ENVIRONMENTAL IMPACT ASSESMENT REPORT

EXECUTIVE SUMMARY

PROJECT NAME :
PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR ROADS IN (MEGHALAYA WEST) UNDER MEGHALAYA INTEGRATED TRANSPORT PROJECT(MITP)

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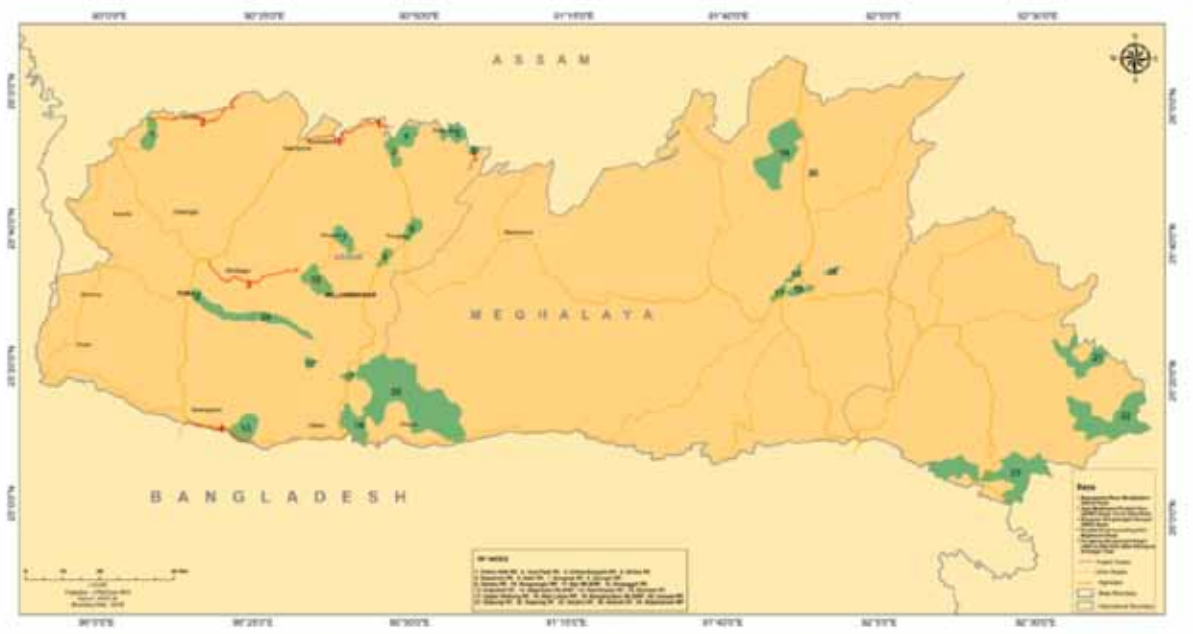
EXECUTIVE SUMMARY

1. The Government of India thus, on behalf of Government of Meghalaya has applied for financing an amount of US$ 82 Million equivalent from the World Bank for *MEGHALAYA Integrated transport project*, **MITP Phase - I Roads**. Up-gradation of 266.82 km road length will be carried out in Phase-I. The Department of Economic Affairs (DEA) and The World Bank (WB) has accorded in principle approval of Tranche-I of MITP for US$ 110 million (loan assistance of US$ 82 million and State Share of US$ 28 million), under which State Road Network roads measuring 266.82 km length will be upgraded along with certain other institutional development activities. There are total 10 road sections selected under Phase-I, 5 road sections in East Meghalaya and 5 road sections in West Meghalaya.

2. The Meghalaya PWD is in the process of preparing DPR (Detailed Project Road) for about 140 km (Stage -1) in West Meghalaya as part of whole MITP (see table below). The main objective of the proposed consultancy assignment is to carry out the DPR for Construction of major district roads in West Meghalaya State under Phase-I of MITP. The Consultancy service for preparation of Detailed Project Report have been entrusted to M/s APS Corporations Pvt. Ltd., Meghalaya, for total design length of 139.668 km of major road sections listed in below Table.

Sl. No	Name of Road	Total Length in Km
1	Bajengdoba Resu Mendipathar Damra Road	35.860
2	Agia Medhipara Phulbari Tura (AMPT) Road (1st to 32nd kms)	31.955
3	Rongram Rongrenggre Darugre (RRD) Road	40.400
4	Parallel Road to existing Dalu Baghmara Road	20.853
5	Rongjeng Mangsang Adokgre (44th to 55th km) Ildek A'kong to A'dokgre	10.600
	Total	139.668km

3. The proposed road projects location map with the protected area of Meghalaya.



4. Description of Project Roads:

All the project roads has been under Meghalaya PWD (Roads) NH. The description of the road project locations has been as follows-

a. The proposed. **BajengdobaResubelparaMendipatharDamra Road** is situated in the district of North Garo Hills and lies between Latitude: 25^0 54'11.14" N to 25^0 55'56.94" N, Longitude: $90^0$31'35.86" E to 90^0 46'21.016" E.The Project Road traverses from Westto East direction. The proposed Project road under study will start at NH 51 and ends at NH 62.The average ground level of area varies between57.00 m to 230.00 m from the Mean Sea Level. The proposed road will be constructed in Single Lane standard, with paved shoulders. There are about 144 Nos. of Minor Junctions out of which 131 Nos are T Junctions and 13 Nos are Y Junctions. There are 6 No. of Major Bridge, 10 No. of Minor bridges, 61 Nos of Slab Culverts and 74 nos. of HP culvert are found along the existing road.

b. The proposed Project road **Agia Medhipara Phulbari Tura (AMPT) Road (1st to 32nd kms) starts at Sineboard and ends at Nidanpur.** The Project Road traverses from East to Westdirection. The location of the Project Road lies between Latitude: 26° 0'17.02"N to 25°56'5.08"N, Longitude: 90° 6'55.07"E to 90°20'59.41"E. There are There are about 64 Nos. of Minor Junctions out of which 59 Nos are T Junctions and 05 Nos. are Y Junctions. The has been 95 locations where existing hume pipe, culvert and bridges has been present.

c. The **RongramRongrenggreDarugre (RRD) Road** traverses from west to eastdirection. The location of the project road lies between Latitude: 25°33'13.58"N to 25°35'55.37, Longitude: 90°16'45.14"E to 90°33'42.87"E. The entireproject road passes through the Hilly Area. Land used along the road is eithercultivable land, grazing land, private, submerged area or government land.Theaverage groundlevel ofarea varies between 276.00 m to 625.00 mfrom the Mean Sea Level.The proposed road will be constructed in Single Lane standard, with paved shoulders. There are about 75 Nos. of Junctions. There are 4 No. of Major Bridge, 23 No. of Minor bridges, 96 Nos of Slab Culverts and 134 nos. of HP culvert are found along the existing road.

d. The proposed **Parallel Road to existing DaluBaghmara Road**is situated in the district of west garo hillsand starts at Paulpara, Dalu and ends at Phakirkona. The Project Road traverses from West to Eastdirection. The location of the Project Road lies between Latitude: 25°12'35.43"N to 25° 9'43.51"N, Longitude: 90°13'50.28"E to 90°24'31.75"E. The entireproject road passes through the plain area. Land used along the road is eithercultivable land, grazing land, private, submerged area or government land. The average ground level of area varies between28.00 m to 58.00 m from the Mean Sea Level. The proposed road will be constructed in Single Lane standard, with Earthen shoulders. There are about 45 Nos. of Minor Junctions out of which 36 Nos are T Junctions and 9 Nos are Y Junctions. There are 7 No. of Major Bridge, 4 No. of Minor bridges, 8 Nos of Slab Culverts and 65 nos. of HP culvert are found along the existing road.

e. **The proposed RongjengMangsangAdokgre (44th to 55th km) IldekA'kong to A'dokgre** road is situated in the district of North Garo Hills and lies between Latitude: 25°49'55.18"N to 25^0 55' 56.94" N and Longitude: 90°58'26.70"E to 90^0 46' 21.016" E.The Project Road traverses from Southto Northdirection. The entire project road passes throughtheHilly Area. Land used along the road is either cultivable land, grazing land, private, submerged area or government land .The average ground level of area varies between76.00 m to 465.00 m from the Mean Sea Level. The proposed road will be constructed in Single Lane standard, with Earthen shoulders. There are about 19 Nos. of Junctions out of which 8 Nos. are T Junctions and 11 Nos are Y Junctions. There are 1 No. of Major Bridge, 4 No. of Minor bridges, 6 Nos of Slab Culverts and 61 nos. of HP culvert are found along the existing road.

5. At present most of the length of project road (4 projects) is single lane carriageway throughout the length except the AgiaMedhiparaPhulbari Tura (AMPT) Road (1st to 32nd kms.), which is a State Highway. The project road is having poor to fair pavement condition in general, with few stretches having very poor pavement condition. The proposed formation width will be as mentioned below.

6. This Environmental Impact Assessment Report is prepared for all the five proposed project roads in Meghalaya west has been prepared with identification all relevant direct, indirect and cumulative environmental and social risks and impacts for construction and operational phase. For environmental studies and subsequently the assessment the Corridor of Impact is considered of 500m on either side of the proposed road and project influence zone is taken 10km on either side (Arial distance) from boundary of road.

7. The environmental assessment study was prepared between the months of October-December 2019 as part of detailed project report. This is draft Environmental Impact Assessment (EIA) report prepared to fulfills requirements of the Operational Policy 4.01 for World Bank funded Project.

8. The baseline environment parameter within the Corridor of Impact, was conducted by the consultants during November-December 2019. Primary data for ambient air quality, ambient noise status, water quality (Ground and surface) and soil quality was collected and analyzed through aPCB accredited laboratory. The monitoring results are found within the prescribed limits for air and noise level at the monitored locations in the project area.

9. 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 project roadsare situated within the western districts of Meghalaya state. The general topography of west Meghalaya has been hilly with plain area on the north.

10. The proposed project roadsfalls under the Seismic Zone V, which is susceptible to major earthquakes as per the seismic zone map of India (IS 1893 - Part I: 2002). Considering high hazard seismic zone of the project road section area, design standards for structures stipulated in the clause under IRC: 6-2014 has been taken into account.

11. Land use pattern along the project road sectionsare mainly Reserved forest areas, community forest (vegetation) and built up areas along the road alignment.

12. Faunal Diversity:

The faunal diversity of the each of the project road has been as follows-

Sl. No.	FAUNA					
	Road Name	Mammals (no. of species)	Birds (no. of species)	Butterflies (no. of species)	Herpeto-fauna(no. of species)	Fishes (no.of Species)
1	BajengdobaResuMendipatharDamra Road	6	86	15	34	26
2	AgiaMedhiparaPhulbari Tura (AMPT) Road (1st to 32nd kms)	8	74	9	54	29
3	RongramRongrenggreDarugre (RRD) Road	7	99	15	44	28
4	Parallel Road to existing DaluBaghmara Road	8	57	10	30	25
5	RongjengMangsangAdokgre (44th to 55th km) IldekA'kong to A'dokgre	7	94	15	44	21

13. Presence of Forest Areas/ Protected Areas/eco-sensitive areas and Necessary Clearance required:

a. BajengdobaResubelparaMendipatharDamra Road

There are no National Park, Wild Life Sanctuaries within 10 km of the site. Also, there are no protected forest which would interfere with the alignment. This project road as per the amendment (dt. 1st December, 2009) on Environmental Notification (September 14, 2006) of MoEF, Government of India, the current project requires no environmental clearance as it is notunder the category 'A' or "B" for road projects.

b. AgiaMedhiparaPhulbari Tura (AMPT) Road (1st to 32nd kms)

There is no protected area present within the 10 km. of this road project site. There has been two forest area running across the road section of AgiaMedhiparaPhulbari Tura (AMPT) Road (1st to 32nd kms) Road. However, no forest clearance is required for improvement proposal of this road section as the project road does not require extra land within these forest areas. There has been seven locations along the project road through which Asian elephant crosses usually but they are not Government declared elephant corridor in Meghalaya and these areas has been found sensitive as the Asian elephant has been a **Schedule-I (WPA-1972) and IUCN threatened species**. Hence, this road project fulfills the criteria to be considered as the '**Category B'** requiring clearance from the State Impact Assessment Authority **(SEIAA)** of Meghalaya according toGovernment of India EIA guidelines and World bank guidelines.

The list of elephant crossing areas are-

OCASSIONAL ELEPHANT CROSSING SECTIONS		
SI No.	**Name of Area**	**CH/BM**
1	Mothapara	2/150
2	Mothapara	2/200
3	Borogobol	4/280
4	Belguri	5/810
5	Nanguapara part -2 (khasipara)	9/330
6	Nanguapara part -2	9/690
7	Hollaidanga Reserve Forest	29/100

c. RongramRongrenggreDarugre (RRD) Road

The Nokrek National Park has been there along the RRD road on south direction and has been at an aerial distance of 7km (approx.). Again this road froms the Northern boundary of Nokrek Biosphere Reserve. As the Nokrek National Park has been there along the RRD road on south direction and this road forms the Northern boundary of Nokrek Biosphere Reserve fulfills the criteria to be considered as the '**Category B'** requires clearance from the State Impact Assessment Authority **(SEIAA)** of Meghalaya according toGovernment of India EIA guidelines and World bank guidelines.

d. **Parallel Road to existing Dalu Baghmara Road:**

The road alignment is passing through two reserved forest areas viz. Gobrakura R.F., Angratoli R.F. The Gobrakura R.F. extended from chainage 13/600 to 14/800 Km and Angratoli R.F. from chainage 15/800 to 16/300 Km. From the end of the road alignment.The Balpakram National Park situated at a distance of 11 Km (Approx.) and the Baghmara Pitcher Plant Sanctuary situated at a distance of 20 Km. (Approx.) and the proposed road alignment has been out of the ecosensitive zone of these two protected area. This project road as per the amendment (dt. 1st December, 2009) on Environmental Notification (September 14, 2006) of MoEF, Government of India, the current project requires no environmental clearance as it is not under the category 'A' or "B" for road projects.

e. RongjengMangsangAdokgre (44th to 55th km) IldekA'kong to A'dokgre

There is the Ildek R.F. (50/300 to 51/900km) through which the road section of RongjengMangsangAdokgre (44th to 55th km) IldekA'kong to A'dokgre Road has been passing. No forest clearance is required for improvement proposal of this road section as there is no requirement of extra land within the Ildek R.F. The entire project area has not been passing through any protected area yet considerable amount of biodiversity has been observed with eco-sensitive areas in Ildek River at the starting point of the project road. This project road as per the amendment (dt. 1st December, 2009) on Environmental Notification (September 14, 2006) of MoEF, Government of India, the current project requires no environmental clearance as it is notunder the category 'A' or "B" for road projects.

14. Tree Cutting

In all the five projects tree cutting has been there. All cut trees will be compensated at the rate of 1:10 with preference to species that are more efficient in absorbing emissions. The numbers of the trees to be felled in each are as follows-

Sl. No.	Tree Cutting	
	Road Name	Tree Nos.
1	BajengdobaResuMendipatharDamra Road	134

2	AgiaMedhiparaPhulbari Tura (AMPT) Road (1st to 32nd kms)	54
3	RongramRongrenggreDarugre (RRD) Road	155
4	Parallel Road to existing DaluBaghmara Road	53
5	RongjengMangsangAdokgre (44th to 55th km) IldekA'kong to A'dokgre	37

15. In All the proposed five project roads it was found that, there has been some faunal diversity of birds, small mammals, butterflies, herpetofauna etc. However, during construction chances of small animal stray into the construction area and fall into the excavation pits. To prevent such accidents from happening temporary woven wire mesh guards of about 2.4 m (8 ft.) high will be put around the excavated areas. Further, if any stray animal falls in an excavation. No harm would be done to the trapped animal. The contractor in association with PMU and Forest. Department would ensure safe release of the animal.

16. Soil excavation:

In all the five project roads soil excavation will be there and the excavated soil from hill cutting material will be scarified from existing carriageway are expected to be generated form scarified bitumen, dismantling and excavation of existing culvert. The excavated material will used in backfilling in the project and balanced quantity will be disposed of at approved designated site. The soil excavation volume has been as below-

Sl. No.	SOIL EXCAVATION	
	Road Name	AMOUNT (CUM)
1	BajengdobaResuMendipatharDamra Road	154196.44
2	AgiaMedhiparaPhulbari Tura (AMPT) Road (1st to 32nd kms)	600.86
3	RongramRongrenggreDarugre (RRD) Road	114081.00
4	Parallel Road to existing DaluBaghmara Road	7620.86

5	RongjengMangsangAdokgre (44th to 55th km) IldekA'kong to A'dokgre	223464.57

17. In addition, to the above specific measures to mitigate construction related impact (e.g. tree cutting) the Environmental Management Plan has also suggested mitigation measures and action plans which would be implemented during the construction and operation stage of the project. A management system has also been developed to ensure that these measures are effectively implemented.

18. The Environment Management Plan for each of the project road section has been prepared to detail out the mitigation measures which has been identified during the impact assessment in the EIA Study. These plansfurthers detail out the mitigation measures discussed earlier during the Pre-Construction, Construction and Operation Phases of the project. This will ensure that environmental issues are properly addressed during road upgradation. This Environment Management Plan would be included as part of the Bidding Document and shall at a later date used by the Contractor for developing the Contractor's EMP.

19. The institutional arrangement for the implementation of the EMP in all the project roads has been mentioned to identify the role and responsibility of each parties involved in the project implementation. PMU for overall project is headed by the Chief Engineer, PWD who will be responsible for the successful implementation of the Project. The Chief Engineer would be assisted by an Environmental Officer. The team at the PMU would be assisted by the Environmental Officer of Project Management Consultant (PMC).The actual responsibility of implementation of the EMP would be with the Contractor.

20. The Contractor's Environmental Engineer and Health Safety Officer would be responsible for the implementation of the environmental safeguards. The roles and responsibilities of each of these officials have also been detailed out in the EMP. Training and capacity building would be required especially for the PMU staff associated with the project as the Environmental Safeguards would be a relatively new areas which staff are required to handle. The training and capacity building would not only be project specific but would target and developing long term capacities in PWD.

21. An Environmental Monitoring Program has been drawn up for each of the roads to essentially monitor the day to day activities in order to ensure that the environmental quality is not adversely affected during the implementation. The monitoring programme consists of Performance Indicators and Process Indicators. The performance indicators would identify the components which have to be monitored and reported on a continuous basis during the stage of the implementation. These would help identify the level of environmental performance of the project. In addition, there would be Process Indicators which would help in assessing the effectiveness of the system which has been instituted for the program.

22. For the purpose of reporting of environmental performance, a reporting framework has been defined for each of the road projects. This include:

- Daily Monitoring Report: by the contractor to the PMC on the environmental actions which has been implemented.
- Fortnightly and Monthly Monitoring Report: by the PMC to PMU.
- Quarterly Auditing by the PMU to the Management.

Annual Audit by an External Agency of the entire process of EMP Implementation and reporting to the PMU for onward reporting to the World Bank