval required under the project:

Forest Approval	Wild Life approval	EIA approval	Any other NOC/ approval
NO : Corridor is not passing through any type of Forest.	**No,** Corridor is not traversing through any protected areas;	**Exempted:** Not Required	Further will be detailed in detailed study report.

3.6 SUMMARY OF CONSULTATIONS

Community consultations were carried out during site visits, at various locations along the corridor. The objective of these consultations was to briefly detail the intent of the project and obtain views and perceptions of the roadside communities on key issues that merit incorporation in the project road designs. Consultations were carried out at major junctions, settlements and institutions like Gram Panchayat Offices, Forest Offices, Joint Forest Management Committees, Eco-Development Committees, etc. These discussions enabled the team to:

- Identify existing issues along the project corridors,
- Appreciate likely impacts due to project interventions,
- Stakeholder suggestions on ways to avoid or mitigate impacts, and
- Stakeholder suggestions on ways to improve road side environment

Summary of the issues discussed are presented in Table 3-11 below, and the detailed consultation will be provided in DPR stage.

Table 3-11 : Summary of Consultation

Sl. No.	Consultation	Name of Locations	Outcome
1	West Garo Hill District **Number of Consultations:** 1 **Number of Participants:** 29	• Tibapara/Megadop village	• The bridge is at Bakla River. This bridge is presently in damaged condition due flash flood on 9th June 2022. • The village has the students need to travel to other side of the bridge for study which is again challenging for them. • The existing bridge connects link road to NH-62, so this bridge serves important link for various daily chores. • The village head expressed his happiness about the bridge works being planned and also advised to discuss with the community during later stages. • Community people want this bridge work to start as soon as possible.

Sl. No.	Consultation	Name of Locations	Outcome
			• Suggestion was provided by the community to consider safety measures for the curves at the approach road section. • There is no forest near by the alignment • Tree Cutting permission can be obtained from District Autonomous Council with the Consent from Nokma (Village Head) • No Wildlife Sanctuary Nearby Alignment






3.7 BROAD ENVIRONMENTAL MANAGEMENT COST

A broad cost of environmental Management with respect to each corridor wise has been presented in Table 3-12 : The various immediate environmental management measures (Air, water, Soil monitoring, Afforestation Cost, silt trap management cost, Training and capacity building etc.,) have been taken in Environmental Monitoring budget. Please refer Table 3-12 :, showing corridor wise broad environmental budget.

Table 3-12 : Environmental Monitoring Cost

Particulars	Unit Cost	Bridge-1
Environmental Monitoring in Construction Phase* (excluding monsoon season)		1
Air quality Monitoring	7000	42000
Noise Monitoring	2500	15000
Water Quality Monitoring	6000	36000
Soil Quality Monitoring	3000	18000
Travel and Transportation of Monitoring team (Lump sum Amount)	100000	50,000
Silt fencing total	600 rm	120000
Sanitation at construction camp	100000	50000
Sub Total of Sl 1		**331000**
Afforestation Cost		
Compensatory Plantation (10 times of the number of affected trees) for trees existing on Revenue Land(including PWD Land)	4500	500000
Cost for operation phase		
Ambient Air Quality	7000	70000
Ambient Noise Level	2500	25000
Water Quality Monitoring	6000	60000
Soil Monitoring Location	3000	30000
Training & orientation	100000	100000
Travel and Transportation of Monitoring team (Lump sum Amount)	100000	50000
Cost for operation phase		**3,35,000**
Total Cost		**11,70,000**