Initial Environmental Examination

May 2015

IND: Rural Connectivity Investment Program — Project 3

Batch – 3 Roads, Assam

Prepared by Ministry of Rural Development, Government of India for the Asian Development Bank.

CURRENCY EQUIVALENT

as of May 2015

Currency unit	—	Indian rupee (Rs)
Rs 1.00	=	$ .01572
$1.00	=	Rs 63.5981

ABBREVIATIONS

ADB	:	Asian Development Bank
ARRDA	:	Assam Rural Road Development Agency
BIS	:	Bureau of Indian Standards
CD	:	Cross Drainage
CGWB	:	Central Ground Water Board
CO	:	Carbon Monoxide
COI	:	Corridor of Impact
DM	:	District Magistrate
EA	:	Executing Agency
EAF	:	Environment Assessment Framework
ECOP	:	Environmental Codes of Practice
EIA	:	Environmental Impact Assessment
EMAP	:	Environmental Management Action Plan
EO	:	Environmental Officer
FEO	:	Field Environmental Officer
FGD	:	Focus Group Discussion
FFA	:	Framework Financing Agreement
GOI	:	Government of India
GP	:	Gram panchyat
GSB	:	Granular Sub Base
HA	:	Hectare
HC	:	Hydro Carbon
IA	:	Implementing Agency
IEE	:	Initial Environmental Examination
IRC	:	Indian Road Congress
LPG	:	Liquefied Petroleum Gas
MFF	:	Multitranche Financing Facility
MORD	:	Ministry of Rural Development
MORTH	:	Ministry of Road Transport and Highways
MOU	:	Memorandum of Understanding
NAAQS	:	National Ambient Air Quality Standards
NGO	:	Non Governmental Organisation
NOx	:	Nitrogen Oxide
NC	:	Not Connected
NGO	:	Non-Government Organization
NRRDA	:	National Rural Road Development Agency
PIU	:	Project Implementation Unit
PIC	:	Project Implementation Consultants
PRIs	:	Panchyati Raj Institutions
PMGSY	:	Pradhan Mantri Gram Sadak Yojana
POL	:	Petroleum, Oil and Lubricants
PPTA	:	Project Preparation Technical Assistance

PWD	:	Public Works Department
ROW	:	Right-of-Way
RPM	:	Respirable Particulate Matter
RRP	:	Report and Recommendation of the President
RRS	:	Rural Road Sector
SRRDA	:	State Rural Road Development Agency
SBD	:	Standard Bidding Documents
SO_2	:	Sulphur di-Oxide
SPM	:	Suspended Particulate Matter
TA	:	Technical Assistance
TOR	:	Terms of Reference
TSC	:	Technical Support Consultants
UG	:	Upgradation
WBM	:	Water Bound Macadam
ZP	:	Zilla Parisad

NOTE

In this report, "$" refers to US dollars.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

A. Background

1. The Government of India (GOI) launched PMGSY in year 2000 with the objective of providing all-weather road connectivity to all rural habitations with a population of more than 500 persons in plains and 250 persons in hill states. This program is being implemented through National Rural Road Development Authority (NRRDA) under Ministry of Rural Development (MORD) at central level and through State Rural Road Development Authority/Agencies (SRRDA) at state level. The Rural Connectivity Investment Program (RCIP) is continuation of Rural Road Sector II Program (RRS IIP) and is a multi-tranche financing facility (MFF) that aims to construct or upgrade to the all-weather standard about 9,000 km of rural roads connecting around 4,800 habitations in the states of Assam, Chhattisgarh, Odisha, Madhya Pradesh and West Bengal. Under RCIP Project 1 (Loan 2881-IND) sub-projects cover about 3,530 km in total (426.43 km in Assam, 1,009 km in Chhattisgarh, 1,187 km in Madhya Pradesh, 757 km in Odisha, and 151 km in West Bengal) while the RCIP Project 2 (Loan 3065-IND) covers about 3,693 km in total (499 km in Assam, 429 km in Chhattisgarh, 654 km in Madhya Pradesh, 1,184 km in Odisha, and 930 km in West Bengal). The amount funded for the states under ADB RCIP Project 1 is approximately $381.44 million while funding under Project 2 is about $275 million. The subprojects are at various stages of implementation.

2. The Government is submitting the third Periodic Finance Request (PFR) to cover 488.311 km of rural roads in the state of Assam. The Assam Rural Road Development Agency (ARRDA) is the implementing agency (IA) for the ADB funded subprojects in the state. Tranche III as per classification of ADB has been categorised as 'Category B' project and therefore requires an Initial Environmental Examination (IEE). The Assam Rural Road Development Agency **(**ARRDA**)** has selected about 488 kms of rural roads under RCIP Tranche 3. The 488 kms of roads are distributed in 196 stretches spread in 18 of the 27 districts of the State. Within each district, the roads are further scattered in several blocks and sub**-**divisions.

3. These roads has been selected following PMGSY guidelines for the selection of roads under this programme and satisfy the following environmental safeguards:

- The selected road shall not disturb any cultural heritage designated by the Government or by international agencies, such as UNESCO, and shall avoid any monuments of cultural or historical importance.
- The selected road shall not pass through any designated wildlife sanctuaries, national parks, notified ecological sensitive areas or area of internationally significance (e.g., protected wetland designated by the Wetland Convention).
- The sub projects shall only involve activities that follow Government of India laws and regulations and meets funding agency safeguard policies

B. Description of Project

4. The proposal for rural road construction works typically considers a 10-12 m right of way (ROW), which includes side slopes for embankment, side drains on either side of the alignment. The roads consists both Black Top (B.T.) and Cement Concrete (C.C.) as per the ROW availability. The construction proposals are confined to the existing alignment of the unpaved tracks. The broad specifications for road alignment selection, pavement design, construction methodology, and geometric design are in accordance with the "Specification for Rural Roads" published by IRC on behalf of the Ministry of Rural Development, Government of India (GoI).

The design details presented in this chapter highlights the PMGSY specifications. Minor changes will apply depending on road specific issues and design consideration. Since topography of Assam state is largely flat, the design details applicable to flat terrain.

5. The proposed rural road construction work will provide 7.5 m roadway width (this may be reduced to 6 m as per latest guidelines) with 3.75 m carriageway in accordance with the IRC-SP 20: 2002 in plain terrain. The proposal considers a 3.75 m cement concrete pavement with lined storm water drains for stretches passing through built-up areas, waterlogged/water overtopping/ flood prone areas. The pavement design considers a base layer of variable thickness as per the design with granular sub base, 150 mm thick water bound macadam (WBM grade I & II) and finally topped with 20 mm thick bituminous pavement. Adequate cross drainage structures like pipe or slab culverts/bridge structures are considered for drainage channels across the roads. Few minor bridges are also proposed to be constructed.

6. Considering the sub-grade strength, projected traffic and the design life, the pavement design for low volume PMGSY roads are proposed to be carried out as per IRC guidelines IRC: SP: 72 – 2007 or IRC SP:77 “Design of Gravel Road” and IRC SP:62-2004 “Cement Concrete roads”. In built up area for hygienic and safety reasons, C.C pavement is proposed with a hard shoulder and appropriate line drain. A design life of 10 years is considered for the purpose of pavement design of flexible and granular pavements. The embankment height considered as 1m (average) from ground to crust except at the approaches of cross drainage structures. The embankment height will vary in flood prone area as per the HFL. The design speed considered is as per recommended design speed of 50 Km/h.

C. Description of Environment

7. Assam is located between latitude 24°07′ to 28°00′N longitude 89°42′ to 96°02′ E. The geographical area of the state is 78,438 km², which constitutes 2.4 % of the area of the country. A large section of the geographical area is classified as forest area measuring 26,832 sq km or 34.21% of the State.The state boundary touches in the north and east by the Kingdom of Bhutan and Arunachal Pradesh. Along the south lie Nagaland, Manipur and Mizoram. Meghalaya lies to her south-west, Bengal and Bangladesh to her west.

8. Assam is dry in winter, hot, and wet in summer. Minimum temperature ranges from 06° to 08° C in winter to maximum Temperature in summer as 35° C. The annual rain fall vary from 70 inches in west and 120 inches in the east part of the state. All the five districts has similar climate with minor variation in temperatures and rainfall.

9. Most of the project area lies in vast open agricultural land and is largely free from air pollution sources. As such, the ambient air quality (for parameters SO2, RSPM and NOX) is expected to be within the limits in most of rural and semi urban areas. The ambient noise levels are also expected to be within the National Ambient Noise Standards due to absence of any high noise sources in proposed road vicinity.

10. The alluvial soils are extensively distributed over the Brahmaputra and Barak plains and are very fertile particularly in Kokrajgar, Barpeta, Nalbari, Kamrup, Darrang, Sonitpur, Lakhimpuir, and Dhemaji districts. The hill soils are generally found in the southern hill regions of the state. These soils are deep, dark grayish brown in colour and fine to coarse loamy in texture. The lateritic soils are extensively occurring in North Cachar Hills district and in some parts of the southern Karbi Plateau. These soils are dark and finely textured with heavy loams. Geologically, Assam is in the eastern most projection of the Indian Plate, where it thrusts

underneath the Eurasian Plate creating a subduction zone with large plains and dissected hills of the South Indian Plateau system abutting the Himalayas to the north, north-east, and east.

11. The State is seismically active and classified under Zone V, with the highest risk. Assam has extensive river system consisting of the Brahmaputra, the Kusiyara and the Barak and their tributaries. All the rivers in Assam are liable to floods, mainly because they receive heavy rainfall within a short time. The chronically flood prone areas within the state are mainly along the river Brahmaputra from eastern to western part of the state. Sample roads are mostly crossed by seasonal small channels while some are in close proximity of the rivers and are prone to flood..

12. Assam is one of the richest biodiversity zones in the world. There are a number of tropical rainforests, riverine grass lands, bamboo orchards and numerous wetland ecosystems in Assam. Many of these areas have been protected by developing national parks and reserved forests. The Kaziranga and Manas are the two World Heritage Sites in the region, the Kaziranga is the home for the rare Indian Rhinoceros, while Manas is a project tiger sanctuary area. No project roads pass through any of the protected areas

13. As per census state having highest population density among NE states, of 339 persons per sq. km. As against decadal growth rate of 21.54% at the national level, the population of the State has grown by 18.92% over the period 1991-2001. The sex ratio of Assam at 935 females to 1000 males is higher than the national average of 933. Female literacy of the State rose to 56.03% from 43.03% in 1991. There are so many major tribes and a number of sub-tribes inhabiting the area.

14. Postage and telephone system. Subprojects areas also has good access to these facilities. Educational facilities are available in the village areas as well. However, rural population has to depend on urban areas for undergraduate level education. The economy of Assam is primarily agriculture based. Agro-based industries of Assam include-tea industry, Sugar industry, Grain mill products industry-(Rice, Oil and Flour Mill), Food processing industry and Textile industry.

D. Anticipated Environmental Impacts and Mitigation Measures

15. Road improvements work brings substantial economic and social benefits to rural communities and national economies. However, it may also cause adverse environmental impacts though of smaller magnitude, since rural road subprojects are planned to follow the existing alignments and will be of 6 to 7.5 m width only. The impacts are largely expected to be during construction phase, which can be mitigated through engineering measures and adoption of best construction practices.

16. All project roads are subjected to environmental screening using the ECOP checklist. A sample size of 10% was selected by the ARRDA with support from the Project Implementation Consultant (PIC) from which this state level IEE was based. Separate environmental checklist were prepared for bridges with length greater than 50m. All sample roads included under RCIP were selected based on ecological and climate change consideration defined under EARF. Accordingly, none of the sample roads passes through protected areas or encroaches precious ecology (sensitive or protected areas) or any historical or archeologically protected areas. No forestland diversion is involved either.

17. By the 2050s, there is a general increase in temperature in Assam with longer heat wave duration index, and warmer winters. Total precipitation is also expected to increase with the north eastern and western districts of Dhemaji, Lakhimpur, Kokhrajar, Dhuburi, and Bongaon experiencing greater increase than the rest of the State. The implications of the projected increases in temperature and rainfall coupled with the existing natural hazards pose risks to the project roads and bridges sustainability and viability. The most dominant risk of climate change is flooding along the Brahamaputra River more particularly in Guwahati, Barpeta, Nalbari, Dhuburi, Kokrajhar, Darang, Golaghat, Dibrugarh, and Dhemaji. Some of the sample roads are prone to flood from river/streams, ponds and due to heavy rains. One of the sample roads - Dagaon to Mornoiguri (Dhalpur Bazar to Akadhari Road) in Lakhimpur district has 23 small and medium ponds along the project road corridor. Adequate engineering measures are adopted to protect the roads. To address the risks increase in flood occurrence, the sub-project in Assam has allocated Rs 62.290 million of which Rs23M is for culvert construction, Rs22.0M is for increasing embankment height, and Rs14.2M for slope stabilization. Further, compensatory tree plantations[1] (1:3) will be implemented.

18. No land acquisition is involved due to various measures considered for finalisation of road alignment. Villagers have volunteered to donate their land if at certain stages land is required for geometrical correction or alignment adjustment for avoiding tree cutting or shifting of community structure. None of the Tranche 3 roads, both sample and non-sample, pass through any forestland and as such, project has no impact on forest cover. As there are no protected/ecologically sensitive areas in the sub-project areas, no such measures are proposed. In case of a diversion of forestland, prior forest clearance shall be obtained under Forest (Conservation) Act 1980 (amended 1988).

19. Site clearing operations may have impact on common utilities, community properties, and land use. These will be avoided by limiting most of the construction activities along the alignment and strictly implementing the utility and road furniture shifting plan; ground staking of RoW; prior informed consent on vegetation clearing, tree felling with permission from Forest Department, and utility shifting; and preservation and re-use of all topsoil.

20. Impacts related to health, safety of the labourers at the construction campsites, availability of safe drinking water, sanitation, and collection, storage, and disposal of oily wastes addressed in the EMP mostly through good housekeeping and linking with local health protection programs. All construction camps and hotmix plant will be set up at least 500 m away from habitat or forest areas.The contractor will prepare appropriate traffic diversion scheme, which shall be implemented in different stretches of the road as per the progress of the construction work to avoid or minimize disturbance to existing traffic. All excavated materials from roadway, shoulders, verges, drains, cross drainage shall be used for embankments formation if feasible, filling pits, and landscaping. Unusable debris material should be suitably disposed off at pre-designated disposal locations, with approval of the concerned authority. The bituminous wastes shall be disposed in secure landfill sites only in environmentally accepted manner. To minimize deterioration of air quality during construction the following will be implemented as part of the civil works: i) use of covered haul trucks, ii) regular sprinkling of water on active construction fronts and materials storage areas; iii) hot mix plants and diesel generating sets comply with stack height requirements and secure clearance from the State Pollution Control Board, and iv) mandatory use of PPEs to all construction workers.

[1] ARRDA mostly undertake this activity through state forest department. The forest department plants tree either along the proposed roads if land is available otherwise on nearby degraded forest land.

21. Borrowing earth from agricultural land shall be minimised to the extent possible. Further, no earth shall be borrowed from already low-lying areas. The borrow earth shall be sourced from identified locations and with prior permission of landowner and with clear understanding for its rehabilitation. The Indian Road Congress (IRC):10-1961 guideline should be used for selection of borrow pits and quantity that can be borrowed. Balance cut and fill will be followed to the extent possible to minimize borrowing. Adequate provision shall be made for cross drainage structures for maintaining natural drainage pattern in the subproject area and preventing soil erosion.

22. The provision of adequate cross drainage structures shall be made to ensure smooth passage of water and maintaining natural drainage pattern of the area. The discharge capacity of the CD structure shall be designed accordingly. Road levels shall be designed considering HFL. Low costs measures like use of bamboo or eucalyptus tree will be adopted for embankment protection and control of soil erosion. Other slope stabilisation measure like vegetative protection will be installed when necessary as deemed by the PIC. The Amguri (Khamarpara-II to Khamarpara-II (Sastar) road in Bongaigaon district, Chandinagar to Leverputa (Harinagar Baiyerper East Sobodh Nagar to Haritikar Sadirkhal) road in Cachar District, NH31 to Choto Dighaltari Road in Dhubri district, 36 to Binnyachara (Chakapara to Binnyachara) road in Kokrajahr district and Mikirgaon to K A Road in Nagaon district run close to a wet land, Halgora River, Raidak river, Laska river and SIlimkhowa river, respectively. Adequate engineering measures are proposed for protection of road from flood in, Halgora River, Raidak river, Laska river and SIlimkhowa river.

E. Environmental Management Plan and Institutional Arrangements

23. Appropriate mitigation measures are identified for all rural road construction and operation activities. The identified impacts associated with rural roads and mitigative measures are largely common to most of the roads. The EMP provides action common to all roads at pre construction, construction and operation stage. Since IEE is carried out, prior to preparation of DPR, the EMP will be updated specific to road as per DPR requirements by PIU and included with DPR, which shall be available to contractor at the time of bidding.

24. The environmental monitoring program is prepared with aim to monitor the environmental performance of environmental management plan. For rural roads, Environmental Monitoring plan will be more observation oriented and it provides observation areas with frequency of monitoring at pre construction aspects construction stage and operation stage.

25. NRRDA/SRRDA has defined institutional setup including with specified responsibility for environmental management. Existing capacity of the State Rural Roads Development Agencies (SRRDAs) and Project Implementation Units (PIUs) for implementing environmental safeguard issues need substantial strengthening. The capacity enhancement is proposed through focused workshops and training session. Few workshops have already been conducted at participating states through ADB appointed Environmental specialist.

26. Grievance Redress Mechanism is also defined for receiving public concerns at state, PIU, and central level.

F. Public Consultation and Information Disclosure

27. The project has immense acceptability among the local people. They perceived that in addition to providing all weather connectivity, the sub-project road would bring positive

socioeconomic changes in the area. The project has tried its best to address all the issues raised during consultations under the constraints of suitability from engineering point of view.

G. Conclusion

28. The findings of Environment Assessment of sample roads indicate that impacts are mostly similar and subprojects are unlikely to cause any significant environmental impacts. While some of the impacts are negative, there are many bearing benefits to the area. Most of the impacts are likely to occur during construction stage, are temporary in nature, and can be mitigated with minor to negligible residual impacts. The implementation of prescribed mitigation measures will minimize/avoid the adverse impacts. Moreover, the impacts shall be monitored continually by implementing and updating the Environmental Management plan and Environmental Monitoring Plan. Executing agency shall ensure that updated road specific EMP forms part of DPR and is available to contractor at the time of bidding. The contractor will specify the quantity and budget for various activities like rehabilitation of borrow earth pits, first aid and sanitation facilities at construction camp and temporary office/material storage place as per EMP requirements. The same shall be revised if there is any change in the project design. Any such change shall be reported to ADB as well.

29. Any major changes or any major additional work other than the proposed project activities will require updation of ECOPs and IEE. The updated ECOPs and IEE will have to be submitted to NRRDA and ADB for concurrence before civil works commence.

I. INTRODUCTION

A. Project Background

1. Pradhan Mantri Gram Sadak Yojana (PMGSY) aims to provide all-weather road connectivity to currently unserved habitations in India's rural areas, where 70% of the population live. The Government of India (GOI) launched the "Pradhan Mantri Gram Sadak Yojna" (PMGSY)[2] in year 2000 The objective of PMGSY is to provide all-weather road connectivity to all rural habitations with a population of more than 500 persons in plains and and 250 persons in hill states. The National Rural Road Development Authority (NRRDA) is implementing the Project under Ministry of Rural Development (MORD) at central level and through State Rural Road Development Authority/Agencies (SRRDA) at state level[3].

2. The Rural Connectivity Investment Program (RCIP) is a continuation of the Rural Road Sector II Program (RRS IIP) and is a multi-tranche financing facility (MFF) that will construct or upgrade to the all-weather standard about 9,000 km of rural roads connecting around 4,800 habitations in the states of Assam, Chhattisgarh, Orissa, Madhya Pradesh, and West Bengal (collectively called RCIP states). RCIP will also improve the institutional arrangements and business processes through capacity building of the SRRDAs. The project will enhance capacities related to design, operation, safeguard, financial, road safety, and asset management matters. Investments in rural roads will improve connectivity and cut transport costs by providing improved connectivity between habitations, markets, and urban towns.

3. RCIP Tranche 1 financed part of the cost of: (i) construction of 3,461 km of rural roads in the five project states, (ii) consultancy services, and (iii) capacity building of implementing agencies by establishing rural connectivity training and research centers (RCTRCs) and rural roads network management units (RRNMUs). The Loan for Tranche 1 (Loan 2881-IND) totalling $252 million was signed in April 2013 and became effective on 5 June 2013. RCIP Tranche 2 (Loan 3065-IND) totaling $275 million was approved on 25 November 2013. Until May 2014 Tranche 1 has awarded 515 out of 532 or about 97% of the total contracts while for RCIP Tranche II has 498 out of 716 or about 70%.

4. The Government is submitting the third Periodic Finance Request (PFR) to cover 488.311 km of rural roads in the state of Assam. The Assam Rural Road Development Agency (ARRDA) is the implementing agency (IA) for the ADB funded subprojects in the state. Tranche III as per classification of ADB has been categorised as 'Category B' project and therefore requires an Initial Environmental Examination (IEE).

5. This IEE report was prepared by M/s Operations Research Group (P) Ltd., the Technical Support Consultants (TSC) appointed by National Rural Road Development Agency (NRRDA) under the ADB loan assistance.

B. Project Roads Identification and Location

[2] Prime Minister's Rural Road Program
[3] Assam Rural Road Development Authority

6. PMGSY has prepared specific guidelines for the selection of roads to be eligible under this programme. The key requirements is that any road will be eligible for construction or up-gradation only if it is part of the Core Network[4] and satisfy the following environmental criterion:

i. The selected road shall not disturb any cultural heritage designated by the Government or by international agencies, such as UNESCO, and shall avoid any monuments of cultural or historical importance.

ii. The selected shall not pass through any designated wildlife sanctuaries, national parks, notified ecological sensitive areas or area of internationally significance (e.g., protected wetland designated by the Wetland Convention);

iii. The sub projects shall only involve activities that follow Government of India laws and regulations and meets funding agency safeguard policies.

7. The Assam Rural Road Development Agency **(**ARRDA**)** has selected about 488 kms of rural roads under RCIP Tranche 3. The 488 kms of roads are distributed in 196 stretches spread in 18 of the 27 districts of the State. Within each district, the roads are further scattered in several blocks and sub**-**divisions. For Tranche III-Assam, the longest road is T07 to Mousalding with a length of 11.950 km under Nilip Block of Karbi Anglong District, while the shortest is Borghola III to Chakrabhum with 0.520 km under Srijangram Block of Bongaigaon District. The average length of roads works out to 2.491km. Appendix 1 provides the complete road list proposed to be upgraded under Tranche III-Assam.

C. Rural Road Construction Proposal

8. The proposed rural road construction works typically considers a 10-12 m right of way (RoW), which includes side slopes for embankment, side drains on either side of the alignment. However, as per the recent NRRDA guidelines a RoW of 6 m has been considered for roads having an average traffic flow of 100 vehicles per day The roads consists both black top (B.T.) and cement concrete (C.C.) as per the ROW availability.

9. The proposed road upgrading and construction activitie are confined in the existing alignment of the unpaved tracks. Majority of these are foot/pathways traditionally used by the villagers and transformed into the present form of unpaved tracks/roads through minor construction works taken up by the communities, local bodies and state Government over the decades.

D. ADB Safeguard Policies and Category of the Project

10. The Asian Development Bank has defined its safeguard requirements under its *Safeguard Policy Statement 2009* (*SPS 2009*) requiring environmental assessment, mitigation, and commitment towards environmental protection. The prime objectives of these safeguard policies are to: (i) avoid adverse impacts of projects on the environment and affected people,

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[4] Core Network is that minimal network of roads (routes) that is essential to provide access to essential social and economic services to all eligible habitations in the selected areas through at least single all-weather road connectivity. A core network comprises of through routes and link routes. Through routes are the ones, which collect traffic from several link roads or a long chain of habitations and lead it to marketing centres either directly or through the higher category roads i.e., the district roads or the state or national highways. Link routes are the roads connecting a single habitation or a group of habitations to through routes or district roads leading to market centres. Link routes generally have dead ends terminating on a habitation, while through routes arise from the confluence of two or more link routes and emerge on to a major road or to a market centre

where possible; and (ii) minimize, mitigate, or compensate adverse project impacts on the environment and affected people when avoidance is not possible. The ADB *SPS 2009* classify a project into category A, B or C depending on potential environmental impacts.

11. All environmentally sensitive components along each subproject road are assessed to define the magnitude and extent of likely impacts. Selection criteria require none of the roads pass through or near any protected areas, archeologically important monument, and reserved forests. Few tree cutting is allowed provided they are not protected or endangered species. The road primarily passes through agricultural and residential areas. Most of the roads follow existing alignment and land acquisition is minimal. The RCIP Tranche III for the state of Assam is classified as environmental category B based on ADB SPS 2009.

12. No environmental categorisation is made under the Government of India (GoI) environmental legislations since rural road upgrading and construction are not covered by the Indian Environmental (Protection) Act and Rules, 1986 as amended.

E. Objectives and Approach for Environmental Assessment

13. The prime objectives of the environmental assessment is to identify likely environmental impacts during design, construction, and operation stages of each rural road and formulate cost effective mitigation and monitoring measures and institutional mechanism for efective implementation of recommended measures.

14. Since there is large number of subproject roads involved under RCIP and magnitude of each road is small, preparation of individual IEE's for each road is inappropriate. ADB has prepared an Environmental Code of Practices (ECOP) checklist under Rural Road Sector (RRS) ProjectII II that was modified for RCIP. The ECOP is a distillation of the lessons learned in managing environmental impacts from past rural road projects. Each subproject was subjected to rapid environmental screening guided by the ECOP checklist. Sample ECOP checklist with annexures on tree, utility and community structures, strip maps and photographs for each selected sample road are provided in Appendix 2.

15. The findings from the ECOP Checklist from the sample projects provide the basis to prepare state-level IEE reports and EMP. The EMP is generic and forms part of the bidding documents to guide the project implementation consultant (PIC) and project implemention unit (PIU) prepare road specific EMPs provided in the detailed project reports (DPRs).

F. IEE Methodology and Content

16. The state specific IEE was structured based on *ADB SPS, 2009* and *ADB's Environmental Assessment Guidelines (2003)*. The IEE reports including EMPs, and monitoring plans, cover the most environmentally sensitive components in state as well as specific to subproject roads.

- **Corridor of Impact**: The direct area of influence or the corridor of impact (COI) has been considered as 10 m on either side of the proposed sample roads alignment Based on the proposed cross-section.

- **Field Visits, Primary and Secondary Data Collection**: A total of 10% of the nominated roads were selected to comprise the sample population where the environmental examination is to be conducted. Each sample road was visited by

PIC along with concerned PIU officials for environmental assessment. Individual road specific strip map was prepared during the field visit to capture the information related to tree inventory, utility and community structures located along the proposed road alignment, surface water bodies, and ecological sensitivities. Secondary environmental information pertaining to the environmental issues, protected area, forests areas were collected from various government and non-governmental / research institutions for assessment of the baseline environment of the project locations, district and state as a whole.

- **Data Analysis, Impact identification and Mitigation Measures**: Information collected were analysed and impacts identified. Mitigation measures were proposed common to larger roads and specific to the roads. EMP is prepared considering mitigation measures and institutional framework of SRRDA.

17. The IEE report includes following seven chapters including this introduction Chapter.

- Chapter 1- Introduction
- Chapter 2- Description of Project
- Chapter 3- Description of Environment
- Chapter 4- Anticipated Impacts and Mitigation Measures
- Chapter 5- Institutional Requirement and Environmental Monitoring Plan
- Chapter 6- Public Consultation and Information Disclosure
- Chapter 7- Conclusion and Recommendation

G. Legal Framework and Legislative Requirements

18. India has well defined institutional and legislative framework. The legislation covers all components of environment viz air, water, soil, terrestrial and aquatic flora and fauna, natural resources, and sensitive habitats. India is also signatory to various international conventions and protocols.

19. As per Environment (Protection) Act, 1986; the Environmental Impact Assessment Notification, 2006; amended in 2009 defines the environmental impact assessment for development projects. All new or expansion of national and state highways requires environmental impact assessment and environmental clearance from central or state level Environmental Appraisal Authority. However, rural road projects proposed under RCIP do not require environmental assessment or clearance based on the Notification and instead the mainstream environmental concerns specific procedures that were formulated under Rural Connectivity Investment Program (RCIP) will be implemented.

20. New road construction or road improvement work attract many legislation including the diversion of forest land, tree cutting, opening of new quarry, establishment of temporary workshops, construction camps, hot mix plants, and use of vehicles for construction. The legislation applicable for RCIP roads are listed below:

Table 1: Applicable Environmental[5] Laws and Regulations to RCIP Road

Sl. No.	Legislation	Applicability
1.	Forests (Conservation) Act 1980 (Amended 1988), and Forest (Conservation) Rules, 1981, (Amended 2003)	As per above Act/Rules *Forest Clearance* from Department of Forests/Ministry of Environment and Forests Govt. of India is required for diversion of forest land (if any) for non-forest purpose. Prior permission is required from forests department to carry out any work within the forest areas and felling of roadside trees. Cutting of trees need to be compensated by through afforestation as per permission condition.
2.	The Water (Prevention and Control of Pollution) Act 1972 (Amended 1988), and the Water (Prevention and Control of Pollution) Rules, 1974	Placement of hot-mix plants, quarrying and crushers, batch mixing plants, discharge of sewage from construction camps requires *No Objection Certificate (Consent to Establish and Consent to Operate)* from State Pollution Control Board prior to start of construction or setting up specific facility. *Authorisation* will also be required for disposal of Hazardous Waste like waste oil etc. from State Pollution Control Board
3.	The Air (Prevention and Control of Pollution) Act, 1981, (Amended 1987), and the Air (Prevention and Control of Pollution) Rules, 1982	
4.	The Noise Pollution (Regulation and Control) Rules, 2000 (Amended 2002)	
5.	The Hazardous Waste (Management, Handling and Transboundary Movement) Rules 2008 (Amended 2009), and the Batteries (Management and Handling) Rule, 2001	
6.	Guidelines for Ground Water Extraction Prescribed by Central Ground Water Authority under the power granted under Environment (Protection) Act 1986	*Permission* from Central Ground Water Authority (CGWA) is required for extracting ground water for construction purposes, from declared as Semi-critical, Critical and Overexploited areas from ground water potential prospective. For NOC, An application in the prescribed Performa is to be submitted either to the Office of the Regional Director, (CGWB) of the concerned state, or to Member Secretary, CGWA, New Delhi
7	The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and Workmen Compensation Act	Fixing hours for normal working day, weekly paid rest, overtime pay, basic welfare and amenities, temporary living accommodation on-site, PPEs, penalties for vilolation, and liability of employers in workmen injuries arising from employment.

21. The PMGSY Scheme and Guidelines (2004) No. 12025/8/2001-RC, Ministry of Rural Development (MORD) also defines environmental requirements in road selection and regulatory compliance.

[5] PMGSY Roads are not covered by the EIA Notification. As all eligible roads under the RCIP are prohibited from entering wilidlife protected areas and sanctuaries, no permit under the Wildlife Act is needed.

II. DESCRIPTION OF THE PROJECT

A. General

22. The PMGSY program is mandated to provide all-weather roads to all the rural habitations within the country. RCIP is planned to help meet this objective. Under RCIP Tranche 3 in Assam, 488.311 kms roads have been identified for upgrading. The broad specifications for road alignment selection, pavement design, construction methodology, and geometric design are in accordance with the "Specification for Rural Roads" published by IRC on behalf of the Ministry of Rural Development, Government of India (GoI). The design details presented in this chapter highlights the PMGSY specifications. Minor changes will apply depending on road specific issues and design consideration. Since topography of Assam state is largely flat, the design details applicable to flat terrain are presented in following section.

B. Sample Roads Selected in Assam State

23. Assam has selected 196 roads with a total length of 488.311 kms spread over 18 districts as summarised at Table 2 below and detailed at Appendix 1.

Table 2: Summary of District Wise Rural Roads

Sl. No.	Name of District	No. of Roads	Length of Roads (Km)			
			Total	Max	Min	Average
1	Baksa	3	6.170	2.130	2.010	2.057
2	Barpeta	19	34.682	3.200	0.520	1.825
3	Bongaigaon	9	31.564	8.866	1.123	3.507
4	Cachar	1	1.750	1.75	1.75	1.75
5	Darrang	16	31.890	4.800	1.000	1.993
6	Dhubri	5	7.930	2.220	1.000	1.586
7	Goalpara	6	33.189	11.948	1.500	5.532
8	Kamrup	6	11.624	3.516	1.000	1.937
9	Karbi Anglong	15	38.513	4.000	0.950	2.568
10	Karimganj	22	63.794	8.500	0.630	2.900
11	Kokrajhar	5	6.650	2.000	0.650	1.330
12	Lakhimpur	10	27.620	6.500	0.800	2.762
13	Morigaon	22	43.728	6.000	0.550	1.988
14	Nagaon	20	32.259	4.100	0.780	1.613
15	Sibsagar	13	29.109	5.840	1.200	2.239
16	Sonitpur	4	27.482	8.150	3.500	6.871
17	Tinsukia	7	17.450	4.150	1.750	2.493
18	Udalguri	13	41.580	7.800	1.000	3.198
Total of RCIP Batch III		196	486.984	11.948	0.520	2.675

Source: Assam Rural Road Development Agency, March 2015

C. Project Description

1. Rural Road Construction Proposals

24. The proposed rural road construction work will provide 3.75 to 7.5 m roadway width[6] with 3.75 m carriageway in accordance with the Indian Road Congress (IRC) -SP 20: 2002 in plain terrain. The proposal considers a 3.75 m cement concrete pavement with lined storm water drains for stretches passing through built-up areas, waterlogged, water overtopping, and flood prone areas. The pavement design considers a base layer of variable thickness design with granular sub-base, 150 mm thick water bound macadam (WBM grade I and and II) and finally topped with 20 mm thick bituminous pavement. Adequate cross drainage structures like pipe or slab culverts/bridge structures are considered for drainage channels across the roads. Few minor bridges are also proposed for construction. Figure 1 shows the typical cross section of the rural roads.

25. The rural road construction works will be in conformance with the Rural Roads Manual and Technical Specifications (IRC: SP20: 2002) for Rural Roads published by IRC on behalf of Ministry of Rural Development, Government of India. The broad design considerations are given at later part of this chapter.

2. Present Condition

26. The project roads mainly pass through plain or riverine terrain and agricultural areas. The project roads have several cross drainage structures, electric and telephone posts along the existing alignment. There are some community physical structures like temple, mosque and primary or secondary schools beside the roads alignment, but largely will not be affected due to the widening of roads.

3. Alignment and Profile

27. The existing road is generally an earthen track with some stretches of brickbat soling and the project road is considered as new connectivity road. The construction works are to be confined to the existing alignment. The existing horizontal and vertical alignment / profile will be generally maintained except for minor smoothening or corrections to sustain consistent design speed without causing any land acquisition requirements and thereby the possible social and/or environmental concerns.

4. Design Considerations

28. **Geometrical Design and ROW Requirements:** The geometric design standards for this project will conform to PMGSY-ADB guidelines and the guidelines as stated in *IRC-SP 20:2002* and the final recommendations of NRRDA expert committee *(refer D.O. no. - 17305/1/2007-Tech/12 dated 30/09/2010)*. Recommended design standards vis-à-vis the standards followed for this road are described below. The requirement of ROW as per PMGSY guidelines considered for the design is given at Table 3 below:

Table 3: ROW Requirement

Road classification	Plain and Rolling Terrain (ROW in m)			
	Open Area		Built-up Area	
	Width	Range	Width	Range
Rural roads (ODR and VR)	15	15-25	6.0	6.0

ODR: Other District Road; VR: Village Road

[6] The road width may be reduced to 6m in case of BT and 3.75 m in case of CC as per PMGSY recent guideline.

29. Since terrain is plain, the design speed considered is as per recommended design speed of 50 Km/h for ruling (40 Km/h as minimum speed). The radius of horizontal curve is considered as 90 m ruling minimum (60m absolute minimum). The vertical alignment is designed as per ruling gradient of 3.3% applicable for plain terrain.

30. **Pavement and Embankment Design:** Considering the sub-grade strength, projected traffic and the design life, the pavement design for low volume PMGSY roads are proposed to be carried out as per guidelines of IRC: SP: 72 – 2007 or IRC SP:77 "Design of Gravel Road" and IRC SP:62-2004 "Cement Concrete Roads". In built up area for hygienic and safety reasons, C.C pavement is proposed with a hard shoulder and appropriate line drain. A design life of 10 years is considered for the purpose of pavement design of flexible and granular pavements. The embankment height considered as 1m (average) from ground to crust except at the approaches of cross drainage structures. The embankment height will vary in flood prone area as per the HFL.

31. **Road side drain**: As the insufficient drainage of surface water leads to rapid damage of road, road side drain (*Figure 2*) are provided on the locations of habitation areas with concrete pavement. The rainwater will flow along the longitudinal slope and intermittent gaps in concrete curbs.

32. **Carriageway:** The carriageway is proposed as 3.75 m as per IRC-SP20: 2002 but may be restricted to 3.0 m where traffic intensity is less than 100 motorised vehicles per day and where the traffic is not likely to increase due to situation, like dead end, low habitation and difficult terrain condition. The ROW requirement in built-up/constricted area may be even reduced to 4 m.

33. **Shoulder:** Earthen shoulder shall be constructed in layers and compacted to 100% of Proctor's Density. It is proposed to have 1.875 m wide shoulder (0.875 m hard shoulder and 1 m earthen shoulder) on either side of carriage way.

34. **Surfacing**: Slow setting bitumen emulsion will be applied as primer on water bound layer. Rapid setting bituminous emulsion will be used for Tack coat. Premixed carpet 20 mm thick and mixed with equivalent viscosity grade bitumen shall be laid as surfacing course. 6 mm thick, Type B seal coat is considered for sealing of the premixed carpet.

35. **Structural Works** :Following grades of concrete are proposed for structural works as per specified MORD and IRC specifications:

- Concrete in superstructure of Slab Culvert – M-25 (RCC)
- Concrete in Abutment cap, Dirt wall of slab culverts – M-25 (PCC)
- Brickwork in Abutment, Return Wall, Headwall – Cement mortar (1:4)
- Concrete below Abutment, Return Wall, Headwall – M-10 (PCC)
- Concrete in pavement (on carriageway) – M-30 (PCC)
- Concrete in pavement (on shoulder and drain) – M-25 (PCC

5. Construction Methods

36. For rural road, NRRDA has framed specific guidelines for cost effective construction of these rural roads preferring manual means. Motor grader and tractor-towed rotavator are used for handling of bulk materials like spreading of aggregates in sub-base and base courses by mix-in-place method. Ordinary smooth-wheeled roller is used for compaction if the thickness of the compacted layer does not exceed 100 mm. It is also considered that hot mix plant of

medium type and capacity with separate dryer arrangement for aggregate is used for bituminous surfacing work that can be easily shifted. A self-propelled or towed bitumen pressure sprayer is used for spraying the materials in narrow strips with a pressure hand sprayer. For structural works, concrete is mixed in a mechanical mixer fitted with water measuring device. Excavation is manually or mechanically using suitable medium size excavators.

6. Available Right of Way

37. As per the information available with ARRDA, right-of-way (ROW) is largely available for the rural roads. However, in most of the roads, the required ROW of 10-15 m is encroached and in some of the road, it is put to agricultural use by the adjacent landowners. The private landowners along the proposed (ROW) are voluntarily parting the encroached land and in some cases parted even their own private land without any compensation, anticipating the developmental benefits from the road construction works.

7. Traffic

38. The present traffic data on each of these rural roads typically varies between 10-15 vehicles per day on most of the rural stretches. The traffic largely comprises motorcycles, tractors, light commercial vehicles, animal drawn carts and bicycles.

8. Economic Assessment

39. The economic analysis carried out for the project has indicated that the rural road construction works will act as a catalyst for the rural economic growth and poverty alleviation of the community in the region.

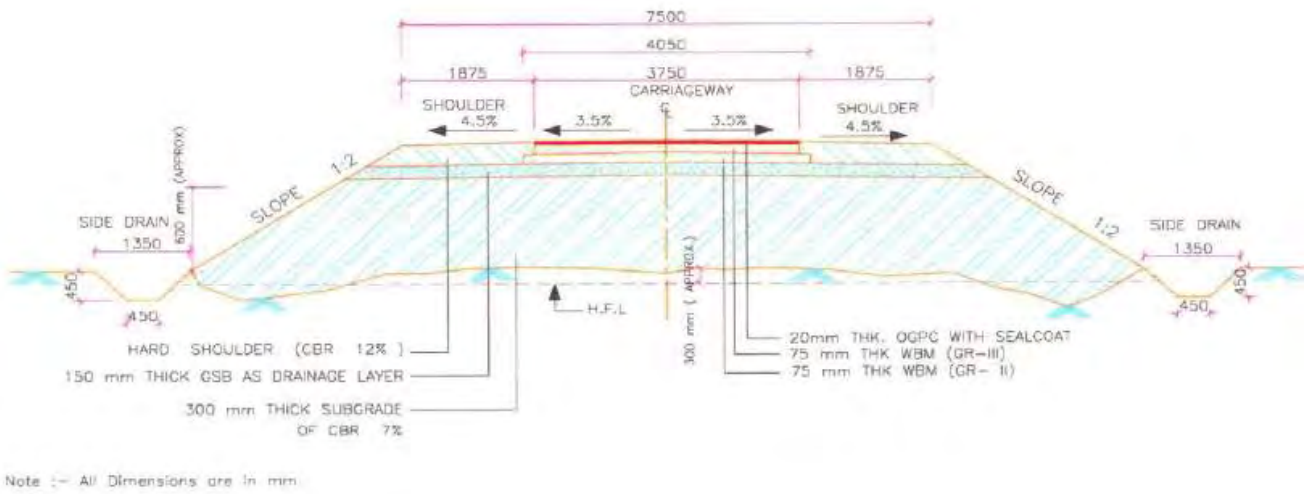

Figure 1: Cross-section of Rural Roads

III. DESCRIPTION OF THE ENVIRONMENT

A. Background

40. Baseline environmental conditions about all facets of environment viz. physical, biological and socio-economic were established using primary and secondary sources. Efforts to collect the latest information both at regional as well as local level especially along the project corridor were made tro allow better prediction of likely changes in the environment due to the project and will serve as performance indicators for various components.

41. The project roads are located almost all over the state covering 18 out of the 27 districts. The baseline information at the state level and road-specific environmental salient features are provided in this chapter.

42. Assam is located between latitude 24°07′ to 28°00′N longitude 89°42′ to 96°02′ E. The geographical area of the state is 78,438 km², which constitutes 2.4 % of the area of the country. The forest area of the state is 27,826 km² constituting 35.48% of the geographical area of the state and 0.85% of the forest area of the country. The state boundary touches in the north and east by the Kingdom of Bhutan and Arunachal Pradesh. Along the south lie Nagaland, Manipur and Mizoram. Meghalaya lies to her south-west, Bengal and Bangladesh to her west.

B. Physical Environment

1. Meteorology and Climate

43. Assam has a humid climatic condition (tropical monsoon rainforest climate). The weather in Assam is dry in winter, hot, and wet in summer. Its most distinguishing feature is the copious rainfall between March and May at a time when precipitation in upper India is at its minimum. The state has three main seasons:

- **Winter**: November to February are winter months when average temperatures range from 06° to 08° C (42° to 46° F).
- **Summer**: The March to May is summer season with hot and humid weather. Summers are hot, with an average temperature of 35° C (92° F) and a high temperature that at times reaches 39° C (102.2° F).
- **Monsoon season:** This season brings relief from the scorching heat of the summers. The average annual rainfall in the state is around 70 inches in the west and around 120 inches in the east.

44. The climate map of Assam is presented in Figure 2.

2. Air Quality

45. Most of the project area lies in vast open agricultural land and is largely free from air pollution sources other than traffic. As such, the ambient air quality for major pollutants like SO_2, SPM and NO_X is expected to be within the limits. However, in absence of any existing data on ambient air quality levels of the project area, secondary sources were referred.

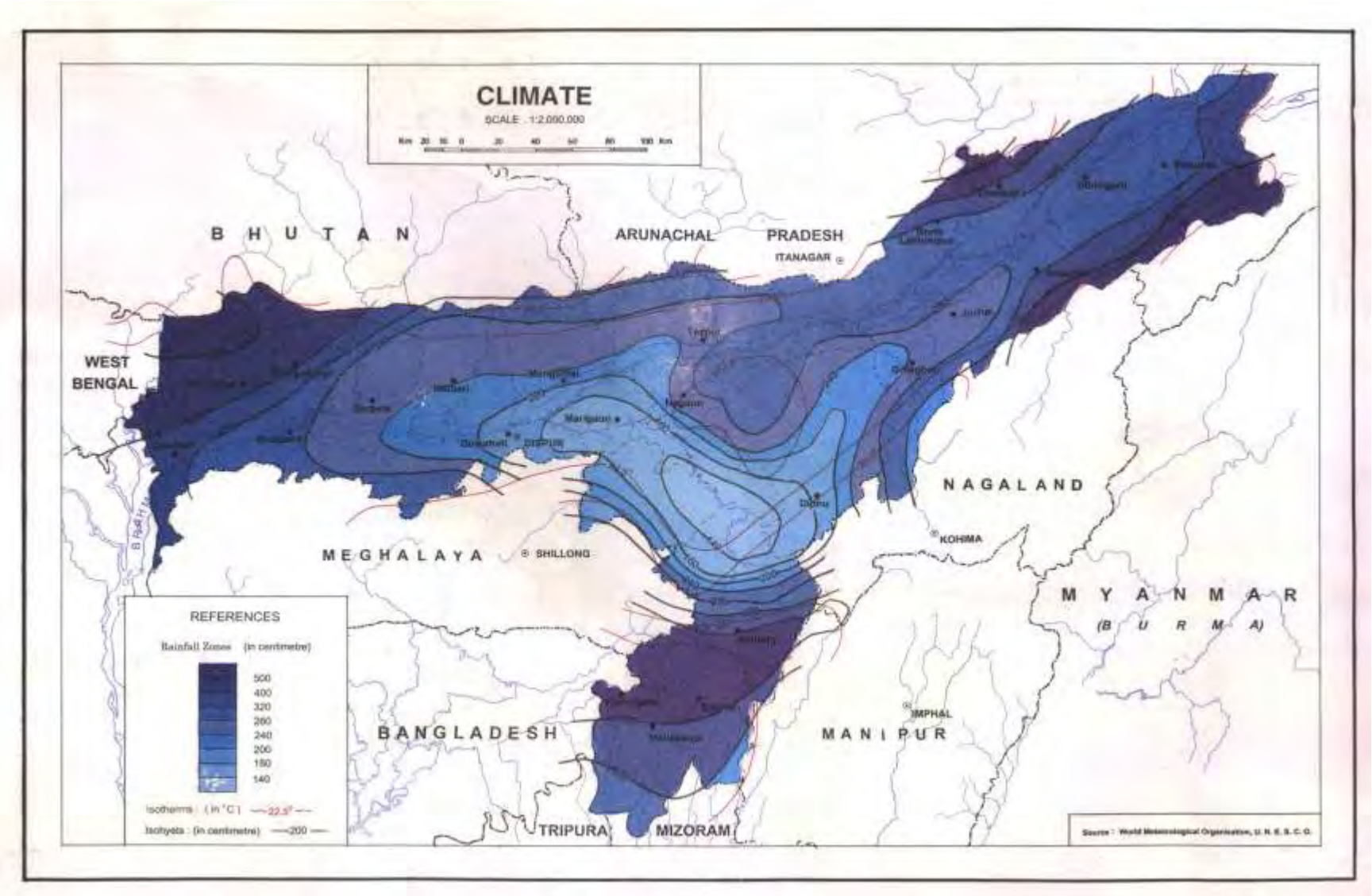

Figure 2: Climate Map of Project Districts –Assam

Table 4: Maximum Observed Ambient Air Quality during 2008

Area classification	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	RSPM ($\mu g/m^3$)	SPM $\mu g/m^3$)
Industrial (maximum observed value)	30	27	265	30
Residential (maximum observed value)	8	20	105	8
National Ambient Air Quality Standards for Industrial and Residential Areas	80	80	100	80

Source: National Ambient Air Quality Status, 2008, CPCB, and Table 3.3

46. The above Table 4 reveals that concentration of all the pollutants is higher in industrial area especially respirable suspended particulate matter. The levels of sulphur dioxide and nitrogen dioxide are however, well within the limits (NAAQS). The higher particulate matter levels are attributed to the vehicular movement on unpaved roads and the loose dust in the agricultural fields that lead to formation of dust clouds over short periods. The same can be concluded from Table 5 which provides a comparison of air quality at different locations.

Table 5: Ambient Air Quality Status of Assam in Previous Years

City	Location	Type of Area	SO_2	NO_2	RSPM (PM10)	SPM
NAAQS						
Bongaigaon	Barapara office Bldg	R	5	11	56	91
	Campus of oil India	R	5	10	76	113
Dibrugarh	Dibrugarh office Bldg	R	5	11	56	92
Golaghat	Golaghat office Bldg	R	4	11	71	108
Guwahati	Fire brigade station	R	9	18	141	211
	Gopinath Nagar	R	7	14	103	163
	Head office	R	9	19	152	233
	Near Pragiyotish college	R	7	15	96	151
Hailakandi	CISF Campus	R	6	13	66	104
Shivsagar	Shivsagar Office Bldg	R	5	12	81	119
Tezpur	Tezpur office Bldg	R	5	11	76	131

Source: National Ambient Air Quality Monitoring Series, CPCB, 2008

R – Residential and other areas,
I – Industrial area,
L- Low, M- Moderate, H – High and C – Critical levels of pollution based on exceedence factor (calculated for n > 50 days)
BDL = Below Detection Limit (Concentration less than 4 $\mu g/m^3$ for SO_2)
BDL = Below Detection Limit (Concentration less than 9 $\mu g/m^3$ for NO_2)

3. Noise

47. Along the proposed road construction proposals, there is no significant industrial activity or vehicular traffic contributing to ambient noise levels. The occasional vehicular movement on the unpaved roads contributes to increased noise levels over short duration and limited to daytime. The existing roads do not appear to have vehicular traffic in the nigh time. Therefore, the ambient noise levels are expected to be within the National Ambient Noise Standards

4. Topography and Geomorphology

48. Assam is an important geographic location of Northeast India. Situated between altitudes 28º18' and 24º North and latitudes 89º 46' and 97º 4' east, Assam is bordered in the north and east by the Kingdom of Bhutan and Arunachal Pradesh. Along the south lie Nagaland,

Manipur and Mizoram. Meghalaya lies to her southwest, Bengal and Bangladesh to her west. Figure 3 shows the physiography of project districts in Assam.

49. The alluvial soils are extensively distributed over the Brahmaputra and Barak plains and are very fertile. The alluvial soils found are divided into two main sub-types; young and old alluvial soils. The young alluvial soils are characterized by modern alluvium deposits. The colour of these soils is generally gray to molted gray. On the other hand, the old alluvial soils occur in some patches of Kokrajgar, Barpeta, Nalbari, Kamrup, Darrang, Sonitpur, Lakhimpuir, and Dhemaji districts. Generally, the old alluvial soils are very deep with fine loams to coarse loams in texture. The piedmont soils are confined to the northern narrow zone along the Himalayan foothills. The soils are very deep and fine to coarse loamy in texture. The hill soils are generally found in the southern hill regions of the state. These soils are deep, dark grayish brown in colour and fine to coarse loamy in texture. The lateritic soils are extensively occurring in North Cachar Hills district and in some parts of the southern Karbi Plateau. These soils are dark and finely textured with heavy loams. Geomorphological Map of Assam is given in Figure 4.

5. Geology/Soil

50. Geologically, as per the plate tectonics, Assam is in the eastern most projection of the Indian Plate, where it thrusts underneath the Eurasian Plate creating a subduction zone. It is postulated that due to the north-easterly movement of the Indian plate, the sedimentary layers of an ancient geosynclines called the Tethys (in between Indian and Eurasian Plates) were pushed upward to form the Himalayas. It is estimated that the height of the Himalayas is increasing by 4 cm each year. Therefore, Assam possesses a special geomorphic environment, with large plains and dissected hills of the South Indian Plateau system abutting the Himalayas to the north, north-east, and east.

51. Geomorphic studies also conclude that the Brahmaputra is a paleo-river, older than the Himalayas, which often crosses higher altitudes in the Himalayas eroding at a greater pace than the increase in the height of the mountain range to sustain its flow. The height of the surrounding regions is still increasing forming steep gorges in Arunachal. The Brahmaputra valley in Assam is underlain by recent alluvium approximately 200-300m thick consisting of clay, silt, sand and Pebbles.

52. The geological map of the Brahmaputra valley covering the entire Assam state / project districts is given in Figure 5.

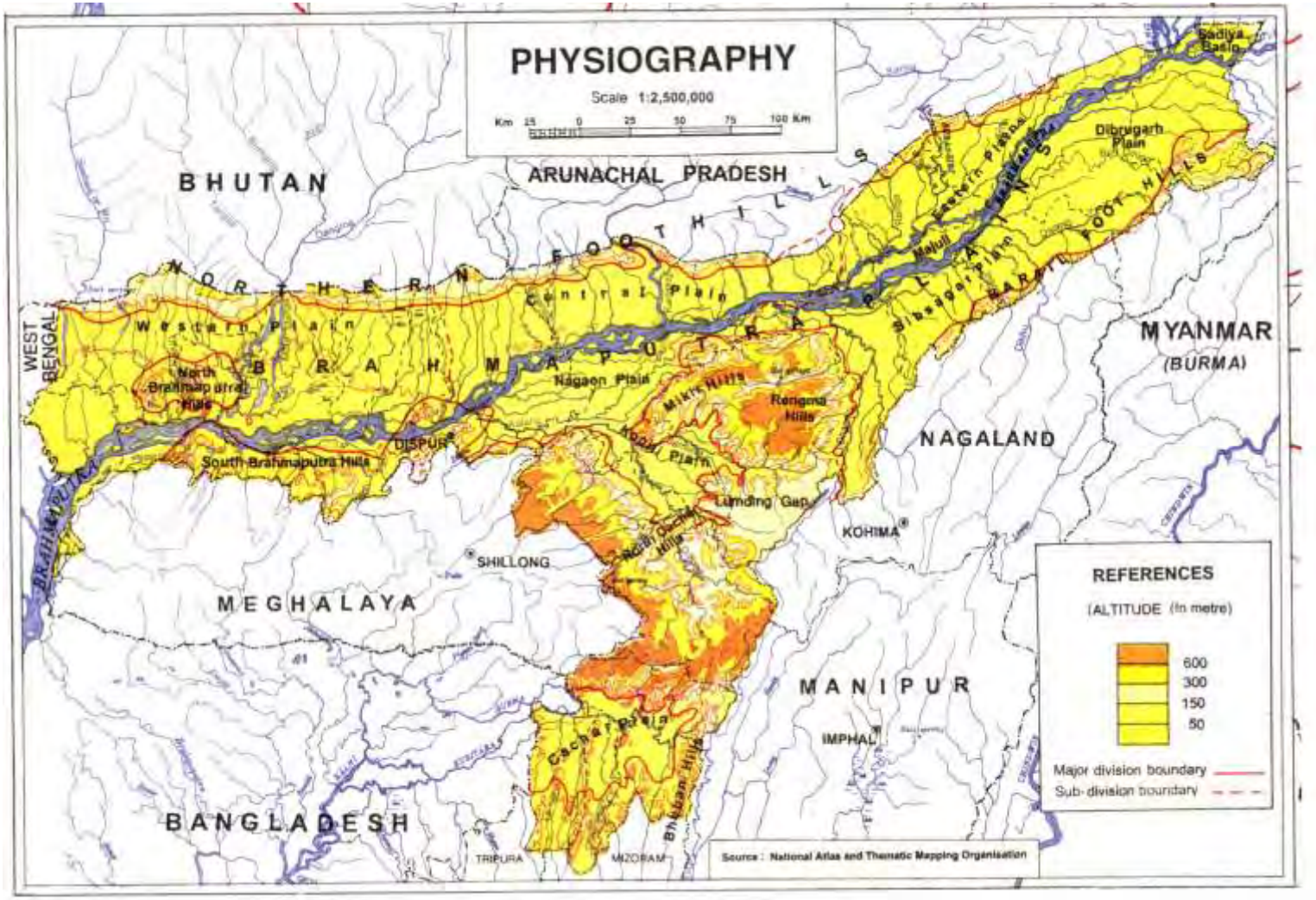

Figure 3: Physiography of Project Districts –Assam

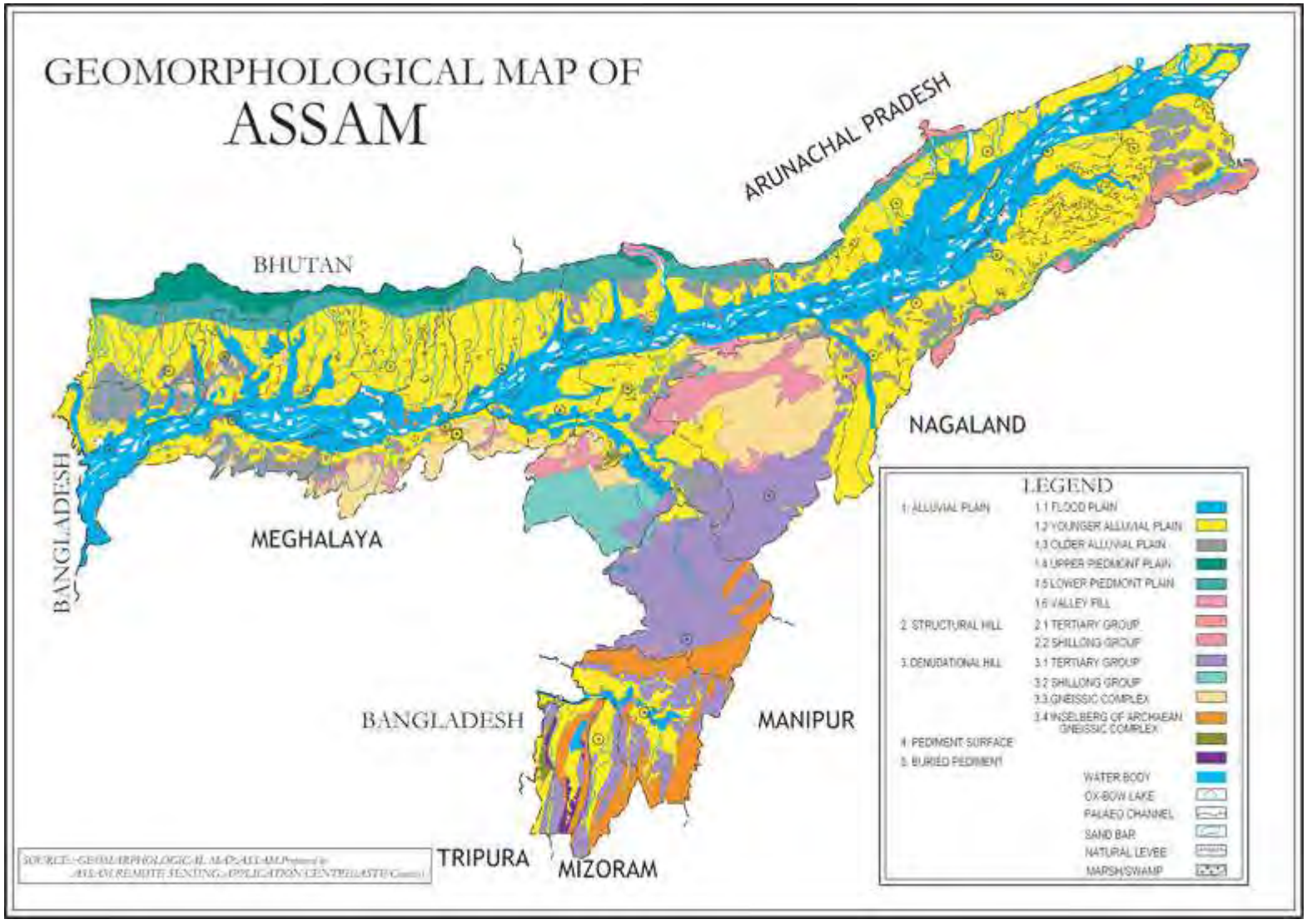

Figure 4: Geomorphology and Landforms Maps of Project Districts –Assam

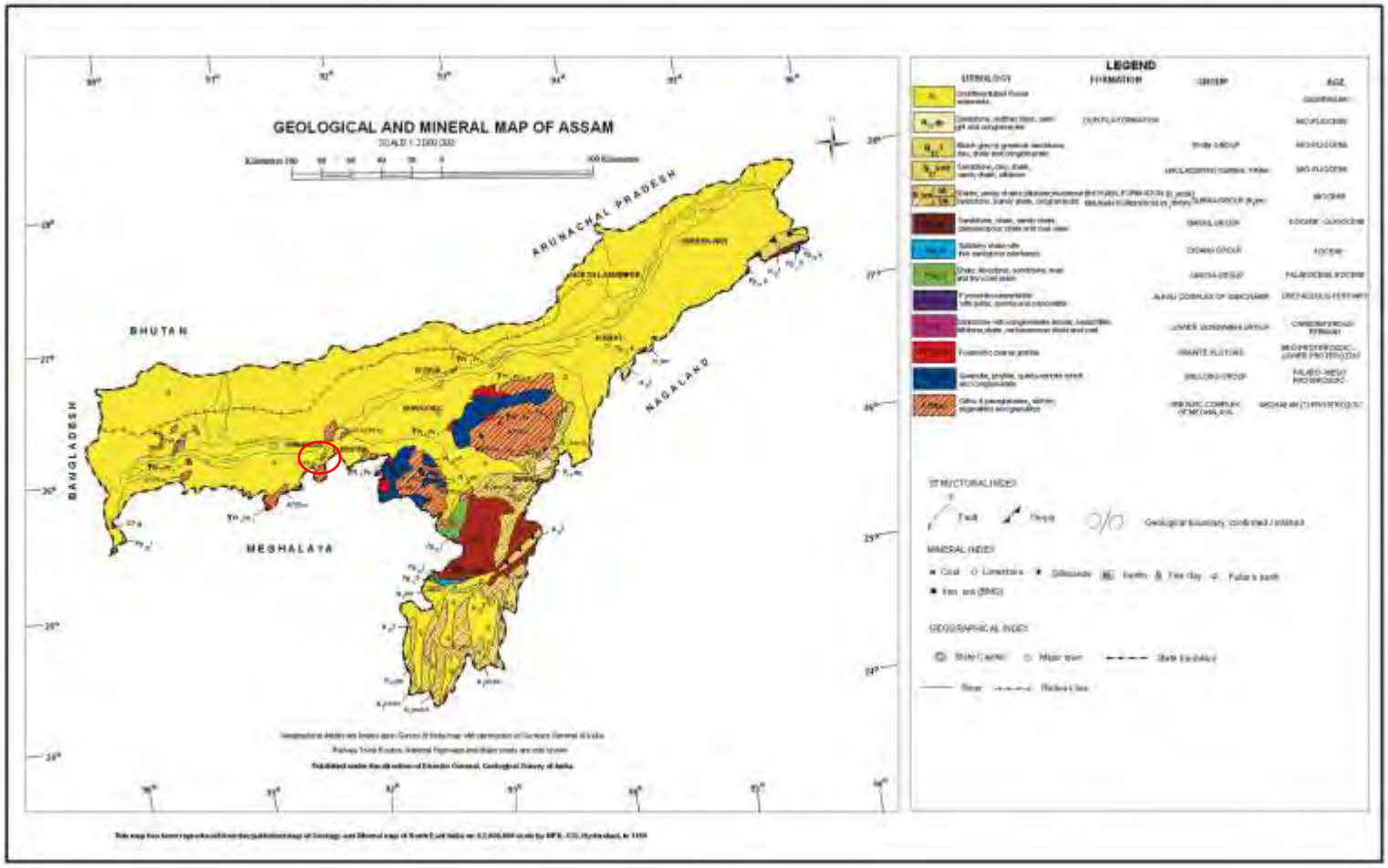

Figure 5: Geological Map of Assam

6. Soil

53. At the state level, the soils in Assam is generally divided into four groups based on topography; a) Alluvial soils, b) Piedmont soils, c) Hill soils, and d) Lateritic soils.The major soil types within the state can be classified into five groups namely Entisols, Mollisols, Alfisols, Ultisols, and Histosols. These soil types can be further classified into several sub groups. Entisols can be sub-classified into younger alluvium and Bhabar. The younger alluvium is predominantly seen along the Brahmaputra River and some sporadic patches in southern parts of state. The mollisols are found in western and northern fringes of the state while alfisols can be seen in central parts of state. The soil map project districts are given in Figure 7.

7. Earthquake and Seismicity

54. **Seismic Hazard**. The seismic hazard map of India was updated by Bureau of Indian Standards (BIS). The entire state of Assam lies in Zone V (Highest level of vulnerability). The Brahmaputra valley and its adjoining highlands are seismically very unstable. The earthquakes of 1897 and 1950, measuring 8.7 on Richter scale are among the most severe in recorded history, and have caused extensive landslips. Rock falls on hill slope, subsidence and fissuring of ground in the valley changes in the courses and morphology of several tributary rivers. The hazard zoning map is shown in Figure 6.

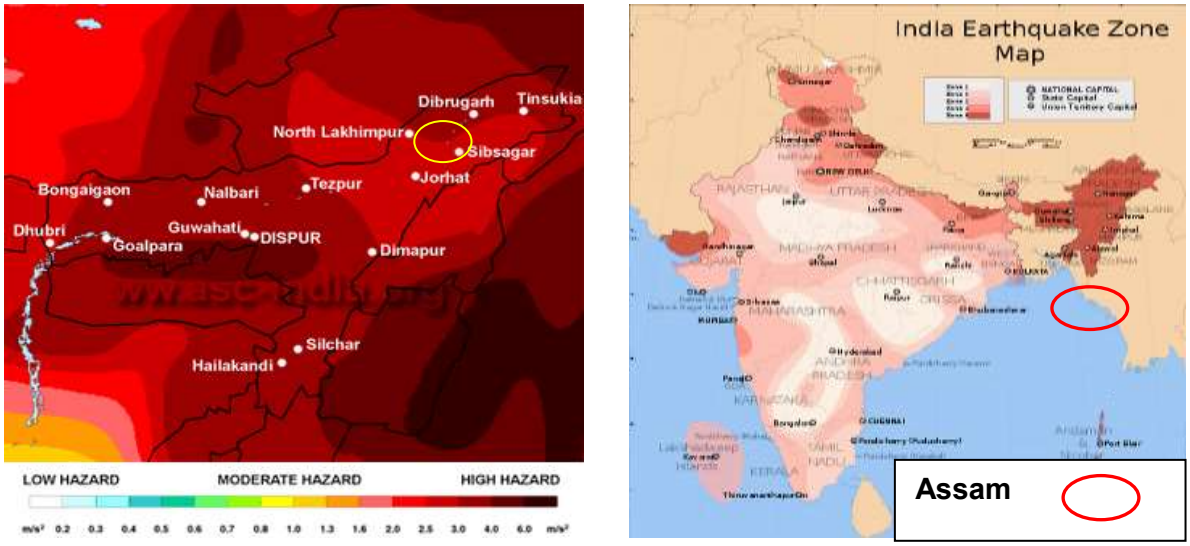

Figure 6: Hazard and Seismic Zone Map

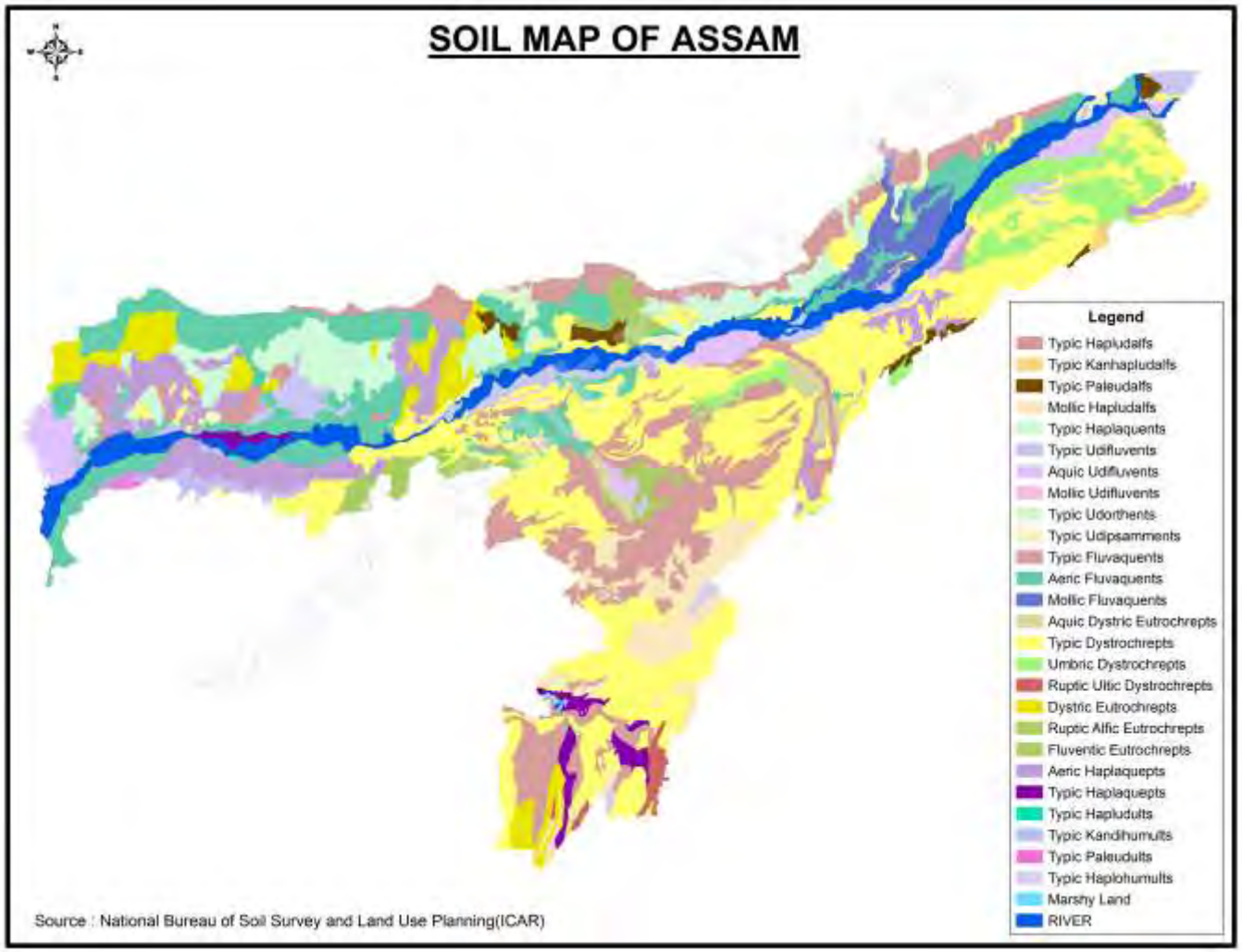

Figure 7: Soil map of Assam

8. Land Use

55. A large section of the geographical area is classified as forest area measuring 26,832 sq km or 34.21% of the State . According to legal classification, reserved forests constitute 66.58 %, and unclassified forests, 33.42%. Details of land use are given in Table 6 and Figure 8.

Table 6: Land Use Pattern in the State

Land Use	Area in '000 ha	Percentage
Total Geographical area	7,844	
Reporting area for land Utilization	7,850	100.0
Forests	1,932	24.61
Not Available for cultivation	2,531	32.24
Permanent pastures and other grassing land	163	2.08
Land under miscellaneous tree crops and groves	234	2.98
Culturable wasteland	80	1.02
Fallow lands other current fallows	65	0.83
Current fallows	110	1.40
Net area sown (as per agriculture census 1995-96 expect total cropped area)	2,734	34.83

Source: State of Forest Report, 2005, Forest Survey of India Dehradun

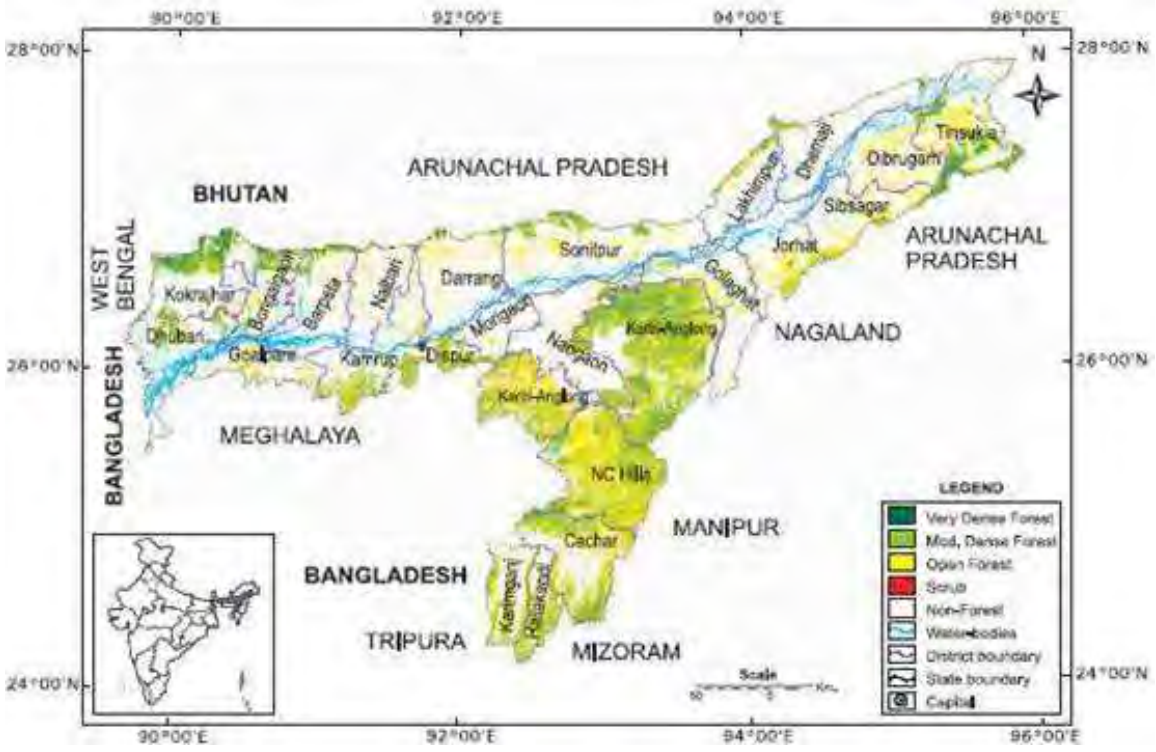

Figure 8: Landuse of Assam

9. Hydrology and Water quality

56. Assam has extensive river system consisting of the Brahmaputra, the Kusiyara, and the Barak and their tributaries. All the rivers in Assam are liable to floods, mainly because they receive heavy rainfall within a short time. These rivers are in their early stage of maturity and are very active agents of erosion. The river waters collect a tremendous amount of silt and other debris and raise the level of the river beds. Therefore, it becomes impossible for the main channel to cope with the vast volume of water received during the rains. The Brahmaputra River has a total drainage area of about 935,500 sq. km. So far, a total of 4, 77,163 hectares of land have been irrigated in Assam. The drainage map of the project districts in Assam is presented in Figure 9.

57. Sample roads are mostly crossed by seasonal small channels. However, many of the sample roads are located in close proximity of the rivers and are prone to flood. Ground water being extracted through hand pumps or tubewell and is the main source of water supply to villagers.

58. In Assam, pollution level is increasing in most surface water resources particularly major towns due to increasing urbanization. To date, none of the major surface water sources are safe for drinking or bathing without conventional water treatment. Rivers such as Bharmaputra, Buridihing, Disang, Jhanji, Dhansiri, Subbansiri, and Borakk are polluted at different stretches due to industrial, domestic, and agricultural pollution. Among all the rivers, Bharmaputra and Dhansiri Rivers are the most polluted. The hydro-geological conditions in both porous and fissured formations spread across project districts / state are given in Table 7.

Table 7: Hydro-geological Conditions of Project District/ Assam

Dynamic Ground Water Resources	
Annual Replenishable Ground water Resource	27.23 Billion Cubic meter
Net Annual Ground Water Availability	24.89 Billion Cubic meter
Annual Ground Water Draft	5.44 Billion Cubic meter
Stage of Ground Water Development	22 %
Ground Water Development and Management	
Over Exploited	NIL
Critical	NIL
Semi- critical	NIL
Artificial Recharge to Ground Water (AR)	▪ Feasible AR structures: 250 Check Dams, 500 weirs, 1000 Gabion structures, 250 development of springs 600 RWH in Urban Areas
Ground Water Quality Problems	
Contaminants	**Districts affected (in part)**
Fluoride (>1.5 mg/l)	Goalpapra, Kamrup, Karbi Anglong, Nagaon,
Iron (>1.0 mg/l)	Cachar, Darrang, Dhemaji, Dhubri, Goalpapra, Golaghat, Hailakandi, Jorhat, Kamrup, Karbi Anglong, Karimganj, Kokrajhar, Lakhimpur, Morigaon, Nagaon, Nalbari, Sibsagar, Sonitpur
Arsenic (>0.05 mg/l)	Dhemaji

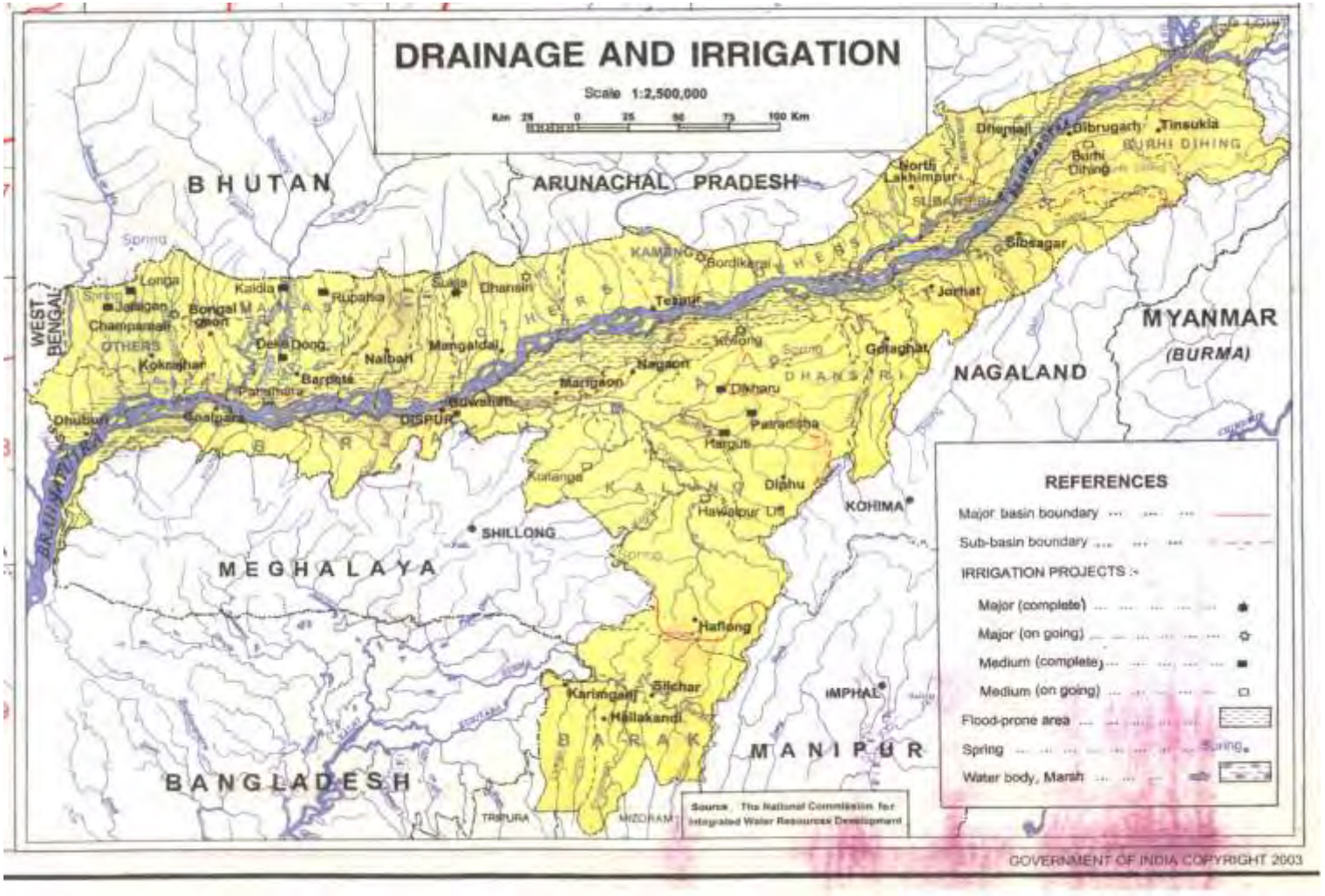

Figure 9: Drainage Map of Project Districts of Assam

59. **Surface Water Quality:** Water resources of the State as a whole are substantial. About 8,251 sq km, which is 10.5% of the total geographical area of the State, is occupied by surface water bodies. Of this about 6,503 sq km is occupied by the river systems including the mighty Brahmaputra and 1,748 sq km by natural wet lands including seasonal and permanent water logged and marshy areas and man-made reservoirs and tanks of size more than 2.5 ha. The total surface water resource of the State is estimated at about 600 billion cubic.

60. **Groundwater Quality and Availability:** The annual replenishable ground water resource of the state has been estimated as 27.23 billion cubic meter and net annual groundwater availability 24.89 billion cubic meters. The annual groundwater draft is estimated as 5.44 billion cubic meter of which 4.85 billion cubic meter is for irrigation and 0.59 billion cubic meters is for domestic and industrial uses. The overall stage of groundwater development in the state is 22% with the lowest figure of 2% in Cachar district and highest 56%in Bongaigaon district.

61. **Flood Prone areas:** The chronically flood prone areas within the state are mainly along the river Brahmaputra from eastern to western areas. In 1988 witness the worst flood when a total of 42.23 lakh hectares of land, including 11.20 lakh hectares of crop damage, affecting more then 8 million people in 8770 villages.

62. **Hydrology:** The Brahmaputra River and the 33 major tributaries joining it in Assam, including the main trans-Himalayan tributaries of Subansiri, Jia Bharali, and Manas, carry about 30% of the country's total surface water. Surface water bodies covering about 8,251 square kilometers (km²) account for 10.5% of the geographical area of the state. Of these, the river systems, including waterlogged areas, occupy 6,503 km². The annual surface water availability is more than 53 million hectare-meters. Brahmaputra valley in Assam has 3,513 wetlands, covering 1,012.3 km². Groundwater is also plentiful at shallow depth in the valley; utilizable groundwater is estimated to exceed 2 million hectare-meters.

C. Biological Environment / Ecological Resources

1. Biological Environment / Ecological Resources of the State

63. Assam is one of the richest biodiversity zones in the world. There are a number of tropical rainforests, riverine grass lands, bamboo orchards and numerous wetland ecosystems in Assam. Many of these areas have been protected by developing national parks and reserved forests. The Kaziranga and Manas are the two World Heritage Sites in the region, the Kaziranga is the home for the rare Indian Rhinoceros, while Manas is a project tiger sanctuary area. No project roads pass through any of the protected areas.

2. Forest and forest type of State

64. Forestry in Assam is one of the most important economic activities of the state. This has been possible due to the vast stretch of forests in Assam. The forest in Assam can be described as: tropical wet evergreen, tropical semi-evergreen, and tropical moist deciduous forests. The total forest area of state is 26,748 Sq. Km. representing 2.4 % of the country's total. Reserved forest 13,870 sq. km. and protected area is 3,925 sq.km. representing17.68% and 5% of State's total area.

65. Although, none of the road stretches passes through any forest land/area but still has trees, which might require felling during clearing up operations for construction of rural roads. In most

of cases, tree cutting has been minimized by suitably modifying the alignment. The habitat type in the project area is mainly modified habitat in accordance with the ADB SPS.

3. Mammals

66. Macaca (Rhesus macaque), Golden langur (*Trachypithecus geei*), Bay bamboo rat (*Connomys badius*), Spotted Deer (*Curvus axis*), Otter (*Aonyx congica*), Indian Mongoose (*Herpestes javanicus*), Clouded leopard (*Neofelis nebulosa*) were reported in the forests of Guwahati. List of mammals is given in Table 8.

Table 8: Mammals Recorded in Guwahati City and Forest Area

S.N	Common Name	Scientific Name
1.	Spotted deer	*Axis axis*
2.	Swamp deer	*Rucervus duvaucelii*
3.	Clouded leopard	*Neofelis nebulosa*
4.	Golden langur	*Trachypithecus geei*
5.	Indian mongoose	*Herpestes javanicus*
6.	Bay bamboo rat	*Cannomys badius*
7.	Hog badger	*Arctonyx collaris*
8.	Rhesus macaque	*Macaca mulatta*
9.	Hoary bamboo rat	*Rhizomys pruinosus*
10.	Otter	*Lutra perspicillata*
11	Ganges river dolphin	*Platanista gangetica*

4. Avifauna

67. Assam state supports rich avifauna, due to abundance of feeding, breeding and roosting places. In this state both endemic and exotic species were reported. Mainly endemic species were confined to upper Assam and exotic species were mainly migratory birds, which arrive in winter for roosting. Birds reported during the time of survey in Guwahati were cosmopolitan in distribution. No endangered species were noticed. Due to high abundance of avifauna, they were noticed along the roadside, in market places, along the banks of river, lakes and in human settlement areas. Majority of the birds recorded in core and buffer zone show short distance and local migration during the daytime (diurnal migration). Their migrations were mainly in search food and new feeding ground.

68. Birds recorded in large number were rock pigeon (*Columba livia),* house crow (*Corvus splendens),* cattle egret (*Bubulcus ibis),* House sparrow, and Myna*.* Three subspecies of myna like Pied Myna, Common Myna, and Bank Myna are commonly found. **Table 9** gives the list of avifauna found in Assam including part of subproject districts.

Table 9: List of Fauna

S. N	Scientific Name	Common Name
1.	*Acridotheres tristis*	Common myna
2.	*Columba livia*	Blue rock pigeon
3.	*Corvus splendens*	House crow
4.	*Dicrurus adsimilis*	Black drango
5.	*Haleyon smyrensis*	White breasted kingfisher
6.	*Milvus migrans*	Pariah kite
7.	*Passer domesticus*	House sparrow

S. N	Scientific Name	Common Name
8.	*Streptopelia chinensis*	Spotted dove
9.	*Apus affinis*	House swift
10.	*Tringa hypoleucos*	Common sandpiper
11.	*Mirafra assamica*	Lark
12.	*Corvus macrorhynchos*	Jungle Crow
13.	*Ocyceros birostris*	Indian Grey Hornbill
14.	*Dicrurus hottentottus*	Hair-crested Drongo
15.	*Anthus rufulus*	Paddyfield pipit
16.	*Cercomela fusca*	Indian Chat
17.	*Coracias benghalensis*	Indian Roller
18.	*Merops orientalis*	Green Bee Eater
19.	*Ardeola gravii*	Pond heron
20.	*Turdoides striata*	Red vented bulbul
21.	*Vanellus indicus*	Red wattled lapwing
22.	*Egretta garzetta*	Little egret
23.	*Ardeola grayigrayi*	Indian pond heron
24.	*Bubulcus ibis*	Cattle egret
25.	*Turdoides striata*	Jungle babbler
26.	*Acridotheres ginginianus*	Bank myna
27.	*Gracupica contra*	Pied myna
28.	*Psittacula kramen*	Rose ring parakeet
29.	*Upupa epops*	Hoopoe

5. Wildlife and Protected Areas

69. Table 10 provides details of national park and sanctuaries in the state and Figure 10 shows their locations. There is no wildlife sanctuaries, national parks, and tiger reserves along the sample roads project areas.

Table 10: List of Protected Areas in Assam

Name	Area in Sq. km	Main attraction
Kaziranga NP	858.98	Rhino, Tiger, Bears, Wild Buffalo, Swamp Deer, Gaur, Gibbon, Bengal Florican, Dolphin, Otter
Manas NP	500	Tiger, Asiatic Wild Buffalo, Asian Elephant, Gaur, Dhole Pigmy hog, Hispid hare, Golden langur, Bengal florican
Dibru-Saikhowa NP	340	Ferel horses, Asiatic Wild Buffalo, White winged wood duck and Salix swamp
Nameri NP	200	Tiger, 4 species of Hornbill, White Winged Wood duck, Golden Mahaseer
Rajiv Gandhi	78.91	Rhino, Tiger, Maljurias Bengal Florican, Otter
Wildlife Sanctuaries		
Garampani	6.05	Elephant, Hot Water Springs
Laokhowa	70.13	Elephant, Tiger, Asiatic Wild Buffalo, Bengal Florican
Bornadi	26.22	Hispid Hare, Pygmy Hog, Dhole, Elephants, Tiger, Great Pied Hornbill, Peafowl
Chakrasila	45.5	Golden Langur, Gaur, Sambar, Barking deer
Burachapori	44.06	Elephants, Tiger, Wild buffalo, Aquatic Birds, Bengal Florican

Name	Area in Sq. km	Main attraction
Pani-Dihing	33.93	Stray Elephants; Birds Paradise
Hollongapar Gibbon	20.98	7 Primates (Hoolock Gibbon, Stump-tailed Macaque, Capped Langur, Pig –tailed Macaque, Assamese Macaque, Slow Loris and Rhesus Macaque), Elephant, Leopard
Pobitora	38.8	Rhino, Leopards, Barking Deer, Migratory Birds
Sonai -Rupai	220	Elephant, Tiger, Gaur, Dhole, Sambar, White Winged Wood duck
Bherjan, Borajan-Padumoni	7.22	Hoolock Gibbon, Capped Langur, Pig-tailed Macaque, Slow Loris and Rhesus Macaque, Leopard
East Karbi Anglong	222	Gaur, Elephants, Tiger, Sambar, Barking Deer, Lesser Cats, Hoolock, Gibbon, Capped Langur, Wreathed Hornbill,
Nambor	37	Gaur, Elephants, Tiger, Sambar, Barking Deer, Lesser Cats, Hoolock Gibbon, Capped Langur, Wreathed Hornbill
Marat Longri	451	Tigers, Leopards, Gaur, Elephants, Hoolock Gibbon
Nambor-Doigurung	97.15	Gaur, Elephants, Tiger, Sambar, Barking Deer, Lesser Cats, Hoolock Gibbon, Capped Langur, Wreathed Hornbill
Amchang	78.64	Elephant, Gaur, Leopard, Lesser Cats, Slow Loris, Hoolock Gibbon, Capped Langur
Dehing Patkai	111.19	Elephants, Tiger, Hoolock Gibbon, White winged Wood Duck, Hornbills, Rain forests
Borail	326.25	Serow, Himalayan Black Bear, Hoolock Gibbon, Langur, Spectacled Monkey

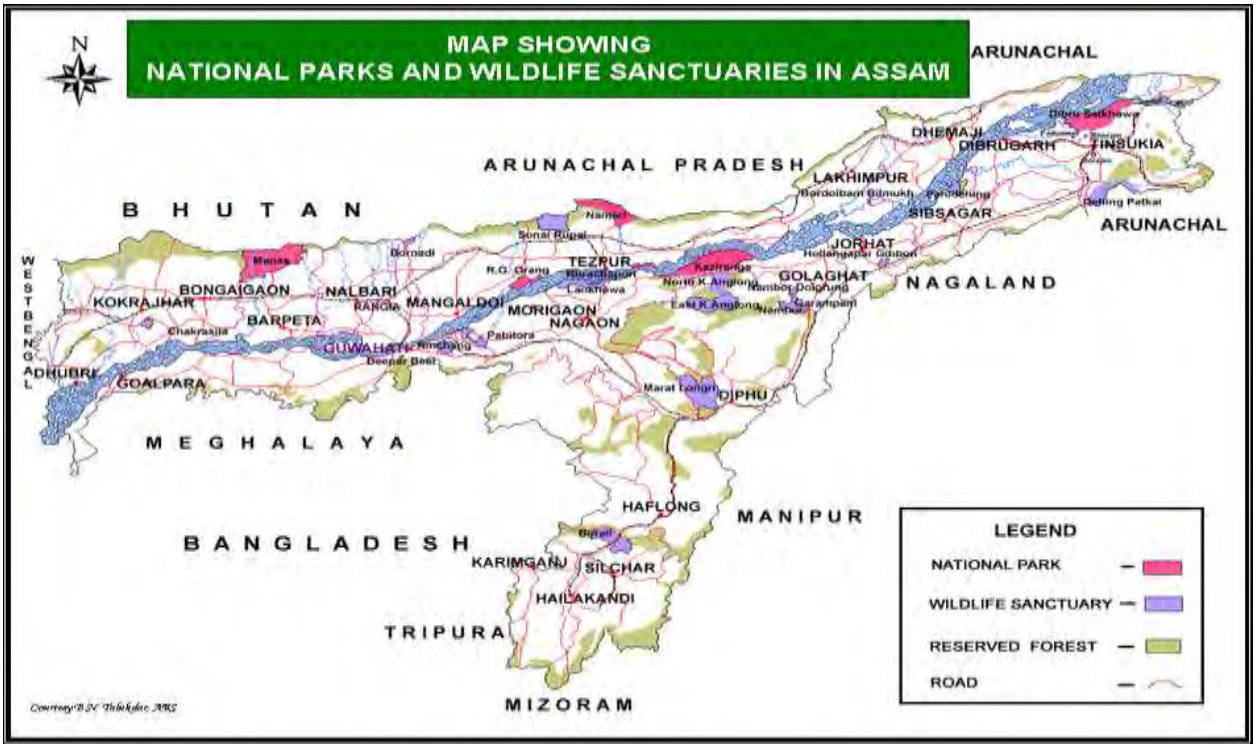

Figure 10: Protected Areas of Assam

6. Aquatic Biology

70. No wetland or large water body falls in or around the selected project roads area. Fisheries activities are common in Assam including subproject areas.

D. Socio-Economic Environment

71. Following paragraphs describes about the socio-economic and cultural environmental of the project surrounding area.

1. Demography

72. As per census, the State has the highest population density among northeast states with 339 persons per sq. km. As against decadal growth rate of 21.54% at the national level, the population of the State has grown by 18.92% over the period 1991-2001. The sex ratio of Assam at 935 females to 1000 males is higher than the national average of 933. Female literacy of the State rose to 56.03% from 43.03% in 1991. There are so many major tribes and a number of sub-tribes inhabiting the area. (Table 11).

Table 11: Demographic Profile

Population (2011 census)	31,169,272
Males	15,954,927
Females	15,214,345
Urban population (Census 2001)%	12.72
Literacy Rate (census 2011) in %	73.18
Male Literacy in %	78.81
Male Literate in numbers	10,756,937
Female Literacy in %	67.27
Female Literacy in numbers	8,750,080

Note: Figures in bracket indicate percentage Source: Census, 2011

2. Healthcare

73. The total fertility rate of the state is 2.5. The infant mortality rate is 58 and maternal mortality ratio is 390 based on SRS 2007 – 2009 compared to the national averages of 2.5, 47, and 212, respectively. Comparative figures of major health and demographic indicators are as follows:

Table 12: Demographic, Socio-economic and Health profile of Assam State as compared to India figures

S. No.	Item	Assam	India
1	Total population (Census 2001) (in million)	26.66	1028.61
2	Decadal Growth (Census 2011) (%)	16.93	17.64
3	Crude Birth Rate (SRS 2008)	23.9	22.8
4	Crude Death Rate (SRS 2008)	8.6	7.4
5	Total Fertility Rate (SRS 2008)	2.6	2.6
6	Infant Mortality Rate (SRS 2008)	64	53
7	Maternal Mortality Ratio (SRS 2004 - 2006)	480	254
8	Sex Ratio (Census 2011)	954	940
9	Population below Poverty line (%)	36.09	26.10

S. No.	Item	Assam	India
10	Schedule Caste population (in million)	1.83	166.64
11	Schedule Tribe population (in million)	3.31	84.33
12	Female Literacy Rate (Census 2001) (%)	54.6	53.7

3. Literacy and Education

74. The State and Central Government give primary focus on developing the Assam as an educational hub. Assam has the highest number of schools, colleges and universities in the region. There are 44,309 primary and middle schools, secondary schools, high schools, colleges for professional as well as general education, universities and other educational institutions in the state. These are some of the best known technical and professional institutes of international repute like the Cotton College, Centre for Plasma Physics, Indian Institute of Technology Guwahati, National Institute of Technology, Silchar, North Eastern Regional Institute of Water and Land Management, and Defence Research Laboratory.

Table 13: Inventory of Schools in Assam by Type

Universities	5
College of general education	431
College of professional education	34
High School	620
Secondary School	4,607
Primary and Middle School	38,410
Other Institutions	202
Total	44,309

4. Affluence

75. The percentage of pucca houses both in rural and urban areas of Assam is lower than the all India average. There has also been a reduction in the percentage of pucca houses in rural Assam between 1991 and 1993-94.House holds with semi-pucca houses continued to be higher in urban Assam and lower in rural Assam than the corresponding all India averages. The percentage of households with semi pucca houses in urban Assam decreased between 1991 and 1993-94.

5. Economy

76. Agriculture is the main occupation of the people of the state. Since rice is the staple diet of the people, cultivation of rice is the main occupation of those practicing agriculture. Other than that, pulses, tea, jute and fruit are also cultivated in good quantity. Approximately 15% of the world's tea production comes from this small state, which is its main source of revenue. Almost 75% of the tea gardens are upper Assam districts of Darrang, Sibsagar and Lakhimpur. Other than tea, fruits like oranges, bananas, guavas, pineapples and guavas are also grown. Forests are an important part of the economy. Timber and bamboo are major products from these forests that bring income to the state.

6. Agriculture

77. Agriculture accounts for more than a third of Assam's income and employs 69% of total workforce. Assam's biggest contribution to the world is its tea. Assam produces some of the finest and most expensive teas in the world. Other than the Chinese tea variety *Camellia*

sinensis, Assam is the only region in the world that has its own variety of tea, called *Camellia assamica*. Assam tea is grown at elevations near sea level, giving it a malty sweetness and an earthy flavor, as opposed to the floral aroma of highland teas like Darjeeling and Taiwanese. Assam also accounts for a fair share of India's production of rice, rapeseed, mustard, jute, potato, sweet potato, banana, papaya, areca nut, and turmeric. Assam is also home of large varieties of citrus fruits, leafy vegetables,vegetables, useful grasses, herbs, and spices, which are mostly subsistence crops.

7. Industries, Cottage and Small Industries

78. Agro-based industries of Assam include tea, sugar, grain mill products, food processing, and textile. Assam was traditionally famous for its cottage industry, especially spinning and weaving. Pat or pure silk production is a major activity is Assam producing about 10% of total natural silk of India. Assam also produces Muga or golden silk. Weaving is an important tradional cottage industry of Assam which can be traced back to very ancient times. Assam also has agro-based industries which include-tea, sugar, grain mill products (rice, oil, and flour), food processing, and textile industries. Mineral-based industries of Assam include railway workshop, engineering industry, re-rolling mill, and steel work.

8. Salient features of the Sample Roads

79. As mentioned in the methodolody and approach to the environmental assessment, a 10% sample from the ARRDA was selected and made basis for the state-level IEE report. The succeeding Table presents key environmental features of a representative road for each district. In general, the project area has flat terrain, agricultural land use, crossing nallahs, bounded by man-made ponds, requires tree cutting and electric pole shifting to accommodate proposed upgrading, and near community centers like temples and schools. The ECOP Checklists for these roads are provided in Appendix 2.

Table 14: Salient Environmental Features of Sample Roads

District	Block	Road Name (length)	Salient Environmental Features
Baksa	Goreswar	T01 To Ramgaon Road (Ramgaon To Bhergaon) [L025] (2.000 km)	• Topography is flat. • Project road passes mainly through agricultural area. • Inhabited areas are located on both sides of the road almost on the entire length of the road. • No erosion prone area. • Few tree cutting and utility/community structure shifting will be required.
Barpeta	Mondia	Kamalpur to Chanmari (2.030 km)	• Topography is flat. • Inhabited areas are located on both sides of the road almost on the entire length of the road, • Project road passes mainly through agricultural area. • Nalla crossings are at Ch 0+100, 0+870,1+250, 1+500, 1+700 and 1+900 • 144 trees are located within 10 m on either side of the CL.Few tree cutting and utility/community structure shifting will be required.
Bongaigaon	Srijangram	Amguri (Khamarpara-II to Khamarpara-II	• Topography is flat. • Inhabited areas are almost through the entire corridor

District	Block	Road Name (length)	Salient Environmental Features
		(Sastar) (3.200 km)	• Erosion prone areas are identified at Ch 0+430km, Ch 0+630 km • 23 ponds are located along the corridor.Slope protection measures should be considered at respective locations. • Few tree cutting and utility/community structure shifting will be required.
Cachar	Katigorah	Chandinagar to Leverputa (Harinagar Baiyerper east Sobodh nagar to Haritikar Sadirkhal) (4.481km)	• Topography is flat. • Project road passes through patches of agricultural and barren land. • Inhabited areas are concentrated at 2+380to 2+660. • Project road passes mainly through agricultural area. • 18 ponds are located along the corridor. • The stream Halgora crosses the road at chainage 3+036 km. • Flood prone area is identified between ch.0+000 km and 2+480 km. • 53 trees are located within 10 m on either side of the CL. • Electric poles and 2 PHE pipelines will be affected due to the project
Darrang	Pachim Mangaldai	Na-Howly to NH 52 (Dhula Chapai Road) (1.900 km)	• Topography is plain. • Inhabited areas are concentrated between • 0+220- 0+890 (LHS) • 1+110-1+400 (LHS) • 1+680-1+900(LHS),0+590-1+000 (RHS) • 11 trees would be affected due to the proposed improvement. • 4 electric poles and 1 stand post will be affected by the project
Dhubri	Agomoni	NH31 to Choto Dighaltari (1.750km)	• Topography is plain. • 3 ponds are located along the corridor. The river Raidak crosses the road at chainage 0+780. • Flood prone area is identified between ch. 0+840 and ch. 1+280 km. • 27 trees, 8 electric poles and 2 stand posts would be affected due to the proposed improvement..
Goalpara	Balijana	Birubari to Keotpara (1.500 km)	• Topography is plain. • 1 pond is located along the road at ch.0+130 km on LHS. The river Jinjhiram flows along the alignment from ch. 0+320 to ch. 1+350 on the RHS. • 8 trees cutting and 6 electric pole shifting will be required.
Kamrup	Rangia	NH 31(Bhatkuchi) to Kekohati (Bhatkuchi Borkhata Dhamdhama Road) (2.000 km)	• Topography is plain. • One pond is located at chainage 1+815(RHS) of the corridor. Slope protection measures should be considered. • 8 trees cutting and 14 electric pole shifting will be required.
Karbi Anglong	Rongkhang	77th KM of SH35 to Langparpan (4.500 km)	• Topography is plain. • Erosion prone areas are identified at chainages 1+645 km, 1+725 km, 2+350 km, 2+560 km and

District	Block	Road Name (length)	Salient Environmental Features
			3+770 km. • 5 ponds are located at chainages 1+645 km, 1+725 km, 2+350 km, 2+560 km and 3+770 km • 21 trees cutting and 6 electric pole shifting will be required.
Karimganj	R K Nagar	L029 to Chunatirgul (RK Nagar to Dolugang) (2.388 km)	• Topography is plain. • The road mainly passes through agricultural area • No erosion prone areas identified • Cutting of 3 trees and utility/community structure shifting will be required.
Kokrajhar	Dotoma	36 to Binnyachara (Chakapara to Binnyachara) (4.000 km)	• Topography is plain. • Habitation areas all along the corridor. • 5 ponds are located along the corridor. The river Laska crosses the road at chainage 2+265 km • 1 tree cutting and 10 electric pole shifting will be required. • 2 mosques, 1 temple and 2 schools are located within 10m from CL of the road
Lakhimpur	Narayanpur	Dagaon to Mornoiguri (Dhalpur Bazar to Akadhari Road) (4.340 km)	• Topography is plain. • Habitation areas all along the corridor. • 23 ponds are located along the corridor • 9 trees will be affected due to the project • 1 electric pole, 1PHE Pipeline and 2 stand posts will be affected due to the project • 4 Namghars and 1 temple are located within 10 m on either side of the CL of the road. None of these community structures will be affected due to the project
Morigaon	Mayong	151 to Charubari Pather (Katahguri to Charubari Pather) (4.000 km)	• Topography is plain. • Habitation areas all along the corridor. • 4 ponds are located along the corridor • 48 trees will be affected due to the project • 2 schools are located within 10m from CL of the road
Nagaon	Pakhimaria	Dakhinpat Kampur road to Kachariguri (2.500 km)	• Topography is rolling. • Habitation areas all along the corridor. • 4 ponds are located along the corridor • No tree would be affected due to the proposed improvement..There is no need for utility shifting
Nagaon	Paschim Kaliabar	Mikirgaon To K A Road (5.111 km)	• Topography is rolling. • Habitation areas all along the corridor. • 1pond is located along the corridor. The stream Silimkhowa crosses the road at chainage 1+020 km. • No tree would be affected due to the proposed improvement.There is need for shifting 6 electric poles
Sibsagar	Nazira	Santipur to Sreepur (Udoipur Ali) (4.100 km)	• Topography is plain. • Project road passes through patches of agricultural land. • Inhabited areas are concentrated through out the project corridor • 10 ponds are located at chainages 0+320 km,

District	Block	Road Name (length)	Salient Environmental Features
			0+370 km, 1+490 km, 1+750 km, 2+310 km, 2+560 km, 2+990 km, 3+420 km on LHS and chainages 1+770 km, 1+960 km on RHS of the proposed alignment. • The road is not flood prone. • No tree would be affected due to the proposed improvement. There is need for shifting 10 electric poles.
Sonitpur	Baghmora	Dhemajibari to NH 52 (5.840 km)	• Topography is plain. • Project road passes through patches of agricultural land. • Inhabited areas are concentrated through out the project corridor • The road is not flood prone. • No tree would be affected due to the proposed improvement..There is need for shifting 4 electric/telephone poles.
Tinsukia	Guijan	• Boruaholla to Gandhia Nahorani • (8.150 km)	• Topography is plain. • Project road passes through patches of agricultural area • 1school, 1 anganwadi centre, 2 namghar and 1 temple are located within 10 m on either side of the alignment. (. • Few tree cutting and utility/community structure shifting will be required.
Udalguri	Kalaigaon	Puthiakhat to Puthimari (6.000 km)	• Topography is plain. • Project road passes through patches of agricultural area • Batiamari River (0+390), Chandara River (1+610), stream (2+220) and Kawadanga River (3+290) crossed the corridor • 1 school is located within 10 m on either side of the alignment. • Few tree cutting and utility/community structure shifting will be required.

IV. ANTICIPATED ENVIRONMENTAL IMPACTS AND ITS MITIGATION MEASURES

80. Road improvements work brings substantial economic and social benefits to rural communities and ultimately to the nation as a whole. Experience from past rural road upgrading projects however indicated risk for adverse impacts mostly related during the construction phase and the loss of avenue trees. Impacts are limited as the eligibility screening criteria defined in the environmental assessment and review framework avoids significant adverse impacts and proposed road improvements are confined along existing alignments. The impacts are expected largely during construction phase, which can be mitigated through engineering measures and adoption of best construction practices. This section outlines the identified impacts during design, construction and operation phases along with proposed mitigation measures for eliminating or minimizing the adverse impacts.

81. All project roads are subjected to environmental screening using the ECOP checklist. A sample size of 10% was selected by the ARRDA with support from the Project Implementation Consultant (PIC) from which this state level IEE was based. Separate environmental checklist were prepared for bridges with length greater than 50m. A standard EMP that forms part of the ECOP Checklist guided the preparation of the EMP provided in this report. As the MFF also calls for construction of training and research centers, separate assessments and EMPs will be prepared and may be integrated in the state-level IEEs as the designs and construction schedule are finalized.

82. The associated environmental impacts are assessed considering present environmental setting of the project area, nature, and extent of the proposed activities. Impacts are analysed on both generic and specific nature and are classified as insignificant, minor, moderate, and major. Since the issues associated with most of the roads are similar, the impacts and mitigation measures given below are applicable to most of the subprojects. Any issue specific to a road is separately mentioned.

A. Common Impacts during Design and Construction Phase

1. Climate change Projection

83. **Temperature.** By the 2050s, there is a general increase in temperature in Assam. The monthly mean daily minimum temperature is expected to increase by 1.93^{o}C to 2.88 ^{o}C from the reference period of 1961-1990 based on General Circulation Model ensemble average. The monthly mean daily maximum temperature and maximum hottest temperatures for the year are also expected to increase by 1.25^{o}C-3^{o}C, and 0.93^{o}C -2.88^{o}C, respectively. The heat wave duration index, defined as the number of days per year within the interval of at least 6 days of maximum temperature is greater than the historic maximum temperature by 5^{o}C, is also expected to increase between 5-42 days. Warmer winter season is expected with the annual coldest temperature to increase between 1.78^{o}C-3.70^{o}C . Geographically, the districts of North Cachar Hills, Cachar, Halakandi, and Karimganj will experience lesser increase in temperature compared to the rest of Assam, but the northeast districts of Dhemaji and Sibjagar will experience higher increase in monthly and annual maximum temperatures.

Figure 11: Predicted Change in Annual Monthly Average Maximum Temperature A2, 2046-2065

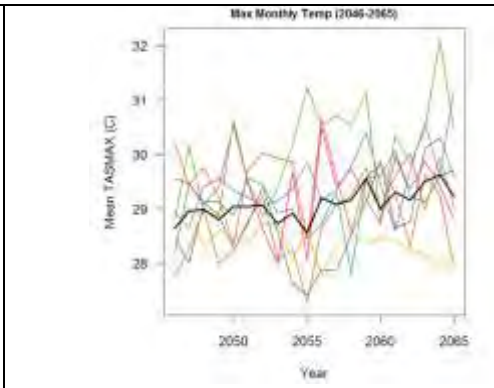

Figure 12: Predicted Future Average of Monthly Mean Daily Maximum Temperature

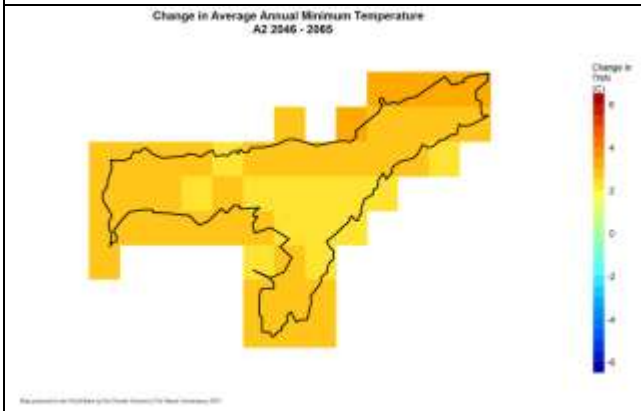

Figure 13: Predicted Change in the Average Annual Minimum Temperature A2, 2046-2065

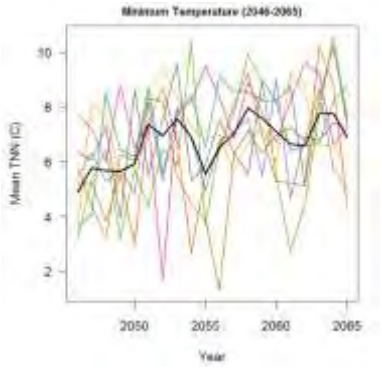

Figure 14: Predicted Future Average of Annual Minimum Temperature

84. **Precipitation**. Total precipitation is expected to increase in the State from 175.26mm – 653.29mm/year in the 2050s. The north eastern and western districts of Dhemaji, Lakhimpur, Kokhrajar, Dhuburi, and Bongaon will experience greater increase in precipitation than the rest of the State. Daily rainfall intensity index is also expected to increase in the future by 0.27-4.49 mm/day.

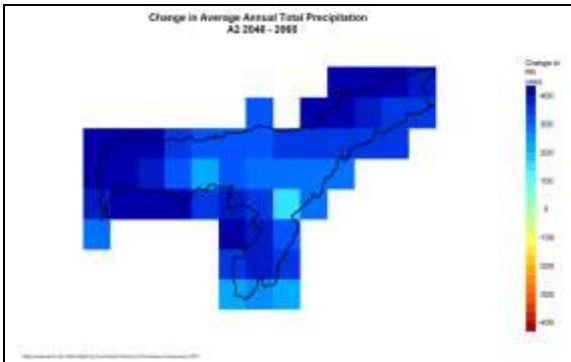

Figure 15: Predicted Change in Average Annual Total Precipitation, A2, 2046-2065

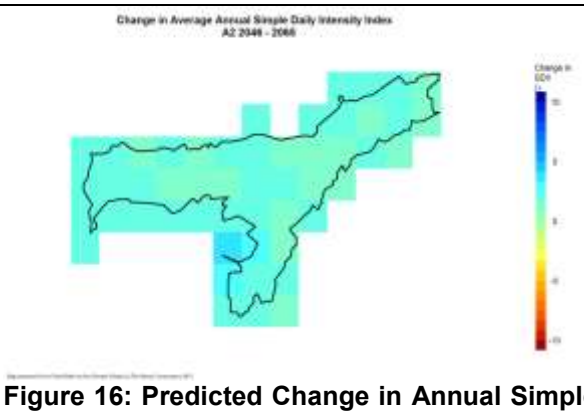

Figure 16: Predicted Change in Annual Simple Daily Intensity Index, A2, 2046-2065

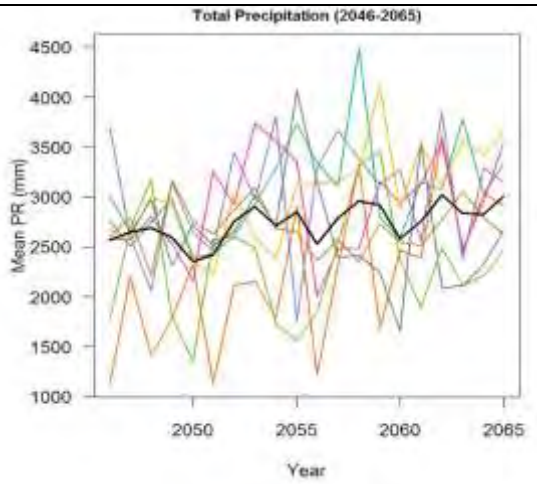

Figure 17: Predicted Future Average of Total Annual Precipitation (mm), A2, 2046-2065

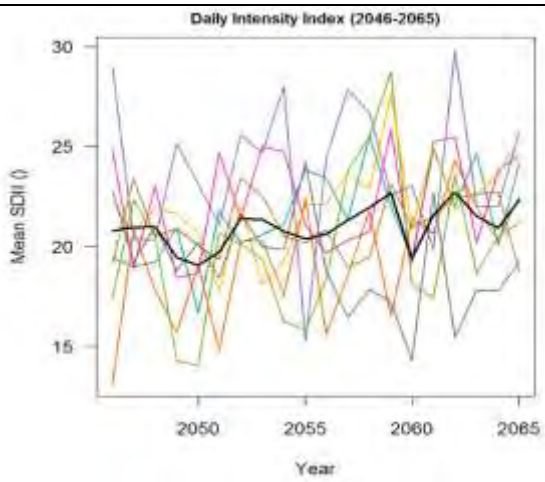

Figure 18: Predicted Future Average of Daily Rainfall Index (mm/day), A2, 2046-2065

2. Natural Hazards and Climate Risks

85. The implications of the projected increases in temperature and rainfall coupled with the existing natural hazards in the State pose risks to the project roads and bridges sustainability and viability. The most dominant risk of climate change is flooding along the Brahamaputra River. All areas adjacent to the Brahamaputra River are prone to flood risks with historical records of greater than 50 events per 100 year and major tributaries at 5-50 occurrences. Flooding in Guwahati, Barpeta, Nalbari, Dhuburi, Kokrajhar, Darang, Golaghat, Dibrugarh, and Dhemaji exposes more than 1,000 persons per year resulting to extreme mortality risk. The projected increase in total rainfall and intensity both upstream and downstream of the Brahmaputra within the State of Assam may result to more severe flooding. This is followed by increase in rainfall in earthquake and landslide prone areas that can jeopardize road embankment stability. Almost the entire State has experienced events between 5.0-6.0 intensities with Dimapur experiencing the most severe earthquakes between 7.1-8.0. Silchar has experienced the most serious ground shaking and most frequent earthquake occurrences at 8-9 Modified Mercali Intensity (MMI) at 0.2-0.4 events/year, respectively. Very high landslide risk areas are found along the Manipur and Nagaland border particularly in Dhuburi and Goalpara districts. The predicted 200-300 mm/year increase in rainfall, also increase the risk of rainfall triggered landslide in this area that can weaken road embankments. Finally, the predicted increase in maximum temperature also increases the risk of vegetation fire which is highest in Dibrugarh with a recorded 300-1,000 events per pixel (see Map) followed by Kamrup with 100-300 events, and low risk of less than 30 events in the Cachar, North Cachar, Anglong, Karbi Anglong, and Golaghat. Bitumen heating and camp site location should ensure that wildfire is avoided particularly near the Marat Longri Wildlife Reserve in Karbi Anglong Autonomous District Council, Borail Sanctuary in Cachar, and all reserved forests.

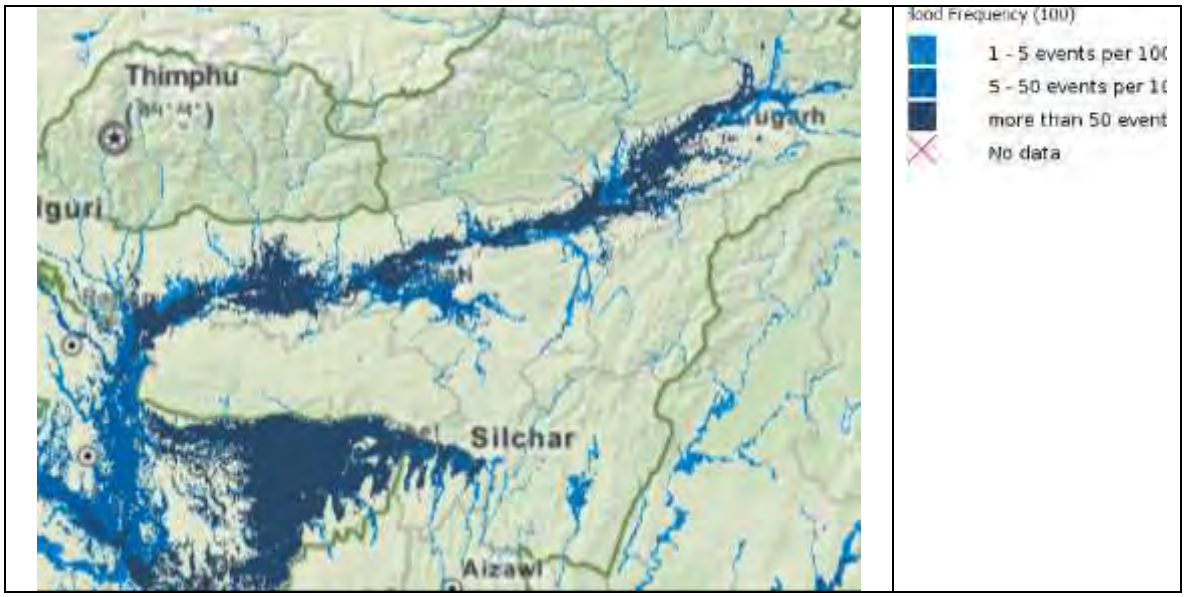

Figure 19: Flood Frequency Map, Assam

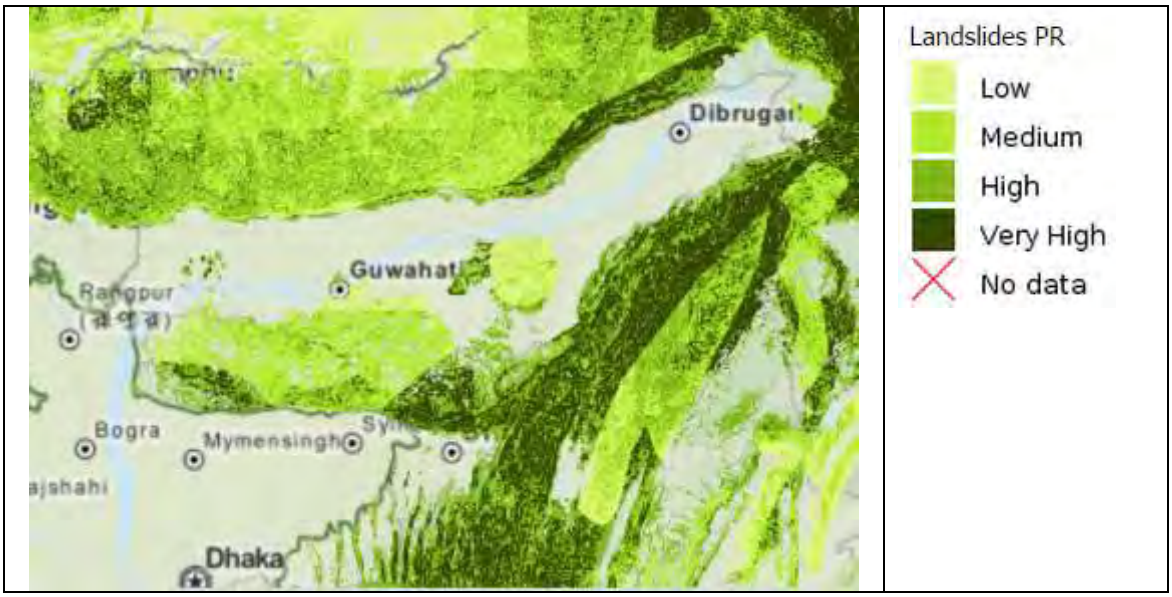

Figure 20: Landslide Prone Map, Assam

86. Some of the sample roads, 5 out of the 19, are prone to flood from river/streams, ponds and due to heavy rains (Table 15). One of the sample roads - Dagaon to Mornoiguri (Dhalpur Bazar to Akadhari Road) in Lakhimpur district has 23 small and medium ponds along the project road corridor. Adequate engineering measures are adopted to protect the roads. The entire Assam state fall under zone V indicating highest level of seismicity. All the subproject roads therefore are prone to earthquake. All rural roads are designed based on IRC:SP-20:2002 "Rural Roads Manual" that referred to IS-1983_2002 Criteria for Earthquacke Resistant Design. Part 3: Bridges and Retaining Walls.

Table 15: List of Sample Subproject Roads Prone to Flood and Erosion

District	Block	Name of Road	Road length (km)
Bongaigaon	Srijangram	Amguri (Khamarpara-II to Khamarpara-II (Sastar)	0.200
Cachar	Katigorah	Chandinagar to Leverputa (Harinagar baiyerper east Sobodh nagar to Haritikar Sadirkhal)	2.480
Dhubri	Agomoni	NH31 to Choto Dighaltari	0.440
Karbi Anglong	Rongkhang	77th KM of SH35 to Langparpan	1.860
Udalguri	Kalaigaon	Puthiakhat to Puthimari	0.750

87. **Mitigation Measures.** The succeeding Table presents the civil works component that address identified climate change risks. Although no attempt was made to segregate additional cost implications due to climate change from standard engineering design practices as stipulated in the IRC, the cost of addressing flooding and erosion for the RCIP Tranche 3 in the State is Rs 62.290 million of which Rs23M is for culvert contruction, Rs22.0M is for increasing embankment height, and Rs14.2M for slope stabilization.

88. Compensatory tree plantations[7] (1:3) will be made to compensate the loss of trees for the construction of sample roads. Additional efforts shall be made for tree plantation wherever feasible. All non-sample rural roads to be included in RCIP, will also be screened for climate change vulnerability and necessary mitigation measures shall be adopted for minimisation of identified vulnerability if any.

[7] ARRDA mostly undertake this activity through state forest department. The forest department plants tree either along the proposed roads if land is available otherwise on nearby degraded forest land.

Table 16: Cost of Climate Change Adaptation, RCIP Tranche 3, Assam

Road Name	District	Block	Length (Km)	Project Cost in the DPR (Rs. In lakh)	Length (m) located in flood prone Area	Length (m) located in landslide prone area	Length (m) located in Tsunami prone area	Cost of measures to address the risks (Rs.)			
								Cost of cross and Side Drains	Cost of bridges/ culverts	Increasing embank-ment height	Slope stabilization (pitching, turfing etc.)
Sutargaon to Dhulara (T04 to Dhulara)	Kamrup	Bihdia Jajikona	2.000	125.85	-	-	-	-	-	-	-
Bamunigaon to Nijbogai	Kamrup	Bongaon	1.600	78.55	1,600.00	-	-	500,000.00	300,000.00	2,000,000.00	1,000,000.00
Barmaroi to Dauduar	Kamrup	Kamalpur	1.000	167.44	-	-	-	-	-	-	-
T02 to Abhipara (Abhipara road)	Kamrup	Rampur	1.200	76.84	1,200.00	-	-	600,000.00	200,000.00	1,500,000.00	700,000.00
NH 31(Bhatkuchi) to Kekohati (Bhatkuchi Borkhata Dhamdhama Rd.)	Kamrup	Rangia	2.000	117.30	300.00	-	-	-	270,000.00	-	2,500,000.00
Bhogpur to Sarupeta (Sarupeta Tanglapara road)	Barpeta	Bajali	2.130	137.08	-	-	-	-	1,162,000.00	-	-
Kamargaon to Dwartara	Barpeta	Chakchaka	2.010	95.27	-	-	-	-	432,000.00	625,000.00	-
Kamalpur to Chanmari	Barpeta	Mondia	2.030	125.90	2,030.00	-	-	-	1,099,000.00	809,000.00	132,000.00
NIL	Nalbari										
NH31 to Choto Dighaltari	Dhuburi	Agomoni	1.750	219.40	610.00	-	-	-	12,227,000.00	472,000.00	23,000.00
17 to Beltari (Batabari to Beltari)	Kokrajhar	Dotma	2.473	118.62	-	-	-	-	-	-	-
108 to Ouguri (Mahendrapur to Ouguri)	Kokrajhar	Dotma	3.780	207.69	-	-	-	-	-	-	-
NH-31 C to Kalaigaon	Kokrajhar	Dotoma	2.800	304.24	-	-	-	-	-	-	-
Maoriagaon to Umanagar	Kokrajhar	Dotoma	2.550	116.14	-	-	-	-	-	-	-
36 to Binnyachara (Chakapara to Binnyachara)	Kokrajhar	Dotoma	4.000	150.34	-	-	-	-	-	-	-
SH-1 to Padmapukur (Dhuburi Kachugaon road)	Kokrajhar	Gosaigaon	2.250	118.08	-	-	-	-	-	-	-
2 to Boalkumari (Aminkata to Boalkumari)	Kokrajhar	Gosaigaon	2.880	131.3	-	-	-	-	-	-	-
74 to Serfanguri (Oxiguri to Sherfanguri)	Kokrajhar	Gosaigaon	2.100	297.82	-	-	-	-	-	-	-
Mallikapur -II to Kerlingpur	Kokrajhar	Hatidhura	2.520	123.25	-	-	-	-	-	-	-

Road Name	District	Block	Length (Km)	Project Cost in the DPR (Rs. In lakh)	Length (m) located in flood prone Area	Length (m) located in landslide prone area	Length (m) located in Tsunami prone area	Cost of measures to address the risks (Rs.)			
								Cost of cross and Side Drains	Cost of bridges/ culverts	Increasing embank-ment height	Slope stabilization (pitching, turfing etc.)
46 to Anandapur ((Milikapur to Anandapur)	Kokrajhar	Hatidhura	2.790	167.03	-	-	-	-	-	-	-
66 to Latamari Rangsapur to Latamari)	Kokrajhar	Hatidhura	1.900	92.56	-	-	-	-	-	-	-
004 (Anthaibari) to Gumabil	Kokrajhar	Kachugaon	0.950	130.93	-	-	-	-	-	-	-
Srirampur to Shyamaguri	Kokrajhar	Kachugaon	2.750	237.23	-	-	-	-	-	-	-
105 to Bongaon FV (Jonali gaon to Bongaon)	Kokrajhar	Kachugaon	1.500	69.01	-	-	-	-	-	-	-
NH 31 C to North Bashbari (Karigaon to North Bashbari)	Kokrajhar	Kokrajhar	3.270	149.96	-	-	-	-	-	-	-
Bezpara no1 to NH 52	Darang	West Mangaldai	0.800	48.52	-	-	-	546,000.00	-	-	-
Bezpara no2 to MPK road	Darang	West Mangaldai	0.840	35.09	-	-	-	105,000.00	-	-	-
NA Howly to NH 52 (Dhula Chapai Rd)	Darang	West Mangaldai	1.900	107.37	-	-	-	521,000.00	-	-	-
Ganakpara to MPK road	Darang	West Mangaldai	2.000	117.11	-	-	-	217,000.00	-	-	-
Hengerajhar to Kanaichuba	Darang	West Mangaldai	1.755	72.65	-	-	-	111,000.00	-	-	-
NIL	Golaghat										
NIL	Dibrugarh										
NIL	Dhemaji										
Rajapara to Tisimpur	Goalpara	Balijana	1.500	102.27	1,500.00	-	-	-	-	640,730.00	-
Birubari to Keotpara	Goalpara	Balijana	1.500	102.38	1,500.00	-	-	-	-	711,923.00	-
Solmari to Matia	Goalpara	Balijana	2.200	119.25	1,650.00	-	-	-	-	783,115.00	-
Goalpara (Mission) to Dwarka Rabhapara-II	Goalpara	Balijana	2.500	125.22	2,500.00	-	-	-	-	1,186,538.00	-
Gojapara (MES) to Mojai Rabhapara	Goalpara	Balijana	2.500	127.99	2,500.00	-	-	-	-	1,186,538.00	-
NH 37 to Dighli	Goalpara	Kuchdhowa	1.500	68.77	1,500.00	-	-	-	-	711,923.00	-

Road Name	District	Block	Length (Km)	Project Cost in the DPR (Rs. In lakh)	Length (m) located in flood prone Area	Length (m) located in landslide prone area	Length (m) located in Tsunami prone area	Cost of measures to address the risks (Rs.)			
								Cost of cross and Side Drains	Cost of bridges/ culverts	Increasing embank-ment height	Slope stabilization (pitching, turfing etc.)
Mowamari to Bandarsree II	Goalpara	Kuchdhowa	2.000	105.12	2,000.00	-	-	-	-	949,230.00	-
Lela to Guwabari	Goalpara	Kuchdhowa	4.600	288.96	4,600.00	-	-	-	-	2,183,229.00	-
Dabli Barpather to Barmatia	Goalpara	Kuchdhowa	1.500	104.25	1,500.00	-	-	-	-	711,923.00	-
Lela to Bandarsree	Goalpara	Kuchdhowa	1.000	60.42	1,000.00	-	-	-	-	474,615.00	-
GD road to Mandalgram (Khara-I)	Goalpara	Kuchdhowa	2.500	133.61	2,500.00	-	-	-	-	1,186,538.00	-
NH 37 ti Charaimari	Goalpara	Kuchdhowa	1.500	66.27	1,500.00	-	-	-	-	711,923.00	-
Sri Surjagiri to Lalabori	Goalpara	Matia	2.000	114.44	-	-	-	-	-	-	-
Bamunpara to Ganakpara	Goalpara	Matia	2.000	103.31	2,000.00	-	-	-	-	949,230.00	-
Adokgiri NEC to Kothakuthi	Goalpara	Rongjuli	1.200	51.56	1,200.00	-	-	-	-	569,538.00	-
Adokgiri NEC to Chekowari no 1	Goalpara	Rongjuli	1.600	76.99	1,600.00	-	-	-	-	759,384.00	-
S J Road to SK road	Cachar	Borkhola	1.123	225.65	-	-	-	-	-	-	-
Bhairavpur VI to Natanpur	Cachar	Kalain	1.250	72.01	-	-	-	-	-	-	-
Chandinagar to Leverputa (Harinagar baiyerper east Sobodh nagar to Haritikar Sadirkhal)	Cachar	Katigorah	4.481	351.08	-	-	-	-	-	-	-
T04 to Harinagar IV (Sadirhal khelma II to Haritikar I)	Cachar	Katigorah	3.407	289.53	-	-	-	-	-	-	-
Hariangar III to Saidpur (Haritikar I to Salimbad)	Cachar	Katigorah	2.122	121.06	2122	-	-	-	-	1,000,000.00	-
T02 to Bishnupur FV	Cachar	Narsingpur	2.500	176.61	2500	-	-	-	-	1,800,000.00	-
Kankpur I to Pachim Diksa (Chatradayal to Harinagar Via Nutan Chandra Paschim Diska)	Cachar	Rajabazar	8.100	778.3	-	150	-	-	-	-	3,300,000.00
T06 to Harinagar	Cachar	Rajabazar	2.381	145.05	-	100	-	-	-	-	800,000.00

Road Name	District	Block	Length (Km)	Project Cost in the DPR (Rs. In lakh)	Length (m) located in flood prone Area	Length (m) located in landslide prone area	Length (m) located in Tsunami prone area	Cost of measures to address the risks (Rs.)			
								Cost of cross and Side Drains	Cost of bridges/ culverts	Increasing embank-ment height	Slope stabilization (pitching, turfing etc.)
Kwarpar to Sahapur (Chibita Bichita III to Chibita Bichita I)	Cachar	Tapang	5.005	282.2	-	-	-	-	-	-	-
NIL	Hailakandi										
T05 to Mentisso (Mentisogaon to NEC Rd)	Karbi Anglong	Bokajan	3.081								
T04 (Sainilangso quarry rd.) to Kania bey	Karbi Anglong	Bokajan	7.414								
3rd Km of BH road to Barpather	Karbi Anglong	Chinthong	1.500								
T07 to Mousalding (17th KM of UKT road to Mousolding)	Karbi Anglong	Chinthong	11.950								
Santilangso to Chatiana (Langhup Teron Gaon)	Karbi Anglong	Nilip	5.177								
77th KM of SH35 to Langparpan	Karbi Anglong	Rongkhang	4.500								
T07 to Mousading (17th KM of UKT road to Mousolding)	Karbi Anglong	Chinthong	11.95	874.17 Lakhs	0	4000	0	5.03 Lakhs	73.45 Lakhs	0	57.75 Lakhs
NIL	Dimapur										

3. Estimated Greenhouse Gas Emissions

89. The projected increase in traffic is expected to increase the amount of greenhouse gas (GHG) emitted to the environment. Using the Transport Emissions Evaluation Models for Projects (TEEMP), an excel-based freeware developed by the Clean Air Asia, together with ITDP, ADB, Cambridge Systematics and UNEP-GEF, the emission intensities are provided in the succeeding Table 17.

90. The estimated greenhouse gas emissions includes road construction[8] for 3 scenarios: business-as-usual which considers the project traffic[9] traveling over existing road conditions which hampers travel speed, emissions without induced traffic which assumed at 0.2 traffic elasticity to occur on Year 3, and emissions with induced traffic.

Table 17: CO2 Estimated Emission Intensity, RCIP Tranche 3; Assam

Details	CO2 Emissions	
	Business-as-Usual	With Project
tons/km	5.79	5.56
tons/year	275.98	264.97
tons/km/year	0.53	0.51
g/pkm	26.96	25.89

91. Extimated emissions over a 1-kilometer stretch with the project is about 5.56 tons or annually at 264.97 over the entire 488.311kms Tranche 3 roads. Due to improvement in road surface from 8 m/km to 2.5m/km results to an annual emission reduction of about 11 tons.

4. Finalization of Alignment

92. **Impact**: The proposed rural road will be constructed to provide 7.5 m roadway in accordance with PMGSY guidelines and technical specifications (IRC-SP 20: 2002) for plain terrains. Sample rural road are aligned to existing road (earthen track with some stretches of brickbat soling). The existing road passes through plain terrain and primarily agriculture areas. None of the sample roads passes close to any protected monument or through protected areas. Impacts due to road alignment and design is expected to be minor and limited to shifting of some common utilities, community structures (temple, school) and cutting of trees falling within road way.

93. **Mitigation Measures**: The road alignment is finalised considering availability of RoW. The ROW is reduced in built up area or constricted areas to minimize land acquisition. The road alignment is modified to minimize tree cutting, shifting of utilities or community structure. The road is designed to follow natural topography to avoid excessive cut and fill. All non-sample roads to be included in RCIP will follow above measures. In addition these subprojects will comply with the following alignment finalisation criteria :

a. The road will be part of district core network and will comply with PMGSY guidelines

[8] 11,000 tons of CO_2/km road built
[9] As projected in the feasibility study

b. Subproject shall not disturb any cultural heritage designated by the government or by the international agencies, such as UNESCO, and shall avoid any monuments of cultural or historical importance.
c. Subproject will not pass through any designated wild life sanctuaries, national park, notified eco-sensitive areas or area of international significance such as protective wet land designated under Wetland Convention, and reserve forest area.
d. Subproject to comply with local and National legislative requirements (such as forest clearance for diversion of forest land) and ADB's Safeguard Policy Statement 2009.

5. Land Acquisition

94. **Impact:** No land acquisition is involved due to various measures considered for finalisation of road alignment. Villagers have volunteered to donate their land if at certain stages land is required for geometrical correction or alignment adjustment for avoiding tree cutting or shifting of community structure. There could be some impact on the encroachers; however, most of them have also volunteered to shift from the proposed alignment. Due diligence on these aspects have been conducted separately and reported in the social compliance reports.

95. **Mitigation Measures**: All efforts shall be made to minimize the land acquisition while finalising the alignment. In an unavoidable situation, adopt suitable engineering measures to reduce the ROW requirement or donation of land from landowners. In the encroached areas, efforts shall be made to restricted road construction to the available space.

6. Protected Areas (National parks, wild life sanctuaries, Eco sensitive zones, protected /historical monuments) and Forest Areas

96. **Impact**: Assam state including the project districts has many wild life sanctuaries and no road under the RCIP is within or located close to these areas. None of the Tranche 3 roads, both sample and non-sample, pass through any forestland and as such, project has no impact on forest cover of the state/Country. Assam is also known to have several national parks and sanctuaries located in various parts of the state. However, none of them is located in close vicinity of the project roads.

97. **Mitigation Measures**: As there are no protected/ecologically sensitive areas in the sub-project areas, no such measures are proposed. In case of a diversion of forestland, prior forest clearance shall be obtained under Forest (Conservation) Act 1980 (amended 1988).

7. Land Clearing Operations

98. **Impact**: The site clearing operations may have impact on common utilities, community properties, land use and vegetation profile of the area if adequate considerations not given to road alignment finalisation, utility and community structure shifting plan, tree felling, and demolition waste disposal.

99. **Mitigation Measures**: The following steps shall be taken to minimise the associated impact with land clearing operations.
a. The land clearing operation should be undertaken as per the defined road alignment and community structure, utility and road furniture-shifting plan.
b. The road land width shall be clearly demarcated on the ground.

c. The utility and community structure shifting shall be as per plan and with consultations and concurrence of the community.
d. Tree felling shall be limited to those, which could not be saved even by design measures. The tree shall be cut with a permission of Forest department. The vegetable cover shall be removed and disposed in consultation with community.
e. All public utilities shall be shifted with a concurrence of respective agencies/authority and to the adjacent location approved by them.
f. All top soil shall be collected and preserved for reuse as a base for turfing of embankment slopes or development of barren areas along roadside. The top soil shall be preserved at identified location with the provision of watering /grass development on the heap surface to prevent air pollution.

8. Cut and Fill and Embankment construction

100. **Impact**: Inadequate alignment planning may increase the cut and fill requirement as well as need for more borrow earth for embankment formation leading to some impact on land use. Inadequate provision for drainage and embankment slope protection may lead to soil erosion. Due consideration is given to above aspect for alignment finalisation of sample road. With the adoption of appropriate mitigation measures, the impact due to above activity on land use and other environmental component is expected to be minimal.

101. **Mitigation Measures:** The alignment design shall consider options to minimise excessive cuts and fills. The cut and fill quantities shall be used for embankment to minimise borrow earth requirement. The design shall be as per relevant IRC provisions for cut and fill, slope protection and drainage. Adequate provision shall be made for cross drainage structures for maintaining natural drainage pattern in the subproject area and preventing soil erosion. The top soil of the cut and fill area shall be used for embankment slope protection.

9. Establishment of Construction Camp, Temporary office and Storage Area

102. **Impact**: The congregation of large labour population and technical staff in the subproject area during the construction phase is unlikely considering the size of the packages and the reliance to host communities to provide local labor.

103. The establishment of construction camp temporary office and storage area will reduce land productivity if these are established on agricultural land. Loading and unloading of construction material, transportation of material, handling of fuel and waste disposal from these areas may have direct and indirect impact on soil, water and air quality

104. **Mitigation Measures**: The following steps shall be taken to minimise/reduce these impacts:

- Construction campsites shall be located away from any local human settlements (minimum 1 km away) and preferably located on lands, which are not productive barren/waste lands presently. Similarly temporary office and storage areas shall be located away from human settlement areas (minimum 500 m).
- The construction camps, office and storage areas shall have adequate water supply, sanitation and all requisite infrastructure facilities. This would minimize dependence of construction personnel on outside resources, presently being used by local populace and minimize undesirable social friction thereof.
- The construction camps shall be located at a minimum 0.5 km from forest land/areas to deter the construction labour in trespassing. Similarly, temporary

office and storage areas shall be located at a minimum 0.5 km from forest land/areas.

- The construction camps, office and storage areas shall have septic tank/soak pit of adequate capacity so that it can function properly for the entire duration of its use.
- All construction camps shall have rationing facilities particularly for kerosene/LPG so that dependence on firewood for cooking is avoided completely to the extent possible.
- The construction camps, office and storage areas shall have health care facilities for adults, pregnant women and children.
- All construction personnel shall be subjected to routine vaccinations and other preventive/healthcare measures.
- Contractor shall arrange all personal protective equipment (PPEs) like helmet, boots, and earplugs for workers, first aid and fire fighting equipment at construction sites. An emergency plan shall be prepared to fight with any emergency like fire.
- Garbage bins must be provided in the camp and regularly emptied and disposed off in a hygienic manner. Domestic solid waste shall be disposed of in a control manner. The recyclable waste shall be sold off and non-saleable and biodegradable waste shall be disposed through secured land filling.
- All fuel oil/lubricant unloading and storage shall be made on the paved areas away from storm water drainage.
- After completion of construction work, the camp /temporary office/storage areas sites shall be restored to its original condition.

10. Traffic Movement

105. **Impact**: Construction work along the existing road could cause disturbances to traffic movements. It will also pose risk of accident to motorist at night if these blockages and disruption are not clearly demarcated.

106. **Mitigation Measures**: The contractor will prepare appropriate traffic diversion scheme, which shall be implemented in different stretches of the road as per the progress of the construction work. This plan shall be approved by PIU and implemented before start of any construction work to avoid any inconvenience to the present road users. The diversion plan should ensure smooth flow of traffic, minimise accidents to road users during construction works. Adequate signboards shall be placed much ahead of diversion site to caution the road users. The road signs should be bold and visible and retro reflective in nature for day and night visibility.

B. Associated Impacts due to Construction Activities

1. Loss of productive soil, erosion and land-use

107. **Impact**: No land use will change due to the project since required ROW is available throughout the alignment. Land use though will change temporarily on the construction camp, temporary office storage areas during the period of construction. This will also result in loss of soil productivity. Soil erosion may take place along steep and un-compacted embankment slope and wherever vegetation is cleared. Soil erosion may have cumulative effect like siltation, embankment damage, and drainage clogging. The siltation, due to soil erosion may occur only in the ponds located close to the roads. There are 5 out of the 19 sample roads reviewed that

are located near river or flood prone area. Erosion may increase due to proximity to these water bodies and flooding of the area. Loss of soil due to run off from earth stockpiles may also lead to siltation. Land use may also change due to borrowing the earth.

108. **Mitigation Measures:** It shall be ensured that the land taken on lease for access road, construction camp and temporary office of the storage facilities, is restored back to its original land use before handing it over back to land owner. The top soil from the productive land (borrow areas, road widening areas etc.) shall be preserved and reused for plantation purposes. It shall also be used as top cover of embankment slope for growing vegetation to protect soil erosion. Therefore, cut and fill shall be planned as per IRC provisions and rural road manual. All steep cuts shall be flattened and benched. Shrubs shall be planted in loose soil area. IRC: 56 - 1974 recommended practice for treatment of embankment slopes for erosion control shall be taken into consideration. Soil erosion shall be visually checked on slopes and embankment areas. If soil erosion observed, suitable measures shall be taken to control it.

2. Borrow Areas and Quarries

109. **Impact.** Borrow areas if left un-rehabilitated may pose risk to people, particularly children and animals of accidentally falling into it. This may become potential breeding ground for mosquitoes and other vector born diseases. Illegal quarryingmay lead to unstable soil condition, destroy the landscape of the terrain, air and noise pollution.

110. **Mitigation Measures:** Borrowing earth from agricultural land shall be minimised to the extent possible. Further, no earth shall be borrowed from already low-lying areas. The borrow earth shall be sourced from identified locations and with prior permission of landowner and with clear understanding for its rehabilitation. The Indian Road Congress (IRC):10-1961 guideline should be used for selection of borrow pits and quantity that can be borrowed. The borrow area shall be located/ rehabilitated as per the guidelines given at Appendix 3. Fly ash shall also be used in road embankment as per IRC guidelines wherever thermal power plant is located within 100 km of the road alignment. The stone aggregate shall be sourced from existing licensed quarries only. The quarry should have requisite consent to operate from State Pollution Control Board. No new quarry shall be opened for the proposed project.

3. Hydrology and Drainage

111. **Impact**: The activities involved with proposed road development may alter the hydrology and drainage pattern of the area in absence of adequate provision for cross drainage structure, construction wastes disposal, and drainage in habitat areas.

112. None of the sample roads is crossing any natural stream except Amguri (Khamarpara-II to Khamarpara-II (Sastar) in Bongaigaon district, Chandinagar to Leverputa (Harinagar Baiyerper East Sobodh Nagar to Haritikar Sadirkhal) road in Cachar District, NH31 to Choto Dighaltari Road in Dhubri district, 36 to Binnyachara (Chakapara to Binnyachara) road in Kokrajahr district and Mikirgaon to K A Road in Nagaon district which run close to a wet land, Halgora River, Raidak river, Laska river and SIlimkhowa river respectively. Adequate engineering measures are proposed for protection of road from flood in, Halgora River, Raidak river, Laska river and SIlimkhowa river. Other roads are prone to water logging due to accumulation of rainwater after heavy downpour. Certain project roads are crossing local and seasonal drains. Village ponds are also located close to few roads. The impact on hydrology and drainage pattern is expected to be minimal.

113. **Mitigation Measures:** The provision of adequate cross drainage structures shall be made to ensure smooth passage of water and maintaining natural drainage pattern of the area. The discharge capacity of the CD structure shall be designed accordingly. Road levels shall be designed considering HFL. Low costs measures like use of bamboo or eucalyptus tree will be adopted for embankment protection and control of soil erosion. Other slope stabilisation measure like vegetative protection will be installed when necessary as deemed by the PIC. The construction work shall be planned in dry season so that water quality of the water channel is not affected due to siltation. Elaborate drainage system shall be provided to drain the storm water from the roadway and embankment and to ensure minimum disturbance to natural drainage of surface and subsurface water of the area. Provision of additional cross drainage structures shall be made in the areas where nearby land is sloping towards road alignment in both the both sides.

114. Provision of CC road construction in habitat area with drainage of both side of the road shall be made as per the design specifications and with adequate slope to prevent any water logging.

4. Compaction and Contamination of Soil

115. **Impact**: Soil in the adjoining productive lands beyond the ROW, haulage roads, and construction camp area may be compacted due to movement of construction vehicles, machineries, equipment and construction camps/storage facilities. Contamination may occur due to inappropriate disposal of liquid waste, (lubricating oil and fuel spills, waste oil and lubricant and vehicle/equipment washing effluent) and solid waste (fuel filters, oily rags) likely to be generated from repair and maintenance of transport vehicles, construction equipment and machinery.

116. **Mitigation Measures**: To prevent soil compaction in the adjoining productive lands beyond the ROW, the movement of construction vehicles, machinery and equipment shall be restricted to the designated haulage route. The productive land shall be reclaimed after construction activity. Septic tank or mobile toilets fitted with anaerobic treatment facility shall be provided at construction camp/temporary office/storage areas. Domestic solid waste at construction camp shall be segregated into biodegradable and non-biodegradable waste. The non-biodegradable and recyclable waste shall be sold off. Fuel and lubricants shall be stored at the predefined storage location. The storage area shall be paved with gentle slope to a corner and connected with a chamber to collect any spills of the oils. All efforts shall be made to minimise the waste generation. Unavoidable waste shall be stored at the designated place prior to disposal. To avoid soil contamination at the wash-down and re-fuelling areas, “oil interceptors” shall be provided. Oil and grease spill and oil soaked materials are to be collected and stored in labelled containers (Labelled: WASTE OIL; and hazardous sign be displayed) and sold off to SPCB/ MoEF authorized re-refiners.

5. Construction Debris and Wastes

117. **Impact**: Uncontrolled disposal of debris and waste may create unhygienic and unsafe condition around the disposal areas.

118. **Mitigation Measures:** All excavated materials from roadway, shoulders, verges, drains, cross drainage shall be used for embankments formation if feasible, filling pits, and landscaping. Unusable debris material should be suitably disposed off at pre-designated disposal locations, with approval of the concerned authority. The bituminous wastes shall be disposed in secure

landfill sites only in environmentally accepted manner. MOSRTH guidelines shall be followed for debris, wastes removal and disposal at unproductive/wastelands which shall be selected with the consent of villagers and Panchayat. The dumping site should be of adequate capacity and to be located away from residential areas (at least 500m away). It should also be located away from water bodies to prevent any contamination of these bodies.

6. Air Quality

119. **Impact**: The potential sources of air emission during the construction phase of the project are given below which can cause localised air pollution.

- Dust from earth works (during site preparation).
- Emissions from the operation of construction equipment and machines.
- Fugitive emissions from vehicles plying on the road, during the transport of construction materials.
- Emissions other than dust particularly from the hot mix plants and laying of bitumen. Hot mix plant will generate carbon monoxide (CO), un-burnt hydrocarbon (HC), sulphur dioxide (SO_2), particulate matters (PM), and nitrogen oxides (NOx) emissions.
- Localised increased traffic congestion in construction areas. Most of the emissions will be in the form of coarse particulate matter, which will settle down in close vicinity of construction site. This may affect the air quality of nearby areas, especially, due to emission discharge from low height of the stack.

120. **Mitigation Measures**: All these impacts will be temporary and hence, no significant impact is envisaged. The following measures will be taken to minimise these:

- Vehicles delivering loose and fine materials like sand and aggregates shall be covered.
- Dust suppression measures like water sprinkling, shall be applied in all dust prone locations such as unpaved haulage roads10, earthworks, stockpiles and asphalt mixing plant areas.
- Mixing plants and asphalt (hot mix) plants shall be located at least 0.5 km away and in downwind direction of the human settlements.
- Material storage areas shall also be located downwind of the habitation area.
- Hot mix plant shall be fitted with stack of adequate height (30 m) or as may be prescribed by state pollution control board (SPCB) to ensure enough dispersion of exit gases. Consent to establish and operate shall be obtained from State Pollution Control Board and comply with all consent conditions.
- Diesel generating (DG) sets shall also be fitted with stack of adequate height. Low sulphur diesel shall be used in DG sets and other construction machineries. Construction vehicles and machineries shall be periodically maintained.
- The requisite PPE (helmet, mask, boot, hand gloves) shall be provided to the construction workers.

7. Noise Quality

[10] Water suppression of fugitive dust can reduce emissions from 12% to 98%

121. **Impact:** Ambient noise level may increase temporarily in the close vicinity of various construction activities, maintenance workshops, vehicles movement and earthmoving equipment.

122. **Mitigation Measures**: The noise level will be intermittent and temporary and will attenuate with increase in distance from noise source. Further, vehicles and equipment should be fitted with silencers and maintained regularly. The workers shall be provided with personal protection devices such as earplugs and earmuffs.

8. Groundwater and Surface Water Quality and Availability

123. **Impact:** Water will be required for compaction of road formation and domestic purposes in the workers camp. These requirements will be mainly sourced from groundwater due to availability and quality. Any uncontrolled abstraction of ground water can deplete the ground water table. Contamination of groundwater is not envisaged since all construction camps will have septic tanks. The drinking water supply to the habitat is primarily through hand pumps and bore wells. No significant impact is anticipated on surface water bodies except the risk of siltation due construction near rivers.

124. **Mitigation Measures**: Requisite permission shall be obtained for abstraction of groundwater from State Ground Water Board/Central Ground Water Authority[11] if applicable. The contractor shall arrange for water required during construction in such a way that the water availability and supply to nearby communities remains unaffected. Water intensive activities shall not be undertaken during summer period to the extent feasible. Provision shall be made to link side drains with the nearby ponds for facilitating water harvesting. Where ponds are not available, the water harvesting pits shall be constructed as per the requirement and rainfall intensity. Measures are already purposed in earlier section for prevention of siltation in water bodies. Water conservation across all activities will be observed.

9. Biological Environment

125. **Impact:** Since the sample roads are not passing through any protected areas or forest area, there is no diversion of forestland**.** The major adverse impacts will be due to tree cutting, Siltation and contamination of water bodies may affect the aquatic life particularly pond fisheries.

126. **Mitigation Measures:** . Since the habitat in the project area is already modified and the main vegetation is only the road side trees all efforts shall be taken to avoid tree cutting. Requisite permission from Forest Department shal**l** be obtained for cutting of roadside trees. Compensatory afforestation shall be made by the Panchayat on 1:3.ratio basis. Additional trees shall be planted wherever feasible. All care shall be taken to avoid siltation/contamination of water bodies. Movement of herbivores like cattle, goats, and cows, have been observed in the surrounding agriculture fields. Disturbance to these animals will be avoided to the extent possible.

C. Impact on Common Property Resources

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[11] As per Central Ground Water Authority (CGWA), there are 43 notified blocks in India where prior permission is required fro extraction of ground water. Currently there are no notified areas in Chhattisgarh state. CGWA is continually updating the list of notified areas.

127. **Impact**: There are public utilities like Electric transformer, electric poles, and hand pumps all along the rural roads. The road construction may require shifting of these utilities. There are many community structures like school, playground village office temples.

128. **Mitigation Measures**: All efforts are made to minimize shifting of common utilities and community structures. ROW has been reduced in constricted areas with appropriate engineering measures to minimize land acquisition and shifting of community structures. The community structures/utilities which can not be saved will be shifted to adjacent area with the concurrence and in consultation with community.

D. Common Impacts during Operation Phase

1. Air Quality

129. **Impact:** Decrease in air quality due to increase in traffic, idling at congestions.

130. **Mitigation Measures**: The bad road condition is the main cause of poor air pollution at present. The improved road conditions will result in the improved ambient air quality. In addition, the subproject road is largely traversing through vast open agriculture areas, which will provide adequate dispersion to gaseous pollutants.

2. Noise

131. **Impact**: During the operational phase, movement of traffic will be the prime source of noise. Traffic congestion and pedestrian interferences along specific stretches may increase the use of horns. This may result in increased noise levels at habitat areas, nearby schools and religious places.

132. **Mitigation Measures**: Awareness signboard shall be provided for safe driving near the habitat areas. Speed limitation and honking restrictions may be enforced near sensitive locations.

3. Land, Soil, Tree Plantation

133. **Impact**: Improve access can lead to conversion of agriculture land for residential and commercial purposes close to roads, which may result in loss of productive land and agricultural produce. Since the rural road are aimed at connecting the villages, and with the general trend of migration of rural population to urban areas, the phenomena of conversion of agriculture land to residential area is unlikely to change.

134. The land occupied for construction camp /temporary office/material storage area will remain unproductive if it is not restored after completion of construction activities. All land conversion must be covered by permission from the Revenue Officer.

135. **Mitigation Measures** It shall be ensured that all construction camp/temporary office/material storage areas are restored to its original conditions. The borrow area rehabilitation will also be ensured as per the agreed plan with the landowner. Contractor and PIC will ensure the same and obtained clearance from PIU before handling over the site to SRRDA.

136. The PIC will undertake survivability assessment and report to PIU the status of compensatory tree plantation at a stage of completion of construction with recommendation for improving the survivability of the tree if required.

4. Groundwater

137. No impact is anticipated on groundwater due to the project during operation phase, hence, no specific mitigation is proposed.

5. Hydrology and Drainage

138. **Impact**: Water accumulation incidence may occur due to inadequate availability of cross drainage structure or clogging of cross drainage structures.

139. **Mitigation Measures**: Regular removal/cleaning of deposited silt shall be done from drainage channels and outlet points before the monsoon season. Rejuvenation of the drainage system by removing encroachments/ congestions shall be regularly conducted.

E. Socio-Economic Impact

140. Assessment of project impact on socio-economic conditions point to the conclusions that positive benefits are many fold compared to its adverse impact.

141. **Positive Impacts**: The better road access is likely to contribute to the overall economic condition of village community. With the quick access to urban market areas, farmers are likely to get better prices for their farm produce. Children will also be able to access the school and education facilities in the near by urban areas.

142. **Safety Measures** shall be adopted as per NRRDA guidelines. Some of them are highlighted below :

- Speed breakers (Rumble strips) as per IRC: 99-1988 shall be provided at sharp corves design and bends where the curve design speed is less than 40 km per hour in plain in rolling terrain.
- Speed breakers shall also be provided at a threshold of habitation (as per NRRDA guidelines) at regular intervals (150-200 m) through habitation.
- The speed breakers are provided and directional sight boards installed at sites where reverse horizontal curves are closely spaced and speed reduction is required.
- Hazard markers to be installed at each end of all box culverts, river crossing causeways and similar CD structures
- Shoulder side slopes shall not be steeper than 2h: 1V unless stone pitching of the slopes is provided.
- Cement concrete pavement and V-shaped drain is constructed to the full width of the available roadway within densely populated habitation.
- Directional sight board are installed on all sharp curves and bends
- At main road, intersection or crossing “STOP” sign and ‘T-intersection’ warning sign shall be installed on the village road.

F. Road Specific Impacts

143. The assessment of sample roads indicates that environmental issue associated with all the roads are similar except five roads (Table 4.1), which are prone to flood. Hence, mitigation measures applicable to the entire road are also will be similar except variation in terms of magnitude, which will depend on length of the road, the presence various environmental components. These components may be assessed in terms of no of pond, number of community structure (mostly temples, playground, school, gram Panchayat office) likely to be shifted, number and type of common utilities (hand pump, water tank, electric transformer, electrical poles).

V. ENVIRONMENTAL MANAGEMENT PLAN, INSTITUTIONAL ARRANGEMENTS AND GRIEVANCE REDRESS MECHANISM

A. Environmental Management Plan

144. The Environmental Management Plan (EMP) is prepared to facilitate effective implementation of mitigations measures with defined roles and responsibility for implementation and monitoring, regulatory compliance requirements, stages of implementation with location, period and costs. The mitigation measures are proposed to eliminate or minimise the identified impact associated with design, construction, and operation stages of the project, to acceptable level by adopting the most feasible options.

145. The EMP is prepared based on the Environmental Code of Practice (ECOP) applicable to rural road defined by ADB at RRS I stage.

146. The identified impacts are mostly related to clearing operations of RoW, traffic diversions, setting and operation of construction camps, quarry and borrowing operations, transportation of materials, construction of cross drainage structures, air and noise pollution due to construction activities and operation of construction equipment, tree cutting and shifting of utilities and physical community structure.

147. Appropriate mitigation measures are identified for all rural road construction and operation activities. The identified impacts associated with rural roads and mitigative measures are largely common to most of the roads. The EMP is detailed at Appendix 4. It provides action common to all roads at pre-construction, construction and operation stage. Since IEE is carried out, prior to preparation of DPR, the EMP will be updated specific to road as per DPR requirements by PIU and included with DPR, which shall be available to contractor at the time of bidding. The areas to be updated as per DPR provisions are highlighted under location column of EMP.

148. Since, these are rural road, the vehicular density and speed will be low. Movement of vehicles will be confined primarily for transfer of agricultural produce to market places. As such, no major emergency is anticipated. In any accidental eventuality, local administration can be reached quickly for help though Gram Panchayat (village administration) communication systems.

B. Environmental Monitoring Plan

149. The environmental monitoring program aims to assess the the environmental performance of environmental management plan. The EMOP will:

- assess the effectiveness of mitigation measures,
- assess the change in environmental quality during construction and operation stages,
- assess compliance to regulatory requirements, and
- monitor status of corrective action taken in case of deviation from the planned measures or regulatory requirements.

150. For rural roads, EMoP will rely more on visual observation during pre construction aspects[12], construction stage and operation stage. A monitoring plan with monitoring indicator and frequency of monitoring is given at Appendix 5.

C. Institutional Arrangements and Responsibilities

151. NRRDA constituted by MORD is the nodal agency for the implementation of PMGSY in India. SRRDA is the state level agency responsible for implementation of PMGSY program in the state. NRRDA has developed various guidelines and defined institutional arrangements for effective and timely implementation of PMGSY program, which also covers measures for environmental and social safeguards. In line with the defined institutional requirements, each SRRDA has set up district level project implementation units (PIUs). NRRDA also appoints Technical Support Consultant (TSC) to provide technical support for capacity building in SRRDA/PIUs, facilitating them for environmental and social safeguard compliance monitoring and due diligence. SRRDA appoints PIC (project implementation consultant) for supervision of construction work. PIC also helps PIU in monitoring the EMP.

152. NRRDA is also responsible to coordinate with SRRDA and ensure compliance to ADB safeguard requirements.

153. The institutional arrangement at national and state levels to implement PMGSY and RCIP is shown at Figure 21.

D. Institutional Environmental Responsibilities

154. The institutional environmental responsibilities for different level and function is elaborated below:

155. **MORD**[13] the executing agency has the responsibility for monitoring implementation of the EMP for all subprojects and undertaking necessary due diligence. MORD ensure this through its Nodal Agency NRRDA (National Rural Road Development Authority). MORD will also ensure that

a. ADB is given access to undertake environmental due diligence for all subprojects, if and when, needed as per EARF requirements.
b. SRRDA meet all environmental assessment requirements in accordance with EARF
c. It undertakes random monitoring of the implementation of the EMP
d. Ensure compliance to legislative requirements such as forest clearance for diversion of forest land for non-forest purposes and Consent to Establish/Operate for hot mix plant, batching plant
e. Appoint Technical Support Consultant (TSC) to assist SRRDA for various environmental aspect and safeguard compliances

[12] Aspects related to alignment selection for inclusion of new roads
[13] MoRD implements it through its nodal agency NRRDA which undertakes this with the help of Environmental Expert of Technical Support Consultant

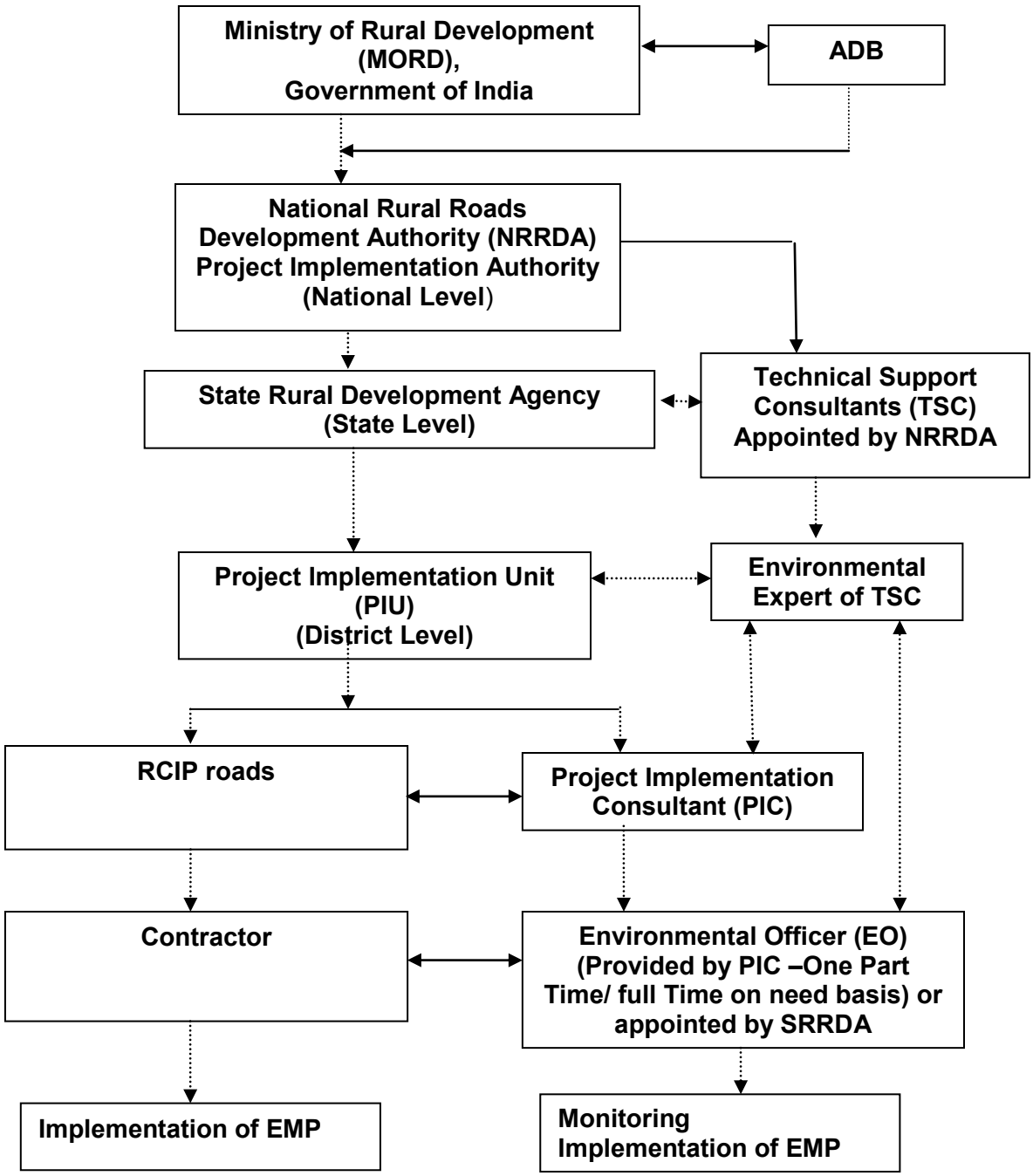


Figure 21: Institutional Arrangement for EMP Implementation

156. **SRRDA**[14]will ensure that :

a. ECOP checklist is prepared for each road
b. The completed ECOP checklist is included in the DPR with the help of PIC.
c. Ensure that all required statutory environmental clearances are obtained and comply with clearance conditions;
d. Ensure that the subproject specific EMPs and respective budget are included in the bidding documents;
e. Ensure that the ECOP checklists and EMP (including general and site specific issues) are made available to the contractors;
f. Undertake routine monitoring of the implementation of the EMP including spot checks on site and prepare monitoring reports at least once a year; and
g. With the support of technical support consultants prepare satisfactory environmental due diligence reports of the earlier tranche/periodic financing request before implementing the next tranche.
h. Appoint Project Implementation Consultant (PIC) for construction supervision and assist PIUs for EMP implementation and related safeguard compliances.

157. **PIU** will be responsible to :

a. Complete the ECOP checklists and prepare subproject specific EMPs (including monitoring plan) for each subproject
b. Obtain necessary statutory environmental clearance prior to commencement of civil works
c. Update the respective ECOP checklists and EMPs if there are any changes in alignment of the subprojects
d. To conduct monitoring of all subprojects and prepare pre-, during and post-construction monitoring checklists through the project implementation consultants,
e. Prepare and submit to SRRDA annual monitoring report as per ADB defined format

158. **The Technical Support Consultants (TSC)** appointed by NRRDA. The Environmental Expert of TSC :

a. Will provide technical assistance to SRRDA/PIU regarding environmental aspects, environmental permitting/clearances requirement,
b. Periodically review EMP implementation status including spot site inspections.
c. Conduct workshops/capacity building program at different level and functions.
d. Prepare environmental Due Diligence report for each trench before implementing next trench
e. Prepare state Level IEE reports and EMPs for non sample roads based on the ECOP checklist completed by the PIC

159. **Project Implementation Consultant (PIC)** is appointed by SRRDA. PIC will provide one Environmental Officer (EO). The EO will be responsible to ensure adherence and implementation of EMP at all stages of works by the contractor. The EO, if found warranting may also conduct field tests, independent of the contractor to determine the effectiveness of EMP under approval of PIC/PIU. The broad duties / responsibilities of the Environmental Officer will include:

[14] With assistance from PIC (Project Implementation Unit)

a. Review of project design and specifications to ensure their adequacy and suitability with respect to the implementation of EMP.
b. Collection and dissemination of relevant environmental documents including amendments to environmental protection acts issued by the various agencies, namely, ADB, Government of India / State and local bodies;
c. Interact with the counterpart of the Contractor(s), review work progress/plans and ensure implementation of the EMP;
d. Co-ordination with the NGOs, community groups and Government departments on environmental issues, provide clarifications/ and obtain clearances during project implementation if any, as required from the regulatory authorities and/or submitting periodic compliance reports as required by the State Authorities;
e. Monitoring sensitive environmental attributes during construction and operation stages15 to ensure that the suggested mitigation measures in the EMP are implemented;
f. Facilitate PIU for preparation of annual monitoring report as per ADB defined format
g. Documentation of the environmental management/monitoring activities for the regular project implementation progress report, which will serve as the basis for the annual environmental monitoring reports.
h. Conducting environmental training/awareness programs for the contractors, the project implementation personnel and the communities.

160. **Contractor** is appointed by SRRDA for construction of road and ensures implementation of EMP proposed. The broad duties of contractor are as follows**:**

a. Make adequate costs provision for EMP requirements while biding
b. Ensure effective implementation of mitigative measures as per road specific EMP
c. Comply with all applicable legislative requirements and obtain necessary consents for to Establish/Operate before start of hot mix plant and batching plants. Comply with al permit conditions
d. Create awareness amongst workers for environment, occupational health and safety aspects. Participate in training and awareness programme along with its executives conducted by PIC.
e. Provide PPE and adequate resources for Environment Occupational Health and Safety
f. Follow all the guidelines for borrowing earth and restoration of borrow areas, setting up construction camps
g. Sourcing of quarry material from approved quarries only
h. Provide all required input to PIC for environmental monitoring as per EMP.

E. Environmental Assessment and Review Framework (EARF) for RCIP

161. ADB has prepared an Environmental Assessment and Review Framework (EARF) which identifies the broad scope of the MFF, outlines the policy, environmental screening and

[15] Normally PIC is supposed to undertake five site visits and five monitoring reports as per contracts being issued by different SRRDA. It is proposed that PIC shall submit the following five monitoring reports: (1) First report at pre construction stage, (2) Second report after three months of start of construction or on completion of 25% construction (3) Thrid report after seven months of start of construction or on completion of 75% of construction, (4) Fourth report after one month of completion of construction and first year of operation stage (5) Fifth report in second month of seond year of operation stage.

assessment, and institutional requirements for preparing the environmental assessments to be followed for subsequent batches and tranches. This EARF also specifies criteria for eligibility for selection rural roads under RCIP. The sample roads are selected following these criteria. The EMP, monitoring requirement, institutional aspects, capacity building, grievance redress mechanism presented in this chapter are developed in line with above EARF. The eligibility criteria for selection of roads under RCIP, environmental assessment requirement for each trench and legal framework are given below:

1. Selection Criteria and Environmental Assessment Requirement

162. The following criteria will be followed for selection of non sample roads.

(i) No Category A (as per ADB's SPS) subproject will be included in the MFF.
(ii) Subprojects will be eligible for construction or upgrading in accordance with the PMGSY guidelines, and be included in the respective district core network.
(iii) The subprojects shall not disturb any cultural heritage designated by the Government or by international agencies, such as UNESCO, and shall avoid any monuments of cultural or historical importance.
(iv) The subproject will not pass through any designated wildlife sanctuaries, national parks, other sanctuaries, notified ecological sensitive areas or area of internationally significance (e.g., protected wetland designated by the Wetland Convention).
(v) The projects shall only involve activities that follow Government of India laws and regulations, ADB's Safeguard Policy Statement (2009)

163. The following environmental Assessment requirement will be followed roads included under RCIP

(i) ECOP checklists with annexes on trees, utility structures, community structures, strip plans and photographs will be completed for each and every road.
(ii) Based on the requirements of the PMGSY guidelines separate ECOP checklists will be prepared for bridges that are longer than 15 m.
(iii) Based on the completed ECOP checklists for roads and bridges, IEE reports will be prepared at a state level. These reports must contain a general EMP and a site specific EMP where there are site specific issues.
(iv) ADB's REA checklist for roads and highways will be completed based on the state level IEE reports prepared and submitted to ADB to confirm categorization

164. The vulnerable to climate change will also be screened following screening checklists, which was integrated in the ADB REA Checklists and corresponding mitigation measures will be prepared.

(i) Is the project area subject to hazards such as earthquakes, floods, landslides, tropical cyclone winds, storm surges, tsunami or volcanic eruptions and climate changes
(ii) Could changes in precipitation patterns or evaporation rates over the lifespan of the project affect its sustainability and cost (i.e., increased landslides increase maintenance costs)?
(iii) Does the project use or depend on resources which could be affected by climate changes such as changes in temperature, precipitation, wind (increased soil moisture content in the sub-grade)?
(iv) Are there any demographic or socioeconomic aspects of the subproject and project area (e.g., population growth, settlement patterns) that increase the vulnerability of the project and surrounding area?

(v) Could the subproject potentially increase the vulnerability of the surrounding area (i.e., by increasing runoff, encouraging settlement in earthquake zones)

2. Legal Framework

165. As per Indian legislation, an environmental clearance is not required for rural roads. However, it may attract provisions of Forest Conservation Act, Wild Life (Protection) Act, and other legislation related with Air, Water and Noise pollution controls and prevention. The legislative applicability screening is presented in Chapter 1 of this report and it will apply for non-sample road as well. Additionally, to ensure conformance to ADB's Safeguard Policy Statement, 2009 (SPS), the subprojects will be subject to the following requirements:

(i) Submission of a completed Rapid Environment Assessment (REA) checklist for Roads and Highways and a categorization form for each state level IEE that is prepared.
(ii) An Initial Environmental Examination[16] (IEE) report including the preparation of an Environmental Management Plan (EMP) and a Monitoring Plan.
(iii) Regular monitoring of implementation of the EMP and submission of monitoring reports and due diligence reports to ADB as necessary

F. Capacity Building

166. Existing capacity of the State Rural Roads Development Agencies (SRRDAs) and Project Implementation Units (PIUs) for implementing environmental safeguard issues need substantial strengthening. Capacity building activities will mainly comprise training workshops for SRRDA and PIU environmental officers on (i) completion of environmental code of practice (ECOP) checklists; (ii) preparation of environmental management plan (EMP) and monitoring plans; (iii) monitoring of EMP implementation and completion of pre-, during and post-construction monitoring checklists; and (iv) preparation of monitoring reports. These few workshops have already been conducted at participating states though ADB appointed Environmental specialist. Additional training will be carried out periodically, by In-house trained and experienced officials.

G. Consultation and Information Disclosure

167. During the preparation of ECOP and Detailed Project Report (DPR), the PIU has to ensure consultation, and addressal of concerns of the affected people.

168. All environmental assessment documents are subject to ADB's Public Communication Policy (2005) and will be made available to the public, upon request. The SRRDAs are responsible for ensuring that all environmental checklist documentation, including the environmental due diligence and monitoring reports, are properly and systematically kept as part of the Investment Program specific records. MORD must disclose state specific sample road IEE reports on its website.

H. Grievance Redress Mechanism

169. PRI administered village level committee is the first contact point for any aggrieved person. This committee will try to settle the concern by them self or in consultation with

[16] As per selection criteria, no Category A subproject will be included under RCIP.

contractor or PIU. The unresolved concerned are forwarded to PIU for further action. PIU resolves these concerns in consultation with PIC, SRRDA, and contractor as the situation demands. This is an established practice and is seen effective enough in RRS II. PIC will also collect concerns received by this committee in the intervening period and report the effectiveness of action taken.

170. Experience in earlier tranches of the progranIn shows that village level grievance redress committees comprising the sarpanch, panchayat secretary and other prominent citizens of the village were in place. However, as the site selection and project design process involved participation and full consultation with the community, there was hardly any grievance by the APs and no complaint was received by any of the village committees.

171. At national level NRRDA has made provision of registering complain /suggestion through its website. NRRDA forwards these complains to concerned SRRDA for necessary actions. SRRDA directly or through concerned PIU initiate the appropriate action and update the complainant as well as NRRDA. It is proposed that NRRDA website will be cross-linked to each SRRDA website as well or SRRDA will also make provision of complain registry at its website.

VI. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

A. General

172. Public consultation was undertaken consistent with the ADB requirements. All the five principles of information dissemination, information solicitation, integration, co-ordination and engagement into dialogue were incorporated in the consultation process. A framework of different environmental impacts likely from the project was strengthened and modified based on opinions of all those consulted, especially in the micro level by setting up dialogues with the village people from whom information on site facts and prevailing conditions were collected.

173. Stakeholder's consultations were held during January 2014 to June 2014 with the intent to understand their concerns, apprehensions, overall opinion and solicit recommendations to improve project design. Informal meetings, interviews were organized covering the entire project stretch. The informal consultation generally started with explaining the sub projects, followed by an explanation to potential impacts. Participant's views were gathered with regard to loss of agricultural land, effect on air and noise quality of the area due to traffic, water availability, accident and risk.

174. The discussions were designed to receive maximum inputs from the participants regarding their acceptability and environmental concerns arising out of the sub-project. They were given the brief outline of the project to which their opinion was sought. Suggestions were also sought for mitigating any potential adverse impact.

B. Compliance with Relevant Regulatory Requirements

2. In India, public consultation is mandatory in case of Category A and B1 category projects[17] in select conditions. Being a category B project as per ADB Environmental Guidelines 2003, consultation was carried out during the early stage of IEE report preparation. The requirement of public consultation during the implementation of the project has been proposed as part of the mitigation plan. . This will involve regular communications between the PIU, PIC and the grievance redressal committee's and community leaders. Consultations carried out and grievances addressed will be recorded in the annual environmental monitoring report which will be submitted for disclosure on the ADB website.

C. Beneficiaries' Comments

175. The project has immense acceptability among the local people. They perceived that in addition to providing all weather connectivity, the sub-project road will bring positive socio-economic changes in the area. Local people mainly discussed on issues related to drainage and commencement of the construction work.

176. Some of the general issues raised during the different consultation sessions can be summed up as follows.

- **Construction Camp** - The participants did not apprehend any adverse impact due to the construction camp near to their villages. They responded positively

[17] As per schedule I of EIA notification number S.O. 1533, dated 14th September 2006. This notification also defines when a public consultation is mandatory.

towards providing support to these, if required, in terms of any food, water requirements.

- **Water Logging and Drainage** - Participants informed about few low-lying areas particularly in along sample roads in Jorahat, Kamrup and Golaghat districts where water logging takes place during monsoon season. The villagers requested for provision of adequate drainage and cross drainage structures at these locations. Villagers also reported for road overtopping in road where they have suggested to raise the road levels.
- **Loss of Livelihood and Income Restoration Options** - This issue was raised by those who had encroached on the proposed alignment. However, they offered the encroached space for the proposed project, if demanded.
- **Road Safety** - Safety issues did not raised concern among the inhabitants including women.
- **Land Acquisition** - People were in full support of the project and were ready to donate their land for the same, if required.
- **Losses of Idols/Shrines -** Participants supported the project and were willing to shift the idols, burial grounds and other religious structures observed at certain locations.
- **Loss of Trees Due to Road Construction** - Respondents were of the opinion that trees cutting should be avoided or else minimised. For trees to be cut compensatory plantation should be done. Some villagers expected additional plantation should be done. Recommended tree species for plantation were other local varieties.
- **Impacts on Health** - Separate consultation sessions were organised by social team to identify issues pertaining to health specifically for sexually transmitted diseases (STDs). Settlements along the rural roads were reported to be getting exposed to such diseases, as there are no long distance users on the project roads.
- **Ambient Air and Noise Quality** – The respondents viewed that these are the problems of urban areas and their villages are still untouched from this aspect. They even do not anticipate any of these problems after the completion of the project.
- **Inconvenience during Construction** - The participants viewed that they will manage it as it will be temporary phenomenon.
- **Employment during Construction** - The locals expected that they should be given preference in employment during project implementation.
- **Perceptions and Expectations** - Perceptions and expectations of the community recorded during the consultation sessions can be broadly listed as:
  - The public and the PAPs appreciated and supported the project with their open hearts.
  - Community at large appreciated overall benefits to them resulting from project development;
  - They were aware of the increased access, lesser commuting time after project implementation;
- **Addressal of Issues** - The project has tried its best to address all the issues raised during consultations under the constraints of suitability from engineering point of view. Some of the provisions made under the project to address the issues and concerns of the community are given in Table 18**.**

Table 18: Addressal of Issues and Concerns under the Project

Issue/Concern	Addressal under the project
Water Logging and Drainage	Adequate cross drainage structures have been planned
Road Safety	Adequate safely signage planned all along the rural road.
Land acquisition and Mode of compensation	The proposed RoW is 12m along the rural road. No land acquisition is planned in project road.
Loss of roadside idols/shrines	Idols and shrines will be relocated to the other nearby places with consultation and proper rituals
Loss of trees	Compensatory afforestation would be done at the ratio of three trees for each tree to be cut.
Increased pollution levels	Pollution levels are not crossing the prescribed limits of CPCB and planned plantation will screen the emission.
Utilities and basic infrastructure	All the utilities, electric poles, telephone lines, wells, tubewells etc. to be impacted will be relocated under the project cost.
Employment of locals during construction	Locals will be given preference for employment during the project implementation

Photographs of Consultation

Consultation with the villagers in Kamrup

Consultation in Bongaingaon

Consultation with PIU in Sibsagar

Visiting the road in Sonitpur

Public Consultation with PIU and Local people in Barpeta

Public Consultaion in Nagaon

Consultations in Kamrup District

VII. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

177. The findings of environment assessment of sample roads indicate that impacts are mostly similar and subprojects are unlikely to cause any significant environmental impacts. While some of the impacts are negative, there are many bearing benefits to the area. Most of the impacts are likely to occur during construction stage, are temporary in nature, and can be mitigated with minor to negligible residual impacts.

178. The project received immense support from local people, as they perceive that this project will improve the overall connectivity and bring various economic opportunities to the people of the area.

179. All sample roads included under RCIP were selected based on ecological and climate change consideration defined under EARF. Accordingly, none of the sample roads passes through protected areas or encroaches precious ecology (sensitive or protected areas) or any historical or archeologically protected areas. As per selection guidelines, none of the selected sample road passes through reserved forests either. Few trees cutting though may be involved.

180. Among the sample project roads there are 23 roads which are prone to flood due to river, proximity to rivers or due to accumulation of rainwater in and around project road area. Adequate engineering measures like cross drainage structures, slop stabilisation are proposed for the protection of road from the flood.

181. All the sample roads are aligned with existing village roads and unpaved movement paths. As such, land acquisition is nil or very minimal which is also acquired through donations from villagers.

182. Considering insignificant environmental sensitivity, the project is categorised as category B as per ADB Safeguard Policy Statement 2009.

183. No categorisation is made under environmental legislation of India, since these small roads do not require any environmental clearance in accordance to Indian Environmental (Protection) Act and Rules, 1986 amended till date. However, clearance from Forest Department will be required for cutting of trees.

184. The impacts identified are mostly related to alignment selection, land clearing, borrowing earth, and cutting of trees, shifting of utilities and community structures, establishment of construction camp or material storage areas, transportation of material and operation of hot mix plant. All identified impacts are either eliminated or minimised through design consideration and suitable mitigative measures.

185. Environmental Management plan covering all stages of road construction (design, construction and operation) is prepared with defined responsibility for its implementation. Environmental Monitoring plan is also prepared to ensure effective implementation of EMPs.

186. NRRDA/SRRDA has defined institutional setup including specified responsibility for environmental management. Existing capacity of the State Rural Roads Development Agencies (SRRDAs) and Project Implementation Units (PIUs) for implementing environmental safeguard issues need substantial strengthening. The capacity enhancement is proposed through focused

workshops and training session. Few workshops have already been conducted at participating states through ADB officials and TSC Experts. Trained and experienced in-house officials should carry out more training in future periodically.

187. The IEE also indicate that rural road construction works does not warrant further EIA study for subsequent rural road construction works in Assam.

B. Key Recommendations

188. Any major changes or any major additional work other than the proposed project activities will require preparation of another environmental assessment. This additional assessment will have to be submitted to NRRDA, Concerned Government authorities and ADB for concurrence before civil works commence.

189. The implementation of prescribed mitigation measures will minimize/avoid the adverse impacts. Moreover, the impacts shall be monitored continually by implementing and updating the Environmental Management plan and Environmental Monitoring Plan.

190. These IEE is prepared based on ECOP checklists and feasibility study. Subproject specific EMP shall be improved as per the final provisions made under DPRs. The updated EMP if there is any change shall also be sent to ADB for information.

191. Executing agency shall ensure that EMP and EMoP is included in Bill of Quantity (BOQ) and forms part of bid document and civil works contract. The contractor will specify the quantity and budget for various activities like rehabilitation of borrow earth pits, first aid and sanitation facilities at construction camp and temporary office/material storage place. The same shall be revised if necessary during project implementation or if there is any change in the project design. Any such change shall be reported to ADB as well.

APPENDIX 1: DETAILS OF PROPOSED BATCH 3 ROADS IN ASSAM

S. No.	District	Block	Package No.	Road Name	Length in Km	Cost Rs in Lakh
1	2	3	4	5	6	7
1	Barpeta	Chakchaka	AS01-153	Rampur to Santradoha *(Duarmora to Satradoha)*	3.61	169.56
2	Barpeta	Barpeta	AS01-155	Keotkuchi to Taparbari (Keotkuchi to Satra Baradi Road)	0.9	39.68
3	Barpeta	Chenga	AS01-156	Batgaon to Kadamtola *(Kadamtola to Batgoan)*	1.02	53.23
4	Barpeta	Gumafulbari	AS01-157	Block Boundary (Bhella) to Barbila road (Borbilla to Bhella)	2.5	112.05
5	Barpeta	Chakchaka	AS01-159	Kumargaon to Kahitama road (Unneiguri)	2.79	128.15
6	Barpeta	Barpeta	AS01-161	Kharia to Bharegaon *(Bharegaon Kharia)*	1.41	72.05
7	Barpeta	Bhabanipur	AS01-164	Khandakarpara to Deolipara	2.43	115.27
	Sub Total Barpeta		**7**	**7**	**14.66**	**689.99**
8	Bongaigaon	Tapattary	AS-02-63	Nayasatra to Piradhara Road	1.37	69.94
9	Bongaigaon	Manikpur	AS-02-67	Khushlaiguri Kawadi to Kwadi - II Road *(Patiladoha to Kawadi-II)*	1.5	60.06
10	Bongaigaon	Srijangram	AS-02-68	T1 to Solmara Road *(Sonakhuli Pt-II to Kakojana)*	1.0	41.66
11	Bongaigaon	Dangtol	AS-02-69	Dhontola to Ligdoba	2.0	80.83
12	Bongaigaon	Dangtol		Bidyapur Ravapur to Bhubaneswari *(Pub Bhadragaon II to Bhumeswari)*	1.0	37.6
13	Bongaigaon	Srijangram	AS-02-71	Huramara I to Huramara-II	1.5	69.15
	Sub Total Bongaigaon		**5**	**6**	**8.37**	**359.24**
14	Dhubri	Bilasipara	AS-05-100	Bhasanigaon to Tarangmukh	1.0	43.06
15	Dhubri	Bilasipara	AS-05-101	Bhasanigaon to Singimari	1.0	44.12
16	Dhubri	Mahamaya	AS-05-102	NH 31 to Pasuarkhal	1.0	41.46
	Sub Total Dhubri		**3**	**3**	**3**	**128.64**
17	Dibrugarh	Joypur	AS-06-91	Dighalia gaon to Khatua gaon	3.2	140.03
18	Dibrugarh	Joypur	AS-06-93	Chenelipather gaon to Getupather gaon *(Chengelijan gaon to Getupather gaon)*	4.35	174.83
19	Dibrugarh	Joypur	AS-06-94	Dighalia No2 to Naharani block No 2	5.03	217.47
20	Dibrugarh	Tingkhong	AS-06-95	Keseruguri - Dilibari Tiniali	3.0	134.13
21	Dibrugarh	Tingkhong	AS-06-96	Tingkhong - Na Sripuria	3.0	133.06
22	Dibrugarh	Tingkhong	AS-06-97	Kasalupathar – Tipamia (Tipomia Raidongia road)	4.5	194.21
23	Dibrugarh	Khowang	AS-06-101	Panitola Gaon - Teporchalibam Gaon *(Gazpuria ali to Teporchali bam)*	1.05	61.27
24	Dibrugarh	Khowang	AS-06-102	Dehingia Gaon - Changmai Gaon *(Old Moran ali)*	1.14	65.74
25	Dibrugarh	Joypur	AS-06-103	Tingrai Doomgaon to Santipur	4.95	215.42
26	Dibrugarh	Joypur	AS-06-104	Silgrant to Namrup Grant (T02 to Block Boundary)	6.33	234.57
27	Dibrugarh	Joipur	AS-06-105	Amguri Nepali to Khatua gaon	3.6	149.786
28	Dibrugarh	Tingkhong	AS-06-107	Kekuri Sawal to Kekuri (M N Road to Kekuriswal	1.0	51.5
29	Dibrugarh	Joypur	AS-06-108	Uriamguri Block to Merbil grant No 5	4.665	203.26
30	Dibrugarh	Joypur	AS-06-109	Tarani pather gaon to Hudupara gaon	2.78	111.93
31	Dibrugarh	Joypur	AS-06-110	Dissang Block to Nakhatia NC gaon	5.0	222.99
32	Dibrugarh	Tengakhat	AS-06-114	Chakali Pather to Tikirabali Road *(Jikirabai Chakali Pathar Road)*	1.5	71.605
33	Dibrugarh	Tengakhat	AS-06-115	Niz Tengakhat to Nakhangia Bongali *(Nakhana Chakala Boria road)*	2.75	121.333
34	Dibrugarh	Tengakhat	AS-06-116	Dharia (Belbari Road) to Naharani No. 1 *(Naharani Dharia road)*	2.6	122.096
35	Dibrugarh	Tengakhat	AS-06-118	Bor Aboipuria to Borhula *(Ghanigaon Road)*	2.627	117.881
36	Dibrugarh	Tengakhat	AS-06-119	Bokuloni No. 1 to Kerekoni No. 2 *(Kerekani Bahonigaon road)*	1.273	57.498
37	Dibrugarh	Lahowal	AS-06-121	Lonpuria to Teporchali Gaon Road *(ROMAI road)*	1.0	50.09
38	Dibrugarh	Khowang	AS-06-122	Changmai gaon to Teliapathar *(Old Moran Ali)*	2.0	117.73
39	Dibrugarh	Tingkhong	AS-06-123	Ouphelia TE to Tipamia *(Tipamia dighala to Ouphelia TE)*	2.0	101.68
40	Dibrugarh	Lahowal	AS-06-127	Romai Road to Dongapather (Phulampur road)	1.0	50.63
41	Dibrugarh	Khowang	AS-06-128	Sensua Pukhuri Gaon to Silsili Demow Kinar *(Khowang to Demow Borphukan ali)*	1.5	86.68

S. No.	District	Block	Package No.	Road Name	Length in Km	Cost Rs in Lakh
42	Dibrugarh	Lahowal	AS-06-132	NH-37 to Ekoratoli *(Ekaratoli Christian road)*	1.0	59.55
43	Dibrugarh	Tengakhat	AS-06-135	Na Bhekulaja to Tingrai Borhula *(Bhekulajan OIL road)*	3.0	127.19
44	Dibrugarh	Tingkhong	AS-06-137	Thulia Chuk to Kabulai No. 28 (Kabula Majgaon road)	1.0	44.65
45	Dibrugarh	Tingkhong	AS-06-138	Sisumuria to Kabula No. 28 (Kabula Majgaon road)	2.5	111.37
	Sub Total Dibrugarh		**29**	**29**	**79.345**	**3550.179**
46	Golaghat	Golaghat South	AS-08-153	Dhupguri to Uriamghat *(Majgaon Uriamghat Road via Haripur Joyapathar)*	5.0	201.9
47	Golaghat	Central Dev Block	AS-08-157	T09 toKathiatoli (Sevadol Ali)	2.5	139.02
48	Golaghat	Morongi	AS-08-159	T04 (02G17) to Gurukani (Extension Sensowa to Kathargaon)	3.05	154.05
49	Golaghat	Golaghat South	AS-08-163	Dagaon no5 to Bilgaon Bilgaon station app road to railwaygate via Bilgaon PHC	3.15	133.831
50	Golaghat	Golaghat South	AS-08-164	Bosapather No1 to Bilgaon Amguri Bosapather ali	2.61	117.454
51	Golaghat	Golaghat South	AS-08-165	Modhupur No2 to Chungajan via Uriamghat Naojan (Pithaghat Modhupur Road}	8.42	311.404
52	Golaghat	Golaghat South	AS-08-166	Zotoi to Bornodi No2 (Lachitgaon Chetia gaon road)	13.08	604.375
53	Golaghat	Golaghat South	AS-08-168	Lakui Nagar to Indrapur (Azarguri bidyapur Road vil Lakhi jayanti)	2.11	96.118
54	Golaghat	Golaghat South	AS-08-169	Old Subha to Sonalinagar No1 (Haldibari Bidyapur via Chetanpur)	10.32	482.659
55	Golaghat	Golaghat South	AS-08-171	Henevi to Milongaon (Rengma pani to Homeland)	9.15	340.271
56	Golaghat	Morongi Dev Block	AS-08-173	G59 to Borgonia (Letekuchapori to Borgoria Connecting Road)	2.0	92.58
57	Golaghat	Golaghat West	AS-08-176	NH 37 to Rawduargaon (Rawduar pathar ali)	1.59	83.85
58	Golaghat	Golaghat West	AS-08-178	T06 to Bhalukaguri (Bahikhowa ali)	2.5	109.062
	Sub Total Golaghat		**13**	**13**	**65.48**	**2866.574**
59	Jorhat	Jorhat North West	AS-10-106	T04 to Barmar Chapori	1.135	77.05
60	Jorhat	Kaliapani	AS-10-111	T06 to Bhakatchuk	4.1	200.73
61	Jorhat	Jorhat Central	AS-10-112	T02 to Bhoroluachuk	2.0	109.143
62	Jorhat	Titabor	AS-10-113	T04 to Kakatikuri	2.0	123.43
63	Jorhat	Majuli	AS-10-114	T04 to Kathoibari	1.5	91.66
64	Jorhat	Ujani Majuli	AS-10-117	T01 to Puriagaon *(Sunowal Kachari to Puriagaon)*	1.89	131.3
65	Jorhat	Ujani Majuli	AS-10-118	L026 to Kandulimari *(Phutchang to Kandulimari)*	2.277	149.387
66	Jorhat	Ujani Majuli	AS-10-119	T01 to Kuhiar Bari *(Samahati to Panikhati Kuhiarbari)*	1.25	84.622
67	Jorhat	Ujani Majuli	AS-10-120	T02 to Mayengia (Bhakatidwar to Mayangia)	1.975	125.985
68	Jorhat	Ujani Majuli	AS-10-121	T03 to Sriram Nepalibari *(Pholongani to shriram Nepalibari)*	1.25	74.472
69	Jorhat	Ujani Majuli	AS-10-123	T05 to Jamudchuk *(Karki chuk to jamud chuk)*	3.24	197.66
70	Jorhat	Jorhat North West	AS-10-124	T05 to Kakatichuk *(Namgharia to Kakatichuk)*	2.0	130.28
71	Jorhat	Kaliapani	AS-10-125	Burakuri to TBN *(T03 to Burakurichuk)*	1.643	86.95
72	Jorhat	Kaliapani	AS-10-126	Majkuri to TBN *(T03 to Khanikar)*	2.29	125.62
73	Jorhat	Titabor	AS-10-127	T07 to Balbasti *(Balbasti SCP road)*	0.715	42.23
74	Jorhat	Majuli	AS-10-128	T04 to Upper Sumonimari	1.0	62.39
75	Jorhat	Majuli	AS-10-129	Dighaligaon to Bongaon *(T04 to Kohalgaon)*	4.5	300.15
76	Jorhat	Majuli	AS-10-131	Redcross near Bongaligaon to Borbari *(T01 to Borbari)*	1.3	77.49
77	Jorhat	Ujani Majuli	AS-10-134	T05 to Jorbil Baniagaon *(Boroguri to pahumora borbam)*	2.0	116.85
	Sub total Jorhat		**19**	**19**	**38.065**	**2307.399**
78	Kamrup	Boko	AS-11-196	55 to Dhekiabori *(Jalukbari Dhekiabori Road)*	1.0	45.8
79	Kamrup	Boko	AS-11-197	98 to Kaithapara*(Raipara Kaithpara Road)*	4.35	190.49
80	Kamrup	Dimoria	AS-11-210	T02 to Nibira NC (*Bherakuchi Pathar to Nibira NC Road)*	2.91	173.96
81	Kamrup	Dimoria	AS-11-212	T08 to Rewa Pather *(Maheswari Mitani Bogibari road)*	3.6	177.02
	Sub Total Kamrup		**4**	**4**	**11.86**	**587.27**
82	Karbianglong	Rangkhang	AS-12-77	L062 to Rangkuru *(7th km of Kollonga Sildubi road to Rongkuro)*	3.0	152.59
83	Karbianglong	Rangkhang	AS-12-78	T03 to Ngharia (*86th Km of SH 35 to Nigheria)*	0.872	42.384
84	Karbianglong	Rangkhang		T02 to Tukhahaidi *(3rd Km of KHL road to Towkhahidi)*	3.5	159.805

S. No.	District	Block	Package No.	Road Name	Length in Km	Cost Rs in Lakh
85	Karbianglong	Rangkhang	AS-12-79	Lo68 to Harlong Chebat *(3rd Km of Disah Road to Harlong Chebat)*	1.8	98.328
86	Karbianglong	Rangkhang	AS-12-80	T03 to Rikhang Mibom *(79th Km of SH-35 to Rikhang Mibom)*	1.83	88.882
87	Karbianglong	Rangkhang		T03 to Mekwe pather (80th Km of SH-35 to Mekwe pather)	4.0	191.6
88	Karbianglong	Lumbajong	AS-12-81	SH 33 to Nagaon Basti *(Road from 10th Km of DLHS road to Nagaon Basti)*	1.995	100.821
89	Karbianglong	Amri	AS-12-82	T06 to Marjang Lalung *(Road from Umswai Pantaloo PWD road to Marjong Lalung gaon)*	1.5	68.185
90	Karbianglong	Cinthong	AS-12-86	Langpi to Rumphum *(Loboi to Rumphum)*	18.384	933.337
	Sub total Karbianglong		**7**	**9**	**36.881**	**1835.932**
91	Kokrajhar	Hatidhura	AS14-136	Srirampur to Khayerghutu *(77 to Khayerghutu)*	2.5	101.84
92	Kokrajhar	Kokrajhar	AS14-140	Maoriagaon-I to Amjulipara *(162, Nayekgaon to Amjulipara)*	2.7	135.21
93	Kokrajhar	Hatidhura	AS14-144	Naisapur Mechpara to Palashguri *(54, Naisapur to Naisapur Mechpara)*	4.5	186.88
94	Kokrajhar	Kokrajhar	AS14-146	177 (Salakati) to Nadanguri	4.5	222.43
95	Kokrajhar	Kokrajhar	AS14-147	177 (Salakati) to Bamunigaon	1.68	77.9
96	Kokrajhar	Kokrajhar	AS14-148	108 (Kamarpara) to Deodoba	1.9	98.08
97	Kokrajhar	Kokrajhar	AS14-149	105(Kakrighola) to Galajharbasti	5.8	304.64
98	Kokrajhar	Chaparsalkocha	AS14-150	T04 (Salkocha Bedlengmari) to Tintila	1.8	126.88
99	Kokrajhar	Kokrajhar	AS14-151	138 (Latagaon) to Laltari	2.3	107.92
100	Kokrajhar	Kokrajhar	AS14-152	177(Salakati) to Benibari	1.73	76.04
101	Kokrajhar	Kokrajhar	AS14-153	18 Barsangaon to Samsingkilla	1.29	46.17
102	Kokrajhar	Kokrajhar	AS14-154	95 (Charaikhala) to Dhupguri *(Choraikola to Harinaguri)*	1.68	83.04
103	Kokrajhar	Gossaigaon	AS14-155	SH-I to Kamarpara *(Dhubri Kachugaon Road to Kamarpara)*	3.1	126.47
104	Kokrajhar	Rupsi	AS14-157	T02 to Singjhora Pondegaon *(Singjhora Pondergaon to Singjhora)*	1.02	48.81
105	Kokrajhar	Rupsi	AS14-159	P-I to Paglijhora *(Bashbari to Paglijhora)*	2.37	108.43
106	Kokrajhar	Kachugaon	AS14-162	Anthaibari(T03) to Joymaguri	3.5	141.75
107	Kokrajhar	Kokrajhar	AS14-163	105 (kakrighola) to Pundibari-II	2.1	102.04
	Sub Total Kokrajhar		**17**	**17**	**44.47**	**2094.53**
108	Lakhimpur	Nowboicha	AS15-93	Christianbosti to Pach No.I Uzani No.II *(Uzzani Khamti MiriGaon Road)*	1.78	76.777
109	Lakhimpur	Nowboicha	AS15-96	Fulbari No.2 to Dhemagarh No.2 Road	1.975	82.096
110	Lakhimpur	Lakhimpur	AS15-97	Hahchara to Damukial NC *(Kapuhuwa Majulial road)*	2.575	113.111
	Sub Total Lakhimpur		**3**	**3**	**6.33**	**271.984**
111	Nagaon	Dalong ghat	AS-19-273	Phulaniati to West phulaniati	1.1	37.23
112	Nagaon	Binnakandi	AS-19-274	NH 36 to Urdhagaon *(Urdhagaon to NH 36 Road)*	0.972	33.77
113	Nagaon	Binnakandi	AS-19-275	Jugijan Binnakandi road *(Binakandi Road via Jugijan)*	1.56	52.67
114	Nagaon	Khagarijan	AS-19-276	Simaluguri Boragaon Road to Uttar Kawaiman *(Simaluguri to Uttar Kawaimari Road)*	1.44	45.42
115	Nagaon	Khagarijan	AS-19-277	Nagaon Juria Road at Herapatty to West Herapatty No. 1 up to Amtola Bridge	1.33	45.74
116	Nagaon	Pakhimaria	AS-19-280	Nonoi Dakhipat Road to Rangalumukh *(Tulshimukh to Rangaloomukg Road)*	1.68	52.48
117	Nagaon	Khagarijan	AS-19-281	Nagaon juria road to West katimari no. 2 *(Katimari grant Road)*	1.114	35.44
118	Nagaon	Khagarijan	AS-19-285	Borbheti kachamari road to West Tokobari *(NH 37 Sensowa to Lalung Gaon Road)*	1.42	52.5
119	Nagaon	Khagarijan	AS-19-286	Nagaon juria road to West Katimari no.1 *(Chalchali Katimari Road to Haibargaon Katimari Road)*	1.06	33.96
120	Nagaon	Pakhimaria	AS-19-287	NH-36 to Pakhimaria Muslim Gaon East	1.272	47.31
121	Nagaon	Pakhimaria	AS-19-289	Maz pathori to Mazpathori Chakarigaon *(Majpathori to Chakarigaon Borpathori Road)*	0.979	34.78
122	Nagaon	Raha	AS-19-290	Katahguri to NH37 *(Roha to Baruakhat Road)*	1.029	33.39
123	Nagaon	Pakhimaria	AS-19-292	Dakhinpat Kampur road to Borkula Pachim *(Dakhinpar Kampur Road to Pachim Bakelagaon Rd)*	0.686	23.99
124	Nagaon	Pakhimaria	AS-19-293	Nagaon Morikallong Nonoi to Uzara Panigaon *(Nagaon Morikolong Nonoi Road to NH 37 via Morikolong Borghat)*	1.513	44.68
125	Nagaon	Pakhimaria	AS-19-295	Buragohainthan to Buragohainthan Pub *(Buragohainthan vill to Rangalumukh Road)*	0.885	27.58
126	Nagaon	Pakhimaria	AS-19-296	Dakhinpat Kampur road to Borkula Pub *(Dakhinpat Kampur Road to Nonoi Dakhinpat Rd via Pub Borkala and Buragohaithan)*	1.501	47.94
127	Nagaon	Kathiatoli	AS-19-297	Nibukali to Kuarichuk	1.565	43.04

S. No.	District	Block	Package No.	Road Name	Length in Km	Cost Rs in Lakh
128	Nagaon	Raha	AS-19-298	Niz Narikali to Kampur Chaparmukh *(Road from KL road to Kuwariati Dhamajigaon Road)*	1.564	53.97
129	Nagaon	Raha	AS-19-299	Kholihamari to Bamunijan *(Ghai to Mulanka via Niz Jagial Deobali Road)*	2.029	64.61
130	Nagaon	Dhalpukhuri	AS-19-304	NH54 to Uttar Bhalluhander *(Uttar Balubhandar to NH 54 at Lanka)*	1.575	50.44
131	Nagaon	Kathiatoli	AS-19-305	Pachim Tetelisara to Kallakhowa *(KK Road to Kalaikhowa via Paschim Tetalichora Rd)*	1.848	49.65
	Sub Total Nagaon		**21**	**21**	**28.1215**	**910.59**
132	Nalbari	Pub Nalbari	AS-20-97	Sandha LP School to Katra HE school *(Barpipla Kendukuchi)*	2.2	89.21
133	Nalbari	Borigog Banbhag	AS-20-98	Bar Bistupur to Khudra Bistupur *(Khudrabitupur to Barbitupur Road)*	2.61	99.5
134	Nalbari	Borigog Banbhag	AS-20-99	Punarkunia to Hablakha *(Hablakha to Ponarkunia Road)*	1.0	35.94
135	Nalbari	Barbhag	AS-20-100	Raikuchi to GDB road at Kamarkuchi	1.0	39.85
136	Nalbari	Barbhag	AS-20-101	Pandula on GDB to Nonoi *(Borbori Nonoi to Narapara road)*	3.0	107.09
	Sub Total Nalbari		**5**	**5**	**9.81**	**371.59**
137	Sibsagar	Amguri	AS-21-145	NH 61 to K K Barua Ali *(Kaliapani MV school to Abhoipuriagaon)*	2.4	100.14
138	Sibsagar	Amguri	AS-21-146	NH 61 to NH 61 via Mirichutia *(Godhulibazar Mising gaon road)*	2.9	122.435
139	Sibsagar	Amguri	AS-21-147	Namati ali to Dhodar Ali *(Namti Veterinary feeder Road)*	3.2	134.32
140	Sibsagar	Amguri	AS-21-148	NH 61 to Ladoigarh *(Kapahtoli Mising Gaon road)*	1.2	50.59
141	Sibsagar	Amguri	AS-21-149	NH 61 to Extn Seuni Ali *(Extension Seuni Ali to Saudgaon Ali connecting NH 61)*	4.2	179.78
142	Sibsagar	Amguri	AS-21-150	Dhodar ali to Mehgarh ali	1.0	42
143	Sibsagar	Amguri	AS-21-152	Namti Ali to Extn Kharikatia ali *(From Extension Kharikatia Ali to Lunpuria Sensua road connecting)*	1.7	70.745
144	Sibsagar	Amguri	AS-21-153	NH 61 to Extn Kharikatia ali *(Buragaon Ali)*	9.85	420.847
145	Sibsagar	Amguri	AS-21-154	NH 61 to Seuni ali *(Amguri level crossing road)*	2.7	114.655
146	Sibsagar	Gaurisagar	AS-21-156	Tikha Belimukhia to Bharalua *(Kerai Ali)*	2.5	103.795
147	Sibsagar	Gaurisagar	AS-21-157	Bor ali road cum Bund to Teliadonga *(Teliadunga to Brahmaputra Mathari)*	2.0	84.52
148	Sibsagar	Gaurisagar	AS-21-158	Bor ali road cum Bund to Dhanekhowa *(Dhanchowa Raghubari Ali)*	1.0	42.38
149	Sibsagar	Gaurisagar	AS-21-159	NH 37 to Saraguri *(Saraguri Ali)*	1.0	44.07
150	Sibsagar	Gaurisagar	AS-21-160	NH 37 to Khola Grazing *(Kaibatra Lahon gaon Ali)*	1.0	42.35
151	Sibsagar	Gaurisagar	AS-21-161	Tikha Belimukhia to Chetia Changmai *(Chetia Phukan Ali)*	2.0	82.66
152	Sibsagar	Gaurisagar	AS-21-162	Naga ali Singibill *(Sontali Chiga Duwarah Ali)*	1.0	41.6
153	Sibsagar	Gaurisagar	AS-21-164	Bor ali road cum Bund to Maglow *(Thekeratol Mising Gaon Ali)*	1.0	42.12
154	Sibsagar	Demow	AS-21-168	Athabari High School to Hiloidhari *(Hiloi bari Ali)*	1.0	43.32
155	Sibsagar	Demow	AS-21-169	Bahuabari to Jamira *(Nemukur Jamira Ali)*	2.9	128.925
156	Sibsagar	Demow	AS-21-170	Kalitagaon to Saragua Gaon *(Kolitagaon Ali)*	1.0	42.73
157	Sibsagar	Demow	AS-21-172	Nathgaon to Maliachuk	0.9	38.335
158	Sibsagar	Demow	AS-21-173	Patsaku to Khamunghat ali	9.9	426.715
	Sub total Sibsagar		**22**	**22**	**56.35**	**2399.032**
159	Sonitpur	Balipara	AS22-136	Paramai Ghuli to Samdhara (T01 to Paramai ghuli)	2.21	83.919
160	Sonitpur	Naduar	AS22-137	Dholaibil to Borpather	2.476	106.28
161	Sonitpur	Naduar	AS22-138	Borbamgaon to Bamunipam	0.727	32.03
162	Sonitpur	Naduar	AS22-140	Padmapur to Bhakatram	0.96	40.59
163	Sonitpur	Balipara	AS22-141	NH 52 to Chapaguri (T02 to Chapaguri)	0.93	42
164	Sonitpur	Balipara	AS22-142	Ghoramari Buragaon to NH 52 (T02 to Ghoramari Buragaon)	1.2	54.76
165	Sonitpur	Balipara	AS22-143	Ghora TE to NH 52 (T02 to Tezpur Ghora)	3.0	136.66
166	Sonitpur	Dhekiajuli	AS22-147	Gorpar Pather to Panbari-I (T06 to Gorpar Pathar)	0.8	35.18
167	Sonitpur	Dhekiajuli	AS22-148	Majgaon Pather to Hugrajuligaon (T09 to Majgaon Pathar)	1.8	79.96
168	Sonitpur	Dhekiajuli	AS22-149	Dighalijuli to Rikamari Bengali (T01 to Dhighalijuli NK)	2.46	127.05
169	Sonitpur	Borchala	AS22-151	Mahkhowajan to Amguri Kachari (T04 to Mahkhowajan gaon)	2.0	97.54
	Sub Total Sonitpur				**18.563**	**894.221**

S. No.	District	Block	Package No.	Road Name	Length in Km	Cost Rs in Lakh
170	Tinsukia	Guijan	AS-23-84	DRT Road - to Dihingia vill (Makum Dhelakhat road)	3.5	150.01
	Sub Total Tinsukia		**1**	**1**	**3.5**	**150.01**
171	Baska	Gobardhana	AS-24-76	Bajegaon Pather Approach Road (T01 to Bajegaon)	1.2	47.04
172	Baska	Gobardhana	AS-24-77	Kalpani to Khagrabari *(Kalpani to Khagrabari via Bishpani)*	2.0	70.22
173	Baska	Tamulpur	AS-24-79	T08 to Kumarpara (Kumarpara Chechapani)	1.67	68.31
174	Baska	Tamulpur		T08 to Darrangapar No2 (Angarkata Darangapar road)	3.7	125.2
175	Baska	Tihu Barama	AS-24-80	Haramjan to Dakhania	1.68	64.64
176	Baska	Tihu Barama		Debichara to Dangarmakha	2.0	67.2
177	Baska	Goreswar	AS-24-83	Boitamari Chowk to Dologdia	2.5	132.276
178	Baska	Jalah	AS-24-86	Ramchartari to Soudarvitha (Saudar Vitha Maharani road)	2.041	99.93
179	Baska	Tamulpur	AS-24-87	T01 to Ulubari no1 (Ulubari to Banguri)	1.8	60.93
180	Baska	Tamulpur	AS-24-88	T01 to Rangapani (Sirishghutu to Fuhurabari)	3.7	129.68
181	Baska	Tamulpur	AS-24-89	T01 to Jamuguri No1 (Jamuguri1toJamuguri2)	2.15	77.7
182	Baska	Jalah	AS-24-91	Dangrigaon NC to Batabari (Batabari to Bongoan road)	1.514	64
183	Baska	Jalah	AS-24-92	Rupahi Khursatari (Bhabasingpathar via Baghmara to Hachara road)	3.258	169.87
184	Baska	Gobardhana	AS-24-93	Barbarijhar to Ganakpara	1.0	42.4
185	Baska	Gobardhana	AS-24-94	Khuduabari to Bhatemaritup	2.0	91.25
186	Baska	Nagrijuli	AS-24-101	T01 to Kalipur No1 (Kalipur no 1 to Kalipur No2)	2.2	78.85
187	Baska	Nagrijuli		T04 to Ghilajhari (Ghilazari Road)	2.55	90.61
	Sub total Baska		**14**	**17**	**36.963**	**1480.106**
188	Chirang	Borobazar	AS-25-96	Dagarpara-I to Dagarapara-II	2.5	109.615
189	Chirang	Manikpur	AS-25-98	Gerukabari to Jamdoha-III (Gerukabari Jamdoha to Jamdoha I)	2.8	122.22
190	Chirang	Borobazar	AS-25-101	L79 to Sikhajora (Chikajhora II to Chikajhora III)	4.5	200.195
191	Chirang	Borobazar	AS-25-103	Panbari to Chourang (Panbari to Chowrang I)	8.0	354.31
192	Chirang	Dangtol	AS-25-108	Kakragaon to Kamandanga	1.0	43.08
193	Chirang	Sidli	AS-25-109	NH 31 C to Gendergaon	1.1	48.81
194	Chirang	Borobazar	AS-25-110	Tangabari to Choto Amguri (Tangabari I to Tangabari II)	3.85	160.73
195	Chirang	Sidli	AS-25-111	Amguri to Boripara (Amguri Bhirangaon to Hasraobari via Borigara)	1.7	74.975
196	Chirang	Dangtol	AS-25-112	Kakragaon to Dubli	2.55	114.382
197	Chirang	Borobazar	AS-25-114	Kharpara Amteka road (T02) to Koila Moila (Amteka road to Koilamoila)	1.35	58.452
198	Chirang	Sidli	AS-25-115	Kolabari to Solmari	1.0	45.6
199	Chirang	Sidli	AS-25-116	Samthaibari to Dologaon	1.0	44.65
200	Chirang	Sidli	AS-25-120	NH 31 C to Rajajan	0.75	34.602
	Sub Total Chirang		**13**	**13**	**32.1**	**1411.621**
201	Udalguri	Kalaigaon	AS-26-59	Batabari No.1 to Hatibandha Road	1.7	85.14
	Sub Total Udalguri		**1**	**1**	**1.7**	**85.14**
	Grand Total		**196**	**202**	**499.569**	**25238.498**

APPENDIX 2: SAMPLE RURAL ROADS: ENVIRONMENTAL CHECKLIST

Road Name		Ramgaon Bhergaon Road
Block Name		Goreswar
District Name	:	Baksa
Total Length of the Road	:	2.000 km

A. Climatic Conditions

Temperature	High: 36% Low: 0%
Humidity	High : 95% Low: 40%
Rainfall	1000mm/year
Rainy Season	May to September

B. Location of the Road and Generic description of Environment

No.	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)		✓	Distance from Coastline: km ( ) more than 50% ( ) less than 20%
2.	Type of Terrain(Plain/Hilly/ Mountainous etc.) *(Explain the topography of the area and how many km of the road are located in the hilly area)*	✓		Topography of terrain - Flat. Altitude: 60.5m (average) The entire section of the alignment fall in the plain terrain
4.	Forest Area *(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest area)?*		✓	Type of Vegetation: Legal Status of the Forest Area: *(Reserved, National Park, Sanctuaries, Unclassified, etc.*
5.	Wildlife *(Explain whether there are any wildlife species in the project area)*		✓	Name of animals: Endangered species (if any):
6.	Inhabited Area	✓		From / To / Side 0+080 / 0+230 / LHS 0+390 / 0+440 / LHS 0+850 / 1+200 / LHS 1+400 / 1+860 / LHS 1+900 / 2+000 / LHS 0+560 / 1+160 / RHS 1+400 / 1+760 / RHS

No.	Type of Ecosystem	Yes	No	Explanation
7.	Agricultural Land	✓		From / To / Side 0+000 / 0+080 / LHS 0+230 / 0+390 / LHS 0+440 / 0+850 / LHS 1+200 / 1+400 / LHS 1+660 / 1+900 / LHS 0+000 / 0+560 / RHS 1+160 / 1+400 / RHS 1+760 / 2+000 / RHS
8.	Grazing grounds		✓	
9.	Barren Land		✓	

C. Specific description of the Road Environment

(Note. Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation
1.	Are there any areas with landslide or erosion problems along the road? ***(If yes, indicate the location (right or left side) and the chainage)***		✓	( ) No Secondary Information is available and Local Community is not aware of this matter
2.	Are there any lakes/swamps beside the road? ***(If yes, list them indicating the location (right or left side)and the chainage)***		✓	
3.	Are there any nallas/streams/rivers etc. Along/crossing the road? ***(If yes, list them indicating the location (right, left or crossing) and the chainage***		✓	
4.	Are there problems of water stagnation and other drainage issues on or near the road? ***(If yes, mention chainage)***		✓	
5.	Is the area along the project road prone to flooding? ***(If yes, mention flood level and frequency)***		✓	( ) No Secondary Information is available and Local Community is not aware of this matter

No.	Parameter/ Component	Yes	No	Explanation
6.	Are there any trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment? ***(If yes attach list of trees indicating the location (right or left side)and the chainage)***	✓		44 trees are located within 10 m on either side of the CL. [Enclosed list Refer. E.1]
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas? ***(If yes, specify details of habitat with chainage)***		✓	( ) No Secondary Information is available and Local Community is not aware of this matter
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	( ) No Secondary Information Available and Local Community is not aware of this matter
9.	Are there any utility structures[2] within 10 m on either side from the center line of the road alignment? ***(If yes, attach list with chainage)***	✓		24 electric poles, 1 transformer, 4 stand posts and 1 well are located within 10 m on either side of road.[Refer E.2]
10.	Are there any religious, cultural or community structures/buildings[3] within 10 m on either side from the center line of the road alignment? ***(If yes attach list with chainage)***	✓		2 temples are located within 10 m on either side of the alignment. (Refer E.3).

D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. ***(Attach list of people met and dates)***	✓		A community consultation was held with PIU and Community members. About 17 participants were present at time of consultation. The list of participants is attached in **Annexure E6.**
2.	Any suggestion received in finalizing the alignment	✓		• The existing alignment should be finalised
3.	If suggestions received, were they incorporated into the design?	✓		

E. Annexure

E-1 List of trees indicating location (left or right side of the road) and chainage (as required under C. 6)

Chainage	Side	Name of Trees	DCL
0+010	LHS	Karol	5

[1] Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures.

[2] Mandir, Masjid, Church, religious/cultural/historical monuments, school, health center, public toilet and other similar structures.

Chainage	Side	Name of Trees	DCL
1+910	RHS	Saisu	3

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6).

Chainage	Side	Name of Trees	DCL
1+910	RHS	Sisu	3

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

E-2 List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

Chainage	Side	Utility Type	DCL
0+015	LHS	Electric Pole	3.7
0+050	LHS	Electric Pole	3.2
0+170	LHS	Electric Pole	3.2
0+220	LHS	Electric Pole	2.7
0+590	LHS	Electric Pole	4
0+650	LHS	Electric Pole	3.2
0+720	LHS	Electric Pole	3.5
0+900	LHS	Electric Pole	3.5
1+560	LHS	Electric Pole	3.2
1+635	LHS	Electric Pole	3.2
1+710	LHS	Electric Pole	3.5
1+780	LHS	Electric Pole	3.2
1+840	LHS	Electric Pole	3.3
0+050	RHS	Transformer	10
0+350	RHS	Electric Pole	3.5
0+510	RHS	Electric Pole	3.5
0+580	RHS	Electric Pole	3.7
0+790	RHS	Electric Pole	3.5
0+840	RHS	Electric Pole	2.8
0+940	RHS	Electric Pole	3.2
1+010	RHS	Electric Pole	2.9
1+080	RHS	Electric Pole	3.5
1+120	RHS	Stand Post	3.5
1+410	RHS	Electric Pole	3.7
1+480	RHS	Electric Pole	3.5
1+490	RHS	Stand Post	4
1+495	RHS	Well	7
1+510	RHS	Electric Pole	4
1+750	RHS	Stand Post	4
1+900	RHS	Stand Post	3.2

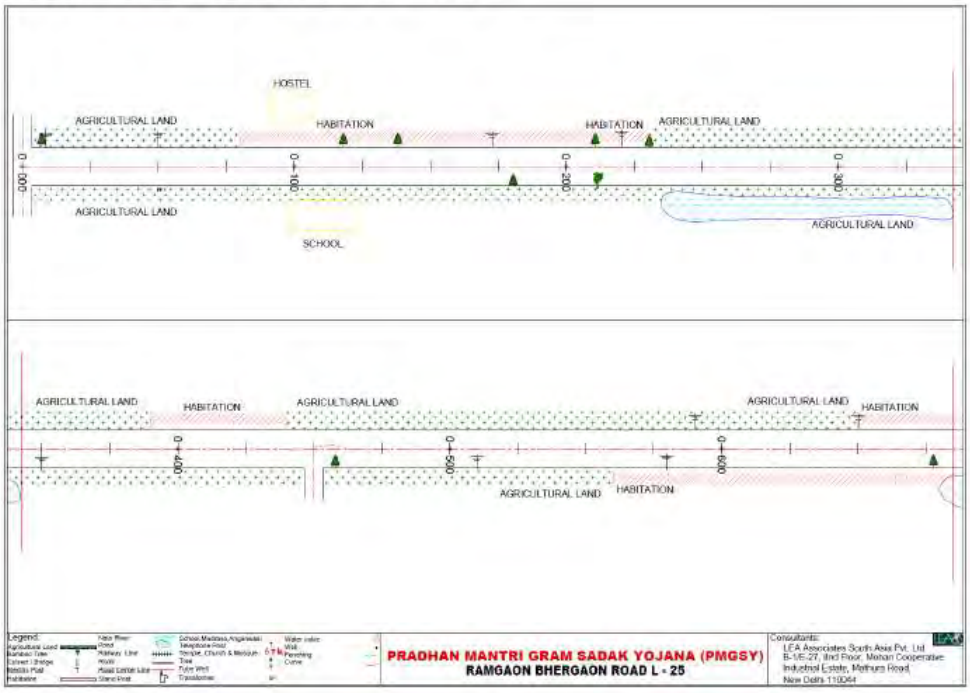
E-3 List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10)

Chainage	Side	Properties	Distance from center line (m)
0+140	LHS	Temple	6
0+780	RHS	Temple	4

CFF AND SCoF DOCUMENTS:
BAKSA DISTRICT

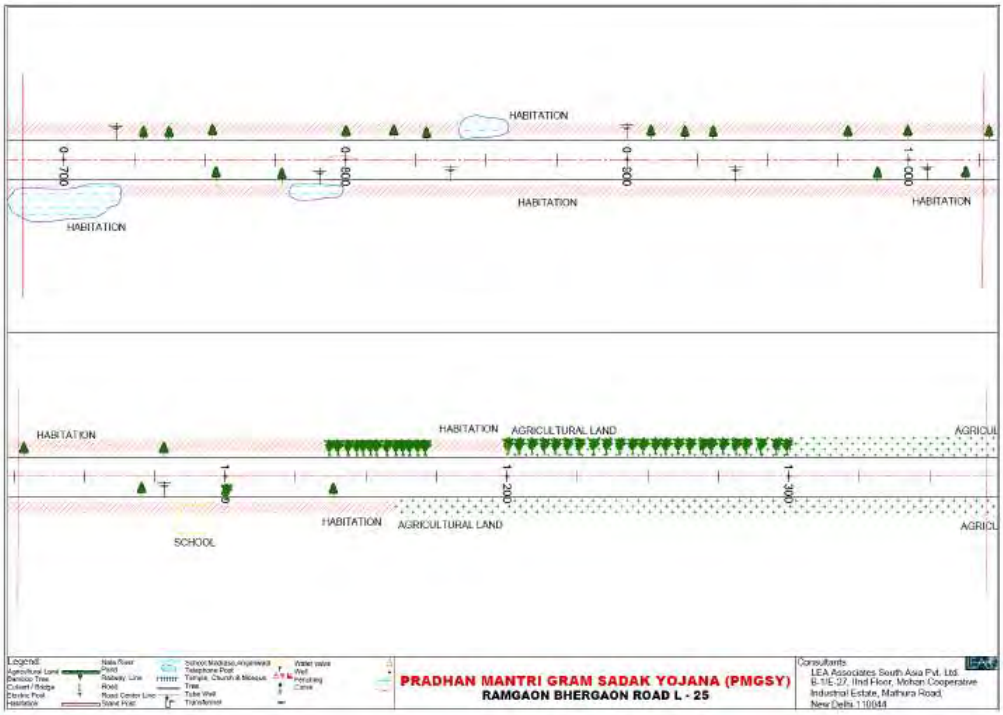
TOI TO RAMGAON ROAD (RAMGAON TO BHERGAON) (3.00)
February 2014

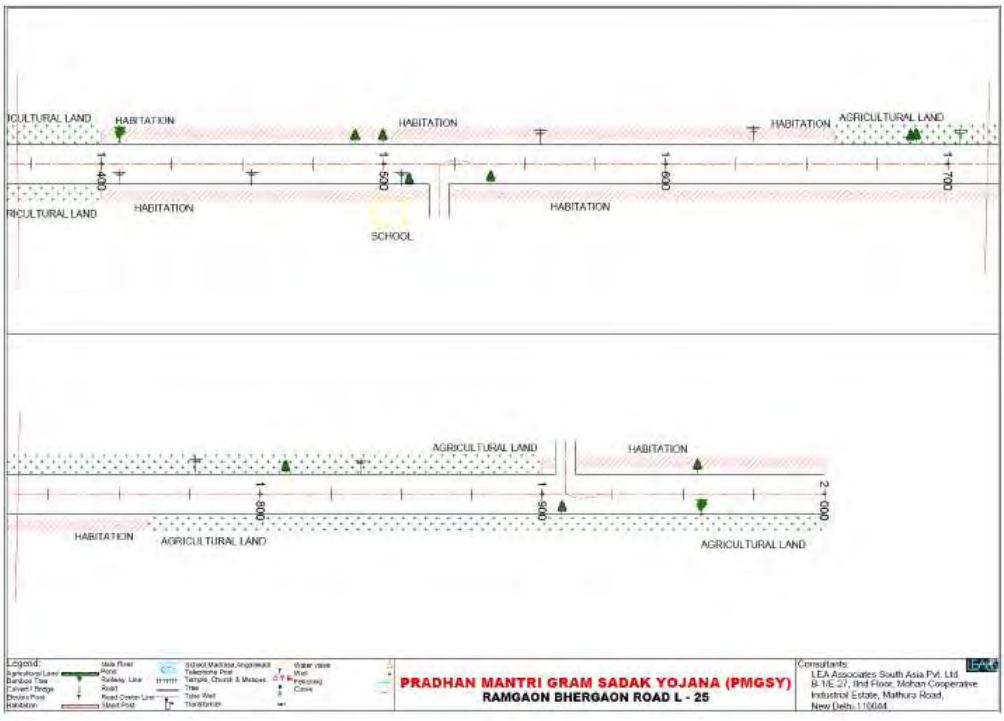
E-4 Sketch of strip map of the road covering details of atleast 10 m on either side from the center line of the road



CFF AND SCoF DOCUMENTS:
BAKSA DISTRICT

TOI TO RAMGAON ROAD (RAMGAON TO BHERGAON) (3.00)
February 2014





E-5 Photographs of the project area showing at least 10 m on either side from center line of road alignment. Every 2 km or less of road must have at least 1 photograph.


Corridor at 0+200km


Corridor at 0+800km


Corridor at 1+400km


Corridor at 1+800km

E-6 List of Participants (Attendance Sheet)

Transect Walk Attendance Sheet

Date: 25/5/13

Community			
Name of the Participants	Signature	Name and designation of the official	Signature
Bah Ram Boro			
Phool Ch. Boro	P Boro		
Ramendra Narzary			
Dayal Debnath			
Sumiti Boro			
Bhaskar Rabha			
Bhupen			
Ranjan Boro			
Rabin Boro	R, B		

Community			
Name of the Participants	Signature	Name and designation of the official	Signature

IV. RURAL ROADS: ENVIRONMENTAL CHECKLIST

Road Name	Kamalpur to Chanmari
Block Name	Mondia
District Name	Barpeta
Total Length of the Road	2.030 Km

A. Climatic Conditions

Temperature	High: 35℃ Low: 11℃
Humidity	High: 100% Low: 51%
Rainfall	2127 mm/year
Rainy Season	July to September

B. Location o-f the Road and Generic description of Environment

No.	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)		✓	Distance from Coastline: km ( ) more than 50% ( ) less than 20%
2.	Type of Terrain-(Plain/Hilly/ Mountainous etc.) *(Explain the topography of the area and how many km of the road are located in the hilly area)*	✓		Topography of terrain - Plain Altitude: 35m (average) The entire section of the alignment fall in the plain terrain
4.	Forest Area *(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest area)?*		✓	Type of Vegetation: Legal Status of the Forest Area: *(Reserved, National Park, Sanctuaries, Unclassified, etc.*
5.	Wildlife *(Explain whether there are any wildlife species in the project area)*		✓	Name of animals: Endangered species (if any):
6.	Inhabited Area	✓		From / To / Side 0+000 / 0+030 / LHS 0+060 / 0+150 / LHS 0+270 / 0+630 / LHS 0+710 / 0+770 / LHS 0+810 / 0+980 / LHS 1+020 / 1+060 / LHS 1+170 / 1+190 / LHS

No.	Type of Ecosystem	Yes	No	Explanation
				1+310 / 1+380 / LHS 1+440 / 1+470 / LHS 1+520 / 1+570 / LHS 1+910 / 1+980 / LHS 0+000 / 0+310 / RHS 0+390 / 0+510 / RHS 0+600 / 0+680 / RHS 0+950 / 0+970 / RHS 1+100 / 1+120 / RHS 1+150 / 1+200 / RHS 1+350 / 1+370 / RHS 1+400 / 1+440 / RHS 1+530 / 1+560 / RHS 1+600 / 1+660 / RHS
7.	Agricultural Land	✓		From / To / Side 0+270 / 0+910 / LHS 1+060 / 1+170 / LHS 1+190 / 1+310 / LHS 1+380 / 1+440 / LHS 1+470 / 1+500 / LHS 1+600 / 1+650 / LHS 1+710 / 1+830 / LHS 0+210 / 0+300 / RHS 0+510 / 0+600 / RHS 0+660 / 0+950 / RHS 1+000 / 1+100 / RHS 1+560 / 1+600 / RHS 1+660 / 1+830 / RHS
8.	Grazing grounds		✓	
9.	Barren Land		✓	

C. Specific description of the Road Environment

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation
1.	Are there any areas with landslide or erosion problems along the road? ***(If yes, indicate the location (right or left side) and the chainage)***		✓	( ) No Secondary information is available and Local Community is not aware of this matter
2.	Are there any lakes/swamps beside the road? ***(If yes, list them indicating the location (right or left side)and the chainage)***		✓	
3.	Are there any nallas/streams/rivers etc. along/crossing the road? ***(If yes, list them indicating the location (right, left or crossing) and the chainage***		✓	

No.	Parameter/ Component	Yes	No	Explanation
4.	Are there problems of water stagnation and other drainage issues on or near the road? ***(If yes, mention chainage)***	✓		Culverts are proposed at 0+100, 0+870, 1+250, 1+500, 1+700 and 1+900
5.	Is the area along the project road prone to flooding? ***(If yes, mention flood level and frequency)***		✓	( ) No Secondary information is available and Local Community is not aware of this matter
6.	Are there any trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment? ***(If yes attach list of trees indicating the location (right or left side)and the chainage)***	✓		144 trees are located within 10 m on either side of the CL. 193 trees (including bamboo groove and areca palm) would be affected due to the proposed improvement Enclosed list Refer: E.1.
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas? ***(If yes, specify details of habitat with chainage)***		✓	( ) No Secondary information is available and Local Community is not aware of this matter
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	( ) No Secondary information Available and Local Community is not aware of this matter
9.	Are there any utility structures[1] within 10 m on either side from the center line of the road alignment? ***(If yes, attach list with chainage)***	✓		27 electric poles, 1 transformer and 3 hand pump are located within 10 m on either side of road. Out of these utilities 19 electric poles, 1 transformer and 1 hand pump would be affected due to the project.[Refer E.2]
10.	Are there any religious, cultural or community structures/buildings[2] within 10 m on either side from the center line of the road alignment? ***(If yes attach list with chainage)***	✓		2 mosques, 1 anganwadi centre and 1 school are located within 10m from CL of the road (Refer E.3. the structures will not be affected by the project).

D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. ***(Attach list of people met and dates)***	✓		A community consultation was held with PIU and Community members. About 35 participants were present at time of consultation. The list of participants is attached in Annexure E6.
2.	Any suggestion received in finalizing the alignment	✓		Road safety measures at anganwadi centre, school, curves and road intersections locations.

[1] Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures

[2] Mandir, Masjid, Church, religious/cultural/historical monuments, school, health center, public toilet and other similar structures

No.	Consultation Activities	Yes	No	Remarks
3.	If suggestions received, were they incorporated into the design?	✓		

E. Annexures

E-1 List of trees indicating location (left or right side of the road) and chainage (as required under C. 6)

Chainage	Side	Name of Trees	DCL
0+050	LHS	Simolu	3.1
0+070	LHS	Simolu	5
0+080	LHS	Simolu	3.1
0+095	LHS	Simolu	2
0+100	LHS	Simolu	3.1
0+180	LHS	Simolu	3.1
0+190	LHS	Simolu	3.4
0+210	LHS	Simolu	3.2
0+214	LHS	Simolu	3.2
0+216	LHS	Bogori	3.2
0+230	LHS	Simolu	3.3
0+235	LHS	Khejur	3.3
0+240	LHS	Simolu	3.3
0+270	LHS	Simolu	3.1
0+330	LHS	Khejur	3.5
0+350	LHS	Khejur	3.5
0+370	LHS	Khejur	3
0+400	LHS	Jackfruit	6
0+410	LHS	Mango	3.1
0+415	LHS	Mango	3.1
0+425	LHS	Rohab	3.1
0+450	LHS	Sishu	3.2
0+460	LHS	Voja	3.3
0+500	LHS	Neem	3.1
0+504	LHS	Voja	3.3
0+550	LHS	Khejur	2.7
0+620	LHS	Simolu	3.5
0+630	LHS	Simolu	3.1
0+640	LHS	Simolu	2.3
0+650	LHS	Simolu	2.3
0+660	LHS	Simolu	2.3
0+755	LHS	Bel	2
0+760	LHS	Simolu	3
0+770	LHS	Simolu	3
0+930	LHS	Coconut	2.5
1+000	LHS	Simolu	3.2
1+240	LHS	Voja	1.2
1+270	LHS	Bogori	2
1+320	LHS	Jackfruit	1.5
1+330	LHS	Coconut	1.5
1+450	LHS	Ajar	1.5
1+455	LHS	Mango	3
1+540	LHS	Mango	1.5
1+550	LHS	Gamari	1.5
1+555	LHS	Gamari	1.5
1+580	LHS	Mango	1.5
1+690	LHS	Voja	2.5

Chainage	Side	Name of Trees	DCL
1+700	LHS	Simolu	2.5
1+710	LHS	Simolu	2.5
1+720	LHS	Simolu	2.5
1+845	LHS	Khejur	1.5
1+855	LHS	Khejur	1.5
1+940	LHS	Simolu	1.5
1+990	LHS	Jackfruit	2
2+000	LHS	Voja	2
2+030	LHS	Jackfruit	2
0+000	RHS	Simolu	4.4
0+010	RHS	Simolu	3.5
0+020	RHS	Khejur	3.4
0+025	RHS	Simolu	3.5
0+030	RHS	Khejur	3.4
0+050	RHS	Jiya	3.5
0+060	RHS	Simolu	3.5
0+070	RHS	Simolu	3.2
0+080	RHS	Simolu	3.1
0+085	RHS	Simolu	3.1
0+090	RHS	Mango	3.5
0+100	RHS	Coconut	3.2
0+110	RHS	Simolu	3.1
0+120	RHS	Simolu	3.1
0+130	RHS	Jiya	3.1
0+140	RHS	Ou Tenga	3
0+150	RHS	Ou Tenga	3.1
0+155	RHS	Mango	3.5
0+160	RHS	Dewa	3.4
0+210	RHS	Simolu	3.2
0+215	RHS	Simolu	3.2
0+220	RHS	Simolu	3.2
0+225	RHS	Simolu	3.2
0+230	RHS	Simolu	3.2
0+232	RHS	Simolu	3.2
0+234	RHS	Simolu	3.2
0+236	RHS	Simolu	3.2
0+240	RHS	Simolu	3.2
0+242	RHS	Simolu	3.2
0+244	RHS	Simolu	3.2
0+246	RHS	Simolu	3.2
0+250	RHS	Simolu	3.1
0+255	RHS	Simolu	3.1
0+260	RHS	Simolu	3.2
0+264	RHS	Simolu	3.2
0+268	RHS	Simolu	3.2
0+340	RHS	Simolu	3.2
0+350	RHS	Arjun	4
0+400	RHS	Khejur	3.5
0+408	RHS	Simolu	3
0+490	RHS	Khejur	3.5
0+506	RHS	Kodom	3.1
0+510	RHS	Bel	3.1
0+520	RHS	Simolu	3.1
0+525	RHS	Simolu	3.1
0+530	RHS	Simolu	3
0+550	RHS	Simolu	3.5
0+630	RHS	Mango	3

Chainage	Side	Name of Trees	DCL
0+680	RHS	Simolu	3
0+720	RHS	Simolu	2
0+750	RHS	Veja	2
0+950	RHS	Jiya	1
1+020	RHS	Simolu	3.1
1+120	RHS	Veja	2
1+130	RHS	Gamari	2
1+140	RHS	Gamari	2
1+144	RHS	Gamari	2
1+146	RHS	Gamari	2
1+148	RHS	Gamari	2
1+220	RHS	Mango	1.5
1+225	RHS	Mango	1.5
1+240	RHS	Simolu	1.5
1+245	RHS	Simolu	1.5
1+250	RHS	Simolu	1.5
1+255	RHS	Simolu	1.5
1+260	RHS	Simolu	1.5
1+262	RHS	Simolu	1.5
1+264	RHS	Simolu	1.5
1+266	RHS	Simolu	1.5
1+270	RHS	Simolu	1.5
1+275	RHS	Simolu	1.5
1+280	RHS	Simolu	1.5
1+285	RHS	Simolu	1.5
1+305	RHS	Khejur	1.5
1+310	RHS	Bojori	1.5
1+315	RHS	Simolu	1.5
1+420	RHS	Jackfruit	1.7
1+450	RHS	Simolu	1.5
1+460	RHS	Velkor	2
1+470	RHS	Dewa	1.4
1+480	RHS	Poma	1.5
1+580	RHS	Simolu	1
1+585	RHS	Simolu	1
1+840	RHS	Simolu	2
1+900	RHS	Simolu	1.5
1+930	RHS	Simolu	1.5
1+990	RHS	Velkor	2
2+005	RHS	Neem	2
Total number of trees		144	

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

E-2 List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

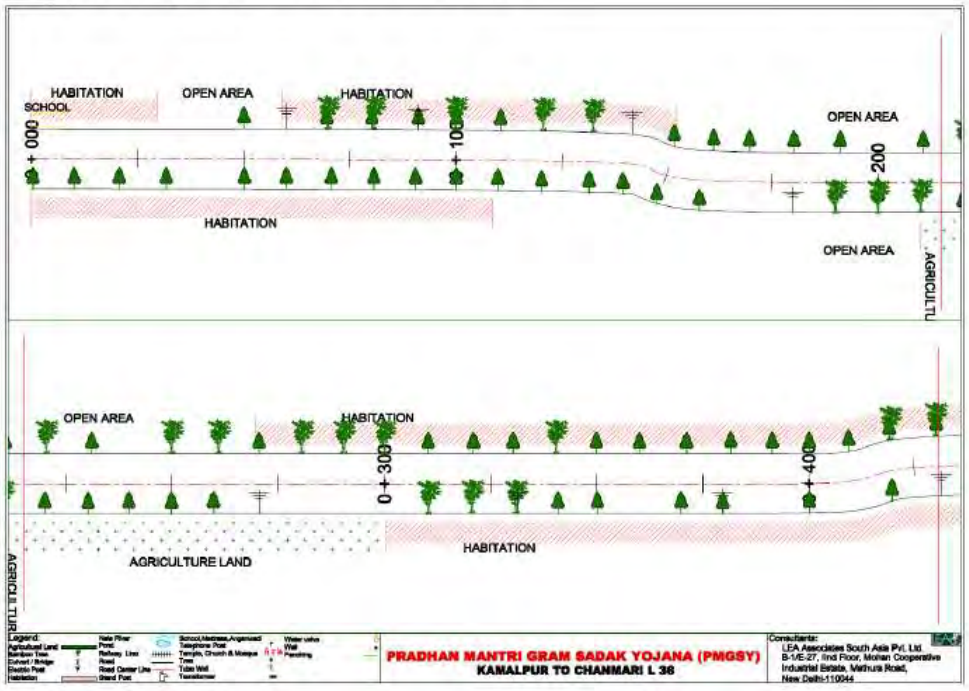
Chainage	Side	Utility Type	DCL
0+060	LHS	Electric Pole	3.3
0+090	LHS	Electric Pole	2.9
0+140	LHS	Electric Pole	2.8
1+058	LHS	Electric Pole	1.5
1+090	LHS	Electric Pole	2.5
1+200	LHS	Electric Pole	2
1+250	LHS	Electric Pole	2.5
1+310	LHS	Electric Pole	1.5

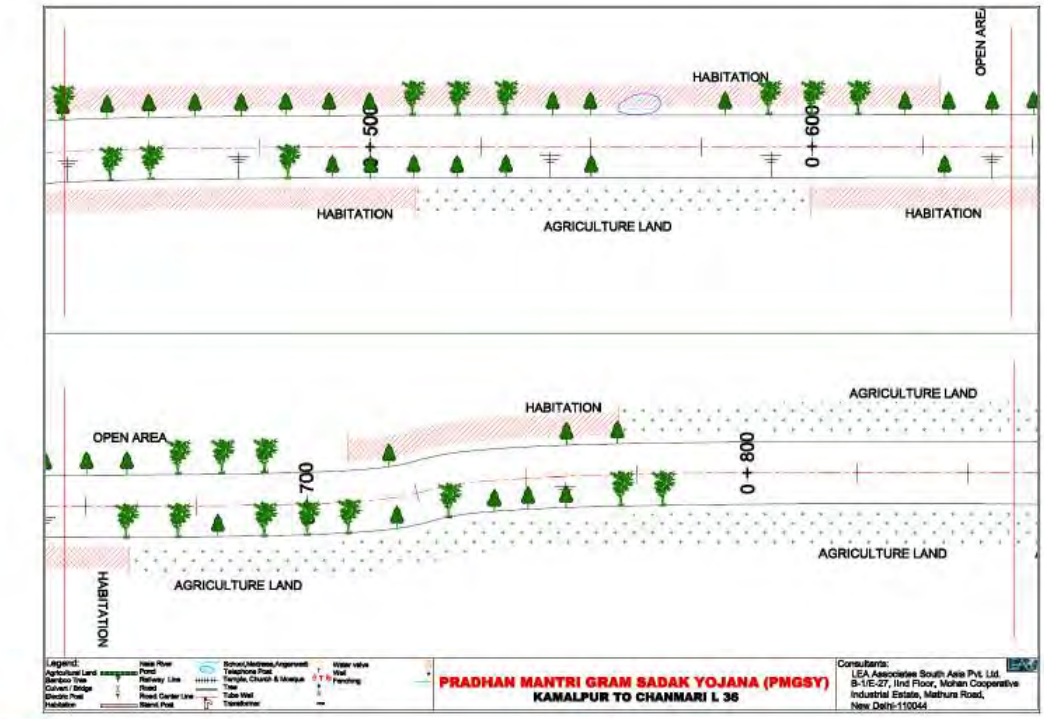
Chainage	Side	Utility Type	DCL
1+390	LHS	Transformer	1.5
1+420	LHS	Hand Pump	2.5
1+475	LHS	Electric Pole	1
1+510	LHS	Electric Pole	1.5
0+180	RHS	Electric Pole	2.8
0+238	RHS	Electric Pole	3
0+270	RHS	Electric Pole	2.8
0+330	RHS	Electric Pole	2.8
0+388	RHS	Electric Pole	2.5
0+430	RHS	Electric Pole	3
0+470	RHS	Electric Pole	3
0+518	RHS	Electric Pole	3.1
0+540	RHS	Electric Pole	2.8
0+590	RHS	Electric Pole	3.1
0+640	RHS	Electric Pole	3.5
0+768	RHS	Electric Pole	3
0+970	RHS	Hand Pump	5
1+160	RHS	Electric Pole	2
1+165	RHS	Hand Pump	3
1+170	RHS	Electric Pole	2
1+360	RHS	Electric Pole	2.8
1+440	RHS	Electric Pole	1.7
1+560	RHS	Electric Pole	1.5
Total number of electric poles		27	
Total number of transformer		01	
Total number of hand pumps		03	

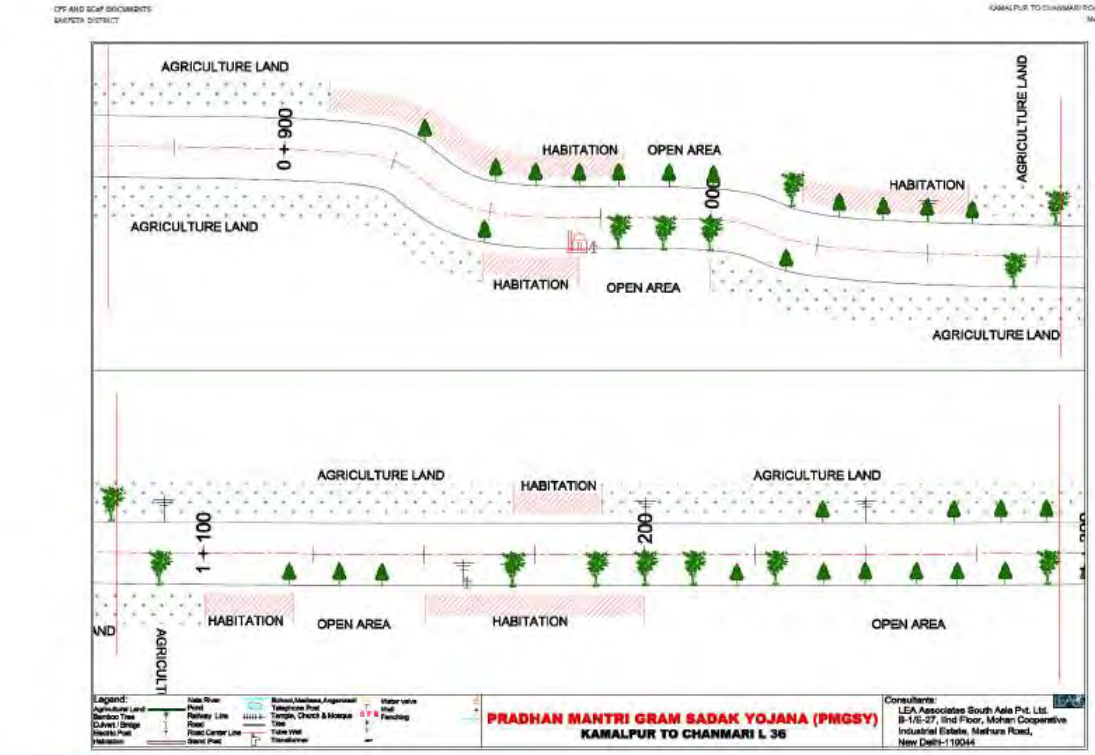
E-3 List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10)

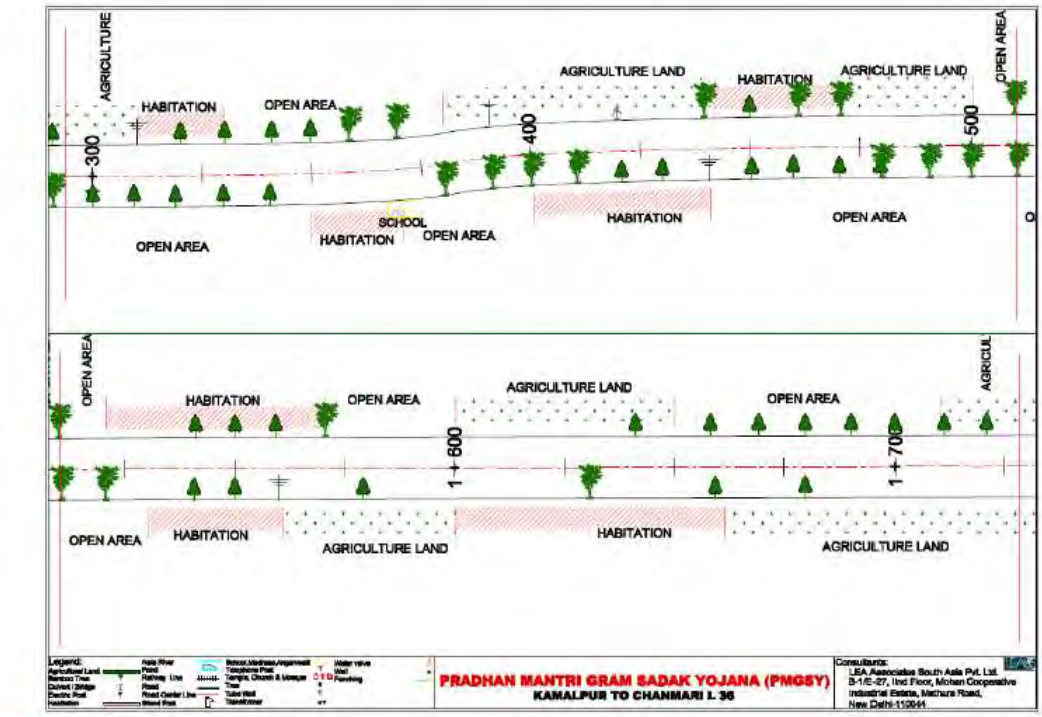
Chainage	Side	Sensitive Structures	Distance from center line (m)
0+000	LHS	Anganwadi Centre	5
1+950	LHS	Mosque	6
0+975	RHS	Mosque	5
1+370	RHS	School	2

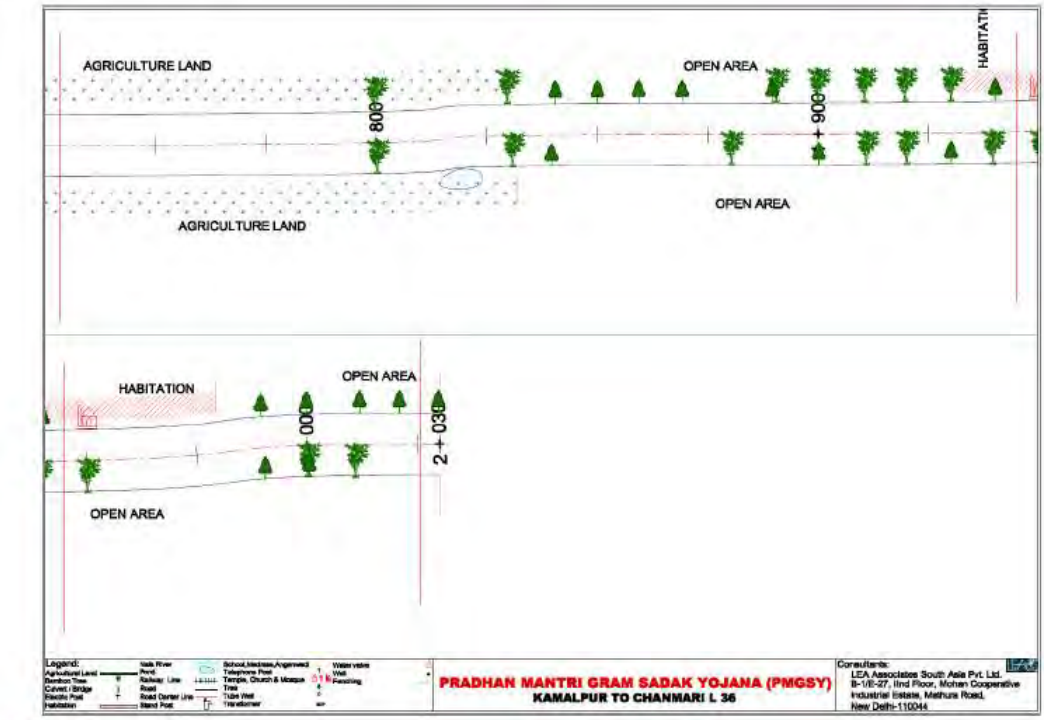
E-4 Sketch of strip map of the road covering details of at least 10 m on either side from the center line of the road




HABITATION
OPEN AREA
0 + 500
0 + 600
HABITATION
AGRICULTURE LAND
HABITATION
AGRICULTURE LAND
HABITATION
OPEN AREA
0 + 700
0 + 800
AGRICULTURE LAND
AGRICULTURE LAND
HABITATION
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
KAMALPUR TO CHANMARI L 36


AGRICULTURE LAND
0 + 900
HABITATION
OPEN AREA
AGRICULTURE LAND
HABITATION
AGRICULTURE LAND
HABITATION
OPEN AREA
AGRICULTURE LAND
AGRICULTURE LAND
HABITATION
AGRICULTURE LAND
1 + 100
1 + 200
HABITATION
OPEN AREA
HABITATION
OPEN AREA
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
KAMALPUR TO CHANMARI L 36


AGRICULTURE
HABITATION
OPEN AREA
AGRICULTURE LAND
HABITATION
AGRICULTURE LAND
OPEN AREA
300
400
500
OPEN AREA
SCHOOL
HABITATION
OPEN AREA
HABITATION
OPEN AREA
OPEN AREA
HABITATION
OPEN AREA
AGRICULTURE LAND
OPEN AREA
1 + 600
1 + 700
OPEN AREA
HABITATION
AGRICULTURE LAND
HABITATION
AGRICULTURE LAND
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
KAMALPUR TO CHANMARI L 36


AGRICULTURE LAND
OPEN AREA
800
900
OPEN AREA
AGRICULTURE LAND
HABITATION
OPEN AREA
000
2 + 039
OPEN AREA
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
KAMALPUR TO CHANMARI L 36

E-5 Photographs of the project area showing at least 10 m on either side from center line of road alignment. Every 2 km or less of road must have at least 1 photograph.

Starting Point of corridor

Corridor at 0+400

Corridor at 0+800

E-6 List of Participants (Attendance Sheet)

Transect Walk Attendance Sheet

Road Name: Kamalpur to chanmari Date: 21/02/2014

Community		PIU/PIO	
Name of the Participants	Signature	Name and designation of the official	Signature
Nizamat Ali			
Nazrul Islam		Lilyma Khatun, President, 79 No. Kadong G. P.	
Alimuddin			
Shajahan Ali			
Mazed Ali (RAO)			
Sakkiram			
Anwar Hussain			
Taleb Ali			
Hakimuddin			

Road Name: Date:

Community		PIU/PIO	
Name of the Participants	Signature	Name and designation of the official	Signature
Sohab Ali			
Jaree Miah			
Saleemuddin			
Bashan Ali			
Jamu Miah			
Abdul Jalil			
Saboruddin			
Jakir Hussen			

IV. RURAL ROADS: ENVIRONMENTAL CHECKLIST

Road Name : Amguri to Khamarpara Part-II
Block Name : Srijangram
District Name : Bongaigaon
Total Length of the Road : 3.200 km

A. Climatic Conditions

Temperature	High: 36°c Low: 9°c
Humidity	High: 95% Low: 40%
Rainfall	1000mm/year
Rainy Season	May to September

B. Location of the Road and Generic description of Environment

No.	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)		✓	Distance from Coastline: km ( ) more than 50% ( ) less than 20%
2.	Type of Terrain-(Plain/Hilly/ Mountainous etc.) *(Explain the topography of the area and how many km of the road are located in the hilly area)*	✓		Topography of terrain – Plain Altitude: 60.6m (average) The entire section of the alignment fall in the plain terrain
4.	Forest Area *(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest area)?*		✓	Type of Vegetation: Legal Status of the Forest Area: *(Reserved, National Park, Sanctuaries, Unclassified, etc.*
5.	Wildlife *(Explain whether there are any wildlife species in the project area)*		✓	Name of animals: Endangered species (if any):
6.	Inhabited Area	✓		Chainage From / To: Side 0+190 / 0+210 : LHS 0+350 / 1+400 : LHS 1+930 / 2+510 : LHS 2+600 / 2+660 : LHS 3+000 / 3+060 : LHS 0+390 / 0+440 : RHS 0+510 / 0+800 : RHS 2+600 / 3+050 : RHS

No.	Type of Ecosystem	Yes	No	Explanation
7.	Agricultural Land	✓		Chainage From / To: Side 0+000 / 0+190 : LHS 0+210 / 0+350 : LHS 1+400 / 1+930 : LHS 2+510 / 2+600 : LHS 2+660 / 3+000 : LHS 3+060 / 3+200 : LHS 0+000 / 0+390 : RHS 0+440 / 0+510 : RHS 0+800 / 2+600 : RHS 3+050 / 3+200 : RHS
8.	Grazing grounds		✓	
9.	Barren Land		✓	

C. Specific description of the Road Environment

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation
1.	Are there any areas with landslide or erosion problems along the road? *(If yes, indicate the location (right or left side) and the chainage)*		✓	( ) No Secondary information is available and Local Community is not aware of this matter
2.	Are there any lakes/swamps beside the road? *(If yes, list them indicating the location (right or left side)and the chainage)*	✓		23 ponds are located along the corridor. Pond locations are given in the table below:

Chainage	Side	Particulars	DCL
0+030	LHS	Pond	4
0+050	LHS	Pond	4
0+080	LHS	Pond	4
0+100	LHS	Pond	4
0+150	LHS	Pond	4
0+180	LHS	Pond	4
0+250	LHS	Pond	6
0+340	LHS	Pond	4
0+440	LHS	Pond	5
1+720 to 1+890	LHS	Pond	3
2+000	LHS	Pond	3.5
2+010	LHS	Pond	3.5
0+090	RHS	Pond	4
0+200	RHS	Pond	4
0+370	RHS	Pond	3.5
0+420	RHS	Pond	5
0+480	RHS	Pond	6
0+690	RHS	Pond	6
0+890	RHS	Pond	4
0+930	RHS	Pond	4
1+680 to 1+930	RHS	Pond	3
2+170	RHS	Pond	3
2+260	RHS	Pond	3.5

No.	Parameter/ Component	Yes	No	Explanation
3.	Are there any nallas/streams/rivers etc. along/crossing the road? *(If yes, list them indicating the location (right, left or crossing) and the chainage*		✓	
4.	Are there problems of water stagnation and other drainage issues on or near the road? *(If yes, mention chainage)*		✓	
5.	Is the area along the project road prone to flooding? *(If yes, mention flood level and frequency)*		✓	( ) No Secondary information is available and Local Community is not aware of this matter
6.	Are there any trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment? *(If yes attach list of trees indicating the location (right or left side)and the chainage)*	✓		101 trees are located within 10 m on either side of the CL. None of these trees will be affected due to the project. [Refer E.1]
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas?		✓	
	(If yes, specify details of habitat with chainage)			( ) No Secondary information is available and Local Community is not aware of this matter
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	( ) No Secondary information Available and Local Community is not aware of this matter
9.	Are there any utility structures[1] within 10 m on either side from the center line of the road alignment? *(If yes, attach list with chainage)*	✓		43 electric poles, 3 stand posts and 4 transformers are located within 10 m on either side of the CL of the road. None of these utility structures will be affected due to the project [Refer E.2]
10.	Are there any religious, cultural or community structures/buildings[2] within 10 m on either side from the center line of the road alignment? *(If yes attach list with chainage)*	✓		2 temples and 1 Mosque are located within 10 m on either side of the CL of the road. None of these community structures will be affected due to the project [Refer E.3]

[1] Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures

[2] Mandir, Masjid, Church, religious/cultural/historical monuments, school, health center, public toilet and other similar structures

D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. ***(Attach list of people met and dates)***	✓		A consultation was held the local community and it was attended by 14 persons. The list of participants is attached in Annexure E6.
2.	Any suggestion received in finalizing the alignment	✓		Road safety measures near school, road intersection, curve locations.
3.	If suggestions received, were they incorporated into the design?	✓		

E. Annexures

E-1 List of trees indicating location (left or right side of the road) and chainage (as required under C. 6)

Chainage	Side	Name of Tree	DCL
0+020	LHS	Bolgos	3
0+130	LHS	Bogori	4
0+170	LHS	Kadam	4
0+220	LHS	Mango	4
0+270	LHS	Bogori	3
0+330	LHS	Kadam	4
0+360	LHS	Radhasura	3
0+380	LHS	Kadam	4
0+390	LHS	Radhasura	4
0+440	LHS	Kadam	4.3
0+450	LHS	Velkor	4
0+480	LHS	Modar	7
0+490	LHS	Mango	4
0+560	LHS	Kadam	4
0+610	LHS	Madar	4
0+660	LHS	Kadam	4
0+680	LHS	Velkor	3
0+720	LHS	Jam	4
0+730	LHS	Bogori	3
0+770	LHS	Kadam	4
0+780	LHS	Kadam	4
0+820	LHS	Mango	4
0+880	LHS	Krishnasura	7
0+910	LHS	Khejur	5
0+930	LHS	Coconut	4
0+990	LHS	Khejur	4
1+040	LHS	Ahat	7
1+080	LHS	Khejur	6
1+180	LHS	Simolu	3
1+210	LHS	Bogori	4
1+280	LHS	Jackfruit	3
1+320	LHS	Mango	3
1+360	LHS	Velkor	4
1+370	LHS	Madar	3
1+400	LHS	Jhya	3
1+490	LHS	Laha	4
1+520	LHS	Velkor	3
1+550	LHS	Simolu	4

Chainage	Side	Name of Tree	DCL
1+600	LHS	Bogori	3
1+680	LHS	Sisu	3
2+060	LHS	Mango	3.5
2+080	LHS	Mango	3
2+120	LHS	Mango	3
2+200	LHS	Sisu	4
2+230	LHS	Segun	4
2+310	LHS	Madar	3
2+400	LHS	Bogori	3
2+450	LHS	Khejur	3
2+480	LHS	Mango	4
2+550	LHS	Bogori	3
2+580	LHS	Velkor	3
2+640	LHS	Jackfruit	4
2+660	LHS	Kadam	3
2+790	LHS	Madar	3
2+870	LHS	Dewa	3.5
2+900	LHS	Kadam	4
2+930	LHS	Jiya	3
2+990	LHS	Jiya	3
3+040	LHS	Bogori	3
0+000	RHS	Kadam	3.5
0+030	RHS	Kadam	3
0+040	RHS	Ahat	4
0+100	RHS	Bogori	4
0+240	RHS	Tal	4
0+260	RHS	Radhasura	4
0+270	RHS	Bhoja	4
0+360	RHS	Simolu	7
0+440	RHS	Radhasura	5
0+530	RHS	Jackfruit	4
0+609	RHS	Velkor	3
0+660	RHS	Kadam	4
0+670	RHS	Kadam	4
0+710	RHS	Mango	4
0+720	RHS	Mango	4
0+730	RHS	Bogori	4
0+740	RHS	Simolu	4
0+760	RHS	Bhoja	3.5
0+800	RHS	Radhasura	4
0+980	RHS	Radhasura	4
1+020	RHS	Botgos	4
1+100	RHS	Krisnasura	3
1+210	RHS	Simolu	4
1+220	RHS	Radhasura	4
1+280	RHS	Bogori	3
1+320	RHS	Bogori	3
1+400	RHS	Jiya	3
1+440	RHS	Bogori	3
1+680	RHS	Bogori	3
1+710	RHS	Bogori	3
1+740	RHS	Bogori	3
2+000	RHS	Velkor	3
2+050	RHS	Kadam	3
2+280	RHS	Bogori	3
2+480	RHS	Bogori	3
2+640	RHS	Mango	3

Chainage	Side	Name of Tree	DCL
2+700	RHS	Kadam	3
2+730	RHS	Velkoi	4
2+790	RHS	Mango	3.5
2+800	RHS	Jackfruit	3
2+830	RHS	Segun	3
2+870	RHS	Jiya	3.5

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

E-2 List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

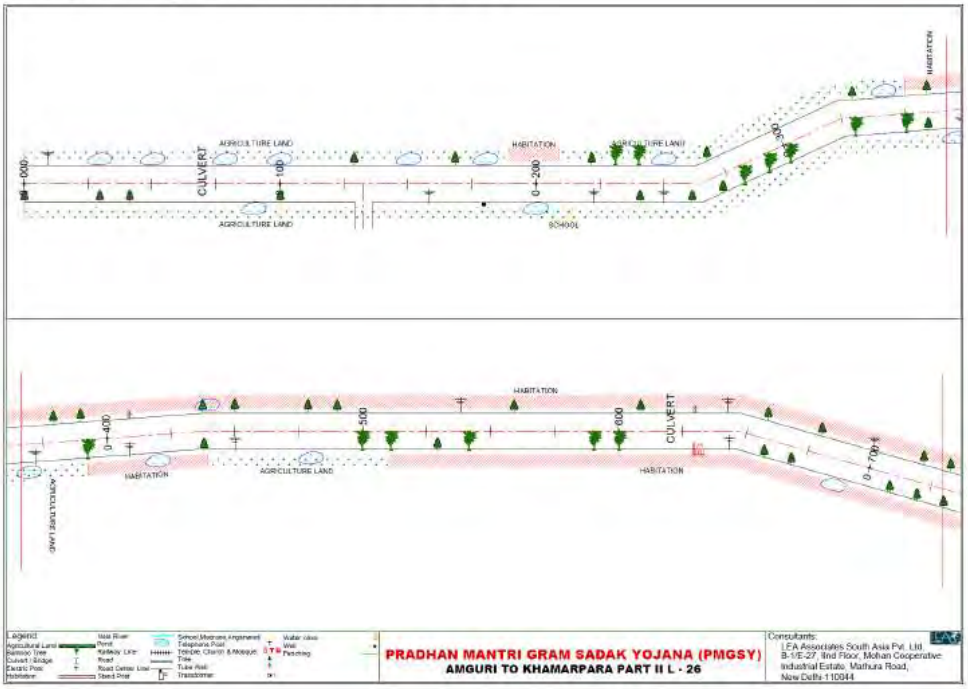
Chainage	Side	Type	Distance from center line (m)
0+540	LHS	Electric Pole	4
0+640	LHS	Electric Pole	3
0+700	LHS	Electric Pole	4
0+750	LHS	Electric Pole	3
0+800	LHS	Electric Pole	4
0+860	LHS	Electric Pole	4
0+950	LHS	Electric Pole	4
1+010	LHS	Electric Pole	4
1+070	LHS	Electric Pole	4
1+350	LHS	Electric Pole	3
1+390	LHS	Electric Pole	3
1+910	LHS	Electric Pole	3
1+950	LHS	Electric Pole	3
2+040	LHS	Electric Pole	3
2+090	LHS	Electric Pole	3
2+130	LHS	Electric Pole	3
2+180	LHS	Electric Pole	3
2+210	LHS	Electric Pole	3
2+260	LHS	Electric Pole	3
2+290	LHS	Electric Pole	3
2+430	LHS	Electric Pole	3
2+460	LHS	Electric Pole	3
2+490	LHS	Electric Pole	3
2+590	LHS	Electric Pole	3
0+160	RHS	Electric Pole	3.5
0+220	RHS	Electric Pole	3.5
0+250	RHS	Electric Pole	3.5
0+370	RHS	Electric Pole	3
0+410	RHS	Electric Pole	4
0+450	RHS	Electric Pole	3
0+640	RHS	Electric Pole	3.5
0+800	RHS	Electric Pole	3
1+010	RHS	Electric Pole	4
1+070	RHS	Electric Pole	4
2+390	RHS	Electric Pole	3
2+550	RHS	Electric Pole	3
2+590	RHS	Electric Pole	3
2+760	RHS	Electric Pole	3
2+810	RHS	Electric Pole	3
2+860	RHS	Electric Pole	3
2+920	RHS	Electric Pole	3
2+980	RHS	Electric Pole	3
3+050	RHS	Electric Pole	3

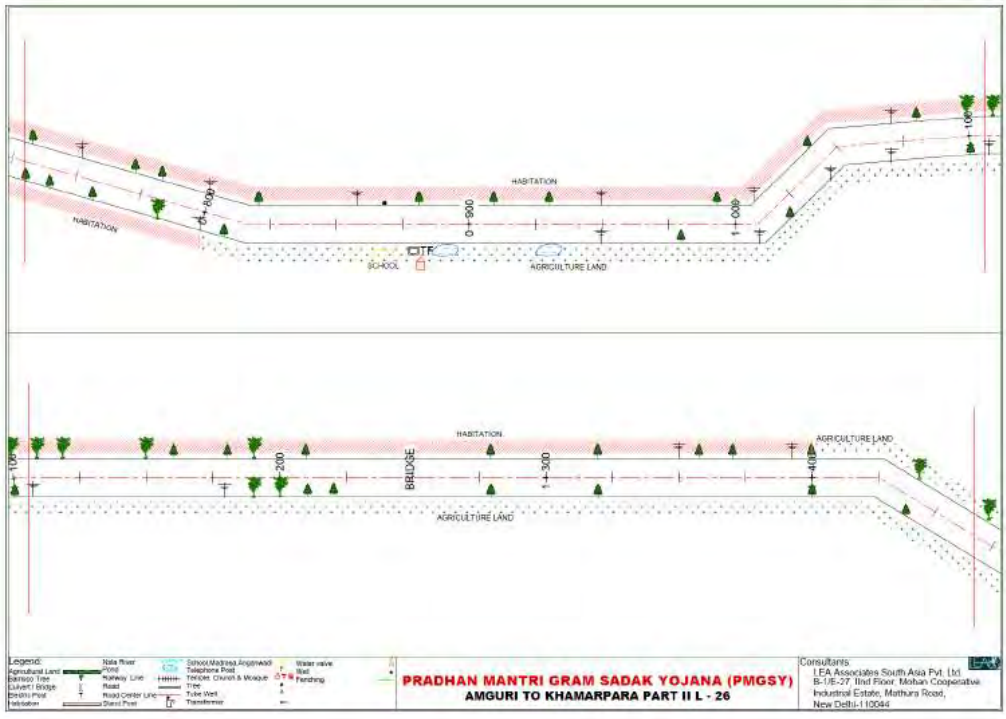
Chainage	Side	Type	Distance from center line (m)
0+410	LHS	Stand Post	3
0+630	LHS	Stand Post	3
1+000	LHS	Stand Post	4
1+980	LHS	Transformer	3
2+510	LHS	Transformer	3.5
0+860	RHS	Transformer	3
3+070	RHS	Transformer	4

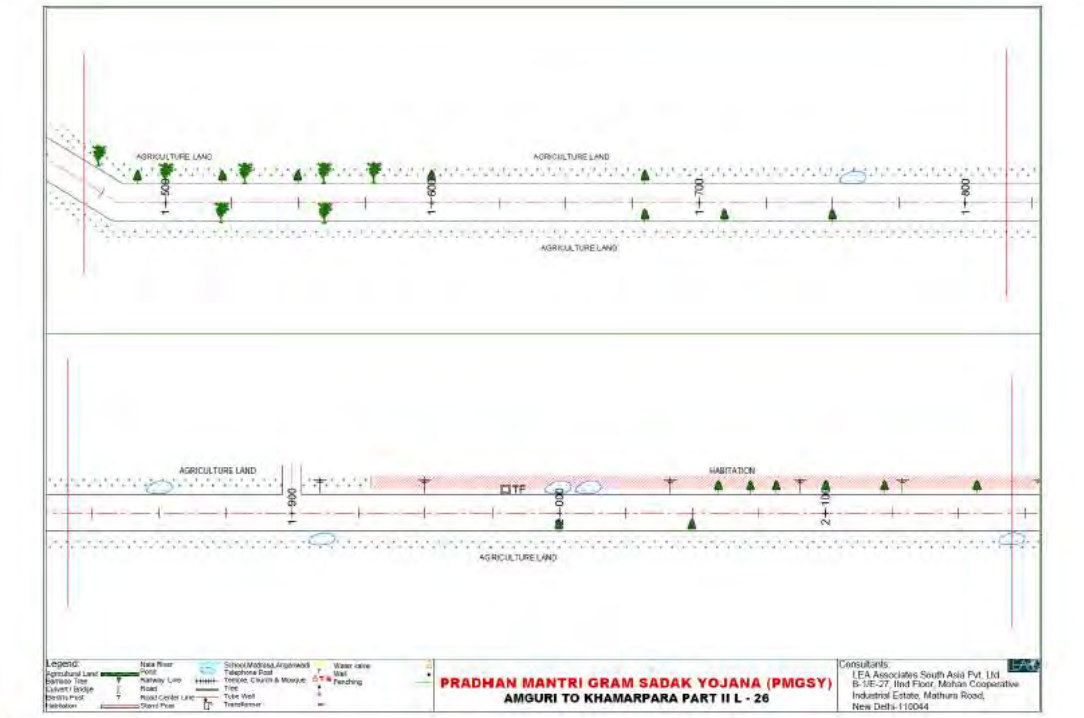
E-3 List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10):

Chainage	Side	Sensitive Structures	Distance from center line (m)
0+860	RHS	Temple	6
2+330	RHS	Temple	4
0+630	RHS	Mosque	10

E–4 Sketch of strip map of the road covering details of atleast 10 m on either side from the center line of the road



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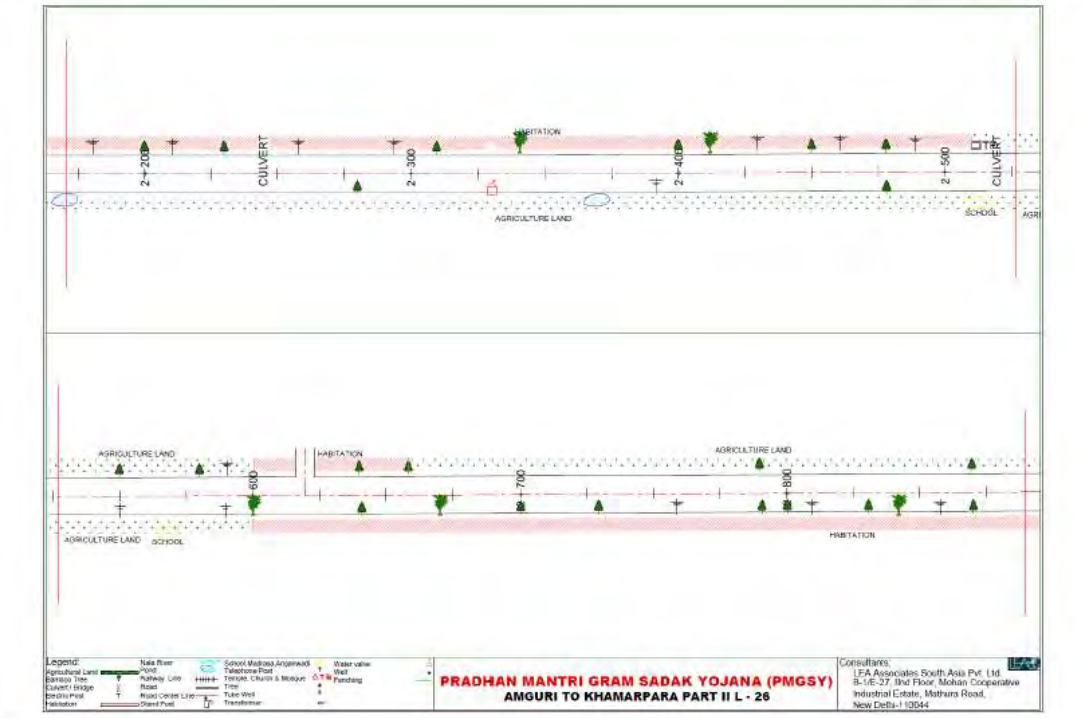
AGRICULTURE LAND
AGRICULTURE LAND
1+500
1+600
1+700
1+800
AGRICULTURE LAND
HABITATION
TF
1+600
1+800
2+100
AGRICULTURE LAND
Legend:
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
AMGURI TO KHAMARPARA PART II L - 26
Consultants:
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044


HABITATION
2+200
CULVERT
2+300
2+400
2+500
CULVERT
AGRICULTURE LAND
SCHOOL
AGRICULTURE LAND
HABITATION
AGRICULTURE LAND
600
700
800
AGRICULTURE LAND
SCHOOL
HABITATION
Legend:
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
AMGURI TO KHAMARPARA PART II L - 26
Consultants:
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044

E-5 Photographs of the project area showing at least 10 m on either side from center line of road alignment. Every 2 km or less of road must have at least 1 photograph.

Start Point of corridor

Corridor at 0+500

Corridor at 1+000

Corridor at 1+500

Corridor at 2+000

Corridor at 2+400

Corridor at 2+800

End point of Corridor

E-6 List of Participants (Attendance Sheet)

Transect Walk Attendance Sheet

Road Name: Anguri to Khamarpara part II Date: 13-12-13

Community:			
Name of the Participants	Signature	Name and designation of the official	Signature
Dharma Ray		Maheswar Nath Sub Engineer Gr. II	
Hariprasad Singha		Pradhan Gram Panchayat	
Dipendra Ray			
Dilip Ray			
Pradyaran Ray			
Pulak Ray			
Manoranjan Ray			
Utpal Ray			
Baikuntha Ray			
Shadan Ray			
Kapan Ray			
Mahen Ray			

IV. RURAL ROADS: ENVIRONMENTAL CHECKLIST

Road Name	:	Chandi Nagar Leverputa Road (Harinagar Baiyerper East Sobodh Nagar to Hanikar Sadirkhal)
Block Name	:	Katigorah
District Name	:	Cachar
Total Length of the Road	:	4.481 km

A. Climatic Conditions

Temperature	High: 36°c Low: 9°c
Humidity	High: 95% Low: 40%
Rainfall	1000mm/year
Rainy Season	May to September

B. Location of the Road and Generic description of Environment

No.	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)		✓	Distance from Coastline: km ( ) more than 50% ( ) less than 20%
2.	Type of Terrain–(Plain/Hilly/ Mountainous etc.) *(Explain the topography of the area and how many km of the road are located in the hilly area)*	✓		Topography of terrain – Plain Altitude: 60.6m (average) The entire section of the alignment fall in the plain terrain
4.	Forest Area *(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest area)?*		✓	Type of Vegetation: Legal Status of the Forest Area: *(Reserved, National Park, Sanctuaries, Unclassified, etc.*
5.	Wildlife *(Explain whether there are any wildlife species in the project area)*		✓	Name of animals: Endangered species (if any):
6.	Inhabited Area	✓		Chainage From – To; Side 2+300 – 2+330 – LHS 0+070 – 0+090 – RHS 2+380 – 2+400 – RHS 2+420 – 2+680 – RHS 4+420 – 4+481 – RHS
7.	Agricultural Land	✓		Chainage From – To; Side 0+000 – 0+290 – LHS 0+665 – 1+900 – LHS

<table>
<tr><th>No.</th><th>Type of Ecosystem</th><th>Yes</th><th>No</th><th>Explanation</th></tr>
<tr><td></td><td></td><td></td><td></td><td>
<table>
<tr><td>2+800</td><td>3+060</td><td>LHS</td></tr>
<tr><td>3+100</td><td>4+410</td><td>LHS</td></tr>
<tr><td>0+000</td><td>0+040</td><td>RHS</td></tr>
<tr><td>0+090</td><td>0+300</td><td>RHS</td></tr>
<tr><td>1+000</td><td>2+200</td><td>RHS</td></tr>
<tr><td>2+800</td><td>3+070</td><td>RHS</td></tr>
<tr><td>3+100</td><td>3+490</td><td>RHS</td></tr>
<tr><td>4+110</td><td>4+220</td><td>RHS</td></tr>
</table>
</td></tr>
<tr><td>8.</td><td>Grazing grounds</td><td></td><td>✓</td><td></td></tr>
<tr><td>9.</td><td>Barren Land</td><td>✓</td><td></td><td>
<table>
<tr><th colspan="2">Chainage</th><th rowspan="2">Side</th></tr>
<tr><th>From</th><th>To</th></tr>
<tr><td>1+300</td><td>2+300</td><td>LHS</td></tr>
<tr><td>2+400</td><td>2+430</td><td>LHS</td></tr>
<tr><td>2+660</td><td>2+800</td><td>LHS</td></tr>
<tr><td>4+410</td><td>4+481</td><td>LHS</td></tr>
<tr><td>2+200</td><td>3+380</td><td>RHS</td></tr>
<tr><td>2+400</td><td>2+420</td><td>RHS</td></tr>
<tr><td>2+680</td><td>2+800</td><td>RHS</td></tr>
<tr><td>4+220</td><td>4+420</td><td>RHS</td></tr>
</table>
</td></tr>
</table>

C. Specific description of the Road Environment

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

<table>
<tr><th>No.</th><th>Parameter/ Component</th><th>Yes</th><th>No</th><th>Explanation</th></tr>
<tr><td>1.</td><td>Are there any areas with landslide or erosion problems along the road?

(If yes, indicate the location (right or left side) and the chainage)</td><td></td><td>✓</td><td>( ) No Secondary Information is available and Local Community is not aware of this matter</td></tr>
<tr><td>2.</td><td>Are there any lakes/swamps beside the road?

(If yes, list them indicating the location (right or left side)and the chainage)</td><td>✓</td><td></td><td>18 ponds are located along the corridor. Pond locations are given in the table below:
<table>
<tr><th>Chainage</th><th>Side</th><th>Particulars</th><th>DCL</th></tr>
<tr><td>0+010</td><td>LHS</td><td>Pond</td><td>2.1</td></tr>
<tr><td>1+270</td><td>LHS</td><td>Pond</td><td>3.3</td></tr>
<tr><td>2+260</td><td>LHS</td><td>Pond</td><td>3.5</td></tr>
<tr><td>2+410</td><td>LHS</td><td>Pond</td><td>3.2</td></tr>
<tr><td>2+760</td><td>LHS</td><td>Pond</td><td>3</td></tr>
<tr><td>3+470</td><td>LHS</td><td>Pond</td><td>3</td></tr>
<tr><td>3+690</td><td>LHS</td><td>Pond</td><td>3.1</td></tr>
<tr><td>3+890</td><td>LHS</td><td>Pond</td><td>7</td></tr>
<tr><td>4+410</td><td>LHS</td><td>Pond</td><td>2.5</td></tr>
<tr><td>0+010</td><td>RHS</td><td>Pond</td><td>2.1</td></tr>
<tr><td>1+180</td><td>RHS</td><td>Pond</td><td>5</td></tr>
<tr><td>1+200</td><td>RHS</td><td>Pond</td><td>3.5</td></tr>
<tr><td>2+040</td><td>RHS</td><td>Pond</td><td>10</td></tr>
<tr><td>2+130</td><td>RHS</td><td>Pond</td><td>4.5</td></tr>
<tr><td>2+280</td><td>RHS</td><td>Pond</td><td>3.5</td></tr>
<tr><td>2+325</td><td>RHS</td><td>Pond</td><td>4.5</td></tr>
<tr><td>2+710</td><td>RHS</td><td>Pond</td><td>3.3</td></tr>
<tr><td>3+470</td><td>RHS</td><td>Pond</td><td>3</td></tr>
</table>
</td></tr>
</table>

No.	Parameter/ Component	Yes	No	Explanation
3.	Are there any nallas/streams/rivers etc. along/crossing the road? ***(If yes, list them indicating the location (right, left or crossing) and the chainage***	✓		The stream Halgora crosses the road at chainage 3+036 km. 1 drain is located along the corridor. Dain location is given in the table below: Chainage: 2+520 to 2+580 ; Side: LHS ; Particulars: Drain ; DCL: 2
4.	Are there problems of water stagnation and other drainage issues on or near the road? ***(If yes, mention chainage)***		✓	
5.	Is the area along the project road prone to flooding? ***(If yes, mention flood level and frequency)***	✓		Flood prone area is identified between ch. 0+000 km and 4+481 km. HFL is 2 ft as informed by the local people. ( ) No Secondary information is available and Local Community is not aware of this matter
6.	Are there any trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment? ***(If yes attach list of trees indicating the location (right or left side)and the chainage***	✓		53 trees are located within 10 m on either side of the CL. Out of these, 22 trees will be affected due to the project. [Refer E.1]
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas? ***(If yes, specify details of habitat with chainage)***		✓	( ) No Secondary information is available and Local Community is not aware of this matter
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	( ) No Secondary Information Available and Local Community is not aware of this matter
9.	Are there any utility structures[3] within 10 m on either side from the center line of the road alignment? ***(If yes, attach list with chainage)***	✓		12 electric poles, 1 transformer and 2 PHE pipelines are located within 10 m on either side of the CL of the road. Out of these utility structures, 4 electric poles and 2 PHE pipelines will be affected due to the project [Refer E.2]
10.	Are there any religious, cultural or community structures/buildings[4] within 10 m on either side from the center line of the road alignment? ***(If yes attach list with chainage)***	✓		1 school and 2 temples are located within 10 m on either side of the CL of the road. [Refer E.3]

[3] Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures

[4] Mandir, Masjid, Church, religious/cultural/historical monuments, school, health center, public toilet and other similar structures

D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. *(Attach list of people met and dates)*	✓		A consultation was held with the local community and it was attended by 20 persons. The list of participants is attached in **Annexure E6.**
2.	Any suggestion received in finalizing the alignment	✓		Road safety measures near school, road intersection, curve locations.
3.	If suggestions received, were they incorporated into the design?	✓		

E. Annexures

E-1 List of trees indicating location (left or right side of the road) and chainage (as required under C. 6)

Chainage	Side	Name of Tree	DCL
1+220	LHS	Koras	3.5
1+900	LHS	Velkor	7
1+905	LHS	Kodam	7
1+910	LHS	Ajar	4
1+920	LHS	Teteli	5
1+960	LHS	Arjun	3.5
1+980	LHS	Ajar	7
2+020	LHS	Moj	3.2
2+360	LHS	Bolgos	10
2+370	LHS	Ahot	5
2+374	LHS	Ahot	5
2+376	LHS	Ahot	5
2+378	LHS	Ahot	5
2+385	LHS	Kodam	4.5
2+390	LHS	Kodam	4
2+400	LHS	Kodam	4
2+470	LHS	Kodam	6
4+370	LHS	Simolu	2.5
4+380	LHS	Velkor	2.5
0+070	RHS	Velkor	2
0+075	RHS	Velkor	2
0+080	RHS	Bogori	2
2+390	RHS	Kordoi	4
2+395	RHS	Mango	5
2+400	RHS	Kodam	3.1
2+440	RHS	Coconut	3.5
2+500	RHS	Mango	2.4
2+504	RHS	Bogori	2.5
2+510	RHS	Mango	2.5
2+520	RHS	Ajar	2.5
2+525	RHS	Mango	2.5
2+530	RHS	Velkor	2.5
2+540	RHS	Bogori	2.5
2+570	RHS	Bogori	2.5
2+580	RHS	Mango	4
2+582	RHS	Velkor	4
2+585	RHS	Coconut	4
2+590	RHS	Jackfruit	10

Chainage	Side	Name of Tree	DCL
2+595	RHS	Bogori	5
2+605	RHS	Bogori	2.5
2+610	RHS	Velkor	4
2+640	RHS	Velkor	4
2+650	RHS	Velkor	2.5
2+660	RHS	Velkor	3.1
4+320	RHS	Bogori	3
4+335	RHS	Velkor	2.5
4+360	RHS	Velkor	2.5
4+420	RHS	Bogori	2.5
4+430	RHS	Bogori	2.5
4+440	RHS	Bogori	2.5
4+460	RHS	Kodam	2.7
4+470	RHS	Kodam	2.6
4+480	RHS	Modar	3

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

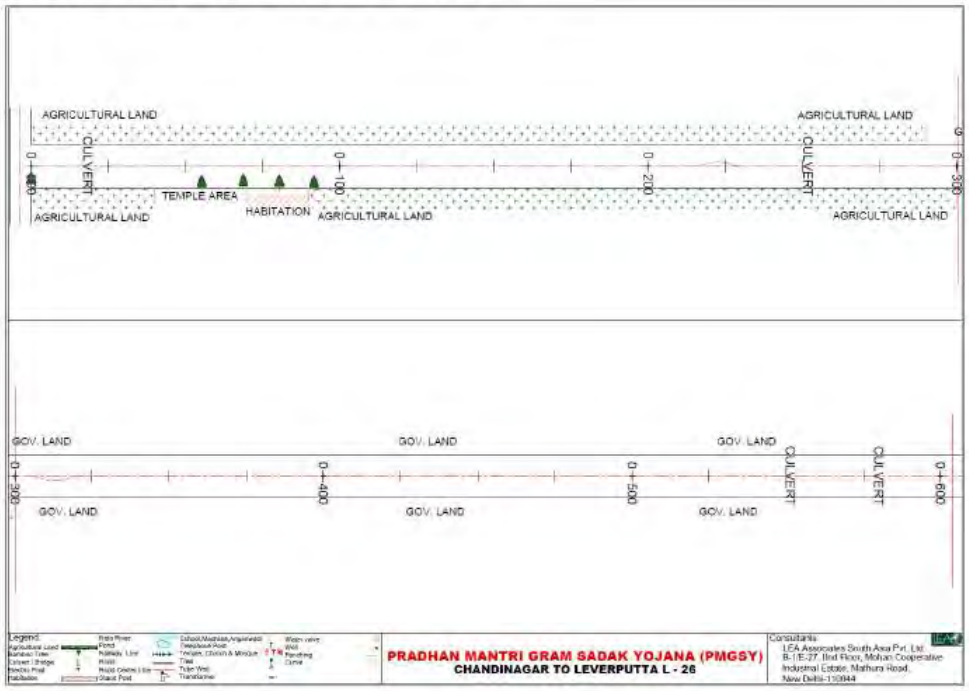
E-2 List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

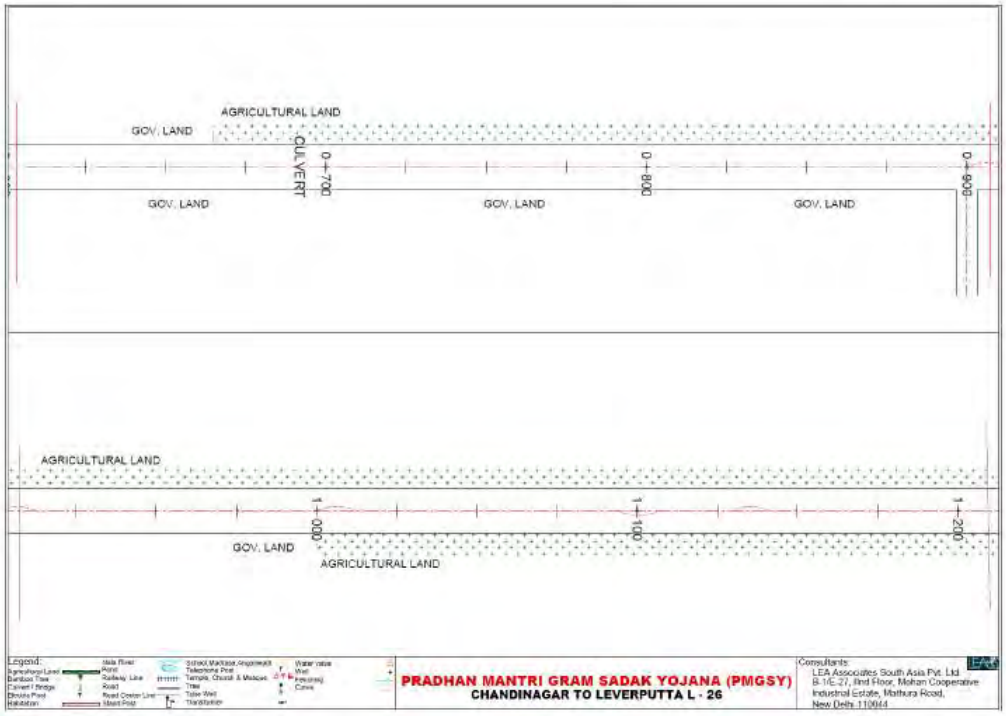
Chainage	Side	Type	Distance from center line (m)
2+380	LHS	Electric Pole	4
2+475	LHS	Electric Pole	4
2+320	RHS	Electric Pole	4
2+430	RHS	Electric Pole	3.1
2+515	RHS	Electric Pole	2.7
2+560	RHS	Electric Pole	3
2+600	RHS	Electric Pole	2.6
4+280	RHS	Electric Pole	7
4+380	RHS	Electric Pole	4
4+410	RHS	Electric Pole	2.5
4+450	RHS	Electric Pole	2.7
4+481	RHS	Electric Pole	4
0+000	LHS	Transformer	3
4+230	RHS	PHE Pipeline	1
4+330	RHS	PHE Pipeline	1.5

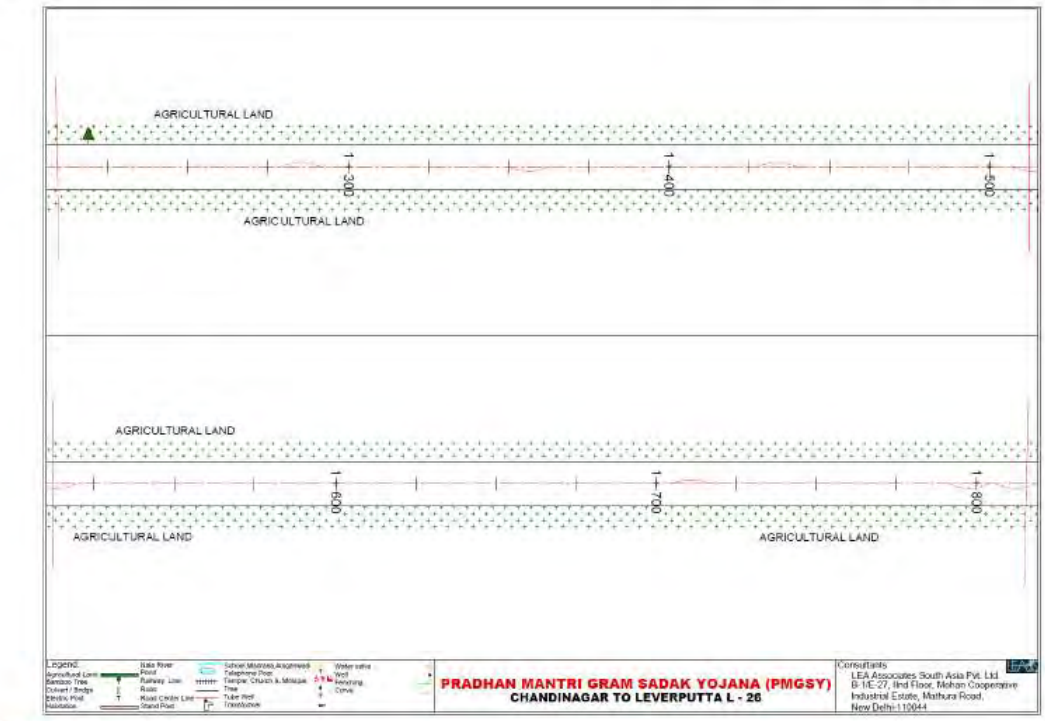
E-3 List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10):

Chainage	Side	Sensitive Structures	Distance from center line (m)
2+440	LHS	School	6
2+350	LHS	Temple	4
0+060	RHS	Temple	3

E-4 Sketch of strip map of the road covering details of atleast 10 m on either side from the center line of the road



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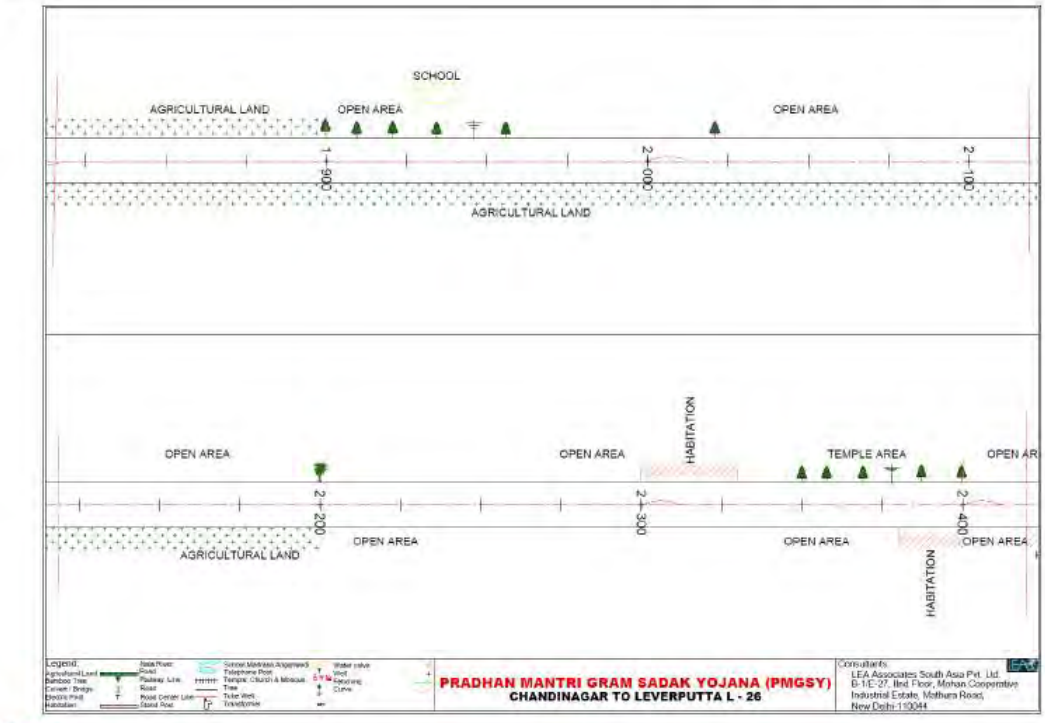
1+400
1+500
AGRICULTURAL LAND
AGRICULTURAL LAND
1+600
1+700
1+800
AGRICULTURAL LAND
AGRICULTURAL LAND
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
CHANDINAGAR TO LEVERPUTTA L - 26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OPEN AREA
1+900
2+000
2+100
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OPEN AREA
OPEN AREA
HABITATION
TEMPLE AREA
2+200
2+300
2+400
AGRICULTURAL LAND
OPEN AREA
OPEN AREA
OPEN AREA
HABITATION
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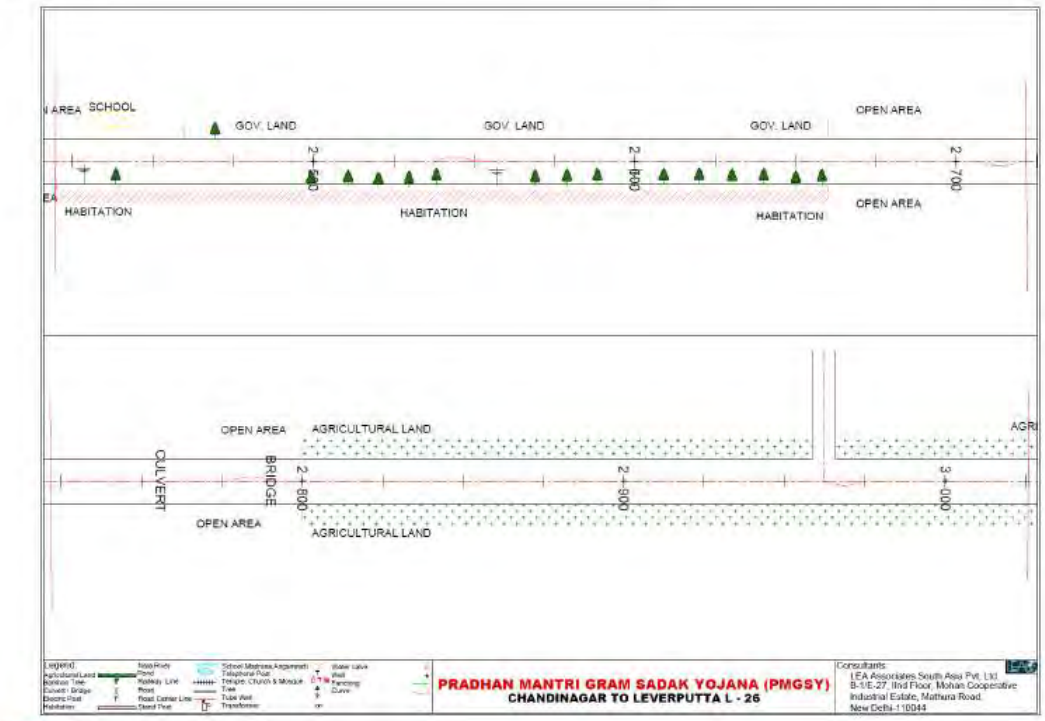
CHANDINAGAR TO LEVERPUTTA L - 26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CULVERT
BRIDGE
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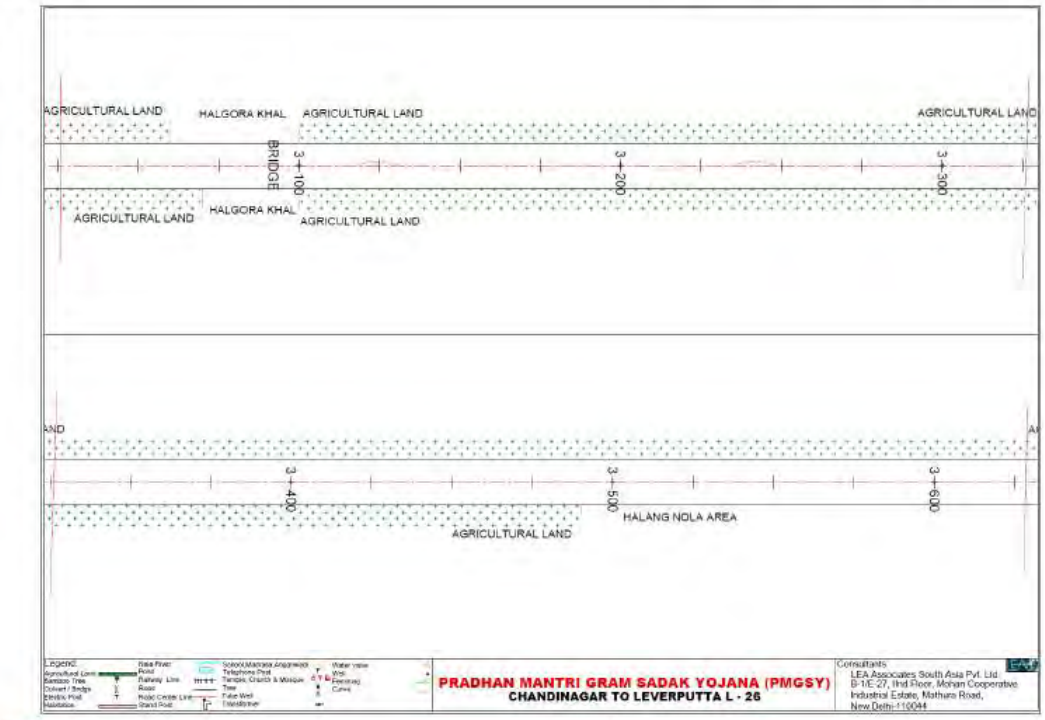
CHANDINAGAR TO LEVERPUTTA L - 26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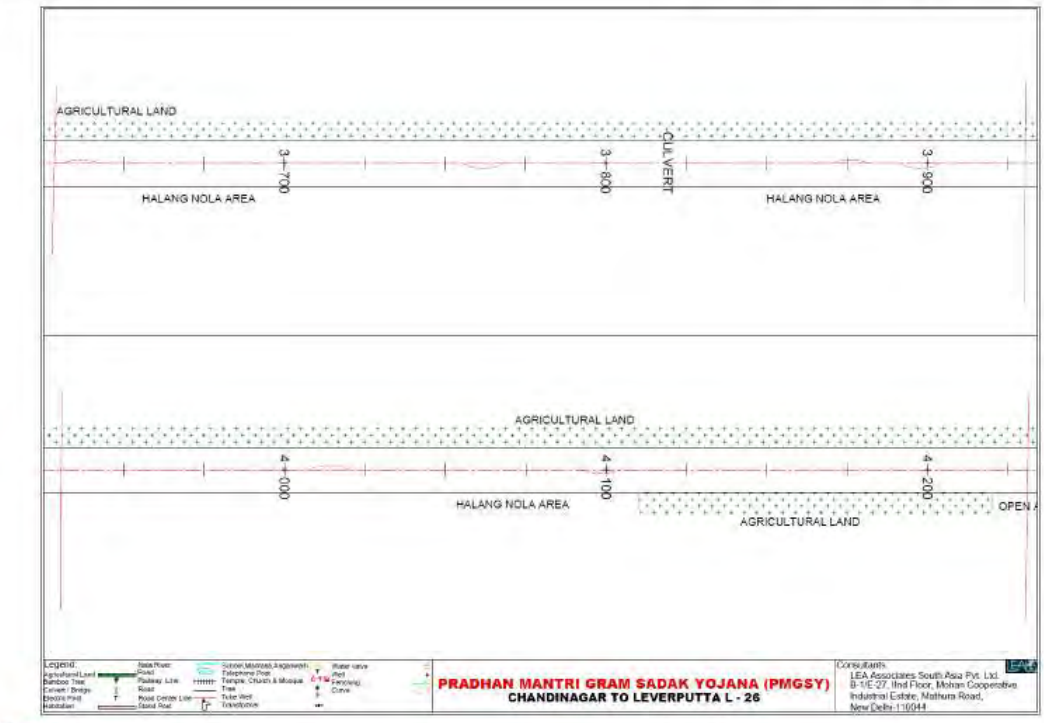
AGRICULTURAL LAND
AGRICULTURAL LAND
BRIDGE
AGRICULTURAL LAND
HALGORA KHAL
AGRICULTURAL LAND
HALANG NOLA AREA
AGRICULTURAL LAND
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
CHANDINAGAR TO LEVERPUTTA L - 26


AGRICULTURAL LAND
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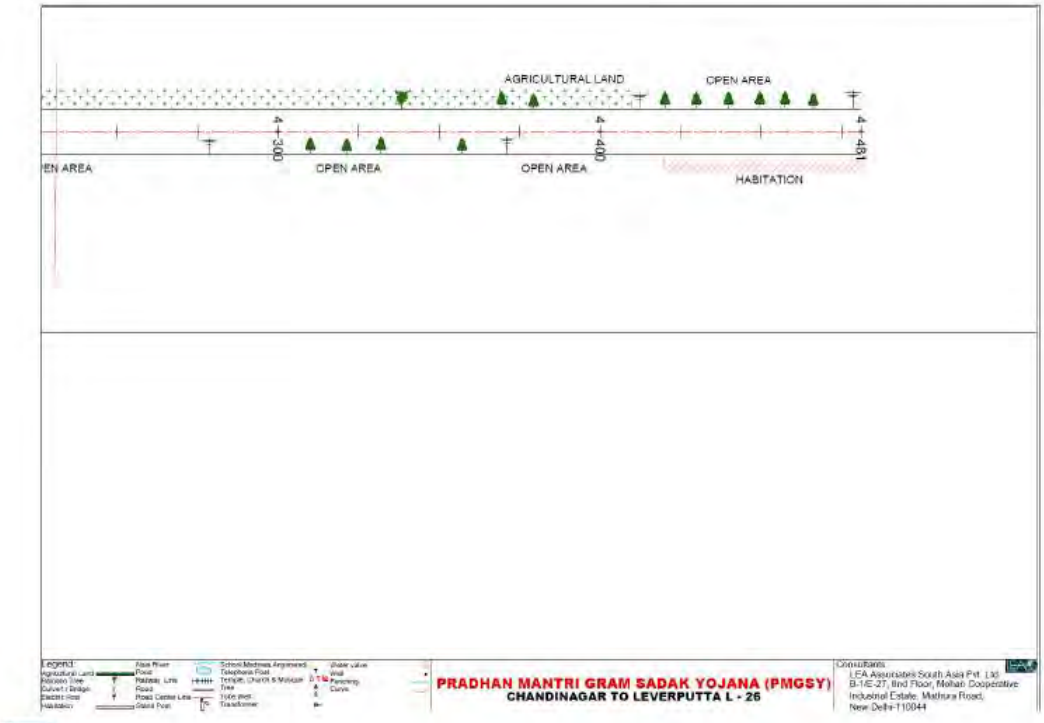
3+800
CULVERT
3+900
HALANG NOLA AREA
HALANG NOLA AREA
AGRICULTURAL LAND
4+000
4+100
4+200
HALANG NOLA AREA
AGRICULTURAL LAND
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
CHANDINAGAR TO LEVERPUTTA L - 26
Consultants:
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044


AGRICULTURAL LAND
OPEN AREA
4+300
4+400
4+481
OPEN AREA
OPEN AREA
HABITATION
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
CHANDINAGAR TO LEVERPUTTA L - 26
Consultants:
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044

E-5 Photographs of the project area showing at least 10 m on either side from center line of road alignment. Every 2 km or less of road must have at least 1 photograph.

Start Point of corridor

Corridor at 0+500

Corridor at 1+000

Corridor at 1+500

Corridor at 2+000

Corridor at 2+500

CPF AND SCaF DOCUMENTS
CACHAR DISTRICT

CHANDINAGAR TO LEVERPUTA (HARINAGAR BAYESPER EAST BOBOON NAGAR TO HARITIKAR SADIRKHAL) [LOZE]
February 2014

Corridor at 3+000

Corridor at 3+500

Corridor at 4+000

End Point of corridor

Road Name: Chandinagar to Leverputa (Harinagar bazar Para east Subodh Nagar to Haritikar Sadirkhal) Date: 01/02/2014

Community		PIU/PRI	
Name of the Participants	Signature	Name and designation of the official	Signature
Kamal Krishna Das	[illegible]	Banibrata Chakraborty JE	[illegible]
Arjun Das	[illegible]	Banesh ch. Das, President, Leverputa Gaon Panchayat	[illegible]
[illegible]	[illegible]		
[illegible]	[illegible]		
[illegible]			
[illegible]			
[illegible]			
[illegible]			
[illegible]			
[illegible]			
Sushanta Das.			
M/S Debraj Das			

IV. RURAL ROADS: ENVIRONMENTAL CHECKLIST

Road Name	Na Howli (Dhula-Chapai Road part) to NH 52
Block Name	Paschim Mangaldoi
District Name	Darrang
Total Length of the Road	1.900 km

A. Climatic Conditions

Temperature	High: 38°c Low: 9°c
Humidity	High: 95% Low: 40%
Rainfall	3000mm/year
Rainy Season	May to September

B. Location of the Road and Generic description of Environment

No.	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)		✓	Distance from Coastline: km ( ) more than 50% ( ) less than 20%
2.	Type of Terrain—(Plain/Hilly/ Mountainous etc.) *(Explain the topography of the area and how many km of the road are located in the hilly area)*	✓		Topography of terrain - Plain Altitude: 60.6m (average) The entire section of the alignment fall in the plain terrain
4.	Forest Area *(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest area)*		✓	Type of Vegetation: Legal Status of the Forest Area: *(Reserved, National Park, Sanctuaries, Unclassified, etc.*
5.	Wildlife *(Explain whether there are any wildlife species in the project area)*		✓	Name of animals: Endangered species (if any):
6.	Inhabited Area	✓		Chainage From / To: 0+220 / 0+890 LHS; 1+120 / 1+400 LHS; 1+680 / 1+900 LHS; 0+590 / 1+000 RHS
7.	Agricultural Land	✓		Chainage From / To: 0+000 / 0+220 LHS; 0+890 / 1+050 LHS

No.	Type of Ecosystem	Yes	No	Explanation
				0+000 / 0+590 RHS; 1+000 / 1+250 RHS; 1+600 / 1+700 RHS
8.	Grazing grounds		✓	
9.	Baren Land		✓	

C. Specific description of the Road Environment

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter / Component	Yes	No	Explanation
1.	Are there any areas with landslide or erosion problems along the road? *(If yes, indicate the location (right or left side) and the chainage)*		✓	
				( ) No Secondary Information is available and Local Community is not aware of this matter
2.	Are there any lakes/swamps beside the road? *(If yes, list them indicating the location (right or left side)and the chainage)*		✓	
3.	Are there any nallas/streams/rivers etc. along/crossing the road? *(If yes, list them indicating the location (right, left or crossing) and the chainage*		✓	
4.	Are there problems of water stagnation and other drainage issues on or near the road? *(If yes, mention chainage)*		✓	
5.	Is the area along the project road prone to flooding? *(If yes, mention flood level and frequency)*		✓	
				( ) No Secondary Information is available and Local Community is not aware of this matter
6.	Are there any trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment? *(If yes attach list of trees indicating the location (right or left side)and the chainage)*	✓		23 trees are identified within 10 m on either side of the CL. 11 trees would be affected due to the proposed improvement. Enclosed list Refer: E.1.
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas? *(If yes, specify details of habitat with chainage)*		✓	
				( ) No Secondary Information is available and Local Community is not aware of this matter

No.	Parameter / Component	Yes	No	Explanation
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	
				( ) No Secondary Information Available and Local Community is not aware of this matter
9.	Are there any utility structures' within 10 m on either side from the center line of the road alignment? *(If yes, attach list with chainage)*	✓		Although 20 electric poles, 4 stand post and 1 transformer are located within 10 m on either side of road, only 4 electric poles and 1 stand post will be affected by the project [Refer E.2]
10.	Are there any religious, cultural or community structures/buildings' within 10 m on either side from the center line of the road alignment? *(If yes attach list with chainage)*	✓		2 temples are identified within 10 m on either side of the CL. None of these structures would be affected due to the proposed improvement. Enclosed list Refer: E.3.

D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. *(Attach list of people met and dates)*	✓		A consultation was held with PIU and community members, it was attended by 32 persons. The list of participants is attached in Annexure E6.
2.	Any suggestion received in finalizing the alignment	✓		• Reconstruction of the existing culverts. • Safety measures should be taken to avoid accidents near schools, curves and road intersection locations.
3.	If suggestions received, were they incorporated into the design?	✓		

E. Annexures

E-1 List of trees indicating location (left or right side of the road) and chainage (as required under C. 6)

Chainage	Side	Name of Tree	DCL
0+000	LHS	Ahat	4.2
0+010	LHS	Ahat	3
0+010	LHS	Shatiana	2
0+000	RHS	Ahat	4
0+204	RHS	Ahat	3.75
0+207	RHS	Ahat	3.75
0+210	RHS	Ahat	3.75
0+213	RHS	Ahat	3.75
0+279	RHS	Ahat	2.75
0+310	LHS	Coconut	3.75
0+312	LHS	Coconut	3.75
0+314	LHS	Coconut	3.75
0+500	RHS	Mango	3
0+640	LHS	Mango	2
0+670	LHS	Jackfruit	2
0+720	RHS	Mango	2
0+721	RHS	Mango	2
0+722	RHS	Mango	2
0+723	RHS	Mango	2
0+724	RHS	Mango	2
0+750	RHS	Jackfruit	2.75
1+200	LHS	Ahat	3
1+220	LHS	Mango	2.75
Total no of trees		23	

[a] Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures

[b] Mandir, Masjid, Church, religious/cultural/historical monuments, school, health center, public toilet and other similar structures

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

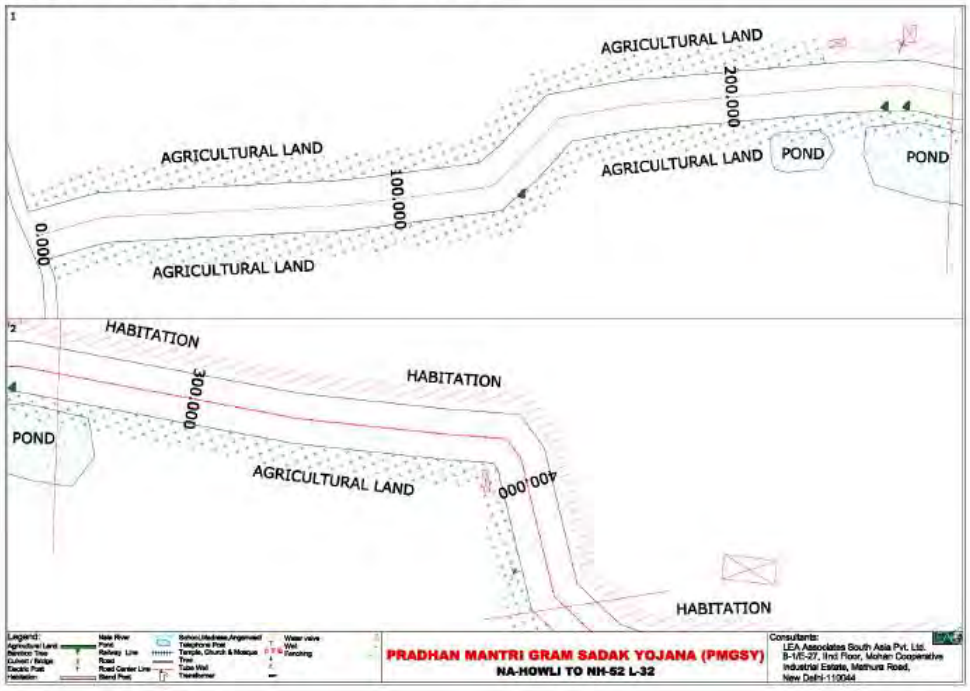
E-2 List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

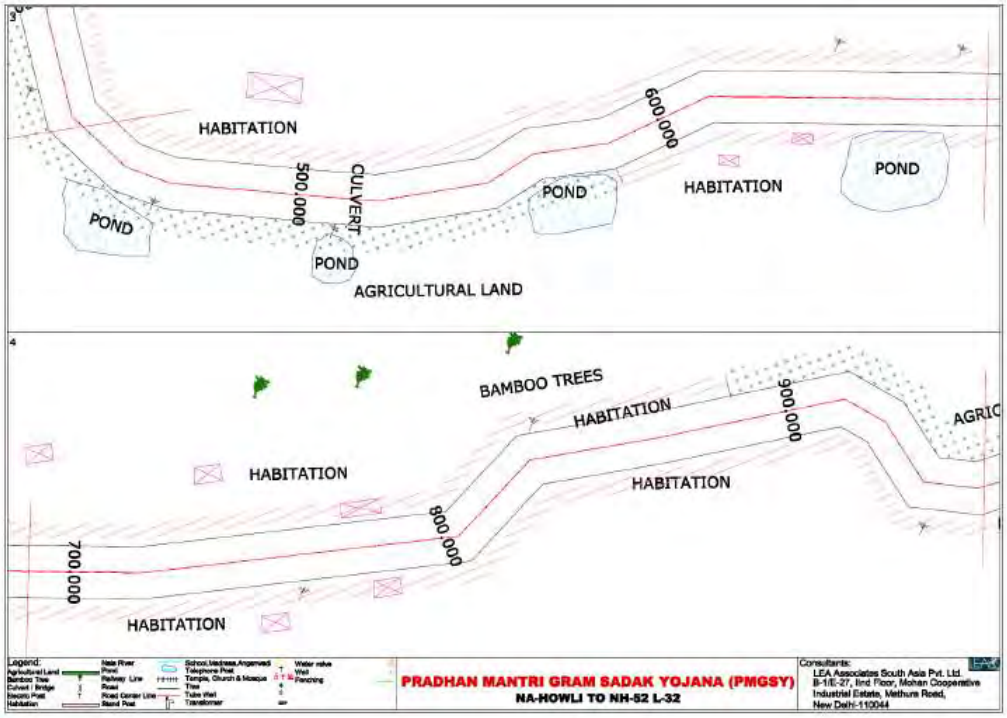
Chainage	Side	Type	Distance from center line (m)	Chainage	Side	Type	Distance from center line (m)
0+250	LHS	Electric Pole	3.5	0+932	LHS	Electric Pole	2.75
0+290	LHS	Stand Post	3.5	1+020	LHS	Electric Pole	3.75
0+290	RHS	Electric Pole	3.75	1+050	RHS	Transformer	3.75
0+340	RHS	Electric Pole	4.5	1+180	RHS	Electric Pole	2.5
0+560	LHS	Stand Post	2.5	1+210	LHS	Electric Pole	3
0+470	RHS	Electric Pole	3.75	1+360	RHS	Electric Pole	3
0+500	RHS	Electric Pole	3	1+520	RHS	Electric Pole	2.5
0+560	RHS	Electric Pole	3.5	1+700	LHS	Electric Pole	3.75
0+660	LHS	Electric Pole	2	1+760	LHS	Electric Pole	3.2
0+690	LHS	Electric Pole	3	1+810	LHS	Electric Pole	3.75
0+720	LHS	Stand Post	3	1+870	RHS	Electric Pole	3
0+780	RHS	Electric Pole	3	1+890	RHS	Stand Post	3
0+880	LHS	Electric Pole	3	–	–	–	–
Total number of electric poles: 20							
Total number of transformer: 01							
Total number of stand post: 04							

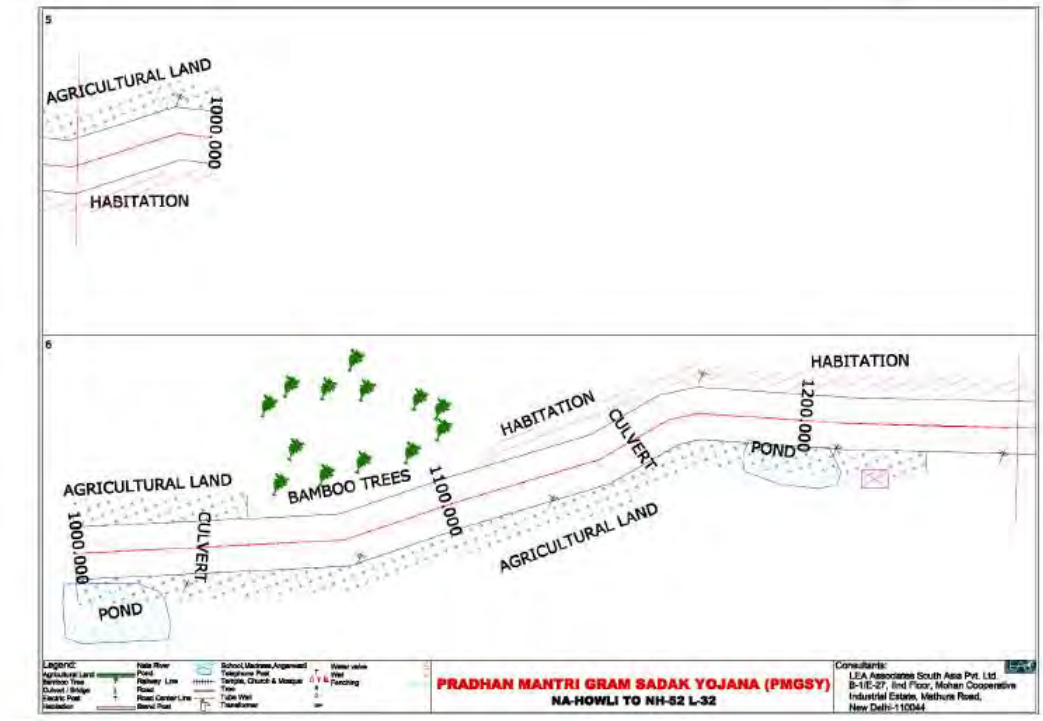
E-3 List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10):

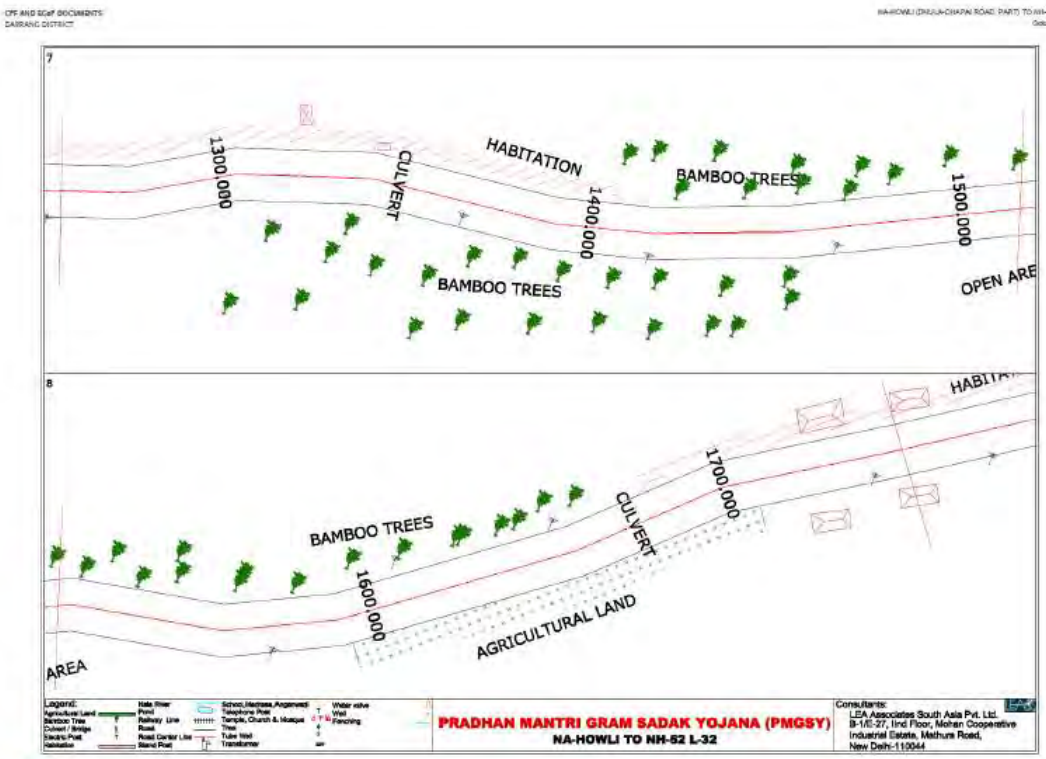
Chainage	Side	Sensitive Structures	Distance from center line (m)
1+170	LHS	Temple	4
1+710	LHS	Temple	5

E-4 Sketch of strip map of the road covering details of atleast 10 m on either side from the center line of the road






5
AGRICULTURAL LAND
1000.000
HABITATION
6
HABITATION
1200.000
HABITATION
CULVERT
POND
AGRICULTURAL LAND
BAMBOO TREES
1100.000
1000.000
CULVERT
AGRICULTURAL LAND
POND
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
NA-HOWLI TO NH-52 L-32


7
1300.000
CULVERT
HABITATION
1400.000
BAMBOO TREES
1500.000
BAMBOO TREES
OPEN ARE
8
1700.000
CULVERT
BAMBOO TREES
1600.000
AGRICULTURAL LAND
AREA
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
NA-HOWLI TO NH-52 L-32

E-5 Photographs of the project area showing atleast 10 m on either side from center line of road alignment. Every 2 km or less of road must have atleast 1 photograph.

Start Point of corridor

Corridor at 0+500

Corridor at 1+050

Corridor at 1+500

Corridor at 1+700

End Point of corridor

IV. RURAL ROADS: ENVIRONMENTAL CHECKLIST

Road Name	NH 31 to Choto Dighaltari Road
Block Name	Agomoni
District Name	Dhubri
Total Length of the Road	1.75 km

A. Climatic Conditions

Temperature	High: 36% Low: 9%
Humidity	High: 95% Low: 40%
Rainfall	1000mm/year
Rainy Season	May to September

B. Location of the Road and Generic description of Environment

No.	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)		✓	Distance from Coastline: km ( ) more than 50% ( ) less than 20%
2.	Type of Terrain-(Plain/Hilly/ Mountainous etc.) *(Explain the topography of the area and how many km of the road are located in the hilly area)*	✓		Topography of terrain – Plain Altitude: 60.6m (average) The entire section of the alignment fall in the plain terrain
4.	Forest Area *(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest area)?*		✓	Type of Vegetation: Legal Status of the Forest Area: *(Reserved, National Park, Sanctuaries, Unclassified, etc.*
5.	Wildlife *(Explain whether there are any wildlife species in the project area)*		✓	Name of animals: Endangered species (if any):
6.	Inhabited Area	✓		Chainage From / To / Side 0+030 / 0+180 / LHS 0+260 / 0+340 / LHS 0+450 / 0+590 / LHS 1+350 / 1+390 / LHS 1+450 / 1+690 / LHS 1+730 / 1+750 / LHS 0+030 / 0+170 / RHS 0+360 / 0+450 / RHS

No.	Type of Ecosystem	Yes	No	Explanation
				1+290 / 1+350 / RHS 1+420 / 1+600 / RHS
7.	Agricultural Land	✓		Chainage From / To / Side 0+590 / 0+780 / LHS 0+810 / 1+290 / LHS 0+450 / 0+780 / RHS 0+810 / 1+290 / RHS
8.	Grazing grounds		✓	
9.	Barren Land		✓	

C. Specific description of the Road Environment

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation
1.	Are there any areas with landslide or erosion problems along the road? ***(If yes, indicate the location (right or left side) and the chainage)***		✓	( ) No Secondary Information is available and Local Community is not aware of this matter
2.	Are there any lakes/swamps beside the road? ***(If yes, list them indicating the location (right or left side)and the chainage)***	✓		3 ponds are located along the corridor. Pond locations are given in the table below: Chainage | Side | Particulars | DCL 0+010 | LHS | Pond | 3 0+115 | RHS | Pond | 3.5 0+700 | RHS | Pond | 6
3.	Are there any nallas/streams/rivers etc. along/crossing the road? ***(If yes, list them indicating the location (right, left or crossing) and the chainage***	✓		The river Raidak crosses the road at chainage 0+780.
4.	Are there problems of water stagnation and other drainage issues on or near the road? ***(If yes, mention chainage)***		✓	( ) No Secondary Information is available and Local Community is not aware of this matter
5.	Is the area along the project road prone to flooding? ***(If yes, mention flood level and frequency)***	✓		Flood prone area is identified between ch. 0+840 and ch. 14+280 km. HFL is 2 ft as informed by the local people. ( ) No Secondary Information is available and Local Community is not aware of this matter

No.	Parameter / Component	Yes	No	Explanation
6.	Are there any trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment? ***(If yes attach list of trees indicating the location (right or left side)and the chainage)***	✓		127 trees are located within 10 m on either side of the CL. Out of these, 27 trees will be affected due to the project. [Refer E.1]
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas?		✓	
	(If yes, specify details of habitat with chainage)			( ) No Secondary Information is available and Local Community is not aware of this matter
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	( ) No Secondary Information Available and Local Community is not aware of this matter
9.	Are there any utility structures[1] within 10 m on either side from the center line of the road alignment? ***(If yes, attach list with chainage)***	✓		18 electric poles, 3 stand posts and 2 transformers are located within 10 m on either side of the CL of the road. Out of these utility structures, 8 electric poles, 2 stand posts and 1 transformer will be affected due to the project [Refer E.2]
10.	Are there any religious, cultural or community structures/buildings[2] within 10 m on either side from the center line of the road alignment? ***(If yes attach list with chainage)***	✓		1 Anganwadi Centre and 2 schools school are located within 10 m on either side of the CL of the road. None of these community structures will be affected due to the project [Refer E.3]

D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. ***(Attach list of people met and dates)***	✓		A consultation was held with the local community members, it was attended by 19 persons. The list of participants is attached in **Annexure E6.**
2.	Any suggestion received in finalizing the alignment	✓		Road safety measures near school, road intersection, curve locations.
3.	If suggestions received, were they incorporated into the design?	✓		

[1] Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures

[2] Mandir, Masjid, Church, religious/cultural/historical monuments, school, health center, public toilet and other similar structures

E. Annexures

E-1 List of trees indicating location (left or right side of the road) and chainage (as required under C. 6)

Chainage	Side	Name of Tree	DCL
0+010	LHS	Kodom	3
0+015	LHS	Kodom	3
0+030	LHS	Mango	5
0+045	LHS	Coconut	3
0+060	LHS	Segun	2.7
0+065	LHS	Jackfruit	2.5
0+075	LHS	Jackfruit	2.5
0+100	LHS	Poma	2.7
0+105	LHS	Kodom	2.7
0+120	LHS	Poma	3.1
0+140	LHS	Moj	3
0+170	LHS	Bot gos	3
0+230	LHS	Sishu	3
0+240	LHS	Segun	3
0+260	LHS	Segun	3.5
0+320	LHS	Jiya	3.1
0+323	LHS	Jiya	3.1
0+326	LHS	Jiya	3.1
0+329	LHS	Jiya	3.1
0+330	LHS	Jiya	3
0+332	LHS	Jiya	3
0+334	LHS	Jiya	3
0+335	LHS	Jiya	3
0+344	LHS	Jolpai	3
0+360	LHS	Mango	3
0+380	LHS	Kodom	4
0+390	LHS	Jiya	2.9
0+394	LHS	Jiya	2.9
0+398	LHS	Jiya	2.9
0+410	LHS	Jiya	3
0+415	LHS	Jiya	3
0+440	LHS	Gamari	10
0+465	LHS	Bel	3.5
0+490	LHS	Jiya	2.8
0+510	LHS	Borpat	3.2
0+530	LHS	Gamari	3.5
0+550	LHS	Jiya	2.9
0+580	LHS	Jiya	3.5
0+730	LHS	Kodom	3.5
0+750	LHS	Velkor	3.2
0+940	LHS	Ahot	2.4
0+960	LHS	Kodom	2
1+360	LHS	Ajar	2.5
1+370	LHS	Mango	5
1+390	LHS	Sojona	3.1
1+440	LHS	Sojona	3
1+450	LHS	Jiya	3
1+500	LHS	Poma	3
1+505	LHS	Poma	3
1+520	LHS	Jackfruit	3
1+540	LHS	Poma	3
1+544	LHS	Poma	3

Chainage	Side	Name of Tree	DCL
1+490	RHS	Poma	3
1+495	RHS	Poma	3
1+520	RHS	Poma	3.2
1+530	RHS	Gamari	3
1+540	RHS	Gamari	3.3
1+590	RHS	Mango	3
1+600	RHS	Poma	4
1+620	RHS	Borpat	3.1
1+624	RHS	Borpat	3.1
1+628	RHS	Borpat	3.1
1+630	RHS	Borpat	3.1
1+634	RHS	Borpat	3.1
1+638	RHS	Borpat	3.1
1+640	RHS	Borpat	3
1+645	RHS	Borpat	3
1+650	RHS	Gamari	3.2
1+655	RHS	Gamari	3.2
1+740	RHS	Jackfruit	3

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

Chainage	Side	Name of Tree	DCL
1+548	LHS	Poma	3
1+560	LHS	Ajar	2.7
1+565	LHS	Ajar	2.7
1+570	LHS	Jiya	3
1+590	LHS	Jackfruit	3
1+600	LHS	Segun	3.7
1+620	LHS	Segun	3
1+625	LHS	Jam	3
1+640	LHS	Segun	2.9
1+650	LHS	Gamari	3.2
1+660	LHS	Gamari	3.2
1+680	LHS	Gamari	3
1+690	LHS	Gamari	3.2
1+735	LHS	Jackfruit	3
1+740	LHS	Gamari	3
0+060	RHS	Jackfruit	2.7
0+064	RHS	Simolu	2.4
0+078	RHS	Tal	2.5
0+085	RHS	Poma	3
0+090	RHS	Jiya	2.7
0+095	RHS	Jiya	2.7
0+100	RHS	Jiya	2.5
0+120	RHS	Jiya	2.5
0+124	RHS	Jiya	2.5
0+128	RHS	Jiya	2.5
0+130	RHS	Kodom	3.7
0+140	RHS	Segun	2.8
0+150	RHS	Segun	2.7
0+170	RHS	Gamari	3.1
0+180	RHS	Ahot	3.2
0+210	RHS	Sishu	3
0+310	RHS	Gamari	3.1
0+315	RHS	Gamari	3.1
0+360	RHS	Gamari	3
0+385	RHS	Gamari	3
0+370	RHS	Jiya	3.1
0+390	RHS	Kodom	3
0+400	RHS	Sojona	3
0+410	RHS	Segun	3
0+420	RHS	Ou tenga	3.1
0+450	RHS	Jiya	3
0+550	RHS	Gamari	3.1
0+610	RHS	Bogori	3.1
0+750	RHS	Segun	3.2
0+754	RHS	Segun	3.2
0+758	RHS	Segun	3.2
0+760	RHS	Segun	3.2
0+765	RHS	Segun	3.2
1+300	RHS	Neem	3
1+305	RHS	Simolu	4
1+330	RHS	Simolu	3
1+370	RHS	Velkor	3.1
1+440	RHS	Jackfruit	3.5
1+450	RHS	Segun	3
1+454	RHS	Mango	3
1+458	RHS	Mango	3
1+460	RHS	Segun	3

Chainage	Side	Name of Tree	DCL
1+490	RHS	Poma	3
1+495	RHS	Poma	3
1+520	RHS	Poma	3.2
1+530	RHS	Gamari	3
1+540	RHS	Gamari	3.3
1+590	RHS	Mango	3
1+600	RHS	Poma	4
1+620	RHS	Borpat	3.1
1+624	RHS	Borpat	3.1
1+628	RHS	Borpat	3.1
1+630	RHS	Borpat	3.1
1+634	RHS	Borpat	3.1
1+638	RHS	Borpat	3.1
1+640	RHS	Borpat	3
1+645	RHS	Borpat	3
1+650	RHS	Gamari	3.2
1+655	RHS	Gamari	3.2
1+740	RHS	Jackfruit	3

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

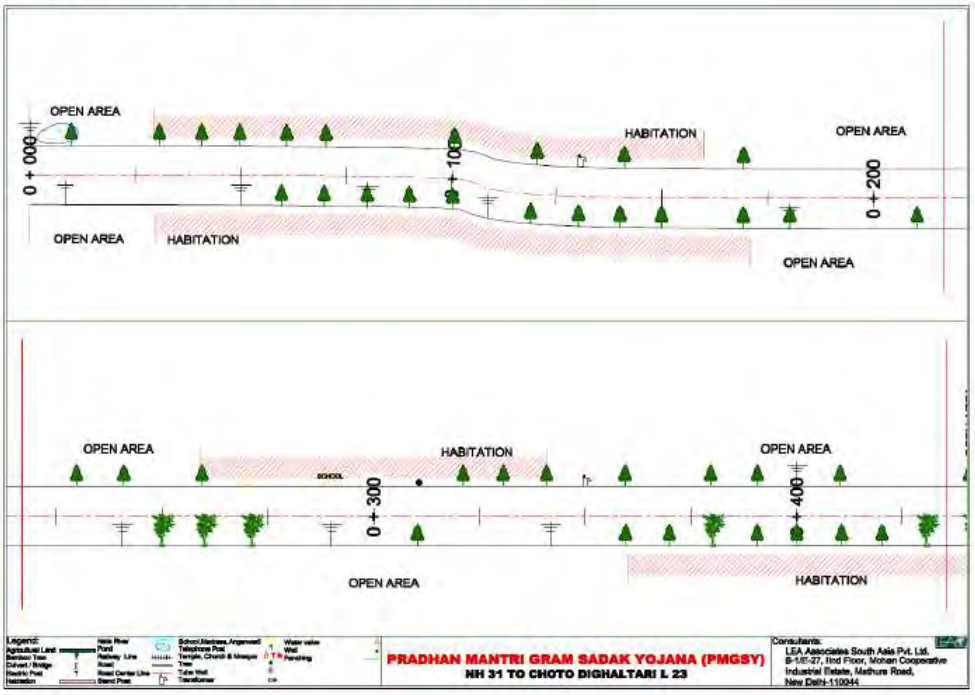
E-2 List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

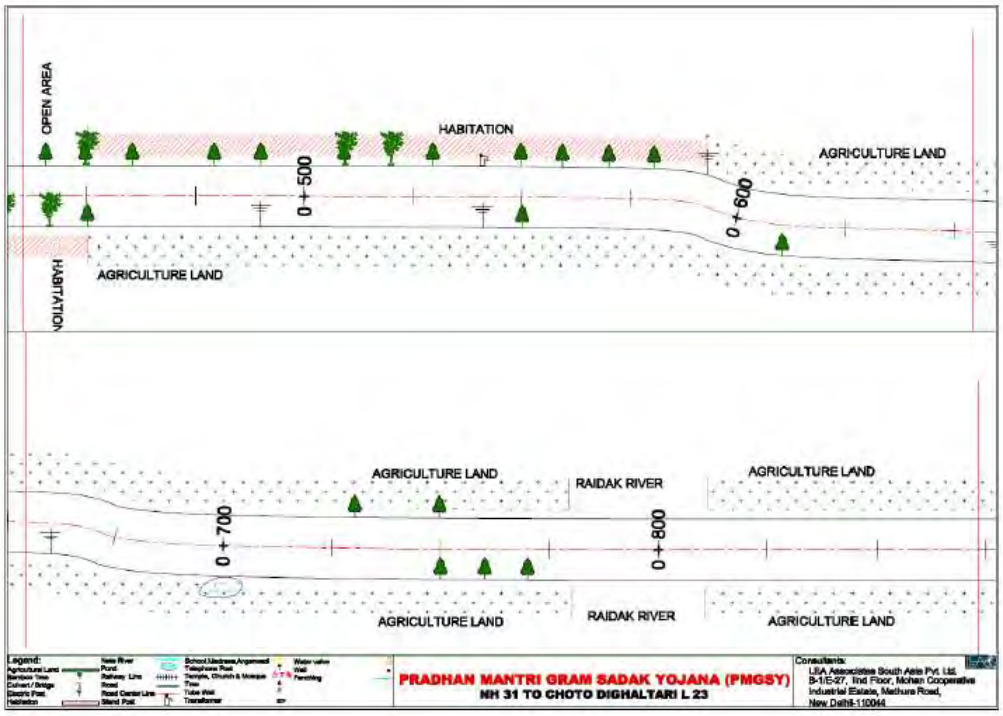
Chainage	Side	Type	Distance from center line (m)
0+000	LHS	Electric Pole	4
0+400	LHS	Electric Pole	2.8
0+590	LHS	Electric Pole	3
1+430	LHS	Electric Pole	3.5
1+470	LHS	Electric Pole	7
1+610	LHS	Electric Pole	3
1+730	LHS	Electric Pole	2.8
0+050	RHS	Electric Pole	2.6
0+080	RHS	Electric Pole	3
0+110	RHS	Electric Pole	2.5
0+185	RHS	Electric Pole	3.6
0+240	RHS	Electric Pole	2.9
0+290	RHS	Electric Pole	3.2
0+340	RHS	Electric Pole	3
0+440	RHS	Electric Pole	2.9
0+490	RHS	Electric Pole	2.7
0+540	RHS	Electric Pole	2.9
0+660	RHS	Electric Pole	10
0+130	LHS	Stand Post	2.7
0+350	LHS	Stand Post	2.7
0+540	LHS	Stand Post	3
0+010	RHS	Transformer	2.5
1+610	RHS	Transformer	5

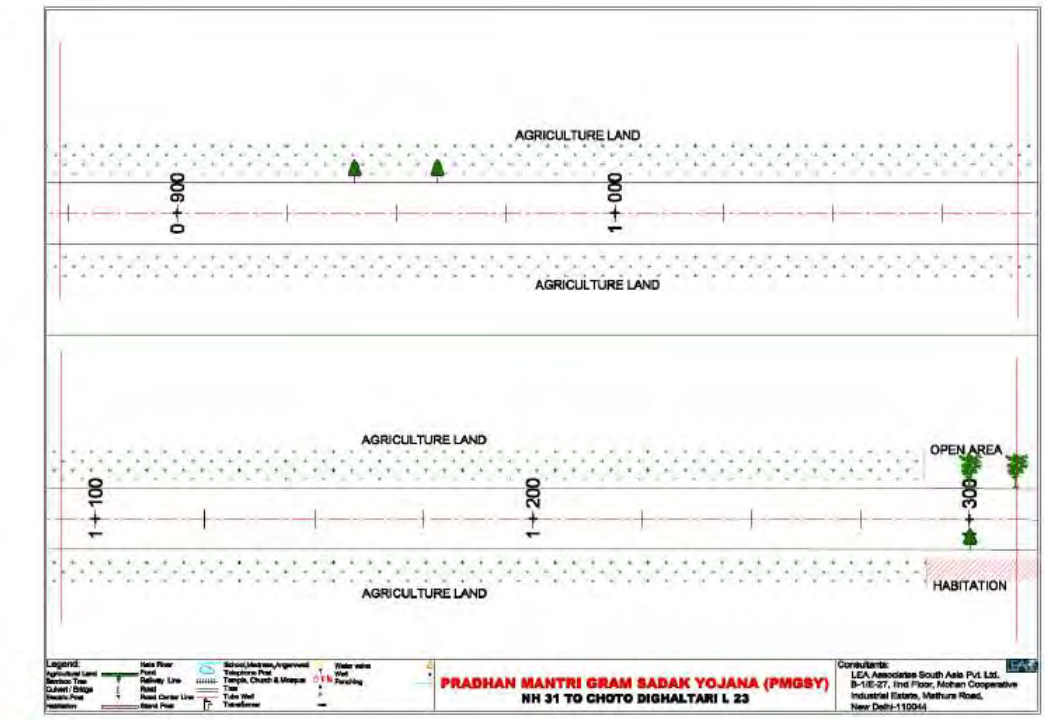
E-3 List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10):

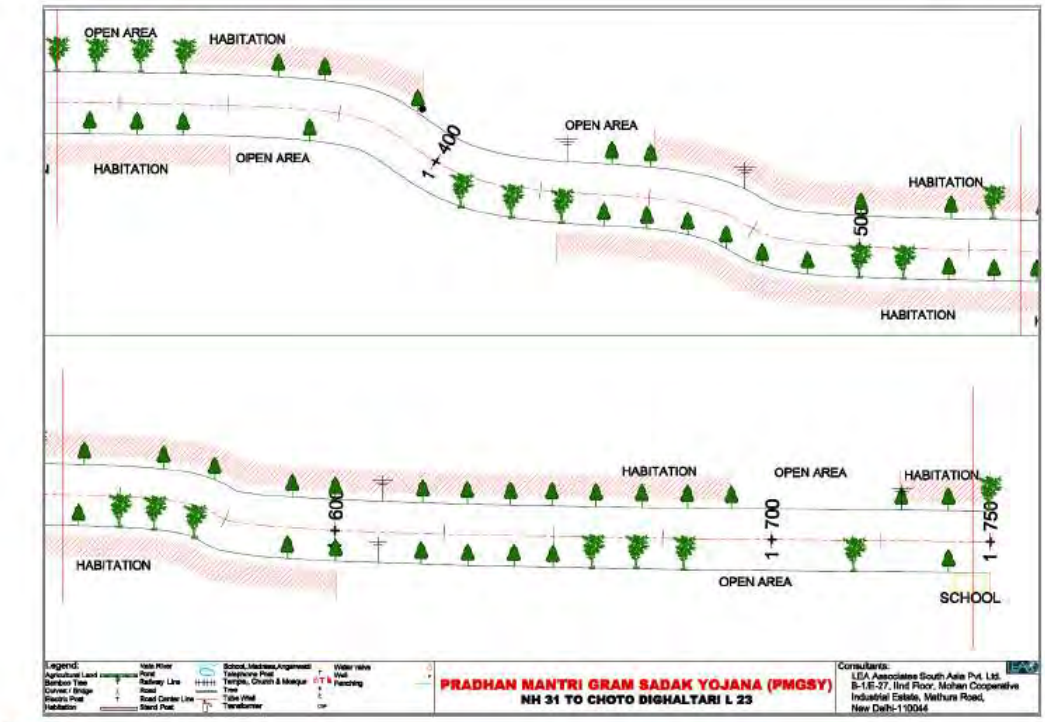
Chainage	Side	Sensitive Structures	Distance from center line (m)
0+270	LHS	Anganwadi Centre	4
0+290	LHS	School	3
1+750	RHS	School	4.5

E-4 Sketch of strip map of the road covering details of atleast 10 m on either side from the center line of the road






AGRICULTURE LAND
0+900
1+000
AGRICULTURE LAND
AGRICULTURE LAND
OPEN AREA
1+100
1+200
300
HABITATION
AGRICULTURE LAND
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
NH 31 TO CHOTO DIGHALTARI L 23


OPEN AREA
HABITATION
HABITATION
OPEN AREA
1+400
OPEN AREA
HABITATION
500
HABITATION
HABITATION
OPEN AREA
HABITATION
600
1+700
OPEN AREA
1+750
SCHOOL
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
NH 31 TO CHOTO DIGHALTARI L 23

E-5 Photographs of the project area showing at least 10 m on either side from center line of road alignment. Every 2 km or less of road must have at least 1 photograph.

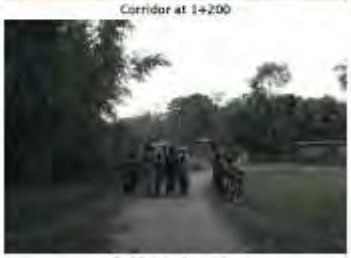
Start Point of corridor

Corridor at 0+400

Corridor at 0+800

Corridor at 1+200

Corridor at 1+600



End Point of corridor

E-6 List of Participants (Attendance Sheet)

Transect Walk Attendance Sheet

Road Name: NH 31 to Choto Bighaltari Date: 13/02/14

Community		PIU/PRI	
Name of the Participants	Signature	Name and designation of the official	Signature
Sukul Ahmedy		Abdur Rahim Sikdar J.E.	13/02/14
Gautam Roy		Jahanara Begum President Jogdia Gram Panchayat	
[illegible]			
Nilambar Pradhani			
Sunil Roy			
Uttam [illegible]			
Mominul Hossain			
[illegible]			
[illegible]			
[illegible]			
[illegible]			
[illegible]			

IV. RURAL ROADS: ENVIRONMENTAL CHECKLIST

Road Name	Birubari to Keotpara
Block Name	Baljana
District Name	Goalpara
Total Length of the Road	1.500 km

A. Climatic Conditions

Temperature	High: 36°c Low: 9°c
Humidity	High: 95% Low: 40%
Rainfall	1000mm/year
Rainy Season	May to September

B. Location of the Road and Generic description of Environment

No.	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)		✓	Distance from Coastline: km ( ) more than 50% ( ) less than 20%
2.	Type of Terrain(Plain/Hilly/ Mountainous etc.) *(Explain the topography of the area and how many km of the road are located in the hilly area)*	✓		Topography of terrain - Plain Altitude: 60.6m (average) The entire section of the alignment fall in the plain terrain
4.	Forest Area *(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest area)?*		✓	Type of Vegetation: Legal Status of the Forest Area: *(Reserved, National Park, Sanctuaries, Unclassified, etc.*
5.	Wildlife *(Explain whether there are any wildlife species in the project area)*		✓	Name of animals: Endangered species (if any):
6.	Inhabited Area	✓		Chainage From / To: 0+000 – 0+040; 0+080 – 0+110; 0+120 – 0+170; 0+190 – 0+230; 0+260 – 0+300; 0+320 – 0+400; 0+710 – 0+830; 0+870 – 0+930; 0+970 – 1+010 — Side: LHS

No.	Type of Ecosystem	Yes	No	Explanation
				Chainage From / To: 1+040 – 1+090; 1+200 – 1+250; 1+280 – 1+330; 1+440 – 1+500; 0+800 – 0+880; 0+920 – 0+950 — Side: RHS
7.	Agricultural Land	✓		Chainage From / To: 0+040 – 0+080; 0+110 – 0+120; 0+170 – 0+190; 0+590 – 0+710; 0+830 – 0+870; 1+010 – 1+040; 1+090 – 1+200; 1+250 – 1+280; 0+130 – 0+200 — Side: LHS; RHS
8.	Grazing grounds		✓	
9.	Barren Land		✓	

C. Specific description of the Road Environment

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter / Component	Yes	No	Explanation
1.	Are there any areas with landslide or erosion problems along the road? ***(If yes, indicate the location (right or left side) and the chainage)***		✓	( ) No Secondary Information is available and Local Community is not aware of this matter
2.	Are there any lakes/swamps beside the road? ***(If yes, list them indicating the location (right or left side)and the chainage)***	✓		1 pond is located along the road at ch.0+130 km on LHS.
3.	Are there any nallas/streams/rivers etc. along/crossing the road? ***(If yes, list them indicating the location (right, left or crossing) and the chainage***	✓		The river Jhajhiram flows along the alignment from ch. 0+320 to ch. 1+350 on the RHS.
4.	Are there problems of water stagnation and other drainage issues on or near the road? ***(If yes, mention chainage)***		✓	

No.	Parameter / Component	Yes	No	Explanation
5.	Is the area along the project road prone to flooding? ***(If yes, mention flood level and frequency)***		✓	( ) No Secondary Information is available and Local Community is not aware of this matter
6.	Are there any trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment? ***(If yes attach list of trees indicating the location (right or left side)and the chainage)***	✓		103 trees are located within 10 m on either side of the CL. Out of these, 8 trees located along the proposed alignment will be affected due to the project. (Refer E.1)
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas? ***(If yes, specify details of habitat with chainage)***		✓	( ) No Secondary Information is available and Local Community is not aware of this matter
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	( ) No Secondary Information Available and Local Community is not aware of this matter
9.	Are there any utility structures[2] within 10 m on either side from the center line of the road alignment? ***(If yes, attach list with chainage)***	✓		27 electric poles, 1 hand pump, 2 transformers are located within 10 m on either side of the CL of the road. Out of these utility structures, 6 electric poles will be affected due to the project (Refer E.2)
10.	Are there any religious, cultural or community structures/buildings[3] within 10 m on either side from the center line of the road alignment? ***(If yes attach list with chainage)***	✓		1 school, 1 temple, 1 church and 1 public toilet are located within 10 m on either side of the CL of the road. None of these community structures will be affected due to the project (Refer E.3)

D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. *(Attach list of people met and dates)*	✓		A consultation was held with the local community. It was attended by 16 persons. The list of participants is attached in Annexure E6.
2.	Any suggestion received in finalizing the alignment	✓		Road safety measures near road intersection, curve locations.
3.	If suggestions received, were they incorporated into the design?	✓		

[1] Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures

[2] Mandir, Masjid, Church, religious/cultural/historical monuments, school, health center, public toilet and other similar structures

E. Annexures

E-1 List of trees indicating location (left or right side of the road) and chainage (as required under C. 6)

Chainage	Side	Name of Tree	DCL
0+030	LHS	Neem	3.6
0+035	LHS	Neem	3.6
0+060	LHS	Neem	3.5
0+090	LHS	Krishnasura	3.5
0+100	LHS	Mango	3.5
0+110	LHS	Kadam	3.5
0+110	LHS	Segun	3.6
0+200	LHS	Krishnasura	3.7
0+210	LHS	Sirish	3.6
0+270	LHS	Neem	4
0+310	LHS	Modar	3.5
0+320	LHS	Modar	3
0+330	LHS	Jackfruit	3
0+340	LHS	Krishnasura	3.2
0+360	LHS	Krishnasura	3.4
0+420	LHS	Jackfruit	3.7
0+430	LHS	Mango	3.7
0+430	LHS	Coconut	3.7
0+440	LHS	Jackfruit	4.7
0+450	LHS	Mango	4
0+460	LHS	Mango	3.8
0+460	LHS	Jackfruit	3.8
0+470	LHS	Mango	3.7
0+470	LHS	Lichu	3.8
0+480	LHS	Jackfruit	3.7
0+490	LHS	Mango	3.6
0+500	LHS	Jackfruit	3.6
0+510	LHS	Mango	4.1
0+520	LHS	Jackfruit	5
0+530	LHS	Lichu	4.5
0+570	LHS	Neem	4.3
0+610	LHS	Bogori	3.5
0+610	LHS	Neem	3.4
0+680	LHS	Bogori	3
0+720	LHS	Neem	3.1
0+730	LHS	Azar	3.6
0+780	LHS	Mango	3.7
0+780	LHS	Jackfruit	3.7
0+790	LHS	Coconut	4.2
0+800	LHS	Voja	3.4
0+800	LHS	Azar	3.4
0+810	LHS	Sirish	3.2
0+820	LHS	Sirish	3.2
0+824	LHS	Sirish	3.2
0+828	LHS	Sirish	3.2
0+830	LHS	Kadam	3.1
0+860	LHS	Kadam	
0+900	LHS	Jackfruit	6
0+920	LHS	Jackfruit	3.1

Chainage	Side	Name of Tree	DCL
0+930	LHS	Jackfruit	3.1
0+980	LHS	Gomari	7
1+010	LHS	Jackfruit	6
1+040	LHS	Neem	4
1+050	LHS	Voja	3.1
1+055	LHS	Voja	3.1
1+060	LHS	Jamun	3.2
1+065	LHS	Jamun	3.2
1+080	LHS	Gomari	3.2
1+080	LHS	Segun	3.3
1+090	LHS	Poma	3.3
1+100	LHS	Bogori	3.4
1+120	LHS	Koras	3.1
1+140	LHS	Bogori	3
1+150	LHS	Bhel	3.2
1+170	LHS	Jamun	5.5
1+200	LHS	Neem	3.1
1+210	LHS	Bhel	3.1
1+215	LHS	Bhel	3.1
1+230	LHS	Bhatghila	3
1+240	LHS	Jackfruit	3.2
1+280	LHS	Mango	3.3
1+290	LHS	Mango	2.5
1+300	LHS	Jackfruit	2.5
1+310	LHS	Jackfruit	2.5
1+320	LHS	Neem	2.5
1+320	LHS	Jackfruit	2.6
1+325	LHS	Jackfruit	2.6
1+340	LHS	Neem	2.5
1+340	LHS	Jackfruit	3
1+345	LHS	Jackfruit	3
1+350	LHS	Jackfruit	2.5
1+380	LHS	Bhel	3
1+390	LHS	Bhel	3
1+394	LHS	Bhel	3
1+398	LHS	Bhel	3
1+410	LHS	Bhel	3.5
1+420	LHS	Voja	5.7
1+450	LHS	Bogori	6
1+460	LHS	Jackfruit	4.5
1+470	LHS	Khejur	4.4
1+500	LHS	Amara	3.4
0+010	RHS	Jackfruit	3.7
0+010	RHS	Gokul	3.7
0+020	RHS	Tetell	3.6
0+020	RHS	Gokul	3.6
0+025	RHS	Gokul	3.6
0+030	RHS	Sirish	3.5
0+040	RHS	Neem	3.5
0+044	RHS	Neem	3.5
0+048	RHS	Neem	3.5
0+060	RHS	Sirish	3.6
0+065	RHS	Sirish	3.6

Chainage	Side	Name of Tree	DCL
0+070	RHS	Sirish	3.6
0+075	RHS	Sirish	3.6
0+080	RHS	Sirish	3.6
0+085	RHS	Sirish	3.6
0+090	RHS	Sirish	3.6
0+100	RHS	Sirish	3.6
0+110	RHS	Sirish	3.6
0+120	RHS	Sirish	3.6
0+130	RHS	Sirish	3.7
0+135	RHS	Sirish	3.7
0+140	RHS	Sirish	3.7
0+145	RHS	Sirish	3.7
0+150	RHS	Sirish	3.7
0+155	RHS	Sirish	3.7
0+160	RHS	Sirish	3.7
0+165	RHS	Sirish	3.7
0+210	RHS	Jackfruit	4.5
0+220	RHS	Bogori	4.5
0+250	RHS	Bogori	3.7
0+290	RHS	Khejur	4.1
0+310	RHS	Ahat	3.6
0+400	RHS	Jackfruit	3.5
0+405	RHS	Jackfruit	3.5
0+410	RHS	Mango	3.6
0+420	RHS	Mango	3.5
0+430	RHS	Jackfruit	3.5
0+435	RHS	Jackfruit	3.5
0+440	RHS	Jackfruit	3.6
0+440	RHS	Mango	3.6
0+450	RHS	Jackfruit	3.5
0+460	RHS	Jackfruit	3.5
0+470	RHS	Jackfruit	3.5
0+470	RHS	Mango	3.7
0+480	RHS	Segun	3.8
0+485	RHS	Segun	3.8
0+490	RHS	Segun	3.8
0+510	RHS	Bhel	4.5
0+520	RHS	Jackfruit	3.7
0+530	RHS	Kadam	3.6
0+540	RHS	Kadam	3.5
0+550	RHS	Kadam	3.5
0+555	RHS	Kadam	3.5
0+560	RHS	Kadam	3.5
0+560	RHS	Azar	4.3
0+610	RHS	Neem	3.6
0+610	RHS	Voja	3.5
0+620	RHS	Mango	3.8
0+630	RHS	Bhel	3.8
0+640	RHS	Azar	3.7
0+650	RHS	Bhel	3.6
0+650	RHS	Neem	3.6
0+660	RHS	Bogori	3.6
0+665	RHS	Bogori	3.6

Chainage	Side	Name of Tree	DCL
0+710	RHS	Bhel	6
0+760	RHS	Bhel	3
0+780	RHS	Bogori	3
0+800	RHS	Azar	3.2
0+810	RHS	Azar	3.3
0+815	RHS	Azar	3.3
0+830	RHS	Bhel	3.1
0+835	RHS	Bhel	3.1
0+850	RHS	Krishnasura	3.2
0+880	RHS	Bhatghila	5
0+890	RHS	Mango	3.3
0+900	RHS	Bhel	5
0+904	RHS	Bhel	5
0+908	RHS	Bhel	5
0+910	RHS	Krishnasura	
0+990	RHS	Bhel	3
1+030	RHS	Bogori	3
1+050	RHS	Bhel	3.1
1+054	RHS	Bhel	3.1
1+058	RHS	Bhel	3.1
1+070	RHS	Bhel	3
1+100	RHS	Azar	3.1
1+130	RHS	Bogori	3
1+190	RHS	Bhel	3.2
1+220	RHS	Bhel	3
1+223	RHS	Bhel	3
1+226	RHS	Bhel	3
1+229	RHS	Bhel	3
1+232	RHS	Bhel	3
1+235	RHS	Bhel	3
1+238	RHS	Bhel	3
1+241	RHS	Bhel	3
1+380	RHS	Bogori	3
1+440	RHS	Bhel	3
1+450	RHS	Bhel	3
1+470	RHS	Bhel	5.5
1+490	RHS	Azar	5
1+500	RHS	Azar	5.5

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

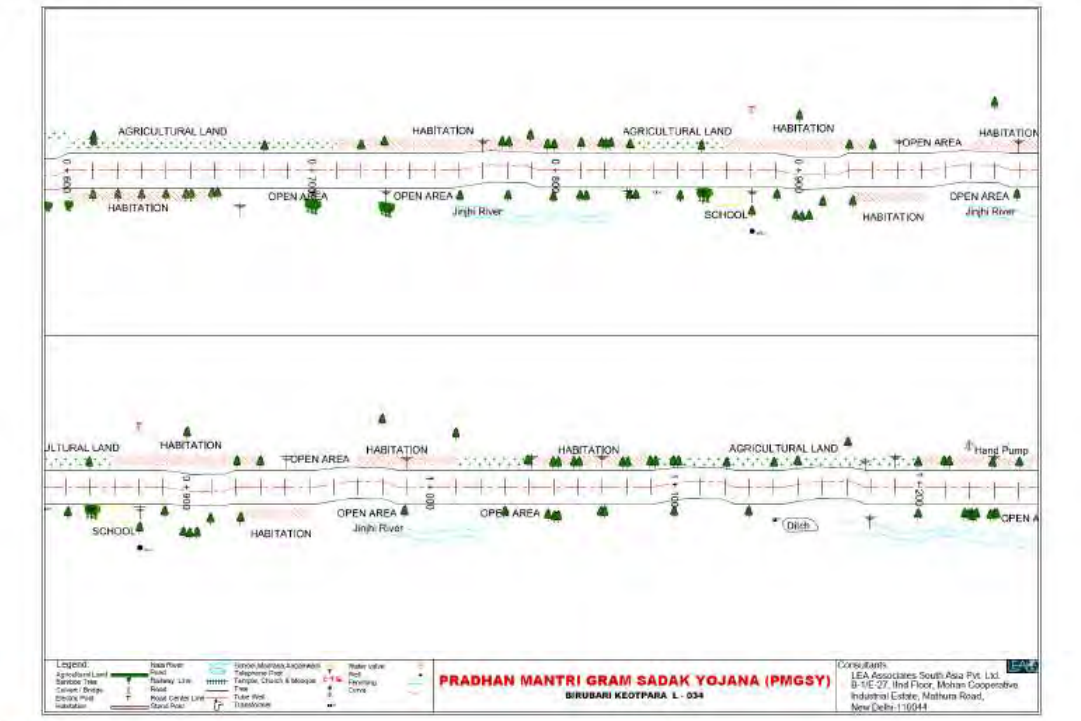
E-2 List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

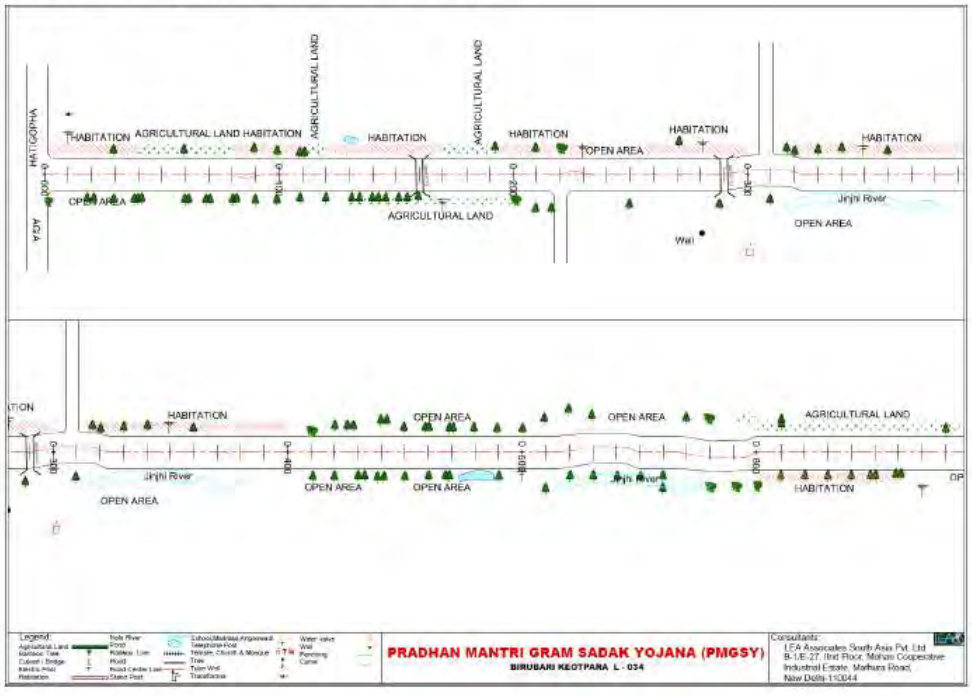
Chainage	Side	Type	Distance from center line (m)
0+010	LHS	Electric Pole	5
0+230	LHS	Electric Pole	3.5
0+280	LHS	Electric Pole	4
0+350	LHS	Electric Pole	3
0+770	LHS	Electric Pole	3.1
0+940	LHS	Electric Pole	3
0+990	LHS	Electric Pole	3
1+040	LHS	Electric Pole	3

Chainage	Side	Type	Distance from center line (m)
1+070	LHS	Electric Pole	2.8
1+180	LHS	Electric Pole	3
1+230	LHS	Electric Pole	2.3
1+250	LHS	Electric Pole	3
1+290	LHS	Electric Pole	2
1+320	LHS	Electric Pole	1.5
1+430	LHS	Electric Pole	3
1+500	LHS	Electric Pole	3
0+170	RHS	Electric Pole	3.6
0+280	RHS	Electric Pole	9
0+500	RHS	Electric Pole	3.9
0+670	RHS	Electric Pole	5.5
0+700	RHS	Electric Pole	3
0+730	RHS	Electric Pole	3
0+830	RHS	Electric Pole	3.1
0+860	RHS	Electric Pole	2.5
0+880	RHS	Electric Pole	3
1+180	RHS	Electric Pole	4.1
1+350	RHS	Electric Pole	2.5
1+220	LHS	Hand Pump	5.3
0+010	LHS	Transformer	7
1+140	RHS	Transformer	3.5

E-3 List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10):

Chainage	Side	Sensitive Structures	Distance from center line (m)
0+870	RHS	School	3.5
0+300	RHS	Temple	8
0+860	LHS	Church	7
0+840	RHS	Public Toilet	3.1


AGRICULTURAL LAND
HABITATION
OPEN AREA
Jinjhi River
SCHOOL
Hand Pump
Ditch
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
BIRUBARI KEOTPARA L - 034


HABITATION
AGRICULTURAL LAND
OPEN AREA
Jinjhi River
SCHOOL
Well
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
BIRUBARI KEOTPARA L - 034

E-5 Photographs of the project area showing at least 10 m on either side from center line of road alignment. Every 2 km or less of road must have at least 1 photograph.

Start Point of corridor

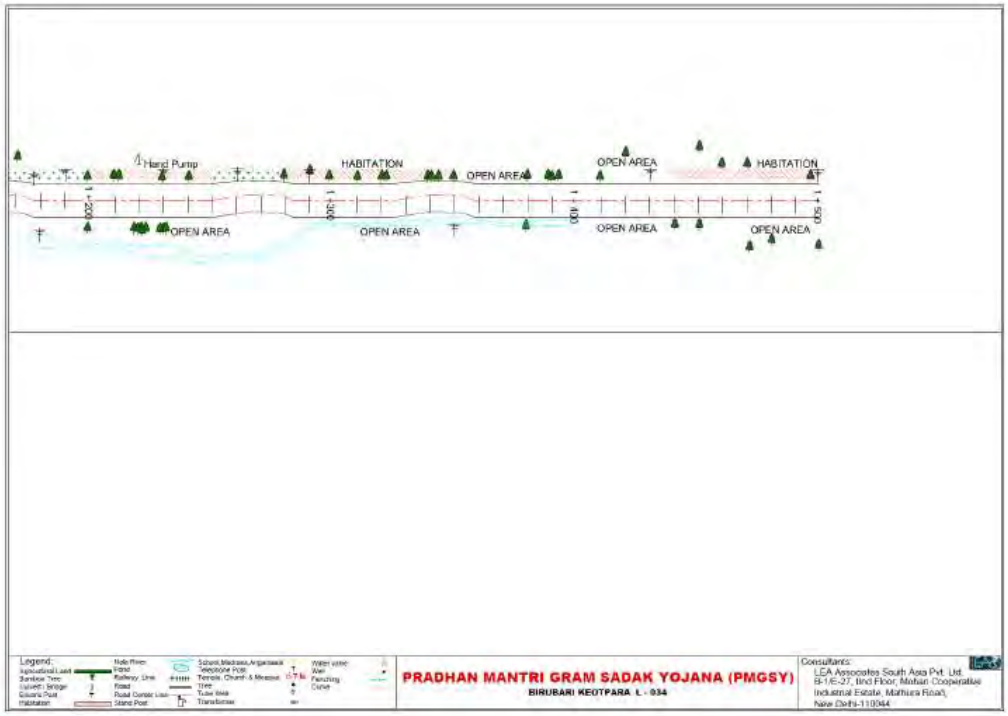
Corridor at 0+400

Corridor at 0+600

Corridor at 0+800

Corridor at 1+000

End Point of corridor



E–6 List of Participants (Attendance Sheet)

Transect Walk Attendance Sheet

Road Name: BIRUBARI KEOTPARA. Date: 27-09-13.

Community		PIU/PRI	
Name of the Participants	Signature	Name and designation of the official	Signature
Durgonath Sangma	Sangma	PRedinath Momin	P. Momin Gaon Pra Village Keotpara Distt.
Sibil Sangma	Sibil	Shri Hrishikesh Das.	S/A. (Hrs)
Hajilisen	Marak		
Sumilan Sangma	S. Sangma		
Traitin Marak	T. Marak		
Franking Sangma	F. Sangma		
Laarson Sangma	L. Sangma		
Prethy Momin	P. Momin		
Mahsila Marak	M. Marak		
Banilla Momin	B. Momin		
Clarair K. Sangma	Sangma		
Rajkumar	Raj		

IV. RURAL ROADS: ENVIRONMENTAL CHECKLIST

Road Name : NH-31(Bhatkuchi) to Dhamdhama
Block Name : Rangia
District Name : Kamrup
Total Length of the Road : 2.000 km

A. Climatic Conditions

Temperature	High: 38.5% Low: 7%
Humidity	High: 84% Low: 69%
Rainfall	1400mm/year
Rainy Season	May to September

B. Location of the Road and Generic description of Environment

No.	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)		✓	Distance from Coastline: km ( ) more than 50% ( ) less than 20%
2.	Type of Terrain-(Plain/Hilly/ Mountainous etc.) *(Explain the topography of the area and how many km of the road are located in the hilly area)*		✓	Topography of terrain – Plain Altitude: 55m (average) The entire section of the alignment fall in the plain terrain
4.	Forest Area *(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest area)?*		✓	Type of Vegetation: Legal Status of the Forest Area: *(Reserved, National Park, Sanctuaries, Unclassified, etc.*
5.	Wildlife *(Explain whether there are any wildlife species in the project area)*		✓	Name of animals: Endangered species (if any):
6.	Inhabited Area	✓		Chainage: From 0+530, To 1+800, Side LHS; From 0+580, To 2+000, Side RHS
7.	Agricultural Land	✓		Chainage: From 0+000, To 0+530, Side LHS; From 0+000, To 0+580, Side RHS

No.	Type of Ecosystem	Yes	No	Explanation
8.	Grazing grounds		✓	
9.	Barren Land		✓	

C. Specific description of the Road Environment

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation
1.	Are there any areas with landslide or erosion problems along the road? ***(If yes, indicate the location (right or left side) and the chainage)***		✓	( ) No Secondary information is available and Local Community is not aware of this matter
2.	Are there any lakes/swamps beside the road? ***(If yes, list them indicating the location (right or left side)and the chainage)***	✓		• One pond is located at chainage 1+815(RHS) of the corridor. Chainage: 1+815, Side: RHS, Particular: Pond, DCL: 4.5 • Slope protection measures should be considered along the road section that traverses the water bodies
3.	Are there any nallas/streams/rivers etc. along/crossing the road? ***(If yes, list them indicating the location (right, left or crossing) and the chainage***		✓	
4.	Are there problems of water stagnation and other drainage issues on or near the road? ***(If yes, mention chainage)***		✓	
5.	Is the area along the project road prone to flooding? ***(If yes, mention flood level and frequency)***		✓	( ) No Secondary information is available and Local Community is not aware of this matter
6.	Are there any trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment? ***(If yes attach list of trees indicating the location (right or left side)and the chainage)***	✓		166 trees are located within 10 m on either side of the CL. Out of these, 8 trees would be affected due to the proposed improvement. Enclosed list Refer: E.1.
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas? ***(If yes, specify details of habitat with chainage)***		✓	( ) No Secondary information is available and Local Community is not aware of this matter

No.	Parameter / Component	Yes	No	Explanation
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	( ) No Secondary Information Available and Local Community is not aware of this matter.
9.	Are there any utility structures[1] within 10 m on either side from the center line of the road alignment? ***(If yes, attach list with chainage)***	✓		46 electric poles, 2 stand posts, 1 transformer and 1 tube well are located within 10m on either side of the road centre line. Out of these, 14 electric poles will be affected due to the project (Refer E.2)
10.	Are there any religious, cultural or community structures/buildings[2] within 10 m on either side from the center line of the road alignment? ***(If yes attach list with chainage)***	✓		2 Schools, 1 namghar, 2 Mandir, and 1 Library are located within 10m on either side of the road.

D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. ***(Attach list of people met and dates)***	✓		A community consultation was held with PIU and Community members during transect walk and it was attended by 60 persons. The list of participants is attached in Annexure E6.
2.	Any suggestion received in finalizing the alignment	✓		• Selection of the borrow areas away from residential areas • To save trees as far as possible • Provision of road safety measures near intersections and curves
3.	If suggestions received, were they incorporated into the design?	✓		

E. Annexures

E-1 List of trees indicating location (left or right side of the road) and chainage (as required under C 6)

Chainage	Side	Trees	DCL(m)
0+070	LHS	Aalsi	5
0+080	LHS	Bogori	3.2
0+120	LHS	Mango	3.8
0+180	LHS	Aalsi	4.5
0+330	LHS	Mango	3.2
0+380	RHS	Velkar	5.3
0+385	RHS	Velkar	5.3
0+389	RHS	Velkar	5.3
0+390	RHS	Velkar	
0+400	LHS	Mango	6
0+400	RHS	Velkar	5

[1] Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures.

[2] Mandir, Masjid, Church, religious/cultural/historical monument, school, health center, public toilet and other similar structures.

Chainage	Side	Trees	DCL(m)
0+405	RHS	Velkat	5
0+530	RHS	Arjun	4.5
0+540	LHS	Jackfruit	3.8
0+550	LHS	Arjun	2.9
0+570	LHS	Mango	3.2
0+600	LHS	Mango	5
0+680	LHS	Bogori	3.3
0+700	LHS	khejur	4.2
0+720	LHS	Mango	3.4
0+740	LHS	Mango	3.4
0+740	RHS	kadam	3.8
0+750	LHS	Radhasura	3.6
0+750	RHS	Arjun	3.4
0+760	RHS	Radhasura	4
0+769	RHS	Radhasura	4
0+778	RHS	Mango	3.7
0+780	RHS	Aahat	2.6
0+785	RHS	Coconut	3.7
0+800	LHS	korosh	4
0+809	RHS	Moj	3.8
0+810	LHS	Coconut	3.8
0+819	LHS	segun	3.8
0+850	RHS	Coconut	3.5
0+860	LHS	Coconut	3.5
0+860	RHS	Mango	3.2
0+870	RHS	kadam	3.4
0+880	LHS	Mango	7
0+890	RHS	Coconut	3.5
0+900	LHS	Coconut	3.8
0+900	LHS	Coconut	4
0+910	LHS	Coconut	3.3
0+920	RHS	Coconut	3.8
0+940	LHS	Velkar	3.4
0+940	RHS	Mango	3.4
0+950	LHS	segun	3.5
0+950	RHS	Mango	4
0+960	RHS	kadam	3.8
0+970	RHS	Velkar	3.5
1+020	LHS	Stalipadma	3.4
1+030	LHS	Aahat	3.4
1+038	LHS	Moj	3.5
1+039	RHS	Radhasura	5
1+040	LHS	Coconut	4
1+040	LHS	Coconut	4.2
1+050	LHS	Coconut	3.5
1+050	RHS	Mango	3.4
1+060	LHS	Coconut	4
1+070	RHS	Neem	3.8
1+079	RHS	Coconut	4
1+079	RHS	Jackfruit	4
1+080	LHS	Coconut	3.5
1+080	RHS	Coconut	4
1+082	RHS	kadam	4
1+090	LHS	Aahat	4.2
1+090	IHS	Moj	4
1+092	RHS	Coconut	4.2
1+100	LHS	Radhasura	4.2

Chainage	Side	Trees	DCL(m)
1+110	LHS	Moj	5
1+110	LHS	kadam	4
1+115	RHS	Simolu	5
1+120	LHS	Moj	4
1+122	LHS	Radhasura	4
1+125	RHS	Coconut	4
1+129	RHS	Moj	4
1+130	RHS	Moj	4
1+139	LHS	Moj	3.8
1+140	LHS	kadam	3.8
1+140	RHS	kadam	4.5
1+160	RHS	kohimola	4
1+170	LHS	Moj	4
1+170	RHS	Moj	4.2
1+172	RHS	kadam	4
1+180	LHS	Moj	4.2
1+180	RHS	kadam	4
1+189	RHS	Mango	4
1+190	LHS	Mango	4
1+190	RHS	Moj	3.8
1+200	RHS	Mango	3.2
1+210	RHS	Simolu	4
1+220	LHS	Coconut	3.6
1+250	LHS	Coconut	4
1+250	LHS	Coconut	4.2
1+252	RHS	Moj	3.4
1+260	LHS	Mango	4
1+270	RHS	Coconut	4
1+279	RHS	Mango	4
1+280	RHS	Moj	4
1+300	RHS	Moj	4
1+310	RHS	Velkar	3
1+320	LHS	Radhasura	4
1+330	RHS	Mango	3.8
1+336	RHS	Moj	3.8
1+350	LHS	Moj	4
1+350	RHS	Mango	4
1+370	LHS	Coconut	4
1+370	LHS	Coconut	4.2
1+380	RHS	kordoi	5
1+390	LHS	Coconut	4
1+400	RHS	Coconut	3.8
1+420	RHS	Coconut	4
1+420	RHS	Coconut	3.8
1+450	LHS	khejur	3
1+468	RHS	Mango	4
1+470	RHS	Mango	3.8
1+480	LHS	Coconut	3.8
1+480	RHS	Coconut	4
1+490	LHS	Coconut	3.8
1+490	RHS	Coconut	4
1+510	RHS	Coconut	4
1+540	RHS	Mango	4.2
1+550	RHS	Coconut	4.2
1+560	LHS	Coconut	4
1+560	LHS	Mango	4.2
1+560	RHS	Coconut	4

Chainage	Side	Trees	DCL(m)
1+570	RHS	Jackfruit	4
1+575	RHS	Jackfruit	4.2
1+580	LHS	Velkar	3.8
1+580	RHS	Mango	3.4
1+580	RHS	Mango	3.8
1+640	LHS	kadam	3.6
1+660	RHS	Coconut	4
1+690	LHS	Coconut	4.2
1+690	LHS	Coconut	4.4
1+720	RHS	Coconut	3.8
1+720	LHS	Coconut	3.8
1+740	RHS	Coconut	3.8
1+760	RHS	Mango	3.2
1+770	RHS	Coconut	4
1+772	RHS	Coconut	3.8
1+779	LHS	Coconut	5
1+780	LHS	Coconut	5
1+789	RHS	Coconut	3.2
1+790	LHS	Mango	3.4
1+790	RHS	Coconut	3
1+800	LHS	Moj	5
1+800	LHS	Moj	5.2
1+800	RHS	Aahat	3.4
1+809	LHS	Radhasura	5
1+815	LHS	Velkar	3.6
1+820	RHS	Aahat	3.2
1+830	RHS	Moj	3.8
1+840	RHS	Mango	3.8
1+850	RHS	Velkar	3.8
1+870	RHS	Mango	4
1+880	RHS	Jackfruit	4
1+889	RHS	Velkar	3.8
1+900	RHS	Simolu	3.8
1+910	RHS	kadam	4
1+920	RHS	Moj	4
1+920	RHS	Jackfruit	4.2
1+940	RHS	Simolu	3.4
1+960	RHS	Aahat	
1+980	LHS	Mango	2.7
1+985	LHS	Arjun	2.7
2+000	LHS	Aahat	2.9

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

E-2 List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

Chainage	Side	Utility Structures	DCL(m)
0+009	RHS	Electric Pole	8
0+060	RHS	Electric Pole	6
0+100	RHS	Electric Pole	7
0+140	RHS	Electric Pole	4
0+190	RHS	Electric Pole	6
0+220	RHS	Electric Pole	8
0+240	RHS	Electric Pole	8
0+270	RHS	Electric Pole	8

Chainage	Side	Utility Structures	DCL(m)
0+330	RHS	Electric Pole	8
0+370	RHS	Electric Pole	5
0+372	RHS	Electric Pole	5
0+390	RHS	Electric Pole	3.4
0+540	RHS	Electric Pole	4
0+580	LHS	Electric Pole	3.2
0+610	RHS	Electric Pole	3.3
0+620	LHS	Electric Pole	3.3
0+650	LHS	Electric Pole	3
0+650	RHS	Electric Pole	4.5
0+690	LHS	Electric Pole	4
0+720	RHS	Transformer	2.9
0+760	LHS	Electric Pole	3.7
0+770	RHS	Electric Pole	2.6
0+780	LHS	Electric Pole	3.8
0+809	LHS	Electric Pole	2.8
0+850	LHS	Electric Pole	3.5
0+920	RHS	Electric Pole	3.8
1+000	LHS	Electric Pole	4
1+000	RHS	Electric Pole	3.2
1+020	RHS	Electric Pole	2.9
1+045	RHS	Electric Pole	2.8
1+060	RHS	Electric Pole	3.8
1+090	RHS	Electric Pole	4
1+160	LHS	Tube Well	4
1+200	LHS	Electric Pole	4
1+250	RHS	Electric Pole	3.2
1+290	RHS	Electric Pole	2.7
1+340	RHS	Electric Pole	3
1+400	LHS	Electric Pole	3
1+440	LHS	Electric Pole	3.2
1+500	LHS	Electric Pole	4
1+500	RHS	Stand Post	3.8
1+550	LHS	Electric Pole	3
1+670	LHS	Electric Pole	2.9
1+730	LHS	Electric Pole	3.2
1+750	LHS	Electric Pole	2.8
1+760	RHS	Stand Post	3.4
1+860	LHS	Electric Pole	2.6
1+890	RHS	Electric Pole	4
1+930	RHS	Electric Pole	3
2+000	RHS	Electric Pole	3.4

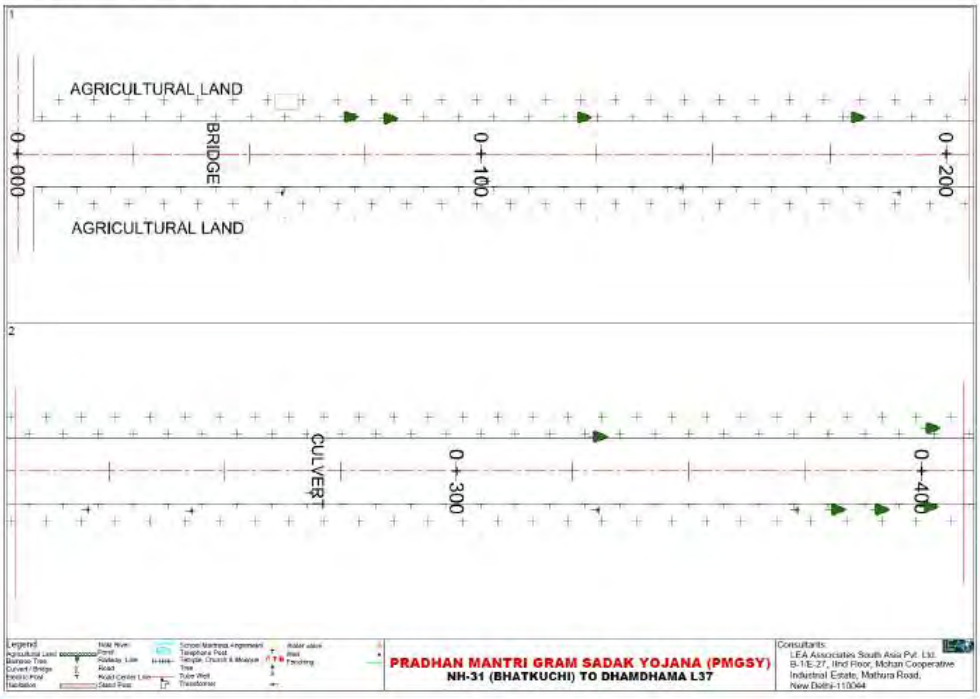
E-3 List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10):

Chainage	Side	Community Structures	DCL (m)
0+771	RHS	Mandir	6
0+790	RHS	School	4
1+780	RHS	Naamghar	8
1+960	RHS	School	4.5
1+970	LHS	Library	7
2+000	LHS	Mandir	3.2

CPF AND SCeF DOCUMENTS
KAMRUP DISTRICT

NH-31 (BHATKUCHI) TO DHAMDHAMA ROAD (L37)
October 2013

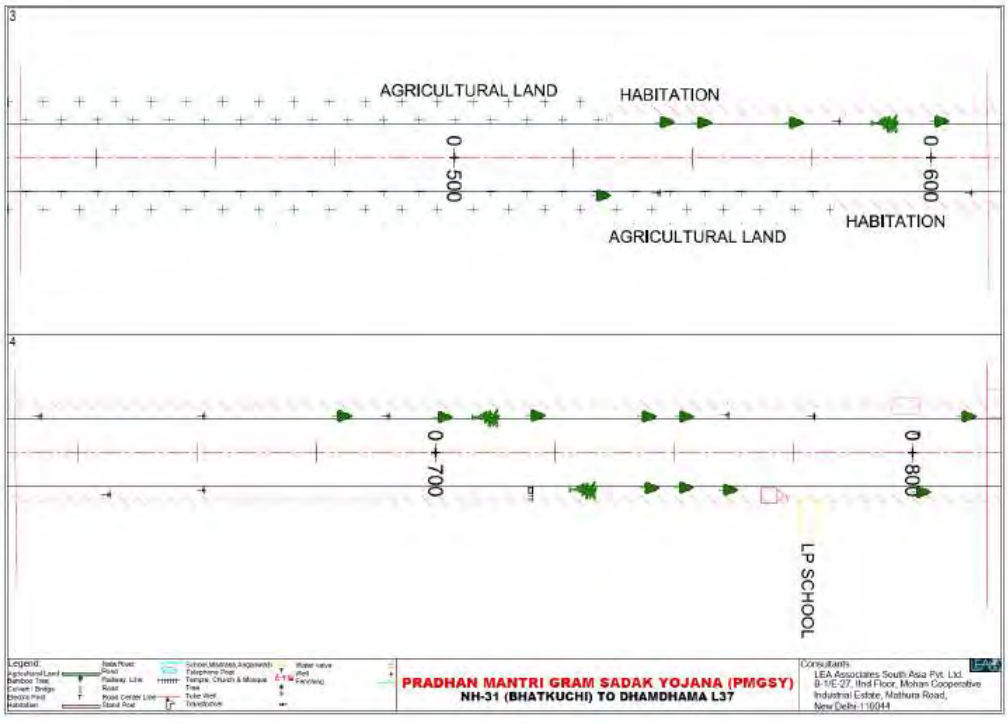
E-4 Sketch of strip map of the road covering details of atleast 10 m on either side from the center line of the road



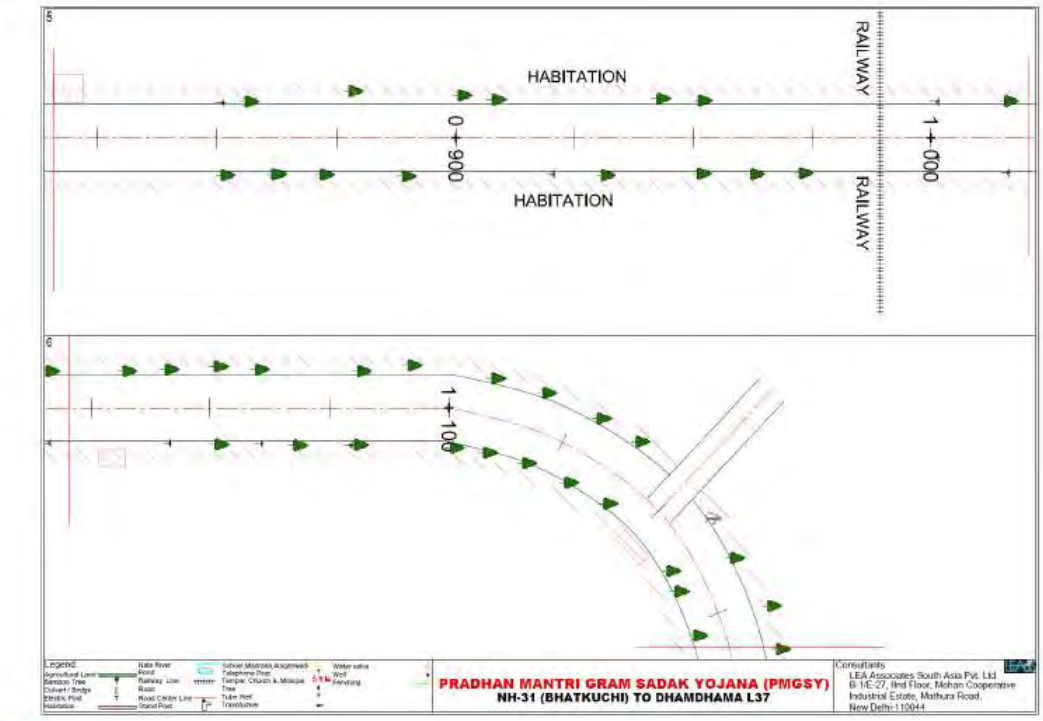
40

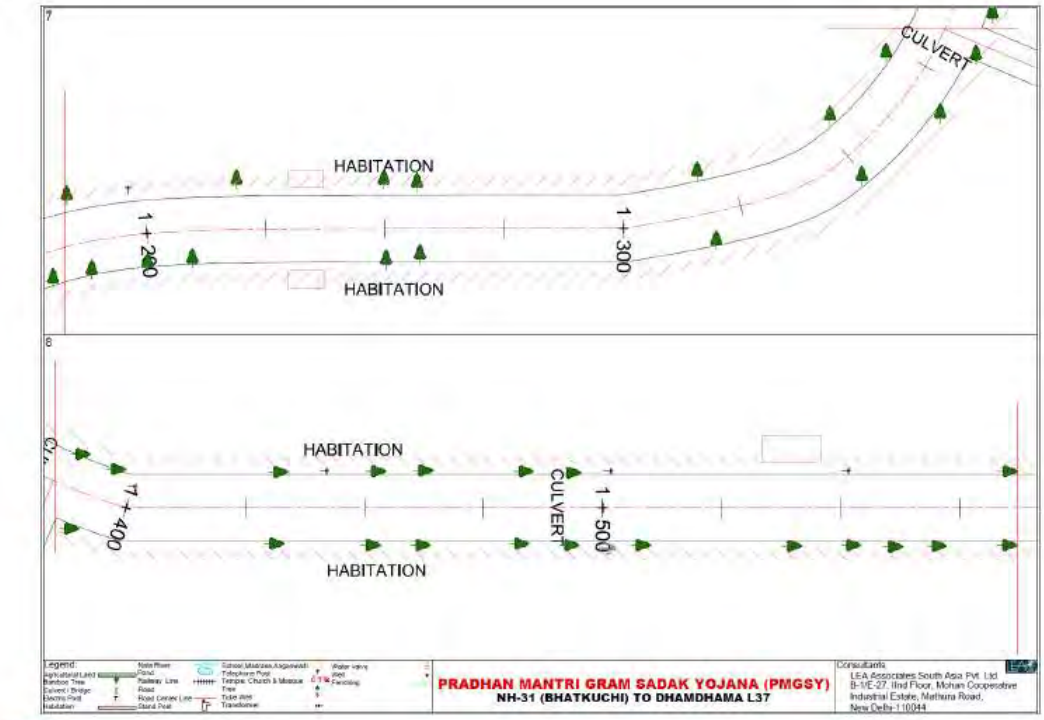
CPF AND SCeF DOCUMENTS
KAMRUP DISTRICT

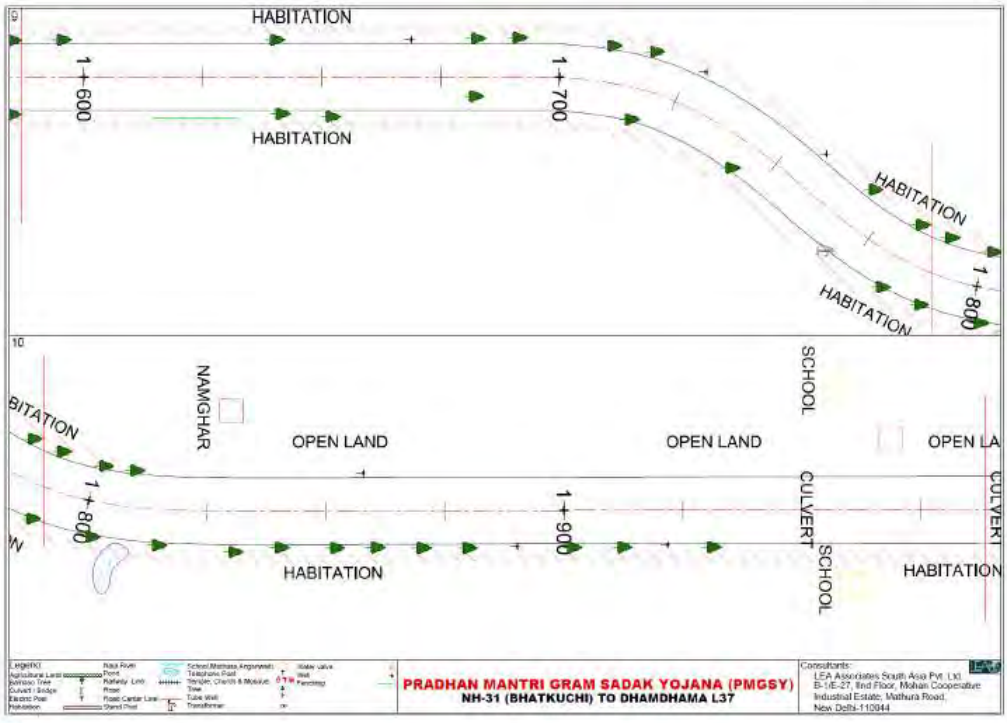
NH-31 (BHATKUCHI) TO DHAMDHAMA ROAD (L37)
October 2013



41


HABITATION
RAILWAY
0+900
1+000
HABITATION
RAILWAY
1+100
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
NH-31 (BHATKUCHI) TO DHAMDHAMA L37


CULVERT
HABITATION
1+200
1+300
HABITATION
HABITATION
1+400
CULVERT
1+500
HABITATION
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
NH-31 (BHATKUCHI) TO DHAMDHAMA L37



E-5 Photographs of the project area showing atleast 10 m on either side from center line of road alignment. Every 2 km or less of road must have atleast 1 photograph.


Trees along the corridor


Transformer located at ch 0+720 (RHS)


Habitation along the corridor


Agricultural Fields located along the corridor

E-6 List of Participants (Attendance Sheet)

Transect Walk Attendance Sheet

Road Name: NH-31 (Bhatkuchi) to Dhamdhama Date: 2/08/2012

	Community		PIU/PRI	
	Name of the Participants	Signature	Name and designation of the official	Signature
	Rafik		Rafik Ali - S.A.	[signature]
1	Sri Nripen Deka	[signature]	[Assamese handwriting]	[signature] গাঁওবুঢ়া
2	Sri Manabendra Deka	[signature]		[stamp]
3	Sri Sailendra Basumatary	[signature]	Hitesh Kr. Talukdar	[signature] JE. PWD. Rangia R.R. Division
4	Sri Jadav Ch. Deka	[signature]	Dr. Mrinal Deka	[signature] Member Z.P.
5	Sri Santosh Kr. Kalita	[signature]	Bhabakanta	S.A. (R.I)
6	Kamaleswar Boro.	Boro	Shri Banikanta Boro	[signature] GAONBURHA Vill—Kokahati, Bhatkuchi Mouza—Pandury, Dist—Kamrup (Assam)
7	Rajani Kanta Deka.	[signature]		
8	Raju Boro	R Boro		
9	Bhabesh Deka	[signature]		
10	Monohar Deka.	[signature]		
11	Narapati Deka	[signature]		

Transect Walk Attendance Sheet

Road Name NH-31 (Bhatkuchi) to Dhamdhama Date: 2/08/2012

	Community		PRI/PRI	
	Name of the Participants	Signature	Name and designation of the official	Signature
12	Khamindra Gogoi	KGogoi		
13	Chandan Deka	CD		
14	[illegible]	KB		
15	Dulen Das	D Das		
16	[illegible]	Madhab		
17	Dipen Barua	DBarua		
18	Jyoti Prasad Gogoi	JPGogoi		
19	Sri Gopal Barua	Gopal		
20	[illegible]			
21	[illegible]	R Das		
22	[illegible]			
23	Ramesh Ch Barua	R Barua		

IV. RURAL ROADS: ENVIRONMENTAL CHECKLIST

Road Name	77th km of SH- 35 to Langparpan
Block Name	Rongkhang
District Name	Karbi Anglong
Total Length of the Road	4.50 km

A. Climatic Conditions

Temperature	High: 36°C Low: 9°C
Humidity	High : 95% Low: 40%
Rainfall	1000mm/year
Rainy Season	May to September

B. Location of the Road and Generic description of Environment

No.	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)		✓	Distance from Coastline: km ( ) more than 50% ( ) less than 20%
2.	Type of Terrain—(Plain/Hilly/ Mountainous etc.) *(Explain the topography of the area and how many km of the road are located in the hilly area)*	✓		Topography of terrain - Plain Altitude: 60.6m (average) The entire section of the alignment fall in the plain terrain
4.	Forest Area *(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest area)?*		✓	Type of Vegetation: Legal Status of the Forest Area: *(Reserved, National Park, Sanctuaries, Unclassified, etc.*
5.	Wildlife *(Explain whether there are any wildlife species in the project area)*		✓	Name of animals: Endangered species (if any):
6.	Inhabited Area	✓		Chainage From / To / Side 0+000 / 0+270 / LHS 0+770 / 1+200 / LHS 1+390 / 2+720 / LHS 3+030 / 3+200 / LHS 3+800 / 4+300 / LHS 0+770 / 1+200 / RHS 1+400 / 1+800 / RHS 2+030 / 2+050 / RHS 2+440 / 2+570 / RHS 2+620 / 2+750 / RHS

No.	Type of Ecosystem	Yes	No	Explanation
				3+080 / 3+200 / RHS 3+600 / 3+790 / RHS 4+300 / 4+430 / RHS
7.	Agricultural Land	✓		Chainage From / To / Side 0+270 / 0+770 / LHS 1+200 / 1+390 / LHS 2+720 / 3+030 / LHS 3+200 / 3+800 / LHS 0+000 / 0+770 / RHS 1+200 / 1+400 / RHS 1+800 / 2+030 / RHS 2+050 / 2+440 / RHS 2+570 / 2+620 / RHS 2+750 / 3+080 / RHS 3+200 / 3+600 / RHS 3+790 / 4+300 / RHS 4+430 / 4+500 / RHS
8.	Grazing grounds		✓	
9.	Barren Land		✓	

C. Specific description of the Road Environment

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation
1.	Are there any areas with landslide or erosion problems along the road? *(If yes, indicate the location (right or left side) and the chainage)*	✓		Erosion prone areas are identified at chainages 1+645 km, 1+725 km, 2+350 km, 2+560 km and 3+770 km. ( ) No Secondary Information is available and Local Community is not aware of this matter
2.	Are there any lakes/swamps beside the road? *(If yes, list them indicating the location (right or left side)and the chainage)*	✓		5 ponds are located at chainages 1+645 km, 1+725 km, 2+350 km, 2+560 km and 3+770 km.
3.	Are there any nallas/streams/rivers etc. along/crossing the road? *(If yes, list them indicating the location (right, left or crossing) and the chainage*		✓	
4.	Are there problems of water stagnation and other drainage issues on or near the road? *(If yes, mention chainage)*		✓	

No.	Parameter/ Component	Yes	No	Explanation
5.	Is the area along the project road prone to flooding? *(If yes, mention flood level and frequency)*		✓	( ) No Secondary Information is available and Local Community is not aware of this matter
6.	Are there any trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment? *(If yes attach list of trees indicating the location (right or left side)and the chainage)*	✓		158 trees are located within 10 m on either side of the CL. Out of these, 21 trees located along the proposed alignment will be affected due to the project. [Refer E.1]
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas? *(If yes, specify details of habitat with chainage)*		✓	( ) No Secondary Information is available and Local Community is not aware of this matter
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	( ) No Secondary Information Available and Local Community is not aware of this matter
9.	Are there any utility structures[1] within 10 m on either side from the center line of the road alignment? *(If yes, attach list with chainage)*	✓		28 electric poles are located within 10 m on either side of the CL of the road. Out of these utility structures, 6 electric poles will be affected due to the project [Refer E.2]
10.	Are there any religious, cultural or community structures/buildings[2] within 10 m on either side from the center line of the road alignment? *(If yes attach list with chainage)*	✓		1 school and 1 temple are located within 10 m on either side of the CL of the road. None of these community structures will be affected due to the project [Refer E.3]

D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. *(Attach list of people met and dates)*	✓		A consultation was held with PIU and community members, it was attended by 18 persons. The list of participants is attached in **Annexure E6.**
2.	Any suggestion received in finalizing the alignment	✓		Road safety measures near road intersection, curve locations.
3.	If suggestions received, were they incorporated into the design?	✓		

[1] Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures

[2] Mandir, Masjid, Church, religious/cultural/historical monuments, school, health center, public toilet and other similar structures

E. Annexures

E-1 List of trees indicating location (left or right side of the road) and chainage (as required under C. 6)

Sl. No.	Chainage	Side	Name of Tree	DCL
1.	00+010	Honaru	RHS	5
2.	00+020	Mango	LHS	6
3.	00+030	Segun	RHS	6
4.	00+035	Segun	RHS	5
5.	00+040	Segun	RHS	4
6.	00+050	Segun	RHS	4
7.	00+060	Segun	RHS	4
8.	00+065	Segun	RHS	4
9.	00+070	Segun	RHS	4
10.	00+075	Sonaru	LHS	5
11.	00+080	Segun	RHS	4
12.	00+105	Segun	RHS	6
13.	00+120	Segun	RHS	6
14.	00+130	Howalu	RHS	6
15.	00+140	Segun	RHS	6
16.	00+155	Segun	RHS	5.5
17.	00+160	Segun	RHS	6
18.	00+170	gomari	LHS	5
19.	00+170	Segun	RHS	6
20.	00+190	Segun	LHS	6
21.	00+200	Segun	LHS	5
22.	00+290	Poma	RHS	6
23.	00+350	Dimoru	LHS	4
24.	00+480	Khakan	RHS	5
25.	00+510	gomari	LHS	5
26.	00+550	Mango	LHS	4.5
27.	00+552	Segun	RHS	5
28.	00+592	Segun	RHS	6
29.	00+600	Segun	RHS	4
30.	00+620	Sonaru	RHS	6
31.	00+640	Segun	RHS	9
32.	00+650	Poma	LHS	6
33.	00+653	krishnasura	RHS	5
34.	00+670	gomari	LHS	4
35.	00+690	Mango	LHS	4
36.	00+700	Segun	RHS	6
37.	00+730	Segun	RHS	4
38.	00+770	Honaru	LHS	3.5
39.	00+770	Sonaru	RHS	4
40.	00+800	krishnasura	LHS	6
41.	00+830	krishnasura	RHS	3.5
42.	00+840	Segun	LHS	4.5
43.	00+850	gomari	LHS	4.5
44.	00+860	Segun	LHS	4.5
45.	00+870	gomari	RHS	5.6
46.	00+880	gomari	LHS	6
47.	00+900	Bogori	LHS	7
48.	00+900	gomari	RHS	4
49.	00+920	Sonaru	RHS	6

Sl. No.	Chainage	Side	Name of Tree	DCL
50.	00+930	gomari	LHS	4
51.	00+930	gomari	RHS	4
52.	00+970	Segun	RHS	7
53.	00+980	gomari	LHS	6
54.	01+000	Mango	RHS	3
55.	01+010	gomari	LHS	7
56.	01+020	Mango	RHS	8
57.	01+050	Segun	LHS	3.5
58.	01+060	Segun	RHS	7
59.	01+070	Segun	LHS	3.5
60.	01+080	Segun	LHS	3.5
61.	01+090	Segun	LHS	3.5
62.	01+090	krishnasura	RHS	3.5
63.	01+110	Segun	LHS	4
64.	00+110	gomari	RHS	5
65.	01+150	gomari	LHS	3
66.	01+155	Sonaru	LHS	3
67.	01+165	Segun	LHS	2.5
68.	01+180	Segun	LHS	3
69.	01+185	gomari	RHS	6
70.	01+190	Mango	RHS	5
71.	01+200	gomari	RHS	5
72.	01+200	Segun	RHS	3
73.	01+205	gomari	RHS	2.5
74.	01+210	Mango	LHS	4
75.	01+230	Poma	RHS	7
76.	01+255	Mango	RHS	6
77.	01+270	gomari	LHS	2.8
78.	01+270	Mango	RHS	5
79.	01+280	Segun	LHS	3
80.	01+280	Sonaru	RHS	5
81.	01+290	Segun	LHS	3
82.	01+300	Segun	LHS	3.5
83.	01+300	Kathal	RHS	5
84.	01+305	gomari	LHS	3.5
85.	01+305	Segun	RHS	6
86.	01+320	gomari	RHS	4.2
87.	01+330	Segun	LHS	3
88.	01+345	gomari	RHS	3
89.	01+540	Sonaru	LHS	4
90.	00+155	gomari	LHS	8
91.	01+570	Sonaru	LHS	6
92.	01+590	Mango	LHS	5
93.	01+600	Kathal	RHS	5
94.	01+630	Kothal	RHS	5
95.	01+670	Mango	RHS	4
96.	01+690	Mango	RHS	3
97.	01+710	Mango	RHS	7
98.	01+780	Siris	RHS	8
99.	01+810	Ahat	RHS	6
100.	01+880	Khakan	RHS	2
101.	01+940	Ahat	LHS	6
102.	01+950	Ahat	RHS	6

Sl. No.	Chainage	Side	Name of Tree	DCL
103.	01+960	Mango	LHS	7
104.	02+000	Ahat	LHS	4
105.	02+000	Mango	RHS	7
106.	02+045	Segun	LHS	5.5
107.	02+050	gomuri	RHS	4
108.	02+100	Mango	LHS	3
109.	00+215	Mango	RHS	4
110.	02+180	Segun	RHS	5
111.	02+220	Mango	LHS	4
112.	02+280	Sonaru	LHS	5.5
113.	02+340	Ahat	LHS	6
114.	02+350	Mango	LHS	6
115.	02+400	Sonaru	RHS	3.3
116.	02+460	gomuri	RHS	3.6
117.	02+470	gomuri	RHS	3.5
118.	02+515	Mango	LHS	5
119.	02+610	Segun	LHS	7
120.	02+630	Segun	LHS	7
121.	02+680	gomuri	LHS	3.5
122.	02+720	gomuri	RHS	3
123.	02+740	Dimoru	LHS	3.5
124.	02+745	Segun	RHS	4
125.	02+790	Poma	RHS	6
126.	02+805	Segun	RHS	4
127.	02+890	Mango	LHS	3.5
128.	03+045	gomuri	LHS	5
129.	03+045	Sonaru	RHS	7
130.	03+060	Segun	RHS	8
131.	03+095	Sonaru	RHS	4
132.	03+110	Mango	LHS	6
133.	03+140	Bogori	RHS	8
134.	03+155	Poma	RHS	5.5
135.	03+165	Sonaru	LHS	4
136.	03+170	Mango	RHS	5
137.	03+195	Sonaru	LHS	4
138.	03+190	Poma	RHS	6
139.	03+365	Sonaru	RHS	5
140.	03+470	Valu	RHS	4
141.	03+490	Segun	RHS	4
142.	03+600	Sonaru	RHS	7
143.	03+650	Segun	LHS	5
144.	03+665	Segun	LHS	5
145.	03+680	Segun	LHS	5
146.	03+990	gomuri	LHS	3.6
147.	04+000	gomuri	RHS	5.5
148.	04+010	gomuri	RHS	5
149.	04+030	Sonaru	LHS	3.5
150.	04+035	Segun	RHS	5
151.	04+100	Segun	LHS	4.3
152.	04+115	Segun	LHS	3.2
153.	04+115	Segun	RHS	3.8
154.	04+380	Poma	RHS	7
155.	04+435	Mango	RHS	3.5

Sl. No.	Chainage	Side	Name of Tree	DCL
156.	04+460	Segun	LHS	4
157.	04+480	Segun	RHS	4
158.	04+495	Segun	RHS	3.5

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

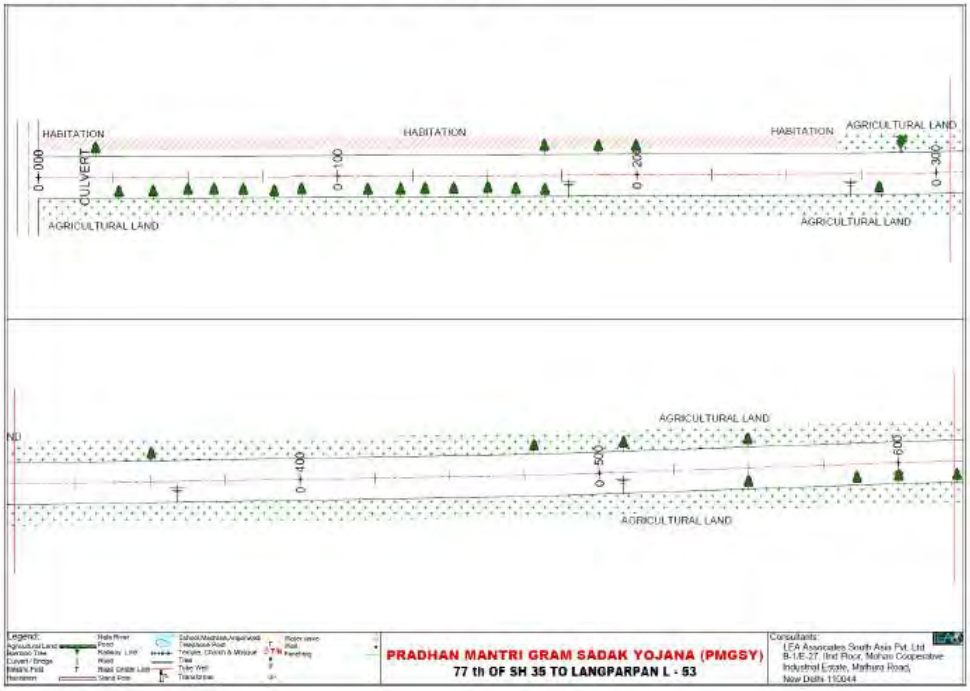
E-2 List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

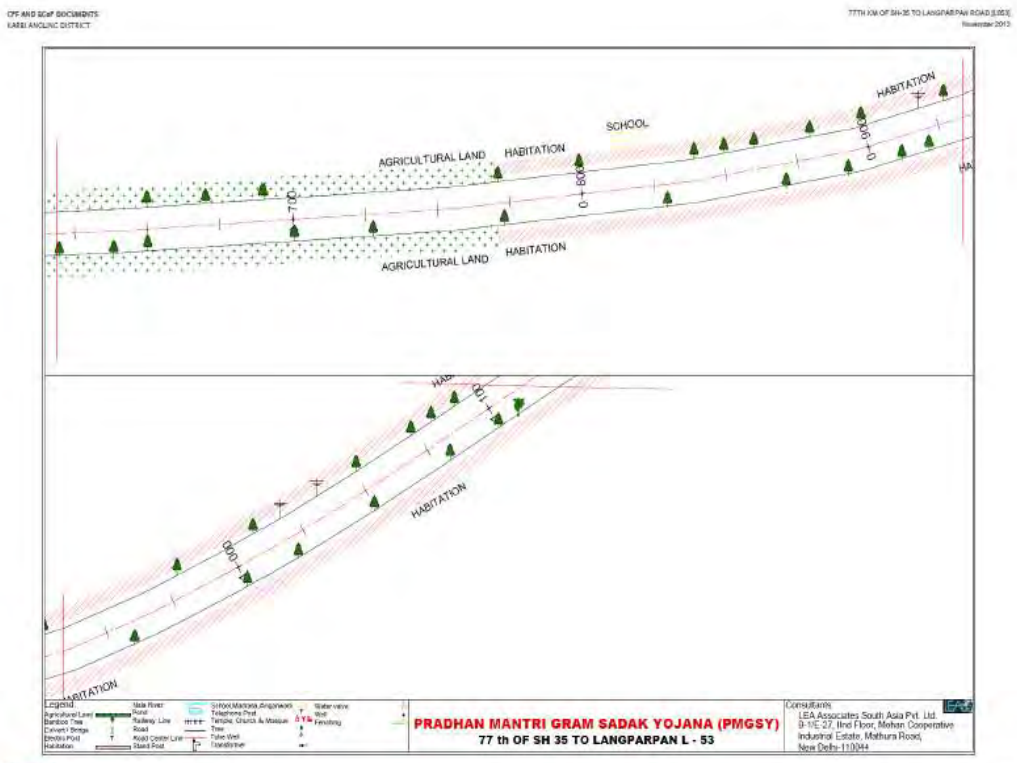
Sl. No.	Chainage	Side	Type	Distance from center line (m)
1.	00+180	Electric Pole	RHS	7
2.	00+280	Electric Pole	RHS	7
3.	00+355	Electric Pole	RHS	6
4.	00+510	Electric Pole	RHS	4
5.	00+890	Electric Pole	RHS	3
6.	00+920	Electric Pole	LHS	10
7.	01+020	Electric Pole	LHS	7
8.	01+040	Electric Pole	LHS	7
9.	01+140	Electric Pole	RHS	3.5
10.	01+480	Electric Pole	LHS	4
11.	01+500	Electric Pole	RHS	3.5
12.	01+540	Electric Pole	RHS	5
13.	01+600	Electric Pole	LHS	3.5
14.	01+640	Electric Pole	LHS	3.5
15.	01+700	Electric Pole	LHS	3
16.	01+740	Electric Pole	RHS	3.5
17.	01+800	Electric Pole	RHS	3
18.	01+840	Electric Pole	LHS	2
19.	01+900	Electric Pole	LHS	4
20.	01+990	Electric Pole	LHS	4.5
21.	02+025	Electric Pole	LHS	3
22.	02+210	Electric Pole	RHS	4
23.	02+170	Electric Pole	RHS	3.5
24.	02+190	Electric Pole	LHS	8
25.	02+330	Electric Pole	RHS	6
26.	02+440	Electric Pole	LHS	5
27.	02+510	Electric Pole	LHS	5
28.	02+615	Electric Pole	RHS	3

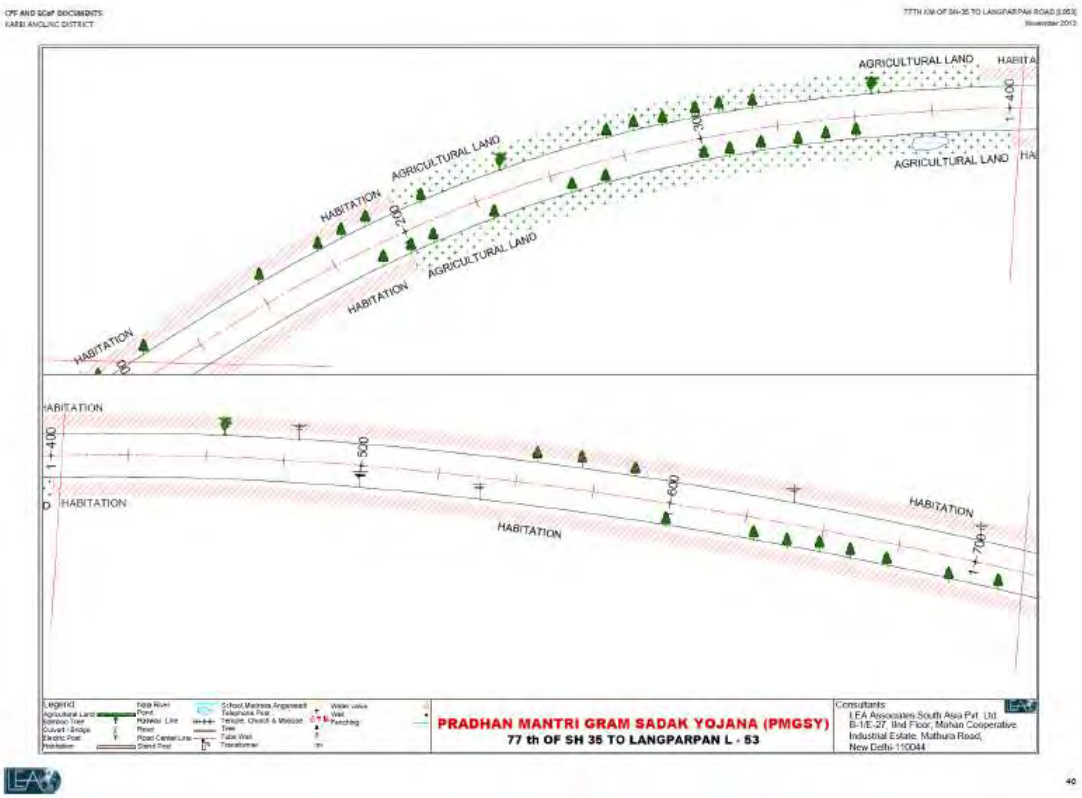
E-3 List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10):

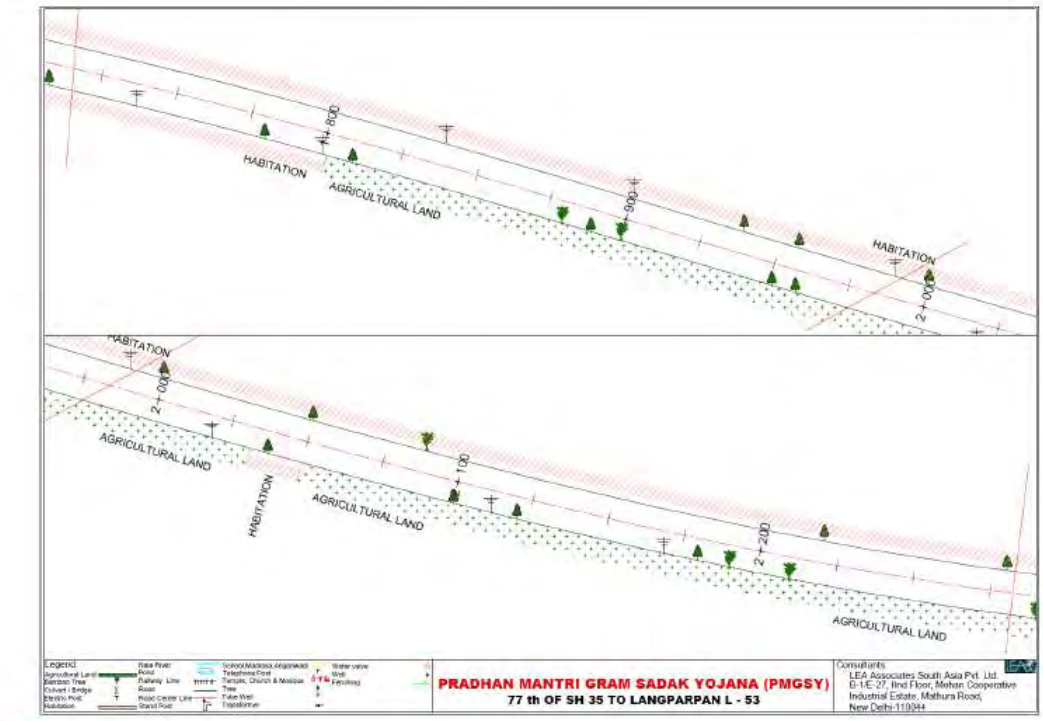
Chainage	Side	Sensitive Structures	Distance from center line (m)
00+820	School	LHS	7
02+550	Temple	LHS	5

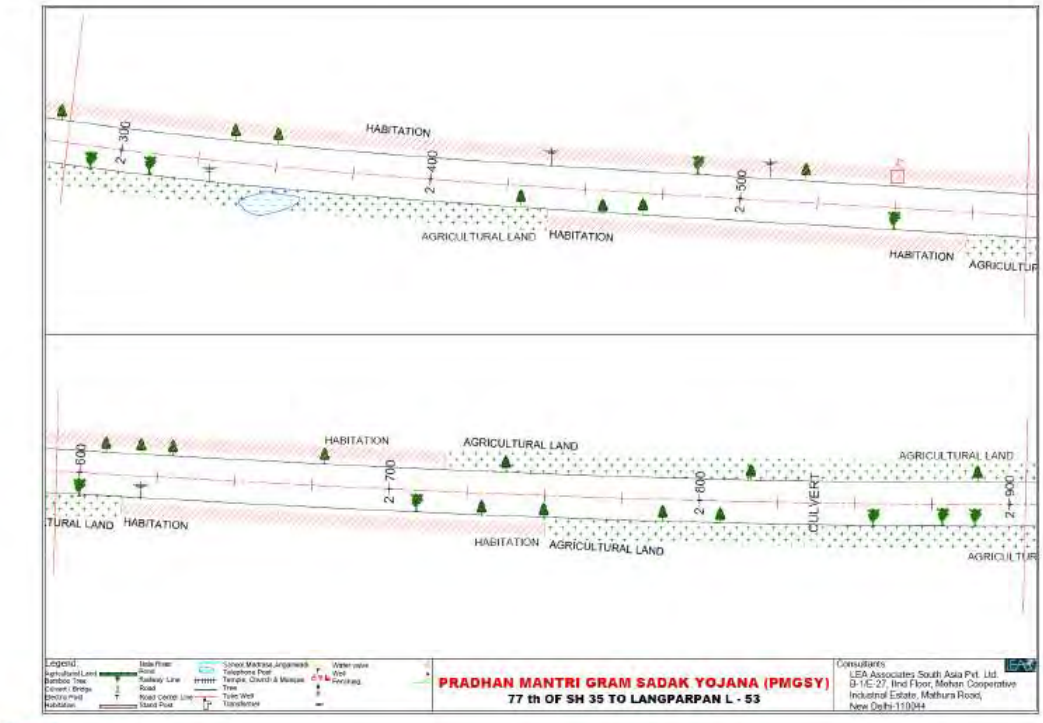
E-4 Sketch of strip map of the road covering details of atleast 10 m on either side from the center line of the road

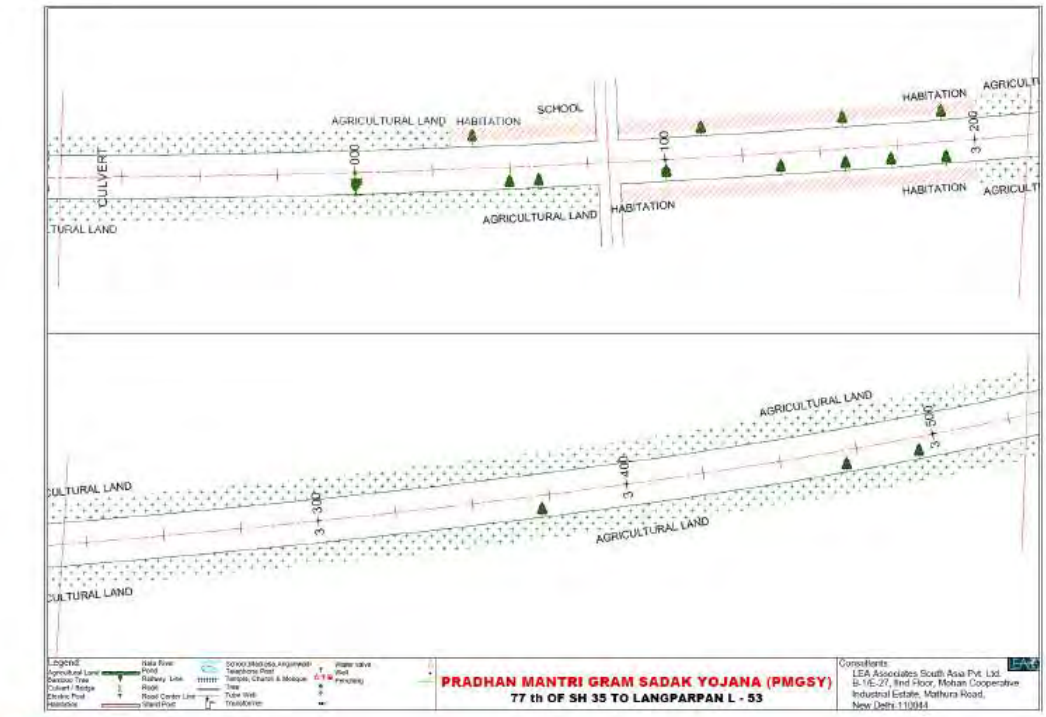



CPF AND SCeF DOCUMENTS
KARBI ANGLONG DISTRICT
77TH KM OF SH-35 TO LANGPARPAN ROAD (L-53)
AGRICULTURAL LAND
HABITATION
SCHOOL
AGRICULTURAL LAND
HABITATION
HABITATION
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
77 th OF SH 35 TO LANGPARPAN L - 53
Consultants
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044


CPF AND SCeF DOCUMENTS
KARBI ANGLONG DISTRICT
77TH KM OF SH-35 TO LANGPARPAN ROAD (L-53)
AGRICULTURAL LAND
HABITATION
AGRICULTURAL LAND
HABITATION
AGRICULTURAL LAND
HABITATION
HABITATION
HABITATION
HABITATION
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
77 th OF SH 35 TO LANGPARPAN L - 53
Consultants
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044


HABITATION
AGRICULTURAL LAND
2+800
2+900
2+000
2+100
2+200
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
77 th OF SH 35 TO LANGPARPAN L - 53
Consultants
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044


HABITATION
AGRICULTURAL LAND
2+300
2+400
2+500
2+600
2+700
2+800
2+900
CULVERT
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
77 th OF SH 35 TO LANGPARPAN L - 53
Consultants
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044



CPF AND EGoP DOCUMENTS
KARBI ANGLONG DISTRICT
77TH KM OF SH-35 TO LANGPARPAN ROAD [L053]
November 2013

Corridor at 3+000

Corridor at 3+500

Corridor at 4+000

End Point of corridor

E-5 Photographs of the project area showing at least 10 m on either side from center line of road alignment. Every 2 km or less of road must have at least 1 photograph.


Start Point of corridor


Corridor at 0+500


Corridor at 1+000


Corridor at 1+500


Corridor at 2+000


Corridor at 2+500

E-6 List of Participants (Attendance Sheet)

Transect Walk Attendance Sheet

Road Name: 77th K.m of S.H 35 to Langparpam Date: 14-07-2012

	Community		Govt.	
	Name of the Participants	Signature	Name and designation of the official	Signature
1	Ding Kisso	Ding Kisso	Sri Toysing Teron Langparpam	JOYSING TERON Sarkari Gaonbara Langparpan Hamren Mouza
2	Pramsankar Chouan	Pramsankar Chouhan		
3	Harinarayan Chouhan	हरिनारायण चौ०		
4	Arghal Chouhan	अरघल चौहान		
5	Chandrama Chouhan	चन्द्रमा चौहान		
6	Keshor Nath Chouhan	केशवनाथ चौहान		
7	Sabitri Timung	Sabitri		
8	Abhimanyu Engti	Abhimanyu Engti		
9	Ram Mahesh chouhan	रामहेश चौहान		
10	Anthony Tisso	A. Tisso		
11	Ram Teiming	R Teiming		
	Lalbalchan Chouhan	लालबालचन चौहान		

IV. RURAL ROADS: ENVIRONMENTAL CHECKLIST

Road Name : L029 to Chunatirgool
Block Name : R.K. Nagar
District Name : Karimganj
Total Length of the Road : 2.388 km

A. Climatic Conditions

Temperature	High: 31% Low: 10%
Humidity	High: 96% Low: 77%
Rainfall	2457.5mm/year
Rainy Season	May to September

B. Location of the Road and Generic description of Environment

No.	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)		✓	Distance from Coastline: km ( ) more than 50% ( ) less than 20%
2.	Type of Terrain-(Plain/Hilly/ Mountainous etc.) *(Explain the topography of the area and how many km of the road are located in the hilly area)*	✓		Topography of terrain - Plain Altitude: 13m (average) The alignment is in the plain terrain
4.	Forest Area *(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest area)?*		✓	Type of Vegetation: Legal Status of the Forest Area: *(Reserved, National Park, Sanctuaries, Unclassified, etc.*
5.	Wildlife *(Explain whether there are any wildlife species in the project area)*		✓	Name of animals: Endangered species (if any):
6.	Inhabited Area	✓		From / To / Side 0+290 / 0+360 / LHS 1+410 / 2+070 / LHS 0+240 / 0+400 / RHS 0+650 / 1+080 / RHS 1+600 / 2+000 / RHS
7.	Agricultural Land	✓		From / To / Side 0+000 / 0+290 / LHS 0+430 / 1+260 / LHS

No.	Type of Ecosystem	Yes	No	Explanation
				0+000 / 0+240 / RHS 0+400 / 0+650 / RHS 1+440 / 1+600 / RHS
8.	Grazing grounds		✓	
9.	Barren Land		✓	

C. Specific description of the Road Environment

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation
1.	Are there any areas with landslide or erosion problems along the road? ***(If yes, indicate the location (right or left side) and the chainage)***		✓	( ) No Secondary Information is available and Local Community is not aware of this matter
2.	Are there any lakes/swamps beside the road? ***(If yes, list them indicating the location (right or left side)and the chainage)***		✓	
3.	Are there any hallas/streams/rivers etc. along/crossing the road? ***(If yes, list them indicating the location (right, left or crossing) and the chainage***		✓	
4.	Are there problems of water stagnation and other drainage issues on or near the road? ***(If yes, mention chainage)***		✓	
5.	Is the area along the project road prone to flooding? ***(If yes, mention flood level and frequency)***		✓	( ) No Secondary Information is available and Local Community is not aware of this matter
6.	Are there any trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment? ***(If yes attach list of trees indicating the location (right or left side)and the chainage)***	✓		61 trees are located within 10 m on either side of the CL and out of these trees 3 trees would be affected due to the proposed improvement Enclosed list Refer. E.1.
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas? ***(If yes, specify details of habitat with chainage)***		✓	( ) No Secondary Information is available and Local Community is not aware of this matter

No.	Parameter/ Component	Yes	No	Explanation
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	( ) No Secondary Information Available and Local Community is not aware of this matter
9.	Are there any utility structures' within 10 m on either side from the center line of the road alignment? ***(If yes, attach list with chainage)***	✓		25 electric poles, 1 transformer, 2 stand posts, and 2 wells are located within 10 m on either side of road. Out of these utilities 4 electric poles would be affected due to the project. [Refer E.2]
10.	Are there any religious, cultural or community structures/buildings' within 10 m on either side from the center line of the road alignment? ***(If yes attach list with chainage)***	✓		2 schools and 2 temples are located within 10m on either side of the CL of the road (Refer E.3).

D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. ***(Attach list of people met and dates)***	✓		A community consultation was held with PIU and Community members. About 27 participants were present at the time of consultation. The list of participants is attached in **Annexure E6.**
2.	Any suggestion received in finalizing the alignment	✓		Road safety measures at schools, curves and road intersections locations.
3.	If suggestions received, were they incorporated into the design?	✓		

No.	Parameter/ Component	Yes	No	Explanation
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	( ) No Secondary Information Available and Local Community is not aware of this matter
9.	Are there any utility structures[1] within 10 m on either side from the center line of the road alignment? *(If yes, attach list with chainage)*	✓		25 electric poles, 1 transformer, 2 stand posts, and 2 wells are located within 10 m on either side of road. Out of these utilities 4 electric poles would be affected due to the project. [Refer E.2]
10.	Are there any religious, cultural or community structures/buildings[2] within 10 m on either side from the center line of the road alignment? *(If yes attach list with chainage)*	✓		2 schools and 2 temples are located within 10m on either side of the CL of the road (Refer E.3).

D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. *(Attach list of people met and dates)*	✓		A community consultation was held with PIU and Community members. About 27 participants were present at the time of consultation. The list of participants is attached in **Annexure E6.**
2.	Any suggestion received in finalizing the alignment	✓		Road safety measures at schools, curves and road intersections locations.
3.	If suggestions received, were they incorporated into the design?	✓		

E. Annexures

E-1 List of trees indicating location (left or right side of the road) and chainage (as required under C. 6)

Chainage	Side	Name of Trees	DCL
0+450	LHS	Aahot	8
1+100	LHS	Jackfruit	5
1+340	LHS	[illegible]	4
1+430	LHS	Mango	4
1+432	LHS	Mango	4
1+434	LHS	Mango	4
1+436	LHS	Mango	4
1+438	LHS	Mango	4
1+440	LHS	Mango	4
1+442	LHS	Mango	4
1+444	LHS	Mango	4
1+446	LHS	Mango	4
1+448	LHS	Mango	4
1+450	LHS	Mango	4
1+452	LHS	Mango	4

[1] Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures.

[2] Mandir, Masjid, Church, religious/cultural/historical monuments, school, health center, public toilet and other similar structures.

Chainage	Side	Name of Trees	DCL
1+454	LHS	Mango	4
1+456	LHS	Mango	4
1+458	LHS	Mango	4
1+450	LHS	Jackfruit	6
1+650	LHS	Segun	4
1+652	LHS	Segun	4
1+654	LHS	Segun	4
1+656	LHS	Segun	4
1+658	LHS	Segun	4
1+720	LHS	Jackfruit	4
1+740	LHS	Jackfruit	3.5
1+780	LHS	Aahot	1.5
1+830	LHS	Jackfruit	3
1+835	LHS	Jackfruit	3
1+850	LHS	Jackfruit	3
1+920	LHS	Jackfruit	3
1+925	LHS	Jackfruit	3
1+930	LHS	Mango	3
1+980	LHS	Kathal	3
2+040	LHS	Mango	3
2+120	LHS	Mango	3
2+140	LHS	Mango	3
0+250	RHS	Siris	3
0+350	RHS	Howla	5
0+440	RHS	Gomari	5
0+660	RHS	Hilikha	4
0+670	RHS	Jackfruit	4
0+720	RHS	Mango	8
0+740	RHS	Mango	5
0+770	RHS	Krishnasura	4
0+820	RHS	Jamu	3.5
0+840	RHS	Jackfruit	8
0+990	RHS	Mango	5
1+060	RHS	Poma	4
1+470	RHS	Jackfruit	4
1+480	RHS	Mango	4
1+660	RHS	Jackfruit	4
1+662	RHS	Jackfruit	4
1+664	RHS	Jackfruit	4
1+666	RHS	Jackfruit	4
1+668	RHS	Jackfruit	4
1+670	RHS	Jackfruit	4
1+672	RHS	Jackfruit	4
1+790	RHS	Jackfruit	2.5
1+905	RHS	Mango	3
1+910	RHS	Mango	3
Total number of trees		61	

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

E-2 List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

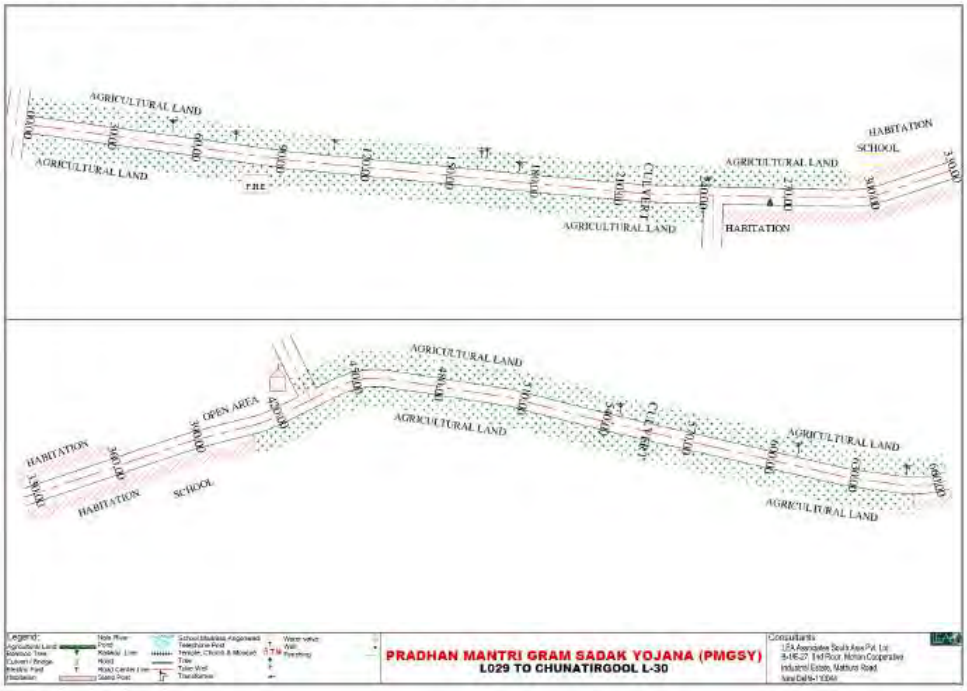
Chainage	Side	Utility Type	DCL
0+010	LHS	Transformer	3.5
0+050	LHS	Electric Pole	4
0+080	LHS	Electric Pole	4

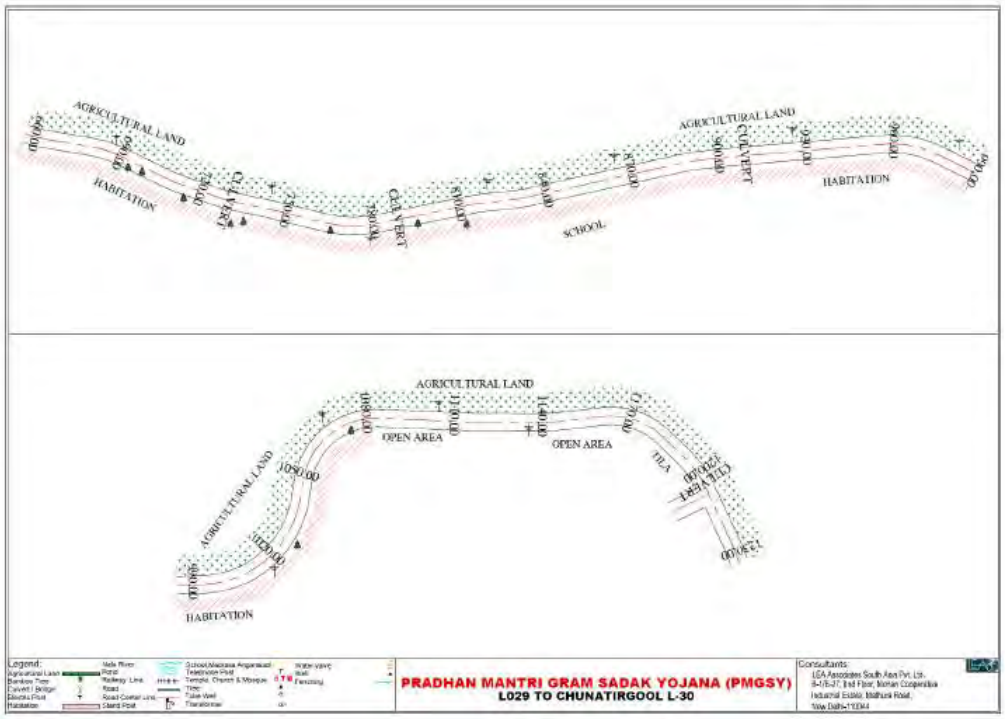
Chainage	Side	Utility Type	DCL
0+110	LHS	Electric Pole	5
0+170	LHS	Electric Pole	8
0+180	LHS	Electric Pole	5
0+230	LHS	Electric Pole	6
0+500	LHS	Electric Pole	3
0+560	LHS	Electric Pole	3.5
0+630	LHS	Electric Pole	3.5
0+670	LHS	Electric Pole	2.5
0+700	LHS	Electric Pole	2.5
0+750	LHS	Electric Pole	3
0+840	LHS	Electric Pole	4
0+950	LHS	Electric Pole	5
1+000	LHS	Electric Pole	3
1+090	LHS	Electric Pole	3
1+110	LHS	Electric Pole	6
1+150	LHS	Electric Pole	3
1+180	LHS	Electric Pole	3
1+770	LHS	Electric Pole	2
1+845	LHS	Electric Pole	2.5
1+900	LHS	Electric Pole	3
0+790	RHS	Electric Pole	4
0+790	RHS	Stand Post	4
0+870	RHS	Well	6
1+045	RHS	Electric Pole	4
1+055	RHS	Stand Post	3
1+730	RHS	Electric Pole	5
1+750	RHS	Well	5
Total number of electric poles		25	
Total number of transformer		01	
Total number of wells		02	
Total number of stand posts		02	

E-3 List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10)

Chainage	Side	Sensitive Structures	Distance from center line (m)
0+440	LHS	Temple	6
1+750	LHS	Temple	4
0+320	RHS	School	8
0+860	RHS	School	5

E-4 Sketch of strip map of the road covering details of atleast 10 m on either side from the center line of the road

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HABITATION
CULVERT
SCHOOL
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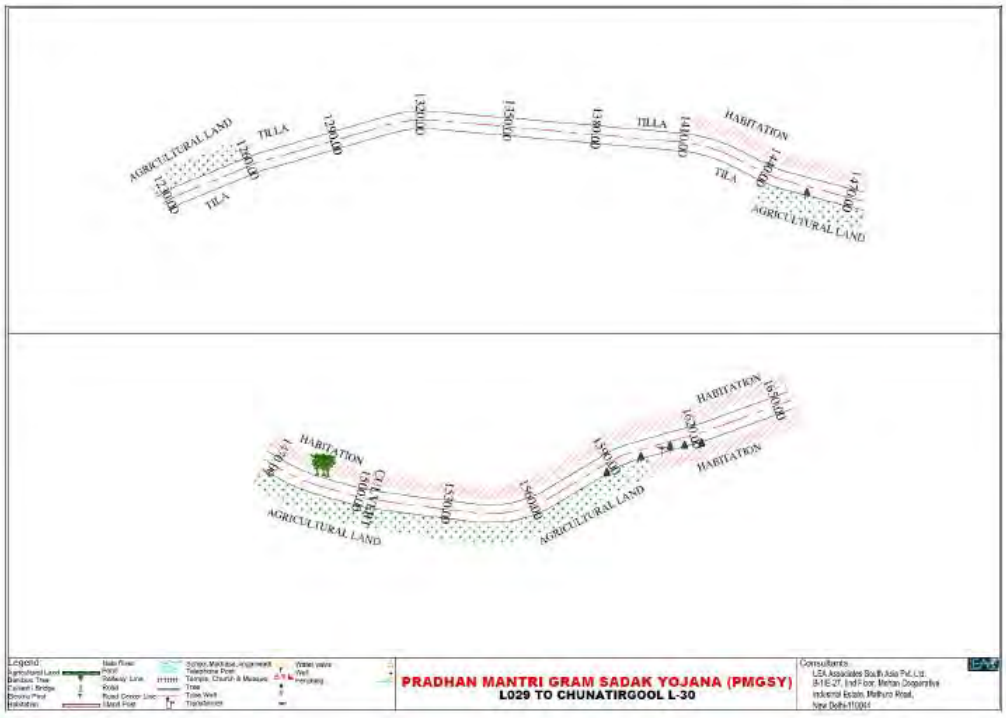
OPEN AREA
OPEN AREA
TILLA
HABITATION
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
L029 TO CHUNATIRGOOL L-30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TILLA
HABITATION
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HABITATION
AGRICULTURAL LAND
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
L029 TO CHUNATIRGOOL L-30

E-5 Photographs of the project area showing atleast 10 m on either side from center line of road alignment. Every 2 km or less of road must have atleast 1 photograph.

Starting Point of corridor

Corridor at 0+500

Corridor at 14000

Corridor at 1+500

Corridor at 2+000

End Point of corridor

E-6 List of Participants (Attendance Sheet)

Transect Walk Attendance Sheet

Road Name: L029 to Chunatirgool

Date: 15/3/13

Community		Officials	
Name of the Participants	Signature	Name and designation of the official	Signature
Arunba Paul	[illegible]	Nguləmkimi Hrangkhol (S. A)	[illegible] 15/3/13
Sajal Das	Sajal Kr Das	Satya Ranjan Goswami S.A	[illegible] 15/3/13
Dulhan Dutta	[illegible] BPL	Mutabbir Ahmed SE(SQ)	[illegible] 15/3/13
Jayanara Begam	[illegible]		
Habina Begam	[illegible]		
Kalpana Das	[illegible]		
Abhijit Paul	Abhijit Paul		
Sujit Deb	[illegible]		
Amarendra Namasudra	[illegible]		
Kanan Deb	[illegible]		
Aparna Das	[illegible]		
Binu Chanda	Binu Chanda		

IV. RURAL ROADS: ENVIRONMENTAL CHECKLIST

Road Name : 36 to Binnyachara Road (Chakapara to Binnyachara)
Block Name : Dotoma
District Name : Kokrajhar
Total Length of the Road : 4.000 km

A. Climatic Conditions

Temperature	High: 36°c Low: 9°c
Humidity	High: 95% Low: 40%
Rainfall	1000mm/year
Rainy Season	May to September

B. Location of the Road and Generic description of Environment

No.	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)		✓	Distance from Coastline: km ( ) more than 50% ( ) less than 20%
2.	Type of Terrain-(Plain/Hilly/ Mountainous etc.) *(Explain the topography of the area and how many km of the road are located in the hilly area)*	✓		Topography of terrain – Plain Altitude: 60.6m (average) The entire section of the alignment fall in the plain terrain
4.	Forest Area *(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest area)?*		✓	Type of Vegetation: Legal Status of the Forest Area: *(Reserved, National Park, Sanctuaries, Unclassified, etc.*
5.	Wildlife *(Explain whether there are any wildlife species in the project area)*		✓	Name of animals: Endangered species (if any):
6.	Inhabited Area	✓		Chainage From / To / Side 0+000 – 0+110 LHS 0+200 – 0+240 LHS 0+360 – 0+600 LHS 0+690 – 0+740 LHS 0+810 – 1+430 LHS 1+470 – 1+500 LHS 1+880 – 1+900 LHS 2+380 – 2+450 LHS 2+530 – 2+560 LHS

No.	Type of Ecosystem	Yes	No	Explanation
				2+830 – 2+900 LHS 2+970 – 3+200 LHS 3+360 – 3+410 LHS 3+530 – 3+650 LHS 3+840 – 3+940 LHS 0+190 – 0+500 RHS 0+650 – 0+720 RHS 0+920 – 1+030 RHS 1+090 – 1+130 RHS 1+250 – 1+300 RHS 1+390 – 1+530 RHS 1+720 – 1+800 RHS 2+350 – 2+450 RHS 2+840 – 2+900 RHS 2+950 – 3+100 RHS 3+120 – 3+360 RHS 3+540 – 3+550 RHS 3+770 – 3+780 RHS 3+795 – 3+820 RHS 3+960 – 4+000 RHS
7.	Agricultural Land	✓		Chainage From / To / Side 0+110 – 0+200 LHS 0+240 – 0+360 LHS 1+500 – 1+880 LHS 2+000 – 2+245 LHS 2+300 – 2+390 LHS 2+450 – 2+550 LHS 2+560 – 2+800 LHS 3+410 – 3+530 LHS 3+730 – 3+840 LHS 1+300 – 1+390 RHS 1+530 – 1+720 RHS 1+800 – 1+870 RHS 1+900 – 2+250 RHS 2+450 – 2+540 RHS 2+600 – 2+750 RHS 3+360 – 3+540 RHS 3+550 – 3+770 RHS 3+780 – 3+795 RHS 3+820 – 3+960 RHS
8.	Grazing grounds		✓	
9.	Barren Land		✓	

C. Specific description of the Road Environment

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation
1.	Are there any areas with landslide or erosion problems along the road? ***(If yes, indicate the location (right or left side) and the chainage)***		✓	
				( ) No Secondary Information is available and Local Community is not aware of this matter
2.	Are there any lakes/swamps beside the road? ***(If yes, list them indicating the location (right or left side)and the chainage)***	✓		5 ponds are located along the corridor. Pond locations are given in the table below: Chainage | Side | Particulars | DCL 3+345 | LHS | Pond | 6 1+700 | RHS | Pond | 4 2+570 | RHS | Pond | 4.7 2+750 | RHS | Pond | 4.5 3+500 | RHS | Pond | 4.5
3.	Are there any nallas/streams/rivers etc. along/crossing the road? ***(If yes, list them indicating the location (right, left or crossing) and the chainage***	✓		The river Laska crosses the road at chainage 2+265 km.
4.	Are there problems of water stagnation and other drainage issues on or near the road? ***(If yes, mention chainage)***		✓	
5.	Is the area along the project road prone to flooding? ***(If yes, mention flood level and frequency)***		✓	
				( ) No Secondary Information is available and Local Community is not aware of this matter
6.	Are there any trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment? ***(If yes attach list of trees indicating the location (right or left side)and the chainage)***	✓		380 trees are located within 10 m on either side of the CL. Out of these, 1 tree located along the proposed alignment will be affected due to the project. [Refer E.1]
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas? ***(If yes, specify details of habitat with chainage)***		✓	
				( ) No Secondary Information is available and Local Community is not aware of this matter
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	
				( ) No Secondary Information Available and Local Community is not aware of this matter

No.	Parameter/ Component	Yes	No	Explanation
9.	Are there any utility structures[1] within 10 m on either side from the center line of the road alignment? ***(If yes, attach list with chainage)***	✓		44 electric poles, 1 hand pump, 5 stand posts and 1 transformer are located within 10 m on either side of the CL of the road. Out of these utility structures, 10 electric poles and 2 stand posts will be affected due to the project [Refer E.2]
10.	Are there any religious, cultural or community structures/buildings[2] within 10 m on either side from the center line of the road alignment? ***(If yes attach list with chainage)***	✓		2 mosques, 1 temple and 2 schools are located within 10 m on either side of the CL of the road. None of these community structures will be affected due to the project [Refer E.3]

D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. ***(Attach list of people met and dates)***	✓		A consultation was held with the local community members, it was attended by 12 persons. The list of participants is attached in **Annexure E6.**
2.	Any suggestion received in finalizing the alignment	✓		Road safety measures near school, road intersection, curve locations.
3.	If suggestions received, were they incorporated into the design?	✓		

E. Annexures

E-1 List of trees indicating location (left or right side of the road) and chainage (as required under C. 6)

Chainage	Side	Name of Tree	DCL	No.s
0+000	LHS	Nim	8	1
0+025	LHS	Kodom	5	1
0+030	LHS	Mango	4.5	1
0+040	LHS	Kathal	4	4
0+045	LHS	Gomari	3.6	5
0+050	LHS	Kathal	3.5	2
0+085	LHS	Gomari	3.5	1
0+100	LHS	Jiya	3.9	2
0+110	LHS	Jiya	3.7	6
0+190	LHS	Kodom	6	1
0+210	LHS	Kathal	4.1	1
0+215	LHS	Jiya	4	1
0+245	LHS	Jiya	3.5	1
0+310	LHS	Mode	4	1
0+380	LHS	Kathal	4.6	1
0+400	LHS	Mohodi	4.1	1
0+410	LHS	Poma	4	1
0+450	LHS	Kathal	7	1
0+520	LHS	Jiya	4	2

[1] Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures

[2] Mandir, Masjid, Church, religious/cultural/historical monuments, school, health center, public toilet and other similar structures

Chainage	Side	Name of Tree	DCL	No.s
0+530	LHS	Gomari	5	3
0+540	LHS	Robab	3.9	1
0+590	LHS	Kodom	3.9	1
0+593	LHS	Gomari	3.9	1
0+650	LHS	Kathal	4	1
0+700	LHS	Jam	3.5	1
0+705	LHS	Kathal	3.4	1
0+725	LHS	Bel	3.2	1
0+730	LHS	Bel	3.2	1
0+745	LHS	Kathal	3.1	1
0+750	LHS	Kathal	3.1	1
0+760	LHS	Poma	3.2	1
0+790	LHS	Kathal	3.4	1
0+800	LHS	Simalu	3.4	2
0+805	LHS	Jiya	4	2
0+850	LHS	Botgus	6	1
0+885	LHS	Kathal	4	1
0+905	LHS	Segun	3.7	1
0+920	LHS	Kathal	4	1
0+930	LHS	Kathal	3.9	1
0+945	LHS	Segun	4.2	1
0+980	LHS	Kathal	4	1
0+985	LHS	Bogori	4.5	1
0+975	LHS	Mango	4	1
0+990	LHS	Kathal	3.5	1
1+000	LHS	Sonaru	4	1
1+005	LHS	Nim	4	1
1+025	LHS	Sojina	3.9	1
1+030	LHS	Jiya	4.1	1
1+035	LHS	Bel	4	1
1+050	LHS	Kathal	4	3
1+085	LHS	Gomari	3.7	1
1+125	LHS	Gomari	4	2
1+130	LHS	Sonaru	4.1	1
1+145	LHS	Gomari	3.6	1
1+150	LHS	Bel	3.7	1
1+155	LHS	Gomari	3.3	1
1+160	LHS	Gomari	4	1
1+180	LHS	Gomari	4	1
1+215	LHS	Kathal	4.2	1
1+220	LHS	Radhachura	4	2
1+230	LHS	Mango	4.1	1
1+245	LHS	Hahura	4.1	1
1+250	LHS	Kathal	4.5	1
1+270	LHS	Gomari	4	1
1+290	LHS	Coconut	4	2
1+300	LHS	Coconut	4.1	1
1+305	LHS	Mango	4.1	1
1+315	LHS	Sonaru	4	1
1+320	LHS	Bogori	4.2	1
1+325	LHS	Amlokhi	4.2	1
1+330	LHS	Tal	4.3	1
1+340	LHS	Kathal	4	1

Chainage	Side	Name of Tree	DCL	Nos
1+350	LHS	Mango	4.6	1
1+355	LHS	Kathal	4.2	1
1+360	LHS	Bel	4.5	1
1+380	LHS	Coconut	4	1
1+390	LHS	Gomari	4	3
1+445	LHS	Gomari	4	1
1+450	LHS	Kathal	3.5	1
1+465	LHS	Kathal	3.1	1
1+470	LHS	Somaru	4	1
1+480	LHS	Kathal	3.4	1
1+505	LHS	Maj	4	1
1+810	LHS	Maj	3.5	1
1+890	LHS	Maj	5	1
1+910	LHS	Poma	3.3	1
1+930	LHS	Poma	3.4	1
2+990	LHS	Poma	3.3	1
2+005	LHS	Jiya	4	1
2+290	LHS	Jiya	4	2
2+300	LHS	Jiya	4	5
2+310	LHS	Jiya	4	6
2+320	LHS	Jiya	4	3
2+330	LHS	Jiya	4	3
2+340	LHS	Jiya	4	1
2+545	LHS	Jiya	3.1	1
2+550	LHS	Jiya	4	1
2+680	LHS	Jiya	4	1
2+730	LHS	Jiya	4.1	6
2+740	LHS	Jiya	4.2	4
2+750	LHS	Jiya	4.2	5
2+760	LHS	Jiya	4.2	3
2+770	LHS	Jiya	4.1	3
2+800	LHS	Dewa	6	1
2+835	LHS	Kathal	4	1
2+840	LHS	Kathal	4	1
2+850	LHS	Gomari	4	1
2+870	LHS	Kathal	4.2	1
2+880	LHS	Mango	4.3	1
2+890	LHS	Borpat	5	1
2+895	LHS	Jiya	4	1
2+900	LHS	Jiya	4.5	1
2+930	LHS	Kathal	5	1
2+940	LHS	Sishu	6	1
2+945	LHS	Borpat	6	1
2+955	LHS	Kodom	5	1
2+960	LHS	Jiya	4	1
2+970	LHS	Jiya	4	1
2+975	LHS	Robab	4	1
3+000	LHS	Gomari	4.2	1
3+020	LHS	Kathal	6	1
3+070	LHS	Gomari	4	1
3+080	LHS	Kathal	4	1
3+180	LHS	Kathal	3.5	1
3+220	LHS	Kodom	4	2

Chainage	Side	Name of Tree	DCL	Nos
3+730	RHS	Jiya	3.2	1
3+740	RHS	Jiya	3.4	1
3+780	RHS	Kathal	3.5	1
3+810	RHS	Arjun	4	1
3+880	RHS	Kathal	3.7	1
3+940	RHS	Kathal	4	1
3+950	RHS	Kathal	4	1
3+960	RHS	Jiya	4	2
3+990	RHS	Gomari	3.7	2

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

E-2 List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

Chainage	Side	Type	Distance from center line (m)
0+170	LHS	Electric Pole	3.2
0+240	LHS	Electric Pole	3.5
0+460	LHS	Electric Pole	3
0+500	LHS	Electric Pole	3.2
0+598	LHS	Electric Pole	5
0+740	LHS	Electric Pole	3
1+435	LHS	Electric Pole	2.8
1+475	LHS	Electric Pole	2.7
1+510	LHS	Electric Pole	2.9
1+540	LHS	Electric Pole	2.8
1+590	LHS	Electric Pole	2.8
1+680	LHS	Electric Pole	2.8
1+720	LHS	Electric Pole	2.8
1+790	LHS	Electric Pole	2.8
3+860	LHS	Electric Pole	3.9
3+900	LHS	Electric Pole	4
4+000	LHS	Electric Pole	4.1
0+000	RHS	Electric Pole	5
0+050	RHS	Electric Pole	3.1
0+120	RHS	Electric Pole	3.5
0+560	RHS	Electric Pole	3.7
0+640	RHS	Electric Pole	3.2
0+710	RHS	Electric Pole	3
0+850	RHS	Electric Pole	4
0+880	RHS	Electric Pole	3.5
0+940	RHS	Electric Pole	3.7
0+970	RHS	Electric Pole	3.7
1+020	RHS	Electric Pole	3.9
1+050	RHS	Electric Pole	3.1
1+100	RHS	Electric Pole	3.2
1+150	RHS	Electric Pole	3.1
1+190	RHS	Electric Pole	3.1
1+235	RHS	Electric Pole	2.9
1+310	RHS	Electric Pole	3.4
1+360	RHS	Electric Pole	3.3
1+390	RHS	Electric Pole	3.5
1+840	RHS	Electric Pole	3
1+875	RHS	Electric Pole	2.9
2+600	RHS	Electric Pole	4.2

Chainage	Side	Type	Distance from center line (m)
2+680	RHS	Electric Pole	4.1
3+590	RHS	Electric Pole	3
3+655	RHS	Electric Pole	3
3+800	RHS	Electric Pole	4
3+965	RHS	Electric Pole	4
1+090	RHS	Hand Pump	4
1+395	LHS	Stand Post	2.6
1+760	LHS	Stand Post	2.6
1+875	LHS	Stand Post	6
1+035	RHS	Stand Post	3
1+105	RHS	Stand Post	3.4
1+270	RHS	Transformer	3

E-3 List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10):

Chainage	Side	Sensitive Structures	Distance from center line (m)
3+740	LHS	Mosque	6
3+830	RHS	Mosque (under construction)	3.5
0+830	LHS	School	4
3+290	LHS	School	6
0+680	RHS	Temple	3.1

E-5 Photographs of the project area showing at least 10 m on either side from center line of road alignment. Every 2 km or less of road must have at least 1 photograph.


Start Point of corridor


Corridor at 0+500

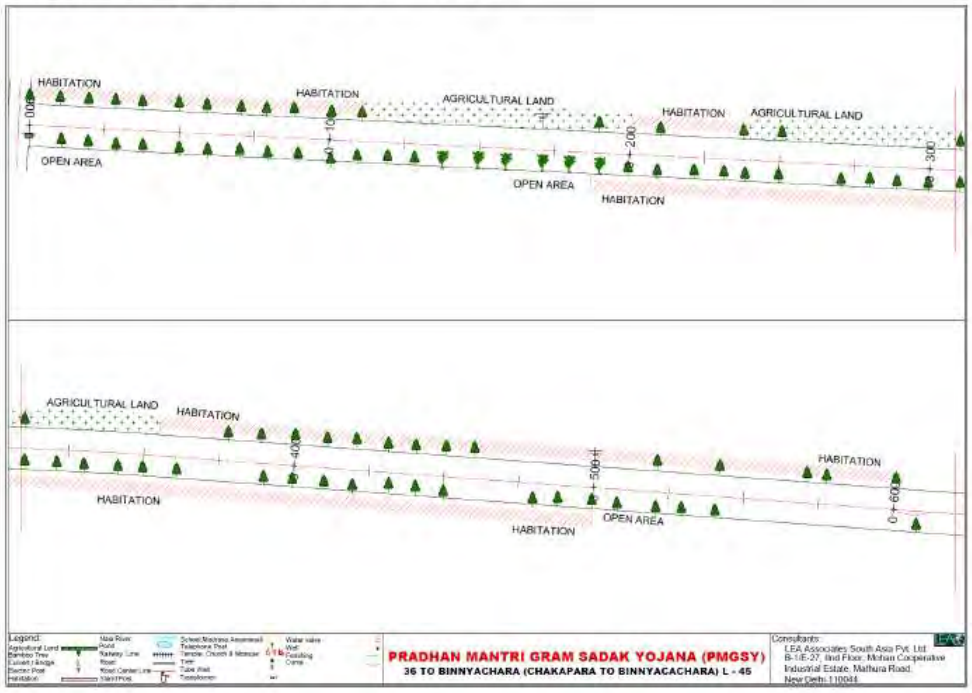

Corridor at 1+000

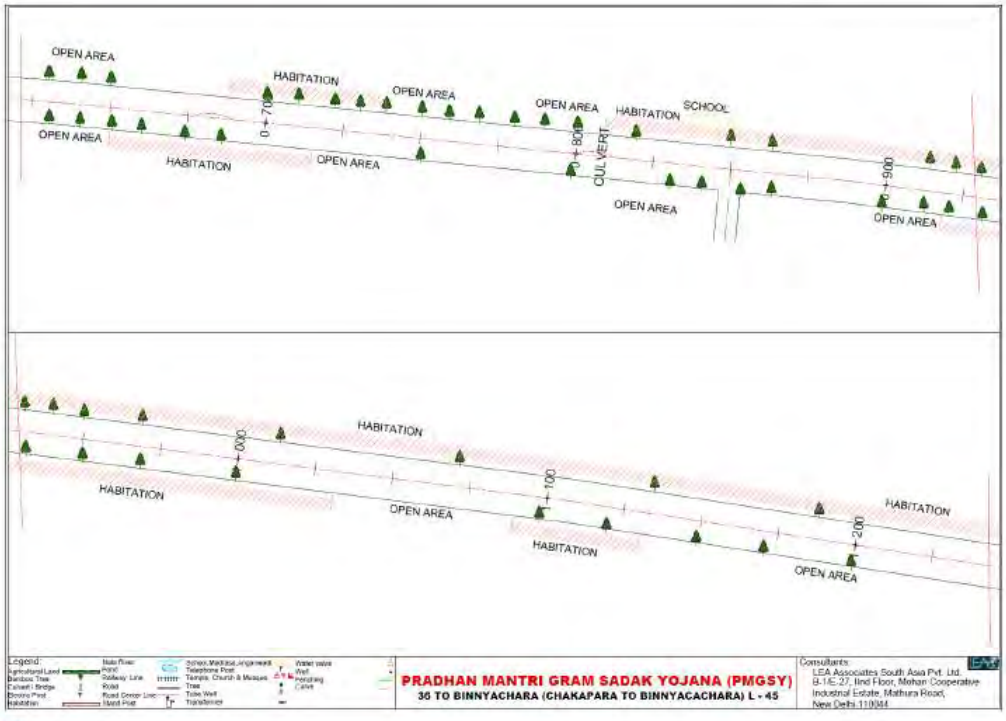

Corridor at 1+500

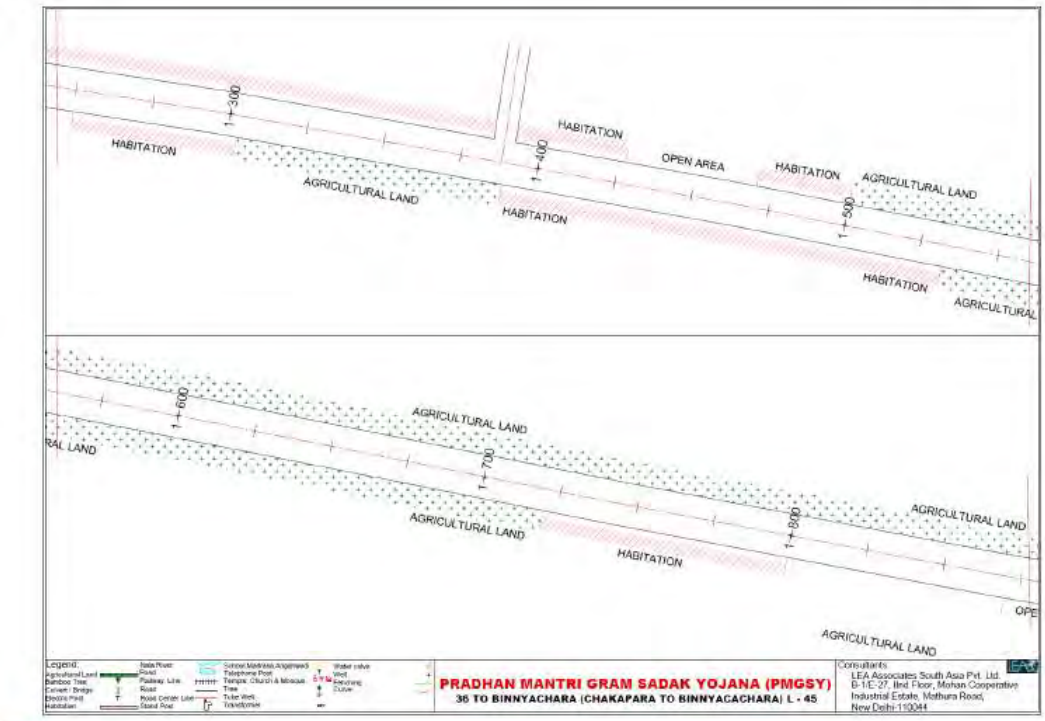

Corridor at 2+000


Corridor at 2+500

E-4 Sketch of strip map of the road covering details of atleast 10 m on either side from the center line of the road



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AGRICULTURAL LAND
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
36 TO BINNYACHARA (CHAKAPARA TO BINNYACACHARA) L - 45
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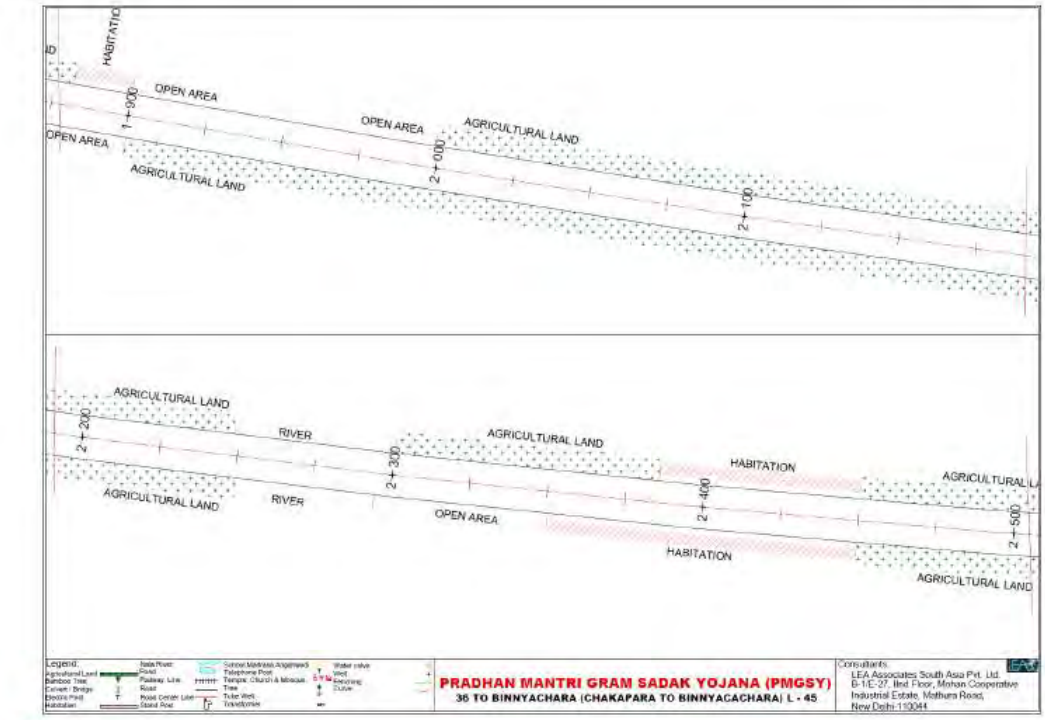
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044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HABITATION
AGRICULTURAL LAND
1+900
2+000
2+100
2+200
2+300
2+400
2+500
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
36 TO BINNYACHARA (CHAKAPARA TO BINNYACACHARA) L - 45
Consultants:
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044

E-6 List of Participants (Attendance Sheet)

Transect Walk Attendance Sheet

Road Name: 36 to Binnyadanga (Chakapara to Binnyadanga) Date: 12/02/14

Community		FKI/PRI	
Name of the Participants	Signature	Name and designation of the official	Signature

IV. RURAL ROADS: ENVIRONMENTAL CHECKLIST

Road Name	Dagaon to Mornoigun Road
Block Name	Narayanpur
District Name	Lakhimpur
Total Length of the Road	4.340 km

A. Climatic Conditions

Temperature	High: 36c Low: 9c
Humidity	High : 95% Low: 40%
Rainfall	1000mm/year
Rainy Season	May to September

B. Location of the Road and Generic description of Environment

No.	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)		✓	Distance from Coastline: km ( ) more than 50% ( ) less than 20%
2.	Type of Terrain—(Plain/Hilly/ Mountainous etc.) *(Explain the topography of the area and how many km of the road are located in the hilly area)*	✓		Topography of terrain - Plain Altitude: 60.6m (average) The entire section of the alignment fall in the plain terrain
4.	Forest Area *(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest area)?*		✓	Type of Vegetation: Legal Status of the Forest Area: *(Reserved, National Park, Sanctuaries, Unclassified, etc.*
5.	Wildlife *(Explain whether there are any wildlife species in the project area)*		✓	Name of animals: Endangered species (if any):
6.	Inhabited Area	✓		Chainage From / To / Side 0+000 / 0+440 / LHS 0+470 / 0+740 / LHS 0+850 / 0+930 / LHS 1+020 / 1+040 / LHS 1+080 / 1+110 / LHS 1+630 / 1+690 / LHS 1+710 / 2+440 / LHS 2+470 / 2+550 / LHS 2+600 / 2+680 / LHS 2+710 / 3+300 / LHS

No.	Type of Ecosystem	Yes	No	Explanation
				3+150 3+400 LHS 3+580 3+660 LHS 3+800 3+830 LHS 4+000 4+100 LHS 4+130 4+240 LHS 0+000 0+470 RHS 0+450 0+670 RHS 0+890 0+930 RHS 1+110 1+170 RHS 1+280 1+410 RHS 1+460 1+500 RHS 1+940 2+370 RHS 2+390 2+420 RHS 2+500 2+670 RHS 2+700 3+250 RHS 3+380 3+430 RHS 3+640 3+660 RHS 4+180 4+340 RHS
7.	Agricultural Land	✓		Chainage From / To: Side 0+440 0+470 LHS 0+740 0+850 LHS 0+930 1+020 LHS 1+040 1+080 LHS 1+110 1+610 LHS 1+690 1+710 LHS 2+440 2+470 LHS 2+550 2+600 LHS 2+680 2+710 LHS 3+300 3+350 LHS 3+400 3+580 LHS 3+660 3+800 LHS 3+830 4+000 LHS 4+100 4+130 LHS 4+240 4+340 LHS 0+470 0+490 RHS 0+670 0+690 RHS 0+710 0+890 RHS 0+930 1+110 RHS 1+170 1+280 RHS 1+410 1+460 RHS 1+500 1+940 RHS 2+370 2+390 RHS 2+420 2+500 RHS 2+670 2+700 RHS 3+250 3+380 RHS 3+430 3+640 RHS 3+680 4+180 RHS
8.	Grazing grounds		✓	
9.	Barren Land		✓	

C. Specific description of the Road Environment

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter / Component	Yes	No	Explanation
1.	Are there any areas with landslide or erosion problems along the road? *(If yes, indicate the location (right or left side) and the chainage)*		✓	( ) No Secondary information is available and Local Community is not aware of this matter
2.	Are there any lakes/swamps beside the road? *(If yes, list them indicating the location (right or left side)and the chainage)*		✓	
3.	Are there any nallas/streams/rivers etc. along/crossing the road? *(If yes, list them indicating the location (right, left or crossing) and the chainage*	✓		23 ponds are located along the corridor. Pond locations are given in the table below:
4.	Are there problems of water stagnation and other drainage issues on or near the road? *(If yes, mention chainage)*		✓	
5.	Is the area along the project road prone to flooding? *(If yes, mention flood level and frequency)*		✓	( ) No Secondary Information is available and Local Community is not aware of this matter

Chainage	Side	Particulars	DCL
0+320 to 0+340	LHS	Pond	2
0+860 to 0+890	LHS	Pond	3.1
1+360 to 1+400	LHS	Pond	3.5
2+040 to 2+080	LHS	Pond	3.2
2+160 to 2+180	LHS	Pond	3.2
2+190 to 2+300	LHS	Pond	3.5
2+240 to 2+270	LHS	Pond	3.2
2+490 to 2+520	LHS	Pond	3.1
2+610 to 2+620	LHS	Pond	3.1
2+860 to 2+930	LHS	Pond	3.2
3+010 to 3+020	LHS	Pond	3.1
3+040 to 3+060	LHS	Pond	3
3+090 to 3+110	LHS	Pond	3.2
3+180 to 3+250	LHS	Pond	3.1
3+630 to 3+650	LHS	Pond	3.1
4+160 to 4+210	LHS	Pond	3.1
0+380 to 0+390	RHS	Pond	3
1+330 to 1+350	RHS	Pond	3.3
2+580 to 2+600	RHS	Pond	3.5
2+600 to 2+620	RHS	Pond	3.3
3+180 to 3+200	RHS	Pond	2
4+240 to 4+280	RHS	Pond	3.1
4+290 to 4+320	RHS	Pond	3.1

No.	Parameter / Component	Yes	No	Explanation
6.	Are there any trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment? ***(If yes attach list of trees indicating the location (right or left side)and the chainage)***	✓		530 trees are located within 10 m on either side of the CL. Out of these, 9 trees will be affected due to the project. [Refer E.1]
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas?		✓	
	(If yes, specify details of habitat with chainage)			( ) No Secondary information is available and Local Community is not aware of this matter
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	
				( ) No Secondary Information Available and Local Community is not aware of this matter
9.	Are there any utility structures[1] within 10 m on either side from the center line of the road alignment? ***(If yes, attach list with chainage)***	✓		59 electric poles, 1 hand pump, 1 PHE Pipeline, 8 stand posts and 1 transformer are located within 10 m on either side of the CL of the road. Out of these utility structures, 1 electric pole, 1PHE Pipeline and 2 stand posts will be affected due to the project [Refer E.2]
10.	Are there any religious, cultural or community structures/buildings[2] within 10 m on either side from the center line of the road alignment? ***(If yes attach list with chainage)***	✓		4 Namghars and 1 temple are located within 10 m on either side of the CL of the road. None of these community structures will be affected due to the project [Refer E.3]

D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. ***(Attach list of people met and dates)***	✓		A consultation was held with the local community and it was attended by 26 persons. The list of participants is attached in Annexure E6.
2.	Any suggestion received in finalizing the alignment	✓		The existing alignment should be finalised
3.	If suggestions received, were they incorporated into the design?	✓		

[1] Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures

[2] Mandir, Masjid, Church, religious/cultural/historical monuments, school, health center, public toilet and other similar structures

E. Annexures

E-1 List of trees indicating location (left or right side of the road) and chainage (as required under C. 6)

Chainage	Side	Name of Tree	DCL
0+150	LHS	Voja	4.1
0+200	LHS	Ahot	3.2
0+205	LHS	Ahot	3.2
0+230	LHS	Mango	4.1
0+240	LHS	Ahot	4.2
0+250	LHS	Ahot	4
0+260	LHS	Simolu	3.6
0+265	LHS	Ahot	3.6
0+270	LHS	Jamu	4
0+310	LHS	Segun	4
0+315	LHS	Segun	4
0+370	LHS	Sotiana	3
0+375	LHS	Sotiana	3
0+402	LHS	Segun	3.2
0+406	LHS	Segun	3.2
0+410	LHS	Segun	4.5
0+415	LHS	Segun	4.5
0+418	LHS	Segun	4.5
0+420	LHS	Segun	3.1
0+460	LHS	Sotiana	3.2
0+470	LHS	Voja	3.4
0+490	LHS	Sotiana	3.2
0+495	LHS	Poniol	3.1
0+500	LHS	Segun	4
0+510	LHS	Ajar	3.4
0+570	LHS	Sunaru	3.1
0+590	LHS	Mango	3.2
0+600	LHS	Poma	3.2
0+610	LHS	Sunaru	3.1
0+620	LHS	Outanga	5
0+650	LHS	Udal	3.5
0+680	LHS	Simolu	3.6
0+690	LHS	Simolu	4
0+700	LHS	Ahot	3.2
0+705	LHS	Gamari	3.2
0+845	LHS	Simolu	3
0+850	LHS	Gamari	3.2
0+855	LHS	Gamari	3.2
0+880	LHS	Ahot	3.3
0+970	LHS	Ahot	3.7
1+025	LHS	Jackfruit	3
1+040	LHS	Bogori	3
1+090	LHS	Dimoru	3.6
1+110	LHS	Gamari	3.1
1+140	LHS	Val	3.1
1+190	LHS	Voja	3.2
1+280	LHS	Sunaru	3
1+285	LHS	Bogori	3
1+290	LHS	Poma	3

Chainage	Side	Name of Tree	DCL
1+310	LHS	Ahot	3
1+320	LHS	Sotiana	3
1+330	LHS	Borolia	3.1
1+360	LHS	Poma	3.1
1+380	LHS	Mos	3.1
1+390	LHS	Sumaru	4
1+400	LHS	Mos	3.3
1+410	LHS	Gamari	3.2
1+415	LHS	Gamari	3.2
1+420	LHS	Gamari	3.2
1+430	LHS	Gamari	3.2
1+440	LHS	Gamari	3.2
1+450	LHS	Gamari	3
1+460	LHS	Gamari	3.2
1+490	LHS	Bogori	3
1+500	LHS	Bogori	3.2
1+520	LHS	Borolia	3.2
1+540	LHS	Bogori	3.1
1+550	LHS	Kadam	3.3
1+550	LHS	Sumaru	3
1+551	LHS	Sumaru	3
1+552	LHS	Sumaru	3
1+553	LHS	Sumaru	3
1+554	LHS	Sumaru	3
1+555	LHS	Sumaru	3
1+556	LHS	Sumaru	3
1+558	LHS	Sumaru	3
1+560	LHS	Sumaru	3
1+562	LHS	Sumaru	3
1+564	LHS	Sumaru	3
1+566	LHS	Sumaru	3
1+568	LHS	Sumaru	3
1+570	LHS	Sumaru	3
1+572	LHS	Sumaru	3
1+574	LHS	Sumaru	3
1+576	LHS	Sumaru	3
1+577	LHS	Sumaru	3
1+578	LHS	Sumaru	3
1+579	LHS	Sumaru	3
1+580	LHS	Sumaru	3.1
1+590	LHS	Sotiana	3.1
1+600	LHS	Dimoru	3.1
1+610	LHS	Bogori	3.1
1+650	LHS	Outanga	3.2
1+660	LHS	Kesiru	3.1
1+665	LHS	Kesiru	3.1
1+668	LHS	Kesiru	3.1
1+680	LHS	Krishnasura	4
1+685	LHS	Neem	3.9
1+690	LHS	Simolu	3.2
1+695	LHS	Voja	3.1
1+700	LHS	Sotiana	3
1+725	LHS	Mango	3.1

Chainage	Side	Name of Tree	DCL
4+222	RHS	Voja	3.2
4+225	RHS	Voja	3.2
4+280	RHS	Voja	3
4+300	RHS	Simolu	3

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

E-2: List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

Chainage	Side	Type	Distance from center line (m)
0+280	LHS	Electric Pole	3.5
0+390	LHS	Electric Pole	3
0+640	LHS	Electric Pole	3
0+760	LHS	Electric Pole	3
0+810	LHS	Electric Pole	5.2
0+840	LHS	Electric Pole	3.1
0+930	LHS	Electric Pole	3
0+980	LHS	Electric Pole	3
1+780	LHS	Electric Pole	3
1+870	LHS	Electric Pole	3.1
1+990	LHS	Electric Pole	3.2
2+280	LHS	Electric Pole	3.1
2+620	LHS	Electric Pole	3.1
2+735	LHS	Electric Pole	4.4
2+770	LHS	Electric Pole	3
2+810	LHS	Electric Pole	3.5
2+860	LHS	Electric Pole	3
2+950	LHS	Electric Pole	3.3
3+010	LHS	Electric Pole	3.1
3+060	LHS	Electric Pole	3
3+120	LHS	Electric Pole	3.1
3+170	LHS	Electric Pole	3.8
3+640	LHS	Electric Pole	3.6
4+250	LHS	Electric Pole	3.4
0+000	RHS	Electric Pole	6
0+340	RHS	Electric Pole	3.1
0+430	RHS	Electric Pole	3
0+470	RHS	Electric Pole	3
0+520	RHS	Electric Pole	3
0+590	RHS	Electric Pole	2.8
0+880	RHS	Electric Pole	4
1+730	RHS	Electric Pole	3
2+060	RHS	Electric Pole	3
2+100	RHS	Electric Pole	3
2+150	RHS	Electric Pole	3
2+210	RHS	Electric Pole	3
2+380	RHS	Electric Pole	3
2+440	RHS	Electric Pole	4.7
2+500	RHS	Electric Pole	3
2+560	RHS	Electric Pole	3
2+820	RHS	Electric Pole	3
2+825	RHS	Electric Pole	3
2+865	RHS	Electric Pole	3
2+900	RHS	Electric Pole	3.1
2+910	RHS	Electric Pole	4.5

Chainage	Side	Type	Distance from center line (m)
3+220	RHS	Electric Pole	3
3+280	RHS	Electric Pole	3.2
3+350	RHS	Electric Pole	3
3+700	RHS	Electric Pole	6.7
3+760	RHS	Electric Pole	4.8
3+830	RHS	Electric Pole	3.7
3+890	RHS	Electric Pole	5
3+940	RHS	Electric Pole	4
3+990	RHS	Electric Pole	3.6
4+060	RHS	Electric Pole	3.2
4+100	RHS	Electric Pole	3.1
4+150	RHS	Electric Pole	3.1
4+200	RHS	Electric Pole	3.1
4+290	RHS	Electric Pole	3.4
4+340	RHS	Hand Pump	4
2+740	LHS	Pre Pipeline	2
1+835	LHS	Stand Post	2
2+190	LHS	Stand Post	3
2+300	LHS	Stand Post	3.3
2+450	LHS	Stand Post	3
2+560	LHS	Stand Post	2.7
2+690	LHS	Stand Post	3
3+032	LHS	Stand Post	3.3
3+260	LHS	Stand Post	3
4+130	RHS	Transformer	3.3

E-3 List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10):

Chainage	Side	Sensitive Structures	Distance from center line (m)
2+730	LHS	Namghar	5
4+020	LHS	Namghar	8
0+700	RHS	Namghar	4.5
4+340	RHS	Namghar	4
4+190	RHS	Temple	5

E-5 Photographs of the project area showing at least 10 m on either side from center line of road alignment. Every 2 km or less of road must have at least 1 photograph.


Start Point of corridor


Corridor at 0+500

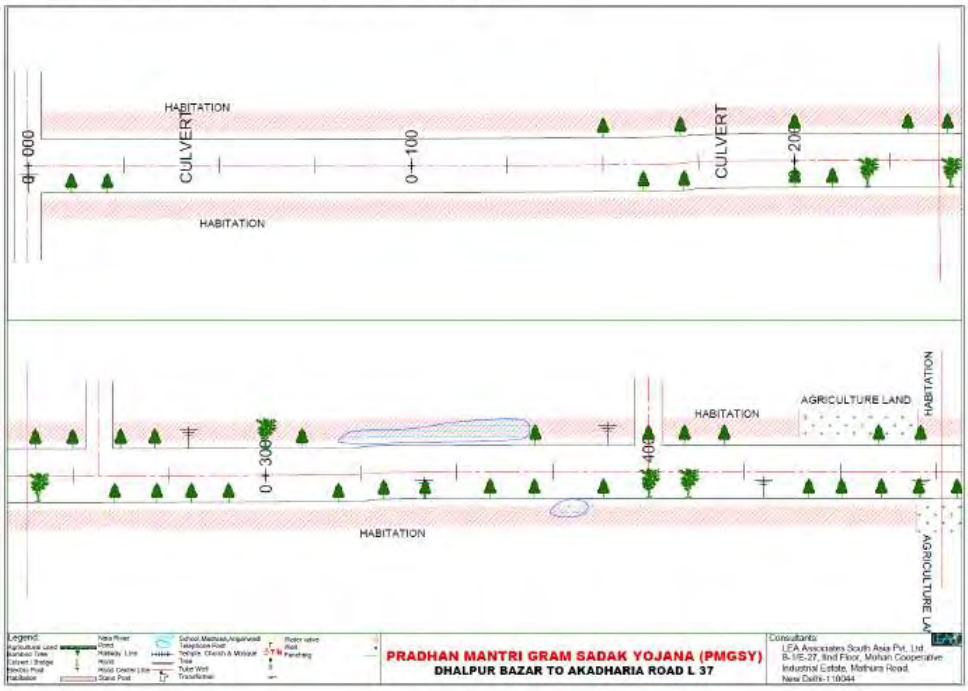

Corridor at 1+000

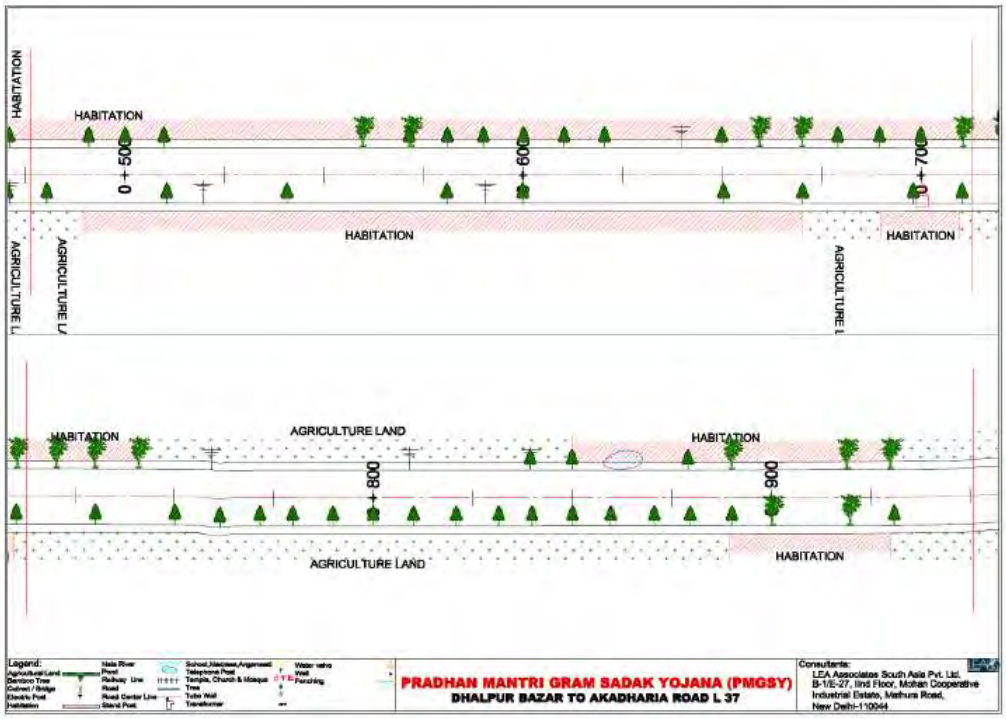

Corridor at 1+500

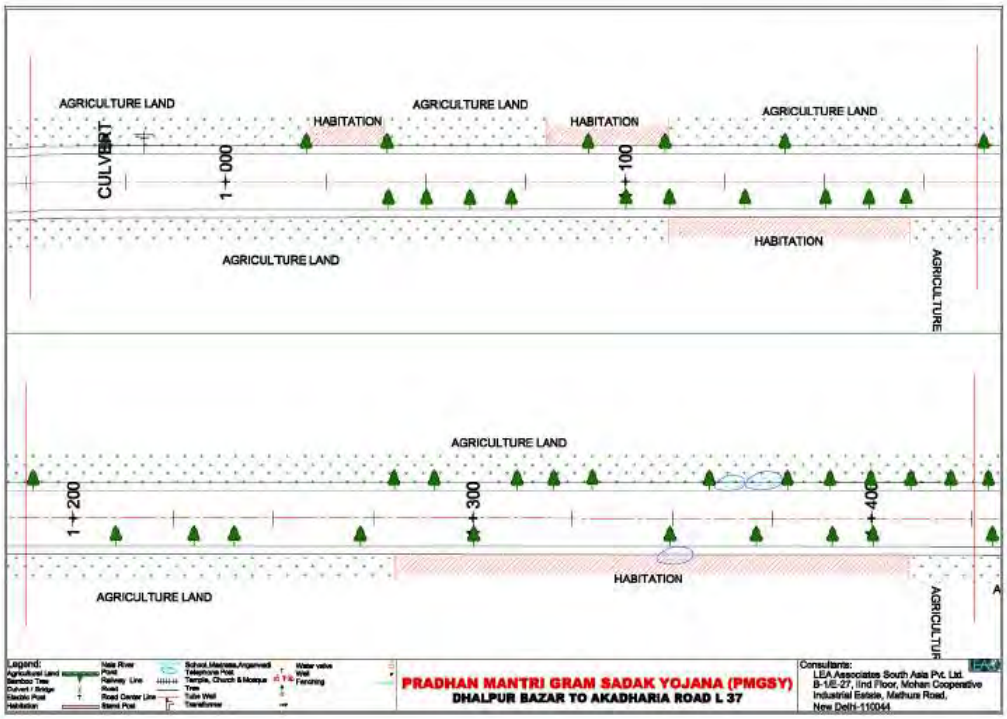

Corridor at 2+000

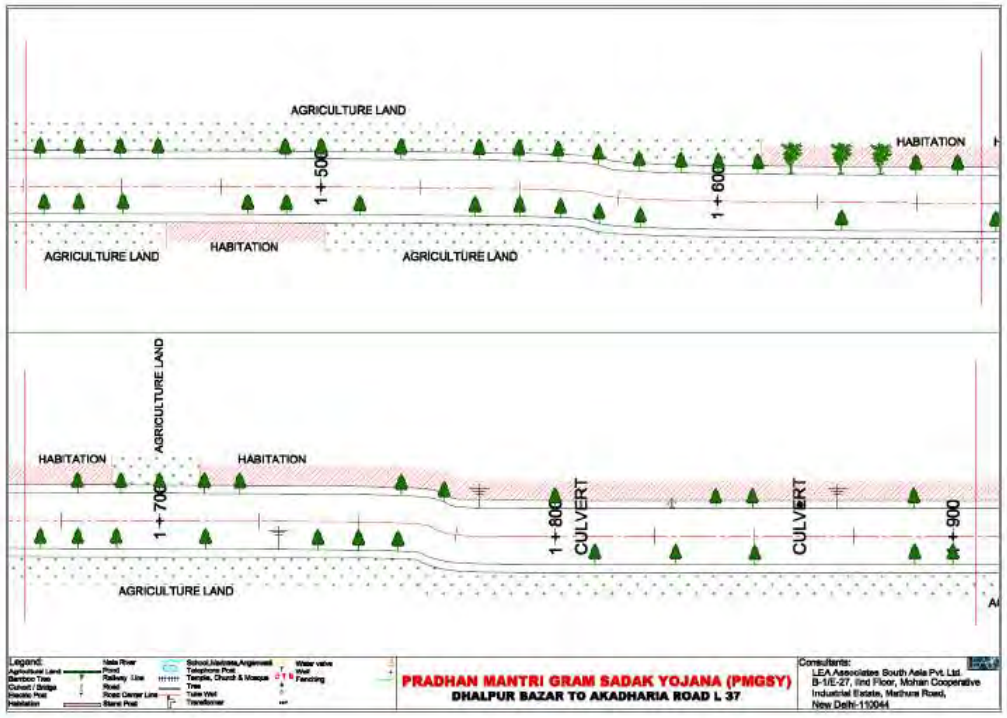

Corridor at 2+500

E-4 Sketch of strip map of the road covering details of atleast 10 m on either side from the center line of the road






AGRICULTURE LAND
HABITATION
AGRICULTURE LAND
HABITATION
AGRICULTURE LAND
CULVERT
1+000
1+100
HABITATION
AGRICULTURE LAND
AGRICULTURE
AGRICULTURE LAND
1+200
1+300
1+400
HABITATION
AGRICULTURE LAND
Legend:
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
DHALPUR BAZAR TO AKADHARIA ROAD L 37
Consultants:
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044


AGRICULTURE LAND
HABITATION
1+500
1+600
AGRICULTURE LAND
HABITATION
AGRICULTURE LAND
AGRICULTURE LAND
HABITATION
HABITATION
1+700
1+800
CULVERT
CULVERT
1+900
AGRICULTURE LAND
Legend:
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
DHALPUR BAZAR TO AKADHARIA ROAD L 37
Consultants:
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044

E-6 List of Participants (Attendance Sheet)

Transect Walk Attendance Sheet

Road name: Dhalpur Bazar To Akadhara Road Date: 27-12-13

Community			
Name of the Participants	Signature	Name and designation of the official	Signature
Sri Jugal Borah	[illegible]	Sri [illegible] Bhattacharya SA	[illegible]
Sri Jiten Prasad	J Prasad	Sri Rajeev Chetia S.A	[illegible]
Sri Binod Bora	B.D	Sri Jandiram Das	[illegible]
Sri Jiten Das	J.D		
Sri Asif Borah	A.B.		
Sri Momin Borah	N. Ali		
Sri Jiban Das	[illegible]		
Sri Sunil Das	[illegible] 27/12/13		
[illegible]	[thumb impression]		
[illegible]	[thumb impression]		
[illegible]	[thumb impression]		
[illegible]	[illegible]		

IV. RURAL ROADS: ENVIRONMENTAL CHECKLIST

Road Name	151 to Charubari Pather (Katahguri to Charubari Pather)
Block Name	Mayong
District Name	Morigaon
Total Length of the Road	4.00 km

A. Climatic Conditions

Temperature	High: 36°C Low: 9°C
Humidity	High: 95% Low: 40%
Rainfall	1000mm/year
Rainy Season	May to September

B. Location of the Road and Generic description of Environment

No.	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)		✓	Distance from Coastline: km ( ) more than 50% ( ) less than 20%
2.	Type of Terrain-(Plain/Hilly/ Mountainous etc.) *(Explain the topography of the area and how many km of the road are located in the hilly area).*	✓		Topography of terrain – Plain Altitude: 60.6m (average) The entire section of the alignment fall in the plain terrain
4.	Forest Area *(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest area)?*		✓	Type of Vegetation: Legal Status of the Forest Area: *(Reserved, National Park, Sanctuaries, Unclassified; etc.*
5.	Wildlife *(Explain whether there are any wildlife species in the project area)*		✓	Name of animals: Endangered species (if any):
6.	Inhabited Area	✓		Chainage: From – To; Side PART–I 0+000 – 0+060 – LHS 0+180 – 0+230 – LHS 1+880 – 2+090 – LHS 0+000 – 0+020 – RHS 1+910 – 2+090 – RHS PART–II 0+430 – 0+470 – LHS

No.	Type of Ecosystem	Yes	No	Explanation
				0+530 0+660 LHS 0+730 0+810 LHS 0+170 0+450 RHS 0+540 0+660 RHS
7.	Agricultural Land	✓		Chainage From / To / Side PART-I 0+060 0+180 LHS 0+230 1+880 LHS 0+020 1+910 RHS PART-II 0+000 0+430 LHS 0+470 0+530 LHS 0+660 0+730 LHS 0+810 1+280 LHS 0+000 0+170 RHS 0+450 0+540 RHS 0+660 1+280 RHS PART-III 0+000 0+330 LHS 0+390 0+630 LHS 0+000 0+330 RHS 0+390 0+630 RHS
8.	Grazing grounds		✓	
9.	Barren Land		✓	

C. Specific description of the Road Environment

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation
1.	Are there any areas with landslide or erosion problems along the road? *(If yes, indicate the location (right or left side) and the chainage)*		✓	( ) No Secondary information is available and Local Community is not aware of this matter
2.	Are there any lakes/swamps beside the road? *(If yes, list them indicating the location (right or left side)and the chainage)*	✓		PART-I Chainage / Side / Type of Water Body / Distance from Centre Line (m) Part-I 0+010 LHS Pond 2.0 1+930 RHS Pond 3 Part-II 0+140 RHS Pond 3.5 Part-III 0+410 LHS Pond 3.5

No.	Parameter / Component	Yes	No	Explanation
3.	Are there any nallas/streams/rivers etc. along/crossing the road? *(If yes, list them indicating the location (right, left or crossing) and the chainage*		✓	
4.	Are there problems of water stagnation and other drainage issues on or near the road? *(If yes, mention chainage)*		✓	( ) No Secondary Information is available and Local Community is not aware of this matter
5.	Is the area along the project road prone to flooding? *(If yes, mention flood level and frequency)*		✓	( ) No Secondary Information is available and Local Community is not aware of this matter
6.	Are there any trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment? *(If yes attach list of trees indicating the location (right or left side)and the chainage)*	✓		104 trees (PART-I), 137 trees (PART-II) and 14 trees (PART-III) are located within 10 m on either side of the CL. Out of these 48 trees will be affected due to the project. (Refer E.1)
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas? *(If yes, specify details of habitat with chainage)*		✓	
				( ) No Secondary Information is available and Local Community is not aware of this matter
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	( ) No Secondary Information Available and Local Community is not aware of this matter
9.	Are there any utility structures[1] within 10 m on either side from the center line of the road alignment? *(If yes, attach list with chainage)*	✓		2 electric poles (PART-I), 1 electric pole (PART-II) and 9 electric poles (PART-III) are located within 10 m on either side of the CL of the road. None of these utility structures will be affected due to the project (Refer E.2)
10.	Are there any religious, cultural or community structures/buildings[2] within 10 m on either side from the center line of the road alignment? *(If yes attach list with chainage)*	✓		Two schools are located within 10m on either side of the CL of the road. (Refer E.3)

[1] Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures

[2] Mandir, Masjid, Church, religious/cultural/historical monuments, school, health center, public toilet and other similar structures

D. Public Consultation

No.	Consultation Activities:	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. *(Attach list of people met and dates)*	✓		A consultation was held with PIU and community members, it was attended by 18 persons. The list of participants is attached in **Annexure E6.**
2.	Any suggestion received in finalizing the alignment	✓		Road safety measures near road intersection, curve locations and railway crossing.
3.	If suggestions received, were they incorporated into the design?	✓		

E. Annexures

E-1 List of trees indicating location (left or right side of the road) and chainage (as required under C, 6)

Chainage	Side	Name Of Tree	DCL	Numbers
PART-I				
0+000	LHS	Valkor	2.9	2
0+020	LHS	Valkor	2.9	3
0+030	LHS	Valkor	7	2
0+040	LHS	Valkor	5	3
0+050	LHS	Jiya	3	1
0+060	LHS	Valkor	3	2
0+110	LHS	Azar	3.9	1
0+120	LHS	Sonaru	3.9	2
0+150	LHS	Hahura	3	2
0+160	LHS	Sonaru	3	1
0+190	LHS	Hahura	3.3	2
0+210	LHS	Hahura	3.3	2
0+230	LHS	Azar	3.5	3
0+630	LHS	Bogori	4.5	1
0+835	LHS	Modar	2.5	1
0+860	LHS	Azar		2
0+870	LHS	Sonaru	3	1
1+130	LHS	Hahura	4	2
1+890	LHS	Kodom	3.5	1
1+910	LHS	Valkor	2	1
1+915	LHS	Hahura	2	2
1+920	LHS	Mango	2.5	1
1+925	LHS	Simalu	3	1
1+930	LHS	Valkor	2	2
1+940	LHS	Sonaru	3.5	2
1+945	LHS	Azar	3.3	2
1+950	LHS	Bogori	3	2
1+960	LHS	Mango	3	1
1+970	LHS	Mango	3.2	3
1+980	LHS	Mango	3.9	1
1+985	LHS	Ou Tenga	3.9	1
2+000	LHS	Valkor	3.9	1
2+000	LHS	Coconut	3.9	1
2+010	LHS	Kodom	3.9	1
2+020	LHS	Mango	3.7	1
2+035	LHS	Bogori	3.2	1

Chainage	Side	Name Of Tree	DCL	Numbers
2+040	LHS	Sotiona	3.5	2
2+050	LHS	Hahura	3.2	5
2+070	LHS	Mango	2	1
2+085	LHS	Valkor	2	1
2+090	LHS	Coconut	3	1
0+030	RHS	Valkor	3	1
0+190	RHS	Hahura	3.9	3
0+690	RHS	Demaru	4	1
0+770	RHS	Demaru	3.2	2
0+780	RHS	Hahura	3.3	3
0+830	RHS	Bogori	3	2
0+840	RHS	Hahura	3.5	4
0+850	RHS	Simalu	3.7	1
0+870	RHS	Jiya	3.3	1
0+935	RHS	Hahura	3.3	2
0+940	RHS	Hahura	3.3	4
1+030	RHS	Jiya	10	1
1+040	RHS	Bogori	3.3	1
1+800	RHS	Ahot	3.1	1
1+940	RHS	Valkor	2.2	2
1+950	RHS	Valkor	3.3	1
2+000	RHS	Ou Tenga	3.9	1
2+010	RHS	Hahura	3.3	3
2+020	RHS	Demaru	3.2	1
2+030	RHS	Hahura	3.2	2
2+040	RHS	Valkor	4	1
2+045	RHS	Segun	4	1
2+060	RHS	Kathal	2.5	1
2+080	RHS	Valkor	2.5	1
2+090	RHS	Demaru	2.5	1
PART-II				
0+030	LHS	Valkor	3.5	3
0+040	LHS	Valkor	3.5	5
0+190	LHS	Valkor	3.9	1
0+195	LHS	Krishnasura	3.9	2
0+210	LHS	Valkor	3.7	3
0+250	LHS	Simalu	5	1
0+255	LHS	Valkor	3	1
0+310	LHS	Valkor	3.1	2
0+320	LHS	Valkor	3.1	3
0+340	LHS	Valkor	3.1	2
0+360	LHS	Valkor	3.1	4
0+460	LHS	Sajina	3.9	1
0+510	LHS	Valkor	3.5	1
0+520	LHS	Valkor	3.9	3
0+550	LHS	Azar	7	1
0+580	LHS	Valkor	4	5
0+600	LHS	Valkor	3.9	3
0+610	LHS	Valkor	3.9	5
0+620	LHS	Demaru	3.9	1
0+635	LHS	Valkor	4	1
0+650	LHS	Ou Tenga	7	1
0+680	LHS	Valkor	4	3
0+700	LHS	Valkor	4	1
0+740	LHS	Simalu	5	1
0+750	LHS	Valkor	5	1
0+755	LHS	Krishnasura	5	1

Chainage	Side	Name Of Tree	DCL	Numbers
0+400	LHS	Valkor	3.5	2
0+405	LHS	Valkor	3.5	2
0+430	LHS	Ahot	3.7	1
0+460	LHS	Krishnasura	3.3	1
0+390	RHS	Valkor	3.5	2
0+470	RHS	Valkor	3.5	1
0+480	RHS	Bogori	3.5	1

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

E-2 List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

Chainage	Side	Type	Distance from center line (m)
PART-I			
2+080	LHS	Electric Pole	3.3
0+100	RHS	Electric Pole	4
PART-II			
0+000	LHS	Electric Pole	3.5
PART-III			
0+390	LHS	Electric Pole	4
0+420	LHS	Electric Pole	4
0+470	LHS	Electric Pole	7
0+490	LHS	Electric Pole	7
0+540	LHS	Electric Pole	7
0+580	LHS	Electric Pole	7
0+600	LHS	Electric Pole	7

E-3 List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10):

Chainage	Side	Sensitive Structures	Distance from center line (m)
PART-II			
0+010	RHS	School	5
0+090	RHS	School	6

E-5 Photographs of the project area showing at least 10 m on either side from center line of road alignment. Every 2 km or less of road must have at least 1 photograph.

PART-I

Start Point of corridor

Corridor at 0+400

Corridor at 0+800

Corridor at 1+200

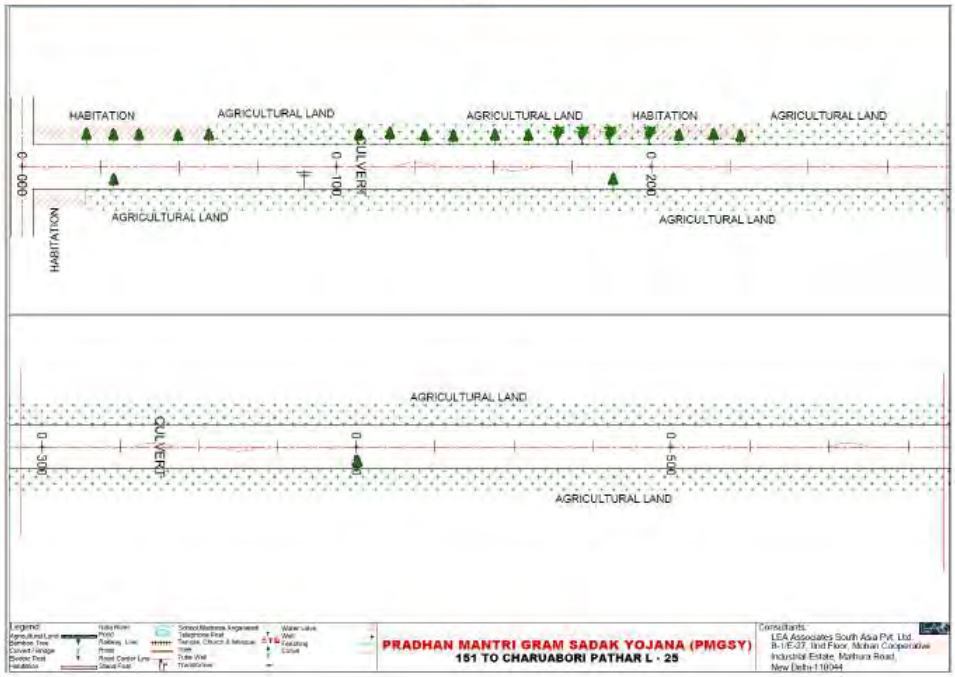
Corridor at 1+600

End Point of corridor

MORIGAON DISTRICT

E-4 Sketch of strip map of the road covering details of atleast 10 m on either side from the center line of the road

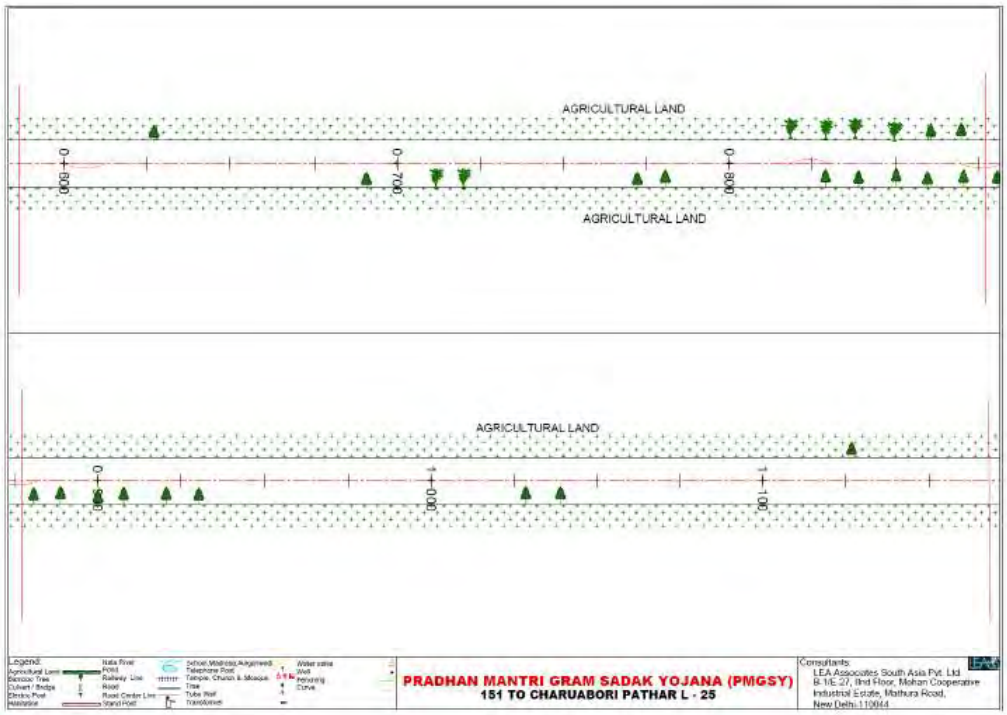
Part-I



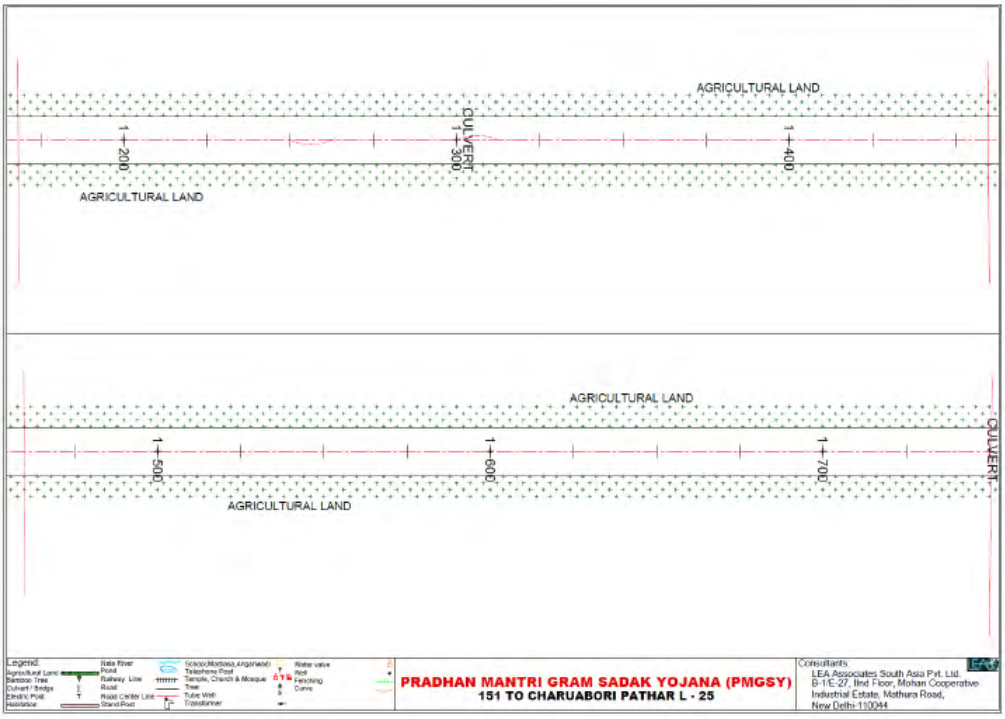
45

OFF AND ROaF DOCUMENTS
MORIGAON DISTRICT

151 TO CHARUBARI PATHER (NATANGURI TO CHARUBARI PATHER) (L005)



46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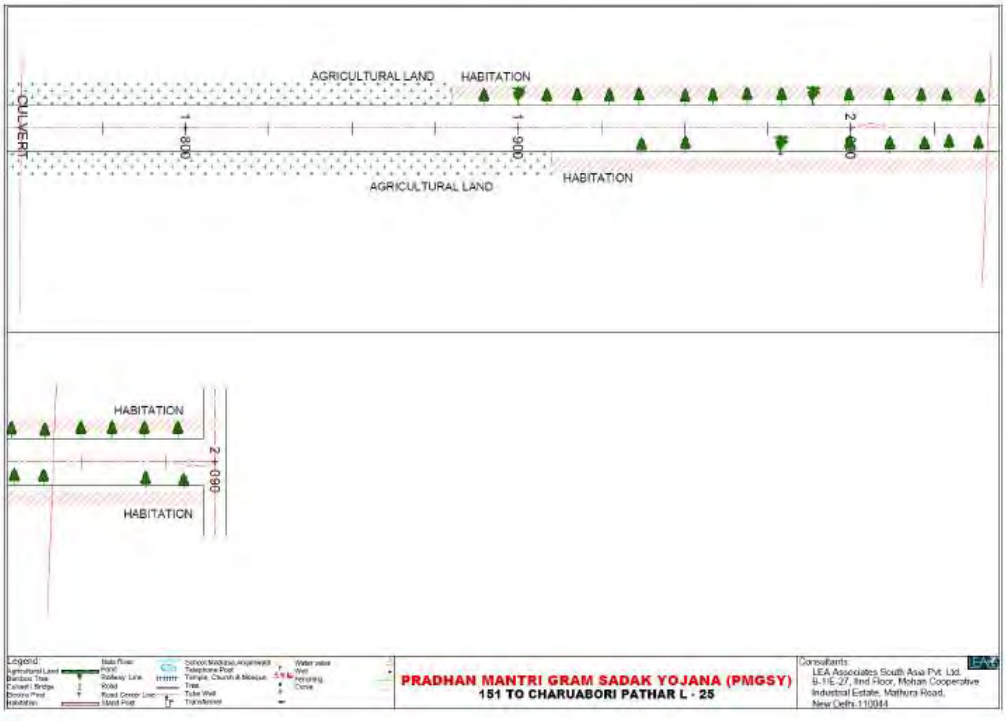
1+200
CULVERT
1+300
1+400
AGRICULTURAL LAND
AGRICULTURAL LAND
1+500
1+600
1+700
CULVERT
AGRICULTURAL LAND
Legend
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
151 TO CHARUABORI PATHAR L - 25
Consultants
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044


AGRICULTURAL LAND
HABITATION
CULVERT
1+800
1+900
AGRICULTURAL LAND
HABITATION
HABITATION
2+600
HABITATION
Legend
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
151 TO CHARUABORI PATHAR L - 25
Consultants
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044

PART-II

Start Point of corridor

Corridor at 0+400

Corridor at 0+800

End Point of corridor

PART-III

Start Point of corridor

Corridor at 0+200

Corridor at 0+400

End Point of corridor

E-6 List of Participants (Attendance Sheet)

Transect Walk Attendance Sheet

Road name: 151 TO Charuabora pathar Date: 23-10-2013

Community		PIU/PRI	
Name of the Participants	Signature	Name and designation of the official	Signature
Shri Simanta Borgohain	S.S.B	Miss Muhiti Das president Uttar Dhuramukh G.P	[illegible] Uttar Dharamukh G.P Date
[illegible]	[illegible]	Md. Abul Hashem S.E./PWD	[illegible]
Sri Khadom Engti	S.K.E		
[illegible]	[illegible]		
[illegible]	[illegible]		
[illegible]	[illegible]		
[illegible]	[illegible]		
[illegible]	[illegible]		
[illegible]	[illegible]		
[illegible]	[illegible]		
[illegible]			
[illegible]			

IV. RURAL ROADS: ENVIRONMENTAL CHECKLIST

Road Name	Dakhinpat Kampur Road to Kachariguri Road
Block Name	Pakhimaria
District Name	Nagaon
Total Length of the Road	2.240 km

A. Climatic Conditions

Temperature	High: 36°c Low: 9°c
Humidity	High: 95% Low: 40%
Rainfall	1000mm/year
Rainy Season	May to September

B. Location of the Road and Generic description of Environment

No.	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)		✓	Distance from Coastline: km ( ) more than 50% ( ) less than 20%
2.	Type of Terrain-(Plain/Hilly/ Mountainous etc.) *(Explain the topography of the area and how many km of the road are located in the hilly area)*	✓		Topography of terrain - Plain Altitude: 60.6m (average) The entire section of the alignment fall in the plain terrain
4.	Forest Area *(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest area)?*		✓	Type of Vegetation: Legal Status of the Forest Area: *(Reserved, National Park, Sanctuaries, Unclassified, etc.*
5.	Wildlife *(Explain whether there are any wildlife species in the project area)*		✓	Name of animals: Endangered species (if any):
6.	Inhabited Area	✓		Chainage: From – To; Side 0+200 – 0+230 – LHS 0+320 – 0+340 – LHS 0+600 – 1+050 – LHS 1+120 – 1+250 – LHS 1+290 – 1+340 – LHS 0+000 – 0+100 – RHS 0+240 – 0+270 – RHS 0+490 – 0+600 – RHS 0+650 – 0+780 – RHS 0+890 – 1+020 – RHS 1+110 – 1+290 – RHS

No.	Type of Ecosystem	Yes	No	Explanation
7.	Agricultural Land	✓		Chainage From / To: 0+000 – 0+200 (LHS); 0+230 – 0+320 (LHS); 0+140 – 0+600 (LHS); 1+050 – 1+220 (LHS); 1+250 – 1+290 (LHS); 1+340 – 2+240 (LHS); 0+100 – 0+240 (RHS); 0+270 – 0+490 (RHS); 0+600 – 0+650 (RHS); 0+780 – 0+890 (RHS); 1+920 – 1+510 (RHS); 1+290 – 2+240 (RHS)
8.	Grazing grounds		✓	
9.	Baren Land		✓	

C. Specific description of the Road Environment

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation
1.	Are there any areas with landslide or erosion problems along the road? ***(If yes, indicate the location (right or left side) and the chainage)***		✓	( ) No Secondary Information is available and Local Community is not aware of this matter
2.	Are there any lakes/swamps beside the road? ***(If yes, list them indicating the location (right or left side)and the chainage)***	✓		11 ponds are located along the corridor. Pond locations are given in the table below. Chainage / Side / Particulars / DCL: 0+100 / LHS / Pond / 6; 0+540 / LHS / Pond / 4; 0+920 / LHS / Pond / 3.1; 1+090 / LHS / Pond / 3; 2+060 / LHS / Pond / 3.3; 2+190 / LHS / Pond / 3.7; 0+030 / RHS / Pond / 4; 0+040 / RHS / Pond / 3; 0+230 / RHS / Pond / 5; 0+590 / RHS / Pond / 3.6; 2+070 / RHS / Pond / 3.2
3.	Are there any nallas/streams/rivers etc. along/crossing the road? ***(If yes, list them indicating the location (right, left or crossing) and the chainage***		✓	

No.	Parameter / Component	Yes	No	Explanation
4.	Are there problems of water stagnation and other drainage issues on or near the road? ***(If yes, mention chainage)***		✓	
5.	Is the area along the project road prone to flooding? ***(If yes, mention flood level and frequency)***		✓	( ) No Secondary Information is available and Local Community is not aware of this matter
6.	Are there any trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment? ***(If yes attach list of trees indicating the location (right or left side)and the chainage)***	✓		172 trees are located within 10 m on either side of the CL. None of these trees will be affected due to the project. [Refer E.1]
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas? ***(If yes, specify details of habitat with chainage)***		✓	( ) No Secondary Information is available and Local Community is not aware of this matter
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	( ) No Secondary Information Available and Local Community is not aware of this matter
9.	Are there any utility structures[3] within 10 m on either side from the center line of the road alignment? ***(If yes, attach list with chainage)***	✓		41 electric poles, 1 hand pump and 2 transformers are located within 10 m on either side of the CL of the road. None of these utility structures will be affected due to the project [Refer E.2]
10.	Are there any religious, cultural or community structures/buildings[4] within 10 m on either side from the center line of the road alignment? ***(If yes attach list with chainage)***	✓		1 temple and 2 Anganwadi Centres are located within 10 m on either side of the CL of the road. None of these community structures will be affected due to the project [Refer E.3]

D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. ***(Attach list of people met and dates)***	✓		A consultation was held with the local community and it was attended by 25 persons. The list of participants is attached in Annexure E6.

[3] Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures

[4] Mandir, Masjid, Church, religious/cultural/historical monuments, school, health center, public toilet and other similar structures

No.	Consultation Activities	Yes	No	Remarks
2.	Any suggestion received in finalizing the alignment	✓		Road safety measures near school, road intersection, curve locations.
3.	If suggestions received, were they incorporated into the design?	✓		

E. Annexures

E-1 List of trees indicating location (left or right side of the road) and chainage (as required under C. 6)

Chainage	Side	Name of Tree	DCL
0+080	LHS	Segun	3
0+084	LHS	Segun	3
0+086	LHS	Segun	3
0+088	LHS	Segun	3
0+090	LHS	Segun	2.7
0+095	LHS	Segun	2.7
0+098	LHS	Segun	2.7
0+104	LHS	Segun	3
0+106	LHS	Segun	3
0+108	LHS	Segun	3
0+110	LHS	Segun	3
0+115	LHS	Segun	3
0+118	LHS	Segun	3
0+120	LHS	Kadam	3.1
0+125	LHS	Kadam	3.1
0+128	LHS	Kadam	3.1
0+130	LHS	Kadam	3.2
0+135	LHS	Kadam	3.2
0+138	LHS	Kadam	3.2
0+200	LHS	Jiya	3
0+210	LHS	Kadam	2.9
0+220	LHS	Radhasura	3
0+235	LHS	Ahot	3
0+240	LHS	Ahot	3
0+270	LHS	Modar	3.1
0+300	LHS	Voja	3.5
0+330	LHS	Moj	3.2
0+350	LHS	Sohura	4.1
0+470	LHS	Bogori	7
0+475	LHS	Sohura	7
0+490	LHS	Jiya	3.1
0+520	LHS	Bogori	3
0+525	LHS	Coconut	5
0+550	LHS	Coconut	4
0+565	LHS	Ahot	5
0+630	LHS	Coconut	4
0+650	LHS	Segun	4
0+655	LHS	Segun	4
0+660	LHS	Coconut	3.5
0+680	LHS	Mango	10
0+695	LHS	Kadam	3.5
0+700	LHS	Bogori	4.5
0+730	LHS	Neem	3.2
0+740	LHS	Bogori	3.5
0+745	LHS	Neem	3.5

Chainage	Side	Name of Tree	DCL
1+250	RHS	Bogori	3.1
1+290	RHS	Simolu	2.4
1+310	RHS	Sonalu	3
1+315	RHS	Sonalu	3
1+330	RHS	Voja	3
1+410	RHS	Ahot	2.2
1+430	RHS	Sonalu	4
1+570	RHS	Velkor	3.3
1+700	RHS	Ahot	3.8
1+720	RHS	Simolu	3.5
1+830	RHS	Ajar	3.1
1+860	RHS	Bot Gos	2.7
2+240	RHS	Velkor	7

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

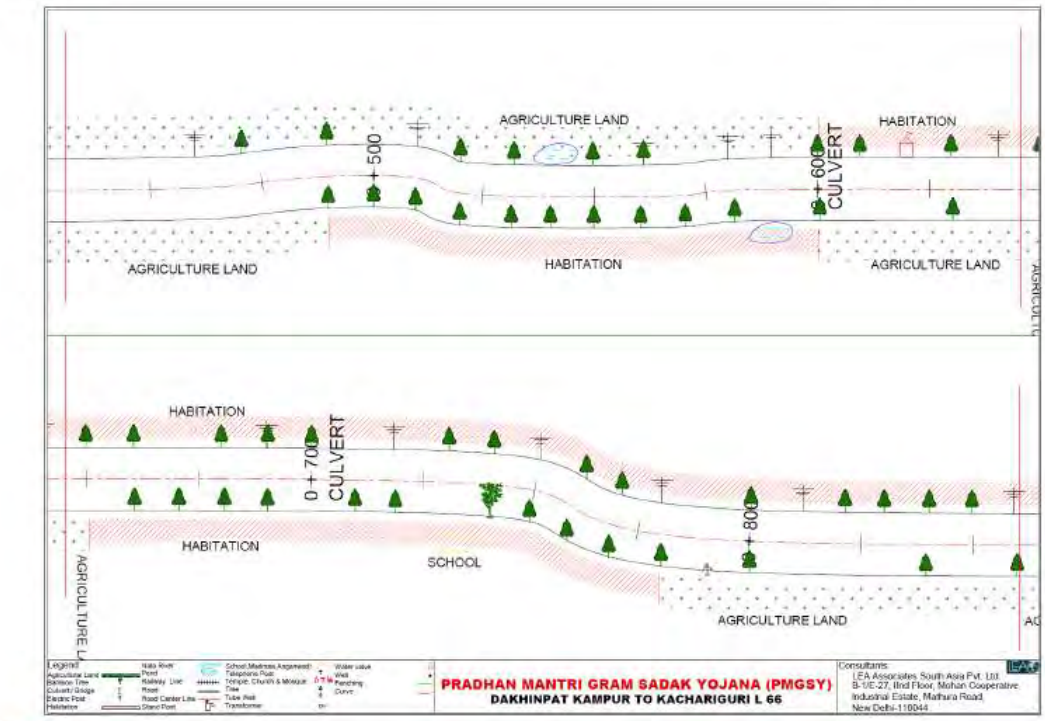
E-2 List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

Chainage	Side	Type	Distance from center line (m)
0+010	LHS	Electric Pole	4.5
0+050	LHS	Electric Pole	2.7
0+140	LHS	Electric Pole	2.8
0+190	LHS	Electric Pole	2.5
0+230	LHS	Electric Pole	2.8
0+280	LHS	Electric Pole	3
0+320	LHS	Electric Pole	3.1
0+370	LHS	Electric Pole	3.2
0+420	LHS	Electric Pole	3.2
0+460	LHS	Electric Pole	3.2
0+510	LHS	Electric Pole	3
0+560	LHS	Electric Pole	3
0+580	LHS	Electric Pole	3
0+640	LHS	Electric Pole	2.8
0+690	LHS	Electric Pole	3
0+720	LHS	Electric Pole	3.5
0+750	LHS	Electric Pole	3.7
0+780	LHS	Electric Pole	3
0+810	LHS	Electric Pole	3.1
0+860	LHS	Electric Pole	2.5
0+880	LHS	Electric Pole	2.4
0+910	LHS	Electric Pole	2.4
0+950	LHS	Electric Pole	2.7
1+030	LHS	Electric Pole	2.6
1+070	LHS	Electric Pole	2.3
1+100	LHS	Electric Pole	3
1+202	LHS	Electric Pole	3
1+265	LHS	Electric Pole	3.2
1+300	LHS	Electric Pole	5.5
1+350	LHS	Electric Pole	3.2
2+210	LHS	Electric Pole	2.5
0+090	RHS	Electric Pole	2.7
1+010	RHS	Electric Pole	2.6
1+150	RHS	Electric Pole	3
1+230	RHS	Electric Pole	3
1+260	RHS	Electric Pole	3

Chainage	Side	Type	Distance from center line (m)
1+300	RHS	Electric Pole	6
1+305	RHS	Electric Pole	6
1+460	RHS	Electric Pole	3
2+140	RHS	Electric Pole	10
2+145	RHS	Electric Pole	10
1+425	RHS	Hand Pump	5
0+590	LHS	Transformer	10
1+210	LHS	Transformer	3

E-3 List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10):

Chainage	Side	Sensitive Structures	Distance from center line (m)
0+905	RHS	Temple	2.5
0+730	RHS	Anganwadi centre	5
1+420	RHS	Anganwadi centre	7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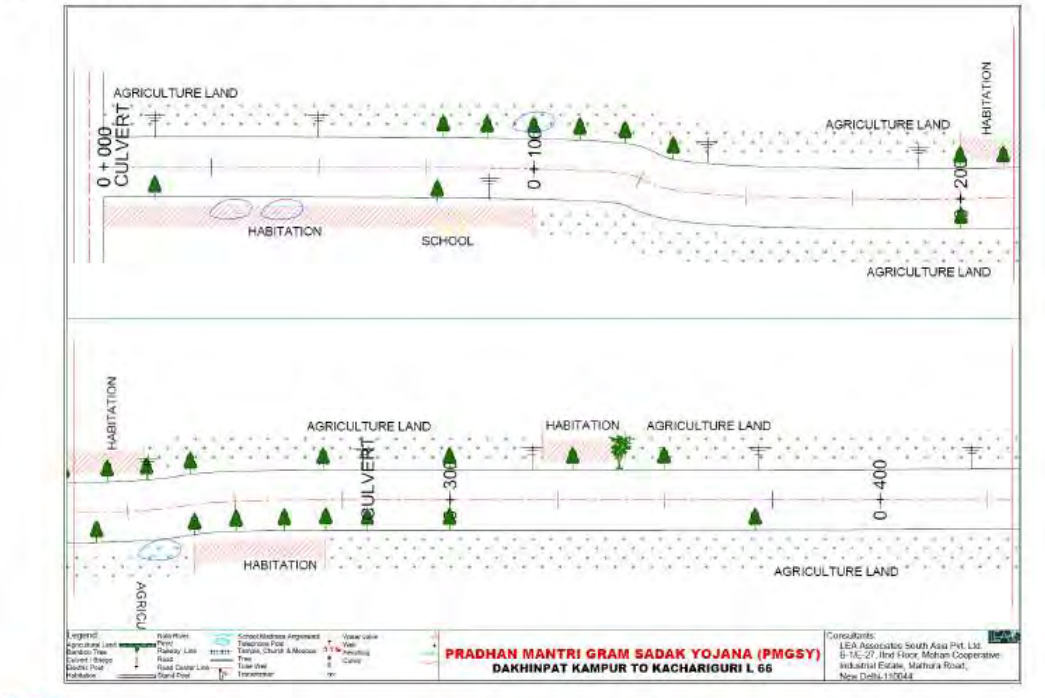
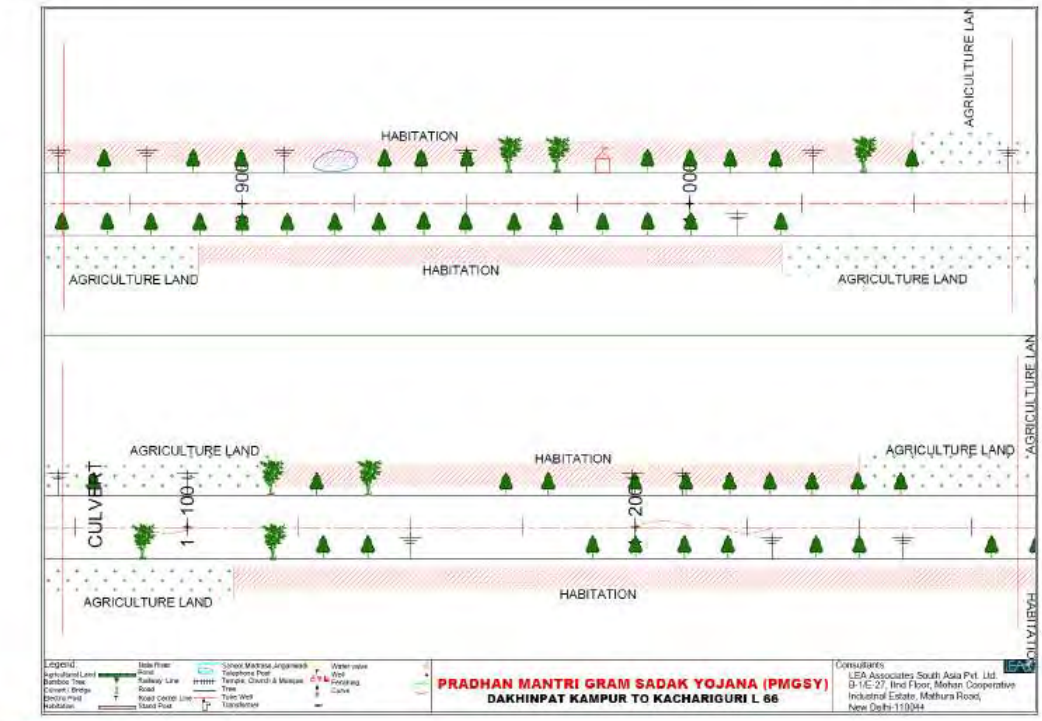
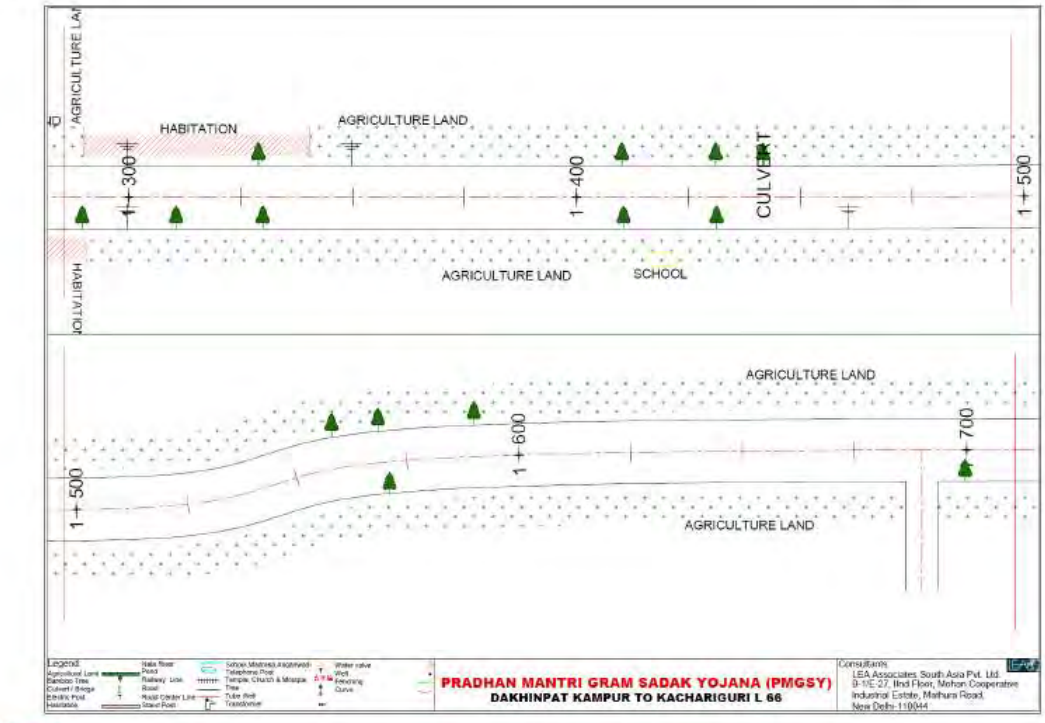
HABITATION
0 + 500
0 + 600
CULVERT
AGRICULTURE LAND
HABITATION
AGRICULTURE LAND
HABITATION
0 + 700
CULVERT
HABITATION
SCHOOL
0 + 800
AGRICULTURE LAND
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
DAKHINPAT KAMPUR TO KACHARIGURI L 66


E-4 Sketch of strip map of the road covering details of atleast 10 m on either side from the center line of the road
AGRICULTURE LAND
0 + 000
CULVERT
HABITATION
SCHOOL
0 + 100
AGRICULTURE LAND
HABITATION
0 + 200
AGRICULTURE LAND
HABITATION
AGRICULTURE LAND
HABITATION
AGRICULTURE LAND
CULVERT
0 + 300
HABITATION
AGRICULTURE LAND
0 + 400
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
DAKHINPAT KAMPUR TO KACHARIGURI L 66


HABITATION
AGRICULTURE LAND
HABITATION
AGRICULTURE LAND
AGRICULTURE LAND
HABITATION
AGRICULTURE LAND
CULVERT
HABITATION
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
DAKHINPAT KAMPUR TO KACHARIGURI L 66


HABITATION
AGRICULTURE LAND
AGRICULTURE LAND
SCHOOL
CULVERT
AGRICULTURE LAND
AGRICULTURE LAND
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
DAKHINPAT KAMPUR TO KACHARIGURI L 66

E-5 Photographs of the project area showing at least 10 m on either side from center line of road alignment. Every 2 km or less of road must have at least 1 photograph.

Start Point of corridor

Corridor at 0+500

Corridor at 1+000

Corridor at 1+500

Corridor at 2+000

End Point of corridor

E-6 List of Participants (Attendance Sheet)

Transect Walk Attendance Sheet

Road name: Dakhinpat Kampsite Road to Kachari gaon. Date: [illegible]/01/2014

Community			
Name of the Participants	Signature	Name and designation of the official	Signature
Rajen Kr. Laskar	[illegible]	[illegible]	[illegible]
Sri Sonaram Nath	[illegible]	President Dakshinpat Gaon Panchayat [illegible]	
Bikash Kr. Nath	[illegible]	Sri Madhab Borah S.A.-P.W.D(R)	[illegible]
[illegible]		[illegible] JE PWD(R)	[illegible]
Sri Apurba Bora.	[illegible]		
Sri Krishna Nath	[illegible]		
Lakhi Kt. Nath	[illegible]		
Sri Niranjan Nath.	[illegible]		
[illegible]			
Sri Pradeep Nath			
[illegible]			
[illegible]			

IV. RURAL ROADS: ENVIRONMENTAL CHECKLIST

Road Name	Mikirgaon to K A Road
Block Name	Borhola
District Name	Nagaon
Total Length of the Road	5.111 km

A. Climatic Conditions

Temperature	High: 36°c Low: 9°c
Humidity	High: 95% Low: 40%
Rainfall	1000mm/year
Rainy Season	May to September

B. Location of the Road and Generic description of Environment

No.	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)		✓	Distance from Coastline: km ( ) more than 50% ( ) less than 20%
2.	Type of Terrain(Plain/Hilly/ Mountainous etc.) *(Explain the topography of the area and how many km of the road are located in the hilly area)*	✓		Topography of terrain – Plain Altitude: 60.6m (average) The entire section of the alignment fall in the plain terrain
4.	Forest Area *(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest area)?*		✓	Type of Vegetation: Legal Status of the Forest Area: *(Reserved, National Park, Sanctuaries, Unclassified, etc.*
5.	Wildlife *(Explain whether there are any wildlife species in the project area)*		✓	Name of animals: Endangered species (if any):
6.	Inhabited Area	✓		Chainage From: To: Side 0+070 0+150 LHS 0+400 0+430 LHS 0+440 0+600 LHS 0+930 0+950 LHS 1+580 1+600 LHS 1+700 1+740 LHS 1+810 1+870 LHS 1+860 2+000 LHS 2+040 2+150 LHS 2+240 2+370 LHS 2+490 2+530 LHS

No.	Type of Ecosystem	Yes	No	Explanation		
				2+580	2+610	LHS
				2+660	2+700	LHS
				2+740	2+760	LHS
				2+800	2+920	LHS
				2+980	3+000	LHS
				3+130	3+160	LHS
				3+190	3+210	LHS
				3+370	3+480	LHS
				3+580	3+670	LHS
				3+730	3+870	LHS
				3+910	3+970	LHS
				4+140	4+370	LHS
				4+860	4+880	LHS
				0+210	0+270	RHS
				0+310	0+540	RHS
				1+510	1+530	RHS
				1+650	1+750	RHS
				1+820	1+960	RHS
				2+000	2+040	RHS
				2+070	2+260	RHS
				2+450	2+470	RHS
				2+500	2+530	RHS
				2+790	2+860	RHS
				3+000	3+040	RHS
				3+090	3+370	RHS
				3+450	3+470	RHS
				3+810	3+980	RHS
				4+350	4+510	RHS
				5+050	5+111	RHS
7.	Agricultural Land	✓		Chainage		Side
				From	To	
				0+000	0+040	LHS
				0+150	0+400	LHS
				0+430	0+440	LHS
				0+600	0+930	LHS
				0+950	1+180	LHS
				1+210	1+580	LHS
				3+160	3+190	LHS
				3+210	3+300	LHS
				3+480	3+530	LHS
				3+670	3+730	LHS
				3+870	3+910	LHS
				3+970	4+140	LHS
				4+370	4+430	LHS
				4+500	4+570	LHS
				0+000	0+210	RHS
				0+270	0+310	RHS
				0+540	1+180	RHS
				2+310	2+410	RHS
				2+710	2+790	RHS
				2+860	3+000	RHS
				3+470	3+730	RHS
				3+980	4+170	RHS
				4+250	4+320	RHS
				4+510	4+570	RHS

No.	Type of Ecosystem	Yes	No	Explanation
8.	Grazing grounds		✓	
9.	Barren Land	✓		

Chainage		Side
From	To	
0+040	0+070	LHS
1+180	1+210	LHS
1+690	1+700	LHS
1+740	1+810	LHS
1+870	1+980	LHS
2+000	2+040	LHS
2+150	2+240	LHS
2+370	2+490	LHS
2+530	2+580	LHS
2+610	2+660	LHS
2+700	2+740	LHS
2+760	2+800	LHS
2+920	2+980	LHS
3+000	3+130	LHS
3+300	3+370	LHS
3+530	3+580	LHS
4+430	4+500	LHS
4+570	4+660	LHS
4+880	5+111	LHS
1+180	1+510	RHS
1+530	1+650	RHS
1+750	1+820	RHS
1+960	2+000	RHS
2+040	2+070	RHS
2+280	2+330	RHS
2+410	2+450	RHS
2+470	2+500	RHS
2+530	2+710	RHS
3+040	3+090	RHS
3+386	3+450	RHS
3+730	3+810	RHS
4+170	4+250	RHS
4+930	5+050	RHS

C. Specific description of the Road Environment

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter / Component	Yes	No	Explanation
1.	Are there any areas with landslide or erosion problems along the road? *(If yes, indicate the location (right or left side) and the chainage)*		✓	No Secondary information is available and Local Community is not aware of this matter
2.	Are there any lakes/swamps beside the road? *(If yes, list them indicating the location (right or left sideland the chainage*	✓		1 pond is located along the corridor, Pond location is given in the table below Chainage | Side | Particulars | DCL 0+565 | LHS | Pond | 1.5

No.	Parameter/ Component	Yes	No	Explanation
3.	Are there any nallas/streams/rivers etc, along/crossing the road? ***(If yes, list them indicating the location (right, left or crossing) and the chainage***	✓		The stream Silmkhowa crosses the road at chainage 1+020 km.
4.	Are there problems of water stagnation and other drainage issues on or near the road? ***(If yes, mention chainage)***		✓	
5.	Is the area along the project road prone to flooding? ***(If yes, mention flood level and frequency)***		✓	( ) No Secondary information is available and Local Community is not aware of this matter
6.	Are there any trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment? ***(If yes attach list of trees indicating the location (right or left side)and the chainage)***	✓		511 trees are located within 10 m on either side of the CL. None of these trees will be affected due to the project. [Refer E.1]
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas? ***(If yes, specify details of habitat with chainage)***		✓	( ) No Secondary information is available and Local Community is not aware of this matter
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	( ) No Secondary Information Available and Local Community is not aware of this matter
9.	Are there any utility structures[1] within 10 m on either side from the center line of the road alignment? ***(If yes, attach list with chainage)***	✓		75 electric poles and 1 hand pump are located within 10 m on either side of the CL of the road. Out of these utility structures, 6 electric poles will be affected due to the project [Refer E.2]
10.	Are there any religious, cultural or community structures/buildings[2] within 10 m on either side from the center line of the road alignment? ***(If yes attach list with chainage)***	✓		1 Namghar, 2 schools, 2 Anganwadi Centres, 4 temples and 1 PHC sub- centre are located within 10 m on either side of the CL of the road. None of these community structures will be affected due to the project [Refer E.3]

D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. ***(Attach list of people met and dates)***	✓		A consultation was held with the local community members, it was attended by 16 persons. The list of participants is attached in **Annexure E6.**

[1] Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures

[2] Mandir, Masjid, Church, religious/cultural/historical monuments, school, health center, public toilet and other similar structures

No.	Consultation Activities	Yes	No	Remarks
2.	Any suggestion received in finalizing the alignment	✓		The existing alignment should be finalised
3.	If suggestions received, were they incorporated into the design?	✓		

E. Annexures

E-1 List of trees indicating location (left or right side of the road) and chainage (as required under C. b)

Chainage	Side	Name of Tree	DCL
0+080	LHS	Kodam	3.5
0+084	LHS	Modar	3.5
0+110	LHS	Jackfruit	4
0+120	LHS	Mango	7
0+150	LHS	Pona	4
0+230	LHS	Somaru	10
0+235	LHS	Somaru	10
0+238	LHS	Somaru	10
0+430	LHS	Somaru	3.7
0+470	LHS	Ahot	4.5
0+490	LHS	Krishnasura	3.5
0+520	LHS	Krishnasura	5
0+530	LHS	Ajar	3.5
0+535	LHS	Ajar	3.5
0+538	LHS	Ajar	3.5
0+540	LHS	Simolu	3.5
0+545	LHS	Simolu	3.5
0+562	LHS	Simolu	3.5
0+580	LHS	Soitan	3.5
1+070	LHS	Bogori	3.3
1+180	LHS	Soitan	3.3
1+185	LHS	Somaru	10
1+200	LHS	Somaru	6
1+205	LHS	Somaru	6
1+210	LHS	Somaru	10
1+230	LHS	Somaru	7
1+350	LHS	Borpat	10
1+410	LHS	Simolu	10
1+490	LHS	Somaru	4
1+510	LHS	Ahot	4
1+520	LHS	Somaru	4
1+525	LHS	Somaru	4
1+530	LHS	Somaru	4
1+570	LHS	Kumbo	3.3
1+660	LHS	Kumbo	10
1+665	LHS	Kumbo	10
1+668	LHS	Kumbo	10
1+740	LHS	Somaru	4
1+745	LHS	Bhal	4
1+750	LHS	Bhal	4.6
1+760	LHS	Somaru	4
1+765	LHS	Somaru	4
1+768	LHS	Somaru	4
1+770	LHS	Somaru	3.3
1+790	LHS	Somaru	4

Chainage	Side	Name of Tree	DCL
4+960	RHS	Velkor	6
4+965	RHS	Velkor	6
4+968	RHS	Velkor	6
4+980	RHS	Borpat	9
4+985	RHS	Borpat	9
4+988	RHS	Borpat	9
5+080	RHS	Borpat	6
5+085	RHS	Borpat	6
5+110	RHS	Sum	4
5+111	RHS	Soltan	4

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

E-2 List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

Chainage	Side	Type	Distance from center line (m)
0+060	LHS	Electric Pole	4.5
0+320	LHS	Electric Pole	4.5
0+400	LHS	Electric Pole	4.5
0+475	LHS	Electric Pole	4.3
0+560	LHS	Electric Pole	3.5
1+940	LHS	Electric Pole	3.5
1+995	LHS	Electric Pole	3.5
2+040	LHS	Electric Pole	3.5
2+210	LHS	Electric Pole	4
2+540	LHS	Electric Pole	4
2+590	LHS	Electric Pole	3.3
2+640	LHS	Electric Pole	3
2+690	LHS	Electric Pole	4
2+750	LHS	Electric Pole	4
2+790	LHS	Electric Pole	3.3
2+840	LHS	Electric Pole	2.7
2+900	LHS	Electric Pole	6
3+135	LHS	Electric Pole	4.7
3+170	LHS	Electric Pole	3.3
3+180	LHS	Electric Pole	4.5
3+210	LHS	Electric Pole	3.3
3+230	LHS	Electric Pole	3.3
3+250	LHS	Electric Pole	3.3
3+290	LHS	Electric Pole	3
3+310	LHS	Electric Pole	3.3
3+570	LHS	Electric Pole	3
3+610	LHS	Electric Pole	3.3
3+650	LHS	Electric Pole	4
3+690	LHS	Electric Pole	2.5
3+720	LHS	Electric Pole	2.5
3+770	LHS	Electric Pole	3
3+810	LHS	Electric Pole	3.5
4+770	LHS	Electric Pole	3.3
4+820	LHS	Electric Pole	6
5+060	LHS	Electric Pole	3.3
5+100	LHS	Electric Pole	4
0+525	RHS	Electric Pole	4
0+600	RHS	Electric Pole	3.5
0+640	RHS	Electric Pole	3.5

Chainage	Side	Type	Distance from center line (m)
0+690	RHS	Electric Pole	3.5
0+740	RHS	Electric Pole	3.5
1+860	RHS	Electric Pole	3.5
1+910	RHS	Electric Pole	3.3
2+100	RHS	Electric Pole	3.3
2+150	RHS	Electric Pole	3
2+190	RHS	Electric Pole	4
2+195	RHS	Electric Pole	4
2+198	RHS	Electric Pole	4
2+252	RHS	Electric Pole	3
2+300	RHS	Electric Pole	3
2+360	RHS	Electric Pole	4
2+400	RHS	Electric Pole	3
2+940	RHS	Electric Pole	3
3+380	RHS	Electric Pole	3
3+410	RHS	Electric Pole	3.3
3+450	RHS	Electric Pole	4
3+490	RHS	Electric Pole	2.5
4+110	RHS	Electric Pole	4
4+240	RHS	Electric Pole	3
4+300	RHS	Electric Pole	3
4+480	RHS	Electric Pole	3
4+530	RHS	Electric Pole	2.7
4+570	RHS	Electric Pole	2.5
4+620	RHS	Electric Pole	3.5
4+625	RHS	Electric Pole	3.5
4+650	RHS	Electric Pole	3.3
4+680	RHS	Electric Pole	3.3
4+710	RHS	Electric Pole	3.3
4+740	RHS	Electric Pole	3.3
4+745	RHS	Electric Pole	3.3
4+860	RHS	Electric Pole	3.5
4+890	RHS	Electric Pole	3.3
4+920	RHS	Electric Pole	3.3
4+970	RHS	Electric Pole	3.3
5+010	RHS	Electric Pole	3.3
2+120	RHS	Hand pump	8

E-3 List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10):

Chainage	Side	Sensitive Structures	Distance from center line (m)
5+075	RHS	Namghar	6
2+250	LHS	School	4
3+660	LHS	School	10
3+140	LHS	Anganwadi Centre	5
5+070	RHS	Anganwadi Centre	6
0+420	LHS	Temple	4.5
3+200	LHS	Temple	6
2+090	RHS	Temple	10
2+230	RHS	Temple	4.3
2+755	LHS	P.H.C Sub-Centre	10

Corridor at 4+000

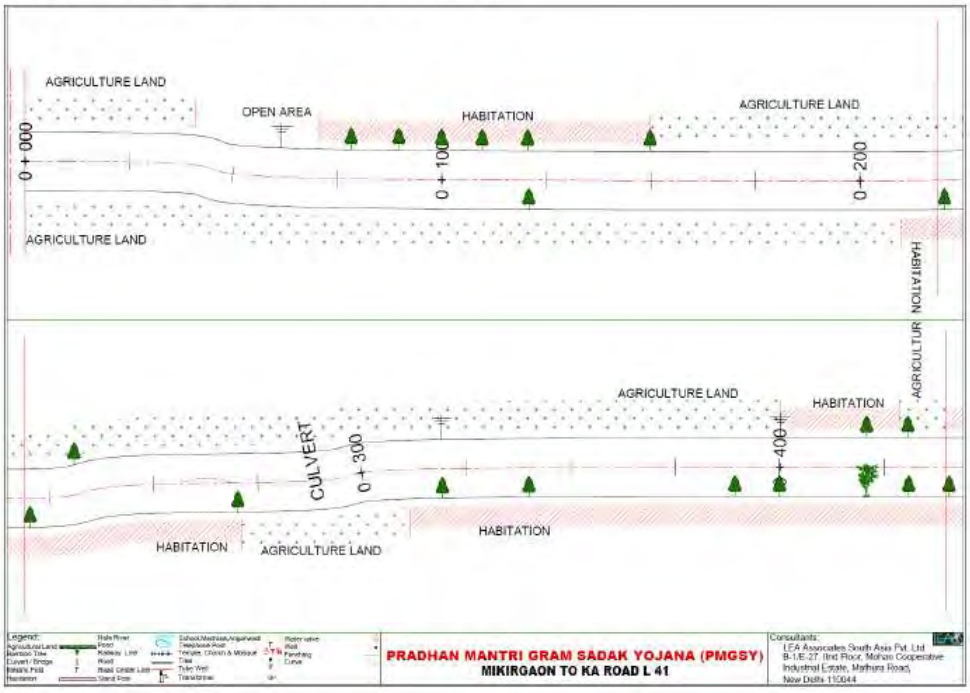
Corridor at 4+500

End Point of corridor

CPF AND SCef DOCUMENTS
NACAON DISTRICT

MIKIRGAON TO K A ROAD (L41)
February 2014

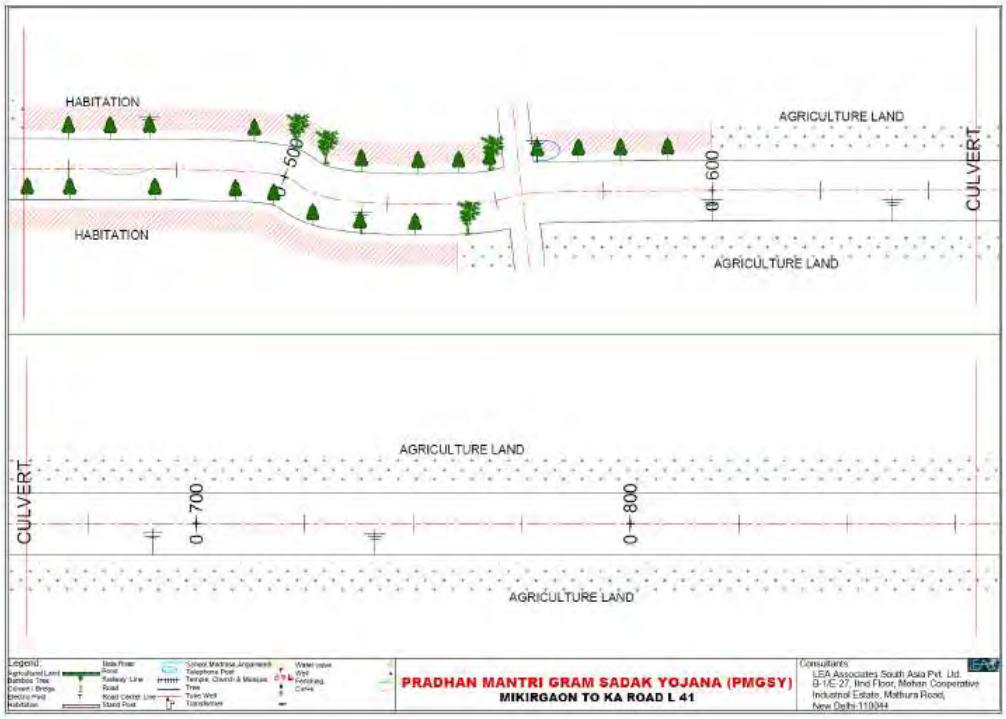
E-4 Sketch of strip map of the road covering details of atleast 10 m on either side from the center line of the road



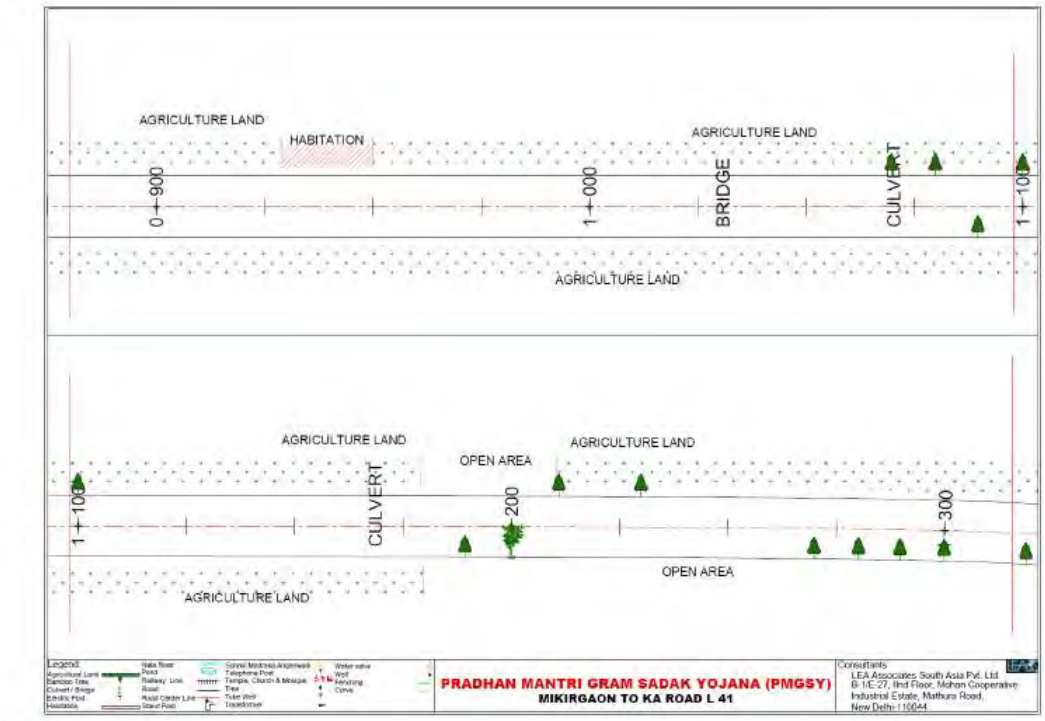
48

CPF AND SCef DOCUMENTS
NACAON DISTRICT

MIKIRGAON TO K A ROAD (L41)
February 2014



49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HABITATION
AGRICULTURE LAND
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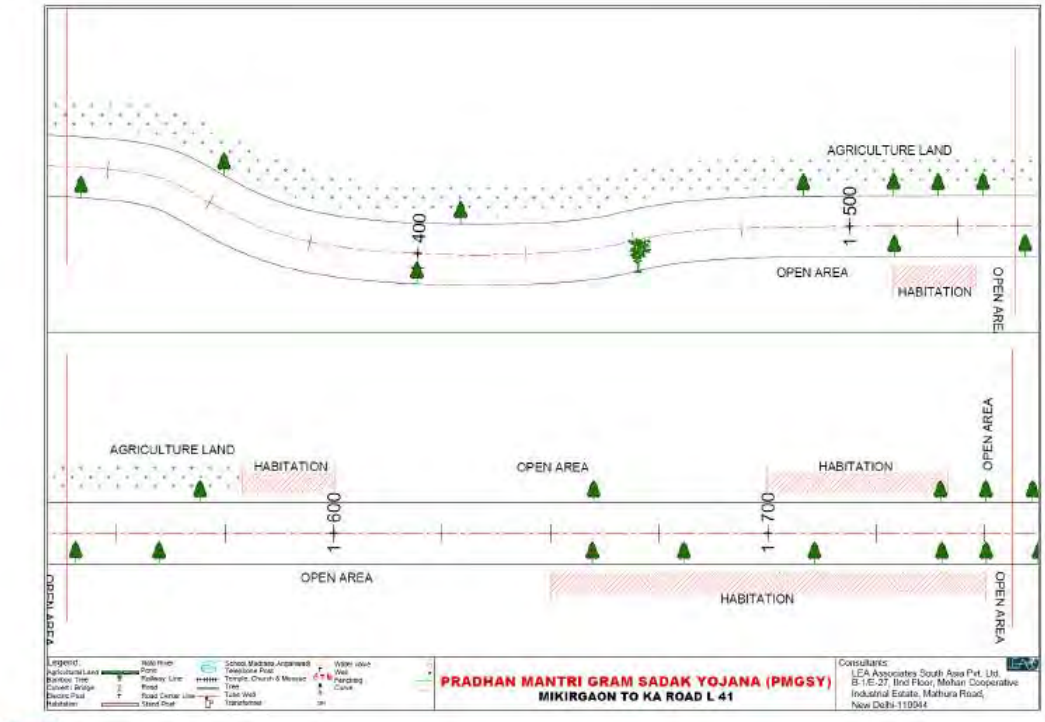
1+000
BRIDGE
CULVERT
1+100
AGRICULTURE LAND
AGRICULTURE LAND
OPEN AREA
AGRICULTURE LAND
1+100
CULVERT
200
300
OPEN AREA
AGRICULTURE LAND
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
MIKIRGAON TO KA ROAD L 41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500
OPEN AREA
HABITATION
OPEN AREA
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HABITATION
OPEN AREA
HABITATION
OPEN AREA
600
700
OPEN AREA
HABITATION
OPEN AREA
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
MIKIRGAON TO KA ROAD L 41

E-5 Photographs of the project area showing at least 10 m on either side from center line of road alignment. Every 2 km or less of road must have at least 1 photograph.

Start Point of corridor

Corridor at 0+500

Corridor at 1+000

Corridor at 1+500

Corridor at 2+000

Corridor at 2+500

Corridor at 3+000

Corridor at 3+500

E-6 List of Participants (Attendance Sheet)

Transect Walk Attendance Sheet

Road Name: Mikirgaon to KA Road. Date: 25|01|2014

Community		PIU/PRI	
Name of the Participants	Signature	Name and designation of the official	Signature
Sambhu Das	[illegible]	Meena Das.	[illegible] President Kathalguri Gaon Panchayat
Sri Deepak [illegible]	[illegible]	[illegible] Rabha	[illegible]
Sri Rohit [illegible]	[illegible]	Sri Kartik Bhumij	[illegible]
Sri [illegible] Gorh	[illegible]	Sri [illegible] S.A.P.W.D.	[illegible]
Sri Probin Bhumij			
[illegible]			
[illegible]			
[illegible]			
[illegible]			
Sri Akash Gour	A G		
Sri Bilhuram Bhumij	[illegible]		
Sri Hira lal Gupta	[illegible]		

IV. RURAL ROADS: ENVIRONMENTAL CHECKLIST

Road Name	Santipur to Shreepur
Block Name	Nazira
District Name	Sivasagar
Total Length of the Road	4.10 km

A. Climatic Conditions

Temperature	High: 36°c Low: 9°c
Humidity	High : 95% Low: 40%
Rainfall	1000mm/year
Rainy Season	May to September

B. Location of the Road and Generic description of Environment

No.	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)		✓	Distance from Coastline: km ( ) more than 50% ( ) less than 20%
2.	Type of Terrain-(Plain/Hilly/ Mountainous etc.) *(Explain the topography of the area and how many km of the road are located in the hilly area)*	✓		Topography of terrain - Plain Altitude: 60.6m (average) The entire section of the alignment fall in the plain terrain
4.	Forest Area *(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest area)?*	✓		Type of Vegetation: Singphan forest Legal Status of the Forest Area: *Unclassified*
5.	Wildlife *(Explain whether there are any wildlife species in the project area)*		✓	Name of animals: Endangered species (if any):
6.	Inhabited Area	✓		Chainage: From / To; Side 0+300 / 0+490 / LHS 0+760 / 0+780 / LHS 0+870 / 0+940 / LHS 1+100 / 1+220 / LHS 1+230 / 1+280 / LHS 1+340 / 1+350 / LHS 1+400 / 1+530 / LHS 1+640 / 1+650 / LHS 1+735 / 1+770 / LHS 1+910 / 1+930 / LHS

<table>
<tr><th>No.</th><th>Type of Ecosystem</th><th>Yes</th><th>No</th><th>Explanation</th></tr>
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</td></tr>
<tr><td>8.</td><td>Grazing grounds</td><td></td><td>✓</td><td></td></tr>
<tr><td>9.</td><td>Barren Land</td><td>✓</td><td></td><td>
<table>
<tr><th colspan="2">Chainage</th><th rowspan="2">Side</th></tr>
<tr><th>From</th><th>To</th></tr>
<tr><td>3+690</td><td>3+760</td><td>LHS</td></tr>
<tr><td>3+800</td><td>3+870</td><td>LHS</td></tr>
</table>
</td></tr>
</table>

C. Specific description of the Road Environment

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter / Component	Yes	No	Explanation
1.	Are there any areas with landslide or erosion problems along the road? ***(If yes, indicate the location (right or left side) and the chainage)***	✓		Erosion prone areas are identified at chainages 0+320 km, 0+370 km, 1+490 km, 1+750 km, 2+310, 2+560 km, 2+990 km, 3+420 km on LHS and chainages 1+770 km, 1+960 km on RHS of the proposed alignment.
				( ) No Secondary Information is available and Local Community is not aware of this matter
2.	Are there any lakes/swamps beside the road? ***(If yes, list them indicating the location (right or left side)and the chainage)***	✓		10 ponds are located at chainages 0+320 km, 0+370 km, 1+490 km, 1+750 km, 2+310 km, 2+560 km, 2+990 km, 3+420 km on LHS and chainages 1+770 km, 1+960 km on RHS of the proposed alignment.
3.	Are there any nallas/streams/rivers etc, along/crossing the road? ***(If yes, list them indicating the location (right, left or crossing) and the chainage***	✓		
4.	Are there problems of water stagnation and other drainage issues on or near the road? ***(If yes, mention chainage)***		✓	
5.	Is the area along the project road prone to flooding? ***(If yes, mention flood level and frequency)***		✓	
				( ) No Secondary Information is available and Local Community is not aware of this matter
6.	Are there any trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment? ***(If yes attach list of trees indicating the location (right or left side)and the chainage)***	✓		142 trees are located within 10 m on either side of the CL. (Refer E.1)
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas? ***(If yes, specify details of habitat with chainage)***		✓	
				( ) No Secondary Information is available and Local Community is not aware of this matter
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	
				( ) No Secondary Information Available and Local Community is not aware of this matter

No.	Parameter/ Component	Yes	No	Explanation
9.	Are there any utility structures[1] within 10 m on either side from the center line of the road alignment? ***(If yes, attach list with chainage)***	✓		20 electric poles are located within 10 m on either side of the CL of the road. Out of these utility structures, 10 electric poles will be affected due to the project [Refer E.2]
10.	Are there any religious, cultural or community structures/buildings[2] within 10 m on either side from the center line of the road alignment? ***(If yes attach list with chainage)***	✓		2 schools, 1 health centre and 1 temple are located within 10 m on either side of the CL of the road. None of these community structures will be affected due to the project [Refer E.3]

D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. ***(Attach list of people met and dates)***	✓		A consultation was held with PIU and community members, it was attended by 17 persons. The list of participants is attached in **Annexure E6.**
2.	Any suggestion received in finalizing the alignment	✓		Road safety measures near road intersection, curve locations.
3.	If suggestions received, were they incorporated into the design?	✓		

E. Annexures

E-1 List of trees indicating location (left or right side of the road) and chainage (as required under C. 6)

Sl. No.	Chainage	Side	Name of Tree	DCL
1.	0+310	LHS	Kothal Tree	3
2.	0+315	LHS	Kothal Tree	3
3.	0+318	LHS	Kothal Tree	3
4.	0+320	LHS	Kothal Tree	3
5.	0+323	LHS	Kothal Tree	3
6.	0+325	LHS	Kothal Tree	3
7.	0+327	LHS	Kothal Tree	3
8.	0+330	LHS	Kothal Tree	5
9.	0+332	LHS	Kothal Tree	3
10.	0+335	LHS	Kothal Tree	3
11.	0+336	LHS	Kothal Tree	3
12.	0+337	LHS	Kothal Tree	3
13.	0+370	LHS	Neem Tree	2.8
14.	0+380	LHS	Tokow Tree	3
15.	0+383	LHS	Tokow Tree	3
16.	0+386	LHS	Tokow Tree	3
17.	0+389	LHS	Tokow Tree	3
18.	0+391	LHS	Tokow Tree	3
19.	0+393	LHS	Tokow Tree	3
20.	0+395	LHS	Tokow Tree	3

[1] Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures

[2] Mandir, Masjid, Church, religious/cultural/historical monuments, school, health center, public toilet and other similar structures

Sl. No.	Chainage	Side	Name of Tree	DCL
135.	3+035	RHS	Simolu Tree	3.5
136.	3+035	RHS	Simolu Tree	3.5
137.	3+038	RHS	Simolu Tree	3.5
138.	3+040	RHS	Simolu Tree	3.5
139.	3+270	RHS	Kadam Tree	3
140.	3+380	RHS	Segun Tree	2.5
141.	3+630	RHS	Segun Tree	3
142.	3+930	RHS	Chandan Tree	3

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

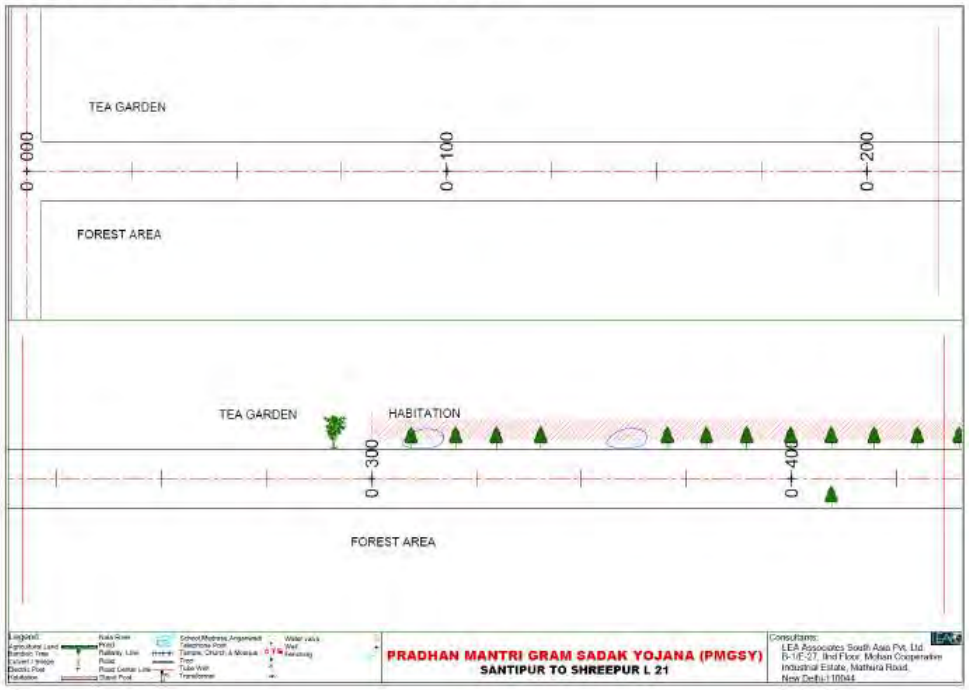
E-2 List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

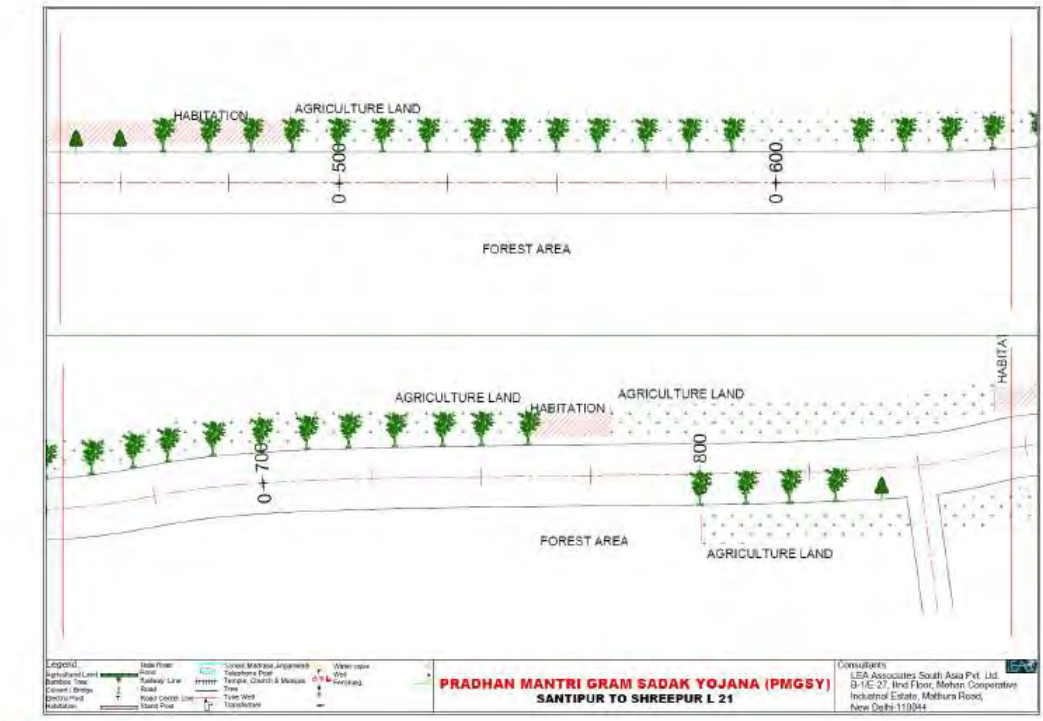
Chainage	Side	Type	Distance from center line (m)
0+980	LHS	Electric Pole	2.6
1+020	LHS	Electric Pole	2.6
1+070	LHS	Electric Pole	2.5
1+120	LHS	Electric Pole	2.5
1+220	LHS	Electric Pole	2.4
1+380	LHS	Electric Pole	2.3
1+580	LHS	Electric Pole	4
1+630	LHS	Electric Pole	3.5
1+780	LHS	Electric Pole	2.6
2+320	LHS	Electric Pole	2.5
2+470	LHS	Electric Pole	4
4+080	LHS	Electric Pole	2.5
1+310	RHS	Electric Pole	2.3
1+800	RHS	Electric Pole	2.6
1+860	RHS	Electric Pole	3
2+020	RHS	Electric Pole	2.1
2+090	RHS	Electric Pole	2
2+180	RHS	Electric Pole	4
2+250	RHS	Electric Pole	2
2+430	RHS	Electric Pole	2.5

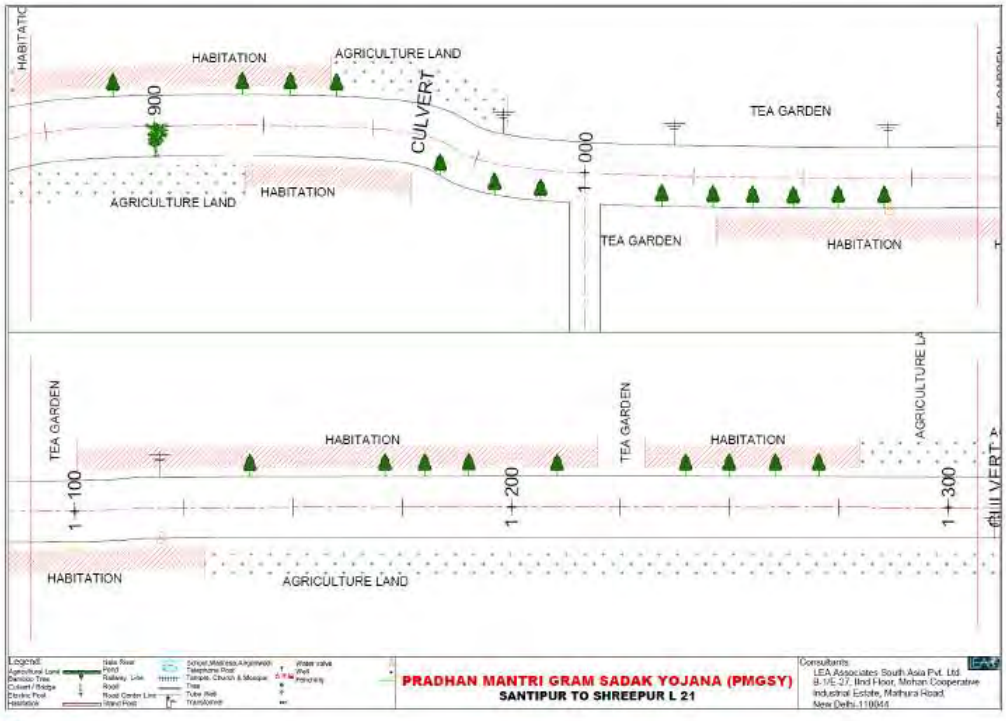
E-3 List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10):

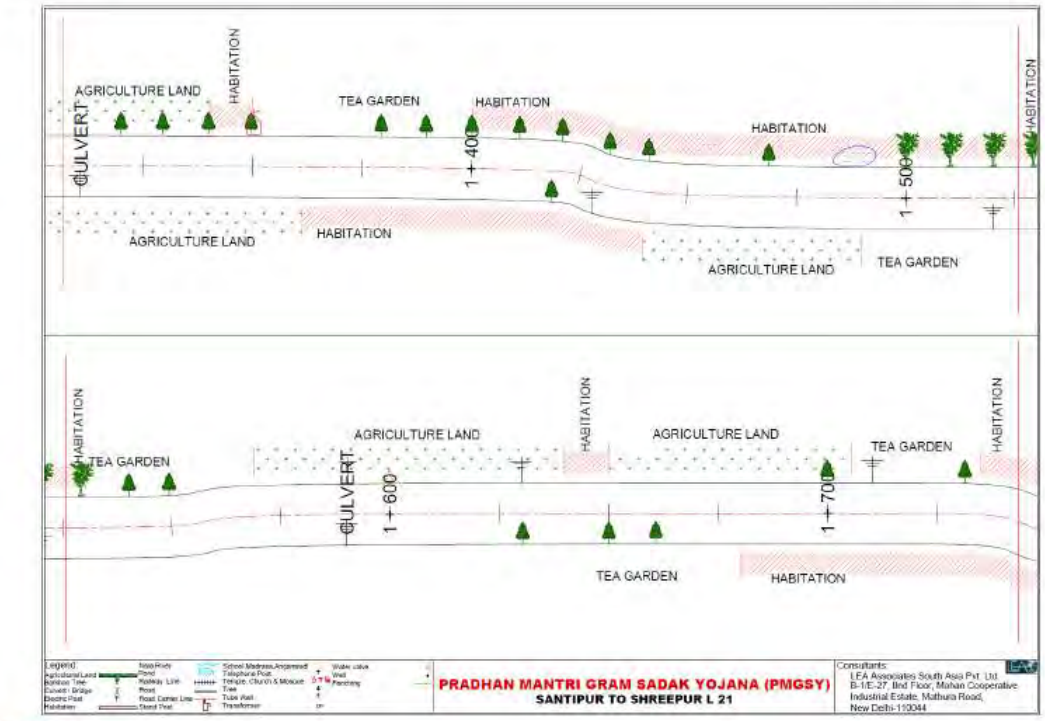
Chainage	Side	Sensitive Structures	Distance from center line (m)
3+780	LHS	School	10
1+100	RHS	School	10
1+930	LHS	Health centre	6
1+350	LHS	Temple	10

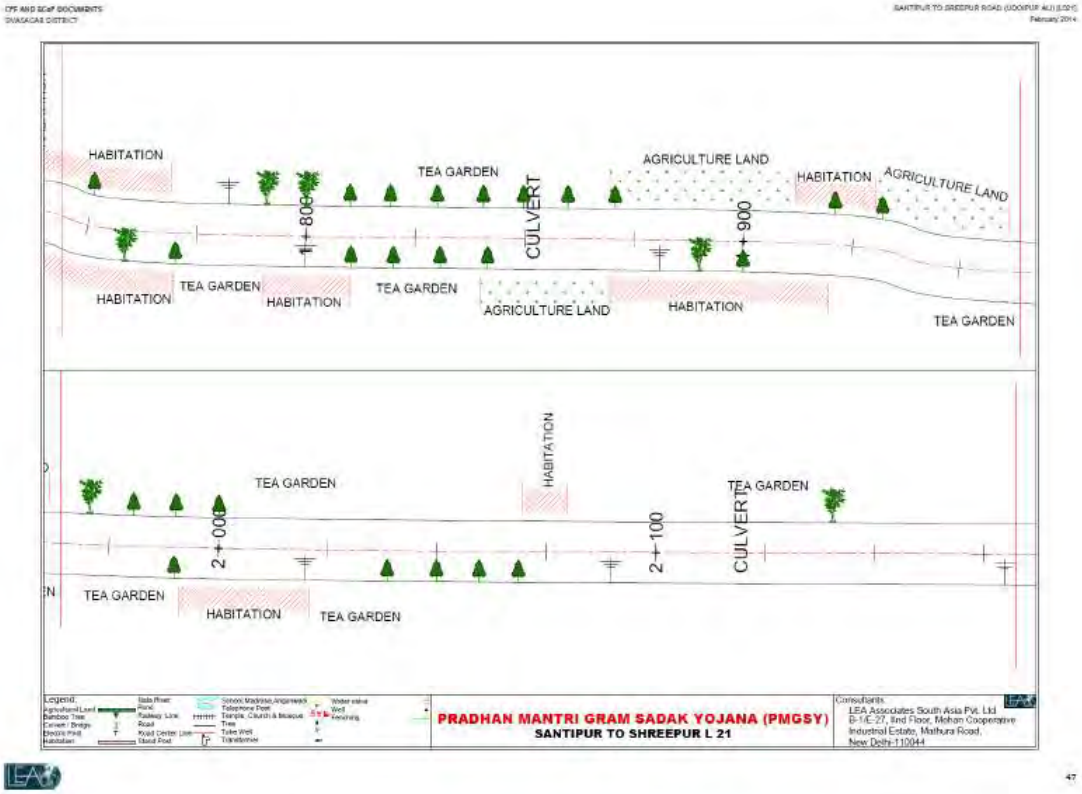
E-4 Sketch of strip map of the road covering details of atleast 10 m on either side from the center line of the road

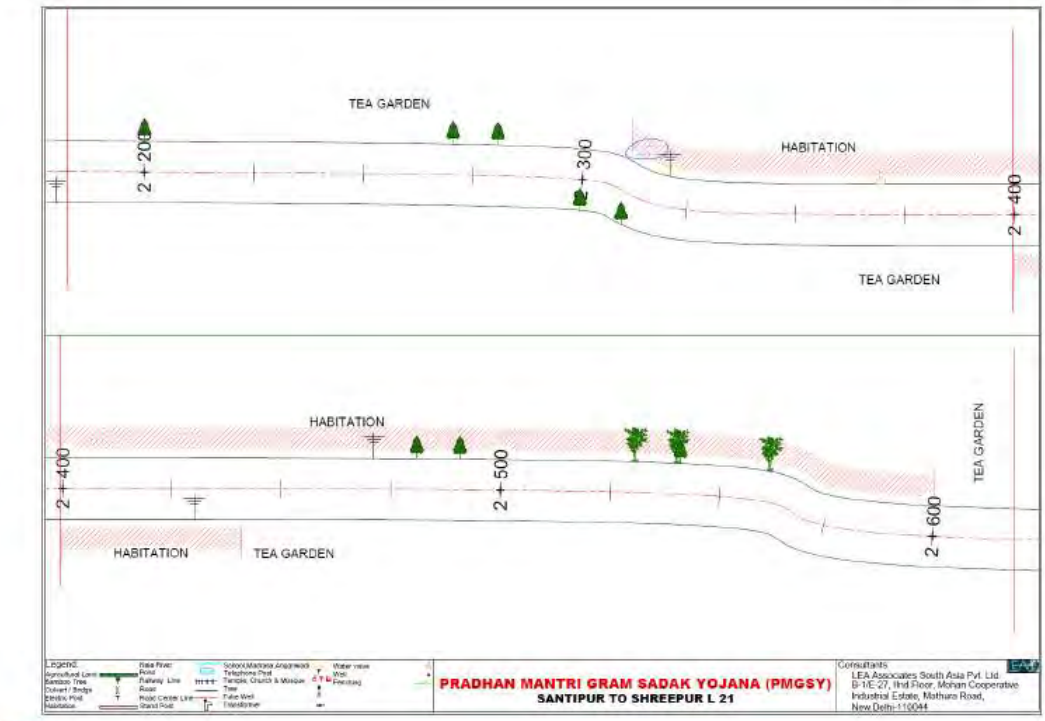


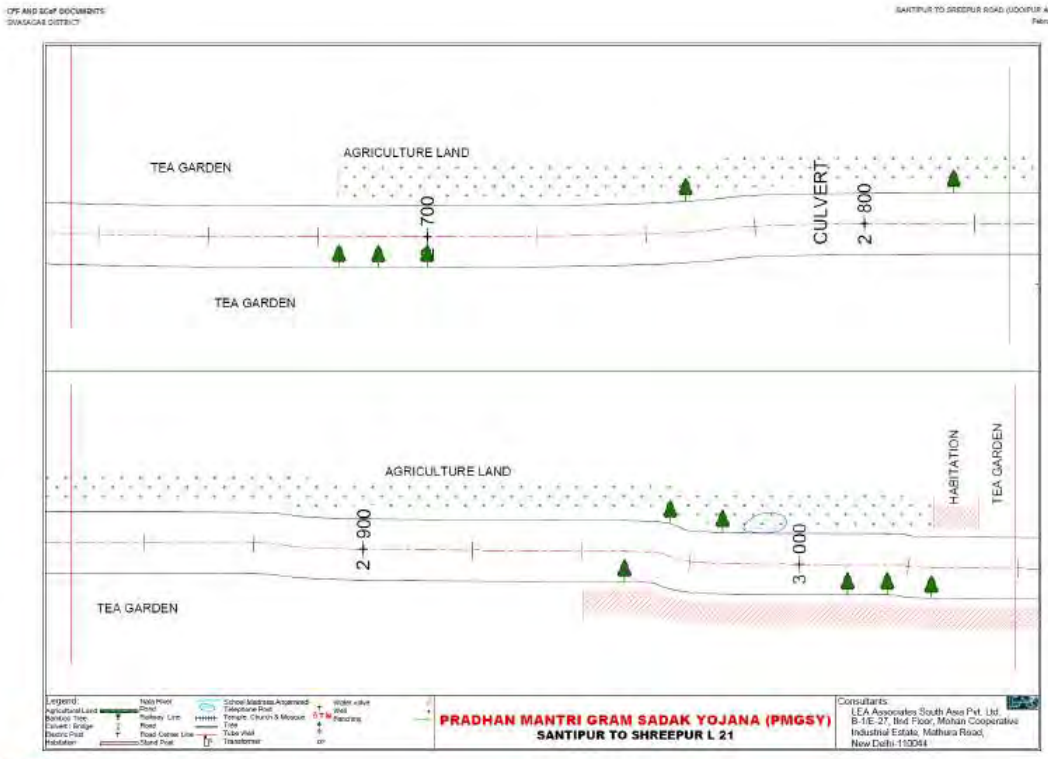

HABITATION
AGRICULTURE LAND
0+500
0+600
FOREST AREA
AGRICULTURE LAND
HABITATION
AGRICULTURE LAND
0+700
800
FOREST AREA
AGRICULTURE LAND
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
SANTIPUR TO SHREEPUR L 21


HABITATION
AGRICULTURE LAND
900
CULVERT
1+000
TEA GARDEN
AGRICULTURE LAND
HABITATION
TEA GARDEN
HABITATION
TEA GARDEN
1+100
HABITATION
1+200
TEA GARDEN
HABITATION
1+300
HABITATION
AGRICULTURE LAND
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
SANTIPUR TO SHREEPUR L 21


CPF AND SCeF DOCUMENTS
SIVASAGAR DISTRICT
SANTIPUR TO SREEPUR ROAD (GOOIPUR ALI) (L21)
February 2014
AGRICULTURE LAND
HABITATION
TEA GARDEN
CULVERT
1+400
1+500
1+600
1+700
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
SANTIPUR TO SHREEPUR L 21
Consultants:
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044


CPF AND SCeF DOCUMENTS
SIVASAGAR DISTRICT
SANTIPUR TO SREEPUR ROAD (GOOIPUR ALI) (L21)
February 2014
HABITATION
TEA GARDEN
AGRICULTURE LAND
CULVERT
1+800
1+900
2+000
2+100
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
SANTIPUR TO SHREEPUR L 21
Consultants:
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044


TEA GARDEN
2+200
2+300
HABITATION
2+400
TEA GARDEN
HABITATION
2+400
2+500
2+600
TEA GARDEN
HABITATION
TEA GARDEN
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
SANTIPUR TO SHREEPUR L 21
Consultants:
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044


TEA GARDEN
AGRICULTURE LAND
700
CULVERT
2+800
TEA GARDEN
AGRICULTURE LAND
HABITATION
TEA GARDEN
2+900
3+000
TEA GARDEN
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
SANTIPUR TO SHREEPUR L 21
Consultants:
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044

E-5 Photographs of the project area showing at least 10 m on either side from center line of road alignment. Every 2 km or less of road must have at least 1 photograph.

Start Point of corridor

Corridor at 1+000

Corridor at 1+600

Corridor at 2+200

Corridor at 2+800

Corridor at 3+400

Corridor at 3+800

End Point of corridor

E-6 List of Participants (Attendance Sheet)

Transect Walk Attendance Sheet

Road name: Sandipur to Sreepur   Date: 22/02/2013

Community		Officials	
Name of the Participants	Signature	Name and designation of the official	Signature
Sri Ram Prasad Sharma	[illegible]	Pulin Gogoi AE	[illegible]
Sri Pranab Gogoi	[illegible]	[illegible] Bora JE	[illegible]
[illegible]	[illegible]	Kula [illegible]	[illegible]
Sri Hem [illegible]	[illegible]		
[illegible]	[illegible]		
Mrs. Nilu Bakti (Bhuyan)	[illegible]		
Mrs Binu Chetry	[illegible]		
Smt Krishna Sharma	[illegible]		
Sri Raj Sharma	[illegible]		
[illegible]	[illegible]		
[illegible]	A S		
Mrs Reena Sharma	RS 22/2/13		

Lason Buragohain, Mathurapur, Baligaon & No-6 Green Revenue Village

IV. RURAL ROADS: ENVIRONMENTAL CHECKLIST

Road Name	Dhemajibari to NH-52 Road
Block Name	Baghmora
District Name	Sonitpur
Total Length of the Road	5.840 km

A. Climatic Conditions

Temperature	High: 36% Low: 9%
Humidity	High : 95% Low: 40%
Rainfall	1000mm/year
Rainy Season	May to September

B. Location of the Road and Generic description of Environment

No.	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)		✓	Distance from Coastline: km ( ) more than 50% ( ) less than 20%
2.	Type of Terrain(Plain/Hilly/ Mountainous etc.) *(Explain the topography of the area and how many km of the road are located in the hilly area)*	✓		Topography of terrain - Plain Altitude: 60.6m (average) The entire section of the alignment fall in the plain terrain
4.	Forest Area *(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest area)?*		✓	Type of Vegetation: Legal Status of the Forest Area: *(Reserved, National Park, Sanctuaries, Unclassified, etc.*
5.	Wildlife *(Explain whether there are any wildlife species in the project area)*		✓	Name of animals: Endangered species (if any):
6.	Inhabited Area	✓		

Chainage		Side
From	To	
0+000	0+130	LHS
0+220	0+530	LHS
0+590	1+000	LHS
1+110	1+200	LHS
1+240	1+340	LHS
1+545	1+580	LHS
1+630	1+640	LHS
1+810	2+040	LHS
2+140	2+430	LHS
2+510	3+690	LHS

No.	Type of Ecosystem	Yes	No	Explanation
				3+620 3+800 LHS 4+690 5+120 LHS 5+200 5+220 LHS 5+250 5+280 LHS 5+440 5+600 LHS 5+620 5+840 LHS 0+000 0+130 RHS 0+210 0+290 RHS 0+400 0+490 RHS 0+600 0+730 RHS 0+770 1+130 RHS 1+190 1+370 RHS 1+620 1+750 RHS 1+900 2+200 RHS 2+260 2+280 RHS 2+520 2+640 RHS 2+690 2+730 RHS 3+710 3+830 RHS 4+640 4+890 RHS 5+000 5+070 RHS 5+150 5+300 RHS 5+440 5+600 RHS 5+650 5+790 RHS
7.	Agricultural Land	✓		Chainage From / To: 0+130 0+220 LHS; 0+330 0+590 LHS; 1+000 1+070 LHS; 1+440 1+545 LHS; 1+580 1+630 LHS; 2+430 2+510 LHS; 2+740 3+090 LHS; 3+670 4+010 LHS; 4+550 4+890 LHS; 5+120 5+200 LHS; 5+280 5+440 LHS; 0+130 0+210 RHS; 0+290 0+340 RHS; 1+130 1+190 RHS; 1+370 1+620 RHS; 2+440 2+520 RHS; 2+730 3+260 RHS; 3+870 4+000 RHS; 4+540 4+840 RHS; 4+890 5+000 RHS; 5+070 5+150 RHS; 5+360 5+440 RHS
8.	Grazing grounds		✓	
9.	Barren Land	✓		Chainage From / To: 1+640 1+910 LHS; 2+040 2+140 LHS; 2+690 2+740 LHS

No.	Type of Ecosystem	Yes	No	Explanation		
				4+010	4+550	LHS
				5+220	5+250	LHS
				5+600	5+620	LHS
				0+340	0+400	RHS
				0+490	0+600	RHS
				0+730	0+770	RHS
				1+750	1+900	RHS
				2+200	2+260	RHS
				2+280	2+440	RHS
				2+640	2+690	RHS
				3+150	3+610	RHS
				4+000	4+540	RHS
				5+600	5+650	RHS
				5+790	5+840	RHS

C. Specific description of the Road Environment

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

<table>
<tr><th>No.</th><th>Parameter/ Component</th><th>Yes</th><th>No</th><th>Explanation</th></tr>
<tr><td>1.</td><td>Are there any areas with landslide or erosion problems along the road?

(If yes, indicate the location (right or left side) and the chainage)</td><td></td><td>✓</td><td>( ) No Secondary Information is available and Local Community is not aware of this matter</td></tr>
<tr><td>2.</td><td>Are there any lakes/swamps beside the road?

(If yes, list them indicating the location (right or left side)and the chainage)</td><td></td><td>✓</td><td></td></tr>
<tr><td>3.</td><td>Are there any nallas/streams/rivers etc. along/crossing the road?
(If yes, list them indicating the location (right, left or crossing) and the chainage</td><td>✓</td><td></td><td>1 drain is located along the corridor. Drain location is given in the table below:
<table>
<tr><th>Chainage</th><th>Side</th><th>Particulars</th><th>OCL</th></tr>
<tr><td>4+730
to 4+850</td><td>RHS</td><td>Drain</td><td>4.5</td></tr>
</table></td></tr>
<tr><td>4.</td><td>Are there problems of water stagnation and other drainage issues on or near the road?

(If yes, mention chainage)</td><td></td><td>✓</td><td></td></tr>
<tr><td>5.</td><td>Is the area along the project road prone to flooding?

(If yes, mention flood level and frequency)</td><td></td><td>✓</td><td>( ) No Secondary information is available and Local Community is not aware of this matter</td></tr>
<tr><td>6.</td><td>Are there any trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment?

(If yes attach list of trees indicating the location (right or left side)and the chainage)</td><td>✓</td><td></td><td>716 trees are located within 10 m on either side of the CL. Out of these, 1 tree will be affected due to the project. [Refer E.1]</td></tr>
</table>

No.	Parameter/ Component	Yes	No.	Explanation
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas?		✓	
	(If yes, specify details of habitat with chainage)			( ) No Secondary Information is available and Local Community is not aware of this matter
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	
				( ) No Secondary Information Available and Local Community is not aware of this matter
9.	Are there any utility structures[1] within 10 m on either side from the center line of the road alignment? ***(If yes, attach list with chainage)***	✓		103 electric poles, 3 hand pumps, 3 stand posts, 14 telephone poles and 6 transformers are located within 10 m on either side of the CL of the road. Out of these utility structures, 1 electric pole and 3 telephone poles will be affected due to the project [Refer E.2]
10.	Are there any religious, cultural or community structures/buildings[2] within 10 m on either side from the center line of the road alignment? ***(If yes attach list with chainage)***	✓		1 Mosque, 1 Anganwadi Centre and 3 schools are located within 10 m on either side of the CL of the road. None of these community structures will be affected due to the project [Refer E.3]

D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. ***(Attach list of people met and dates)***	✓		A consultation was held with the local community and it was attended by 16 persons. The list of participants is attached in **Annexure E6.**
2.	Any suggestion received in finalizing the alignment	✓		Road safety measures near school, railway crossing, road intersection, curve locations.
3.	If suggestions received, were they incorporated into the design?	✓		

E. Annexures

E-1 List of trees indicating location (left or right side of the road) and chainage (as required under C. 6)

Chainage	Side	Name of Tree	DCL
0+000	LHS	Aleet	4.2
0+040	LHS	Val	4
0+050	LHS	Val	4
0+055	LHS	Val	4
0+070	LHS	Ajar	4.5
0+230	LHS	Siris	3.4
0+245	LHS	Siris	4

[1] Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures

[2] Mandir, Masjid, Church, religious/cultural/historical monuments, school, health center, public toilet and other similar structures

Chainage	Side	Name of Tree	DCL
0+250	LHS	Gomari	3.2
0+285	LHS	Segun	3.5
0+290	LHS	Kodam	3.6
0+302	LHS	Jamu	5
0+330	LHS	Bogori	3.1
0+355	LHS	Bogori	3.1
0+450	LHS	Veja	4
0+460	LHS	Mango	4
0+465	LHS	Coconut	3.8
0+480	LHS	Coconut	4
0+540	LHS	Sojona	3.1
0+545	LHS	Sojona	3.1
0+548	LHS	Sojona	3.1
0+555	LHS	Jhya	3.1
0+558	LHS	Jhya	3.1
0+560	LHS	Jhya	3.1
0+565	LHS	Jhya	3.1
0+570	LHS	Jhya	3
0+590	LHS	Jhya	3
0+610	LHS	Ahot	3
0+625	LHS	Jackfruit	3
0+630	LHS	Atlas	3.3
0+670	LHS	Coconut	4
0+690	LHS	Jhya	3
0+695	LHS	Jhya	3
0+700	LHS	Gomari	3.1
0+702	LHS	Gomari	3.1
0+720	LHS	Coconut	4.5
0+780	LHS	Coconut	3.2
0+795	LHS	Coconut	3.2
0+804	LHS	Coconut	3.3
0+806	LHS	Coconut	3.3
0+815	LHS	Coconut	3.2
0+820	LHS	Coconut	3.3
0+900	LHS	Coconut	6
0+901	LHS	Mango	5
0+930	LHS	Jackfruit	3.2
0+940	LHS	Coconut	4.3
0+955	LHS	Coconut	3.8
0+975	LHS	Segun	4.7
0+990	LHS	Veja	3.1
1+000	LHS	Sojona	3.1
1+005	LHS	Sojona	3.1
1+010	LHS	Sojona	3.2
1+015	LHS	Sojona	3.2
1+020	LHS	Veja	3.1
1+090	LHS	Jhya	3.2
1+150	LHS	Coconut	4.3
1+175	LHS	Mango	3.1
1+190	LHS	Gauva	3.1
1+210	LHS	Veja	3
1+240	LHS	Sojona	3
1+250	LHS	Moj	3

Chainage	Side	Name of Tree	DCL
5+215	RHS	Poma	4.2
5+270	RHS	Modar	3.2
5+280	RHS	Modar	3.2
5+295	RHS	Sojona	3.6
5+298	RHS	Sojona	3.6
5+300	RHS	Mango	3.8
5+330	RHS	Bogori	3.1
5+480	RHS	Koras	4
5+500	RHS	Ahot	3.6
5+540	RHS	Gomari	3.7
5+560	RHS	Poma	3.5
5+650	RHS	Ahot	10
5+685	RHS	Jiya	5.3
5+750	RHS	Sojona	3.5
5+755	RHS	Sojona	3.5
5+758	RHS	Sojona	3.5
5+760	RHS	Sojona	3.5
5+780	RHS	Sojona	4
5+785	RHS	Coconut	4.2
5+795	RHS	Coconut	4.2

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

E-2 List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

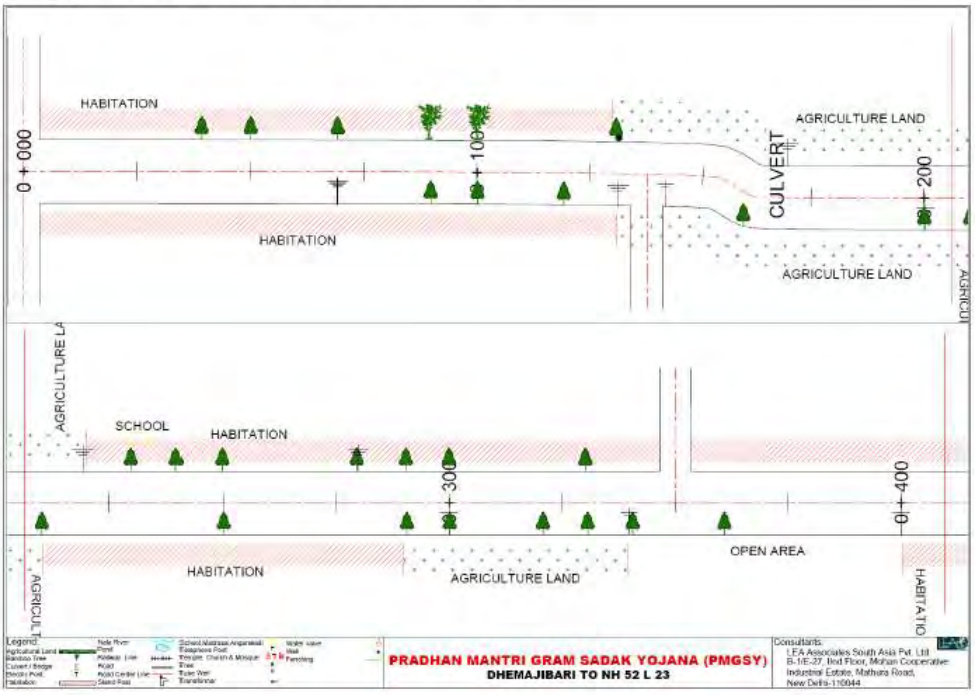
Chainage	Side	Type	Distance from center line (m)
0+170	LHS	Electric Pole	7
0+220	LHS	Electric Pole	3
0+280	LHS	Electric Pole	3.1
0+350	LHS	Electric Pole	3.1
0+420	LHS	Electric Pole	3
0+490	LHS	Electric Pole	3
0+550	LHS	Electric Pole	3
0+640	LHS	Electric Pole	3.3
0+740	LHS	Electric Pole	3
1+060	LHS	Electric Pole	3
1+160	LHS	Electric Pole	3
1+380	LHS	Electric Pole	3
1+460	LHS	Electric Pole	3.1
1+880	LHS	Electric Pole	4.5
1+885	LHS	Electric Pole	4.5
1+990	LHS	Electric Pole	4
2+020	LHS	Electric Pole	3
2+040	LHS	Electric Pole	3.3
2+070	LHS	Electric Pole	4.5
2+560	LHS	Electric Pole	3
2+610	LHS	Electric Pole	3
2+660	LHS	Electric Pole	3.5
2+710	LHS	Electric Pole	3.5
2+715	LHS	Electric Pole	3.5
2+790	LHS	Electric Pole	3.6
2+870	LHS	Electric Pole	3.6
2+950	LHS	Electric Pole	3.5

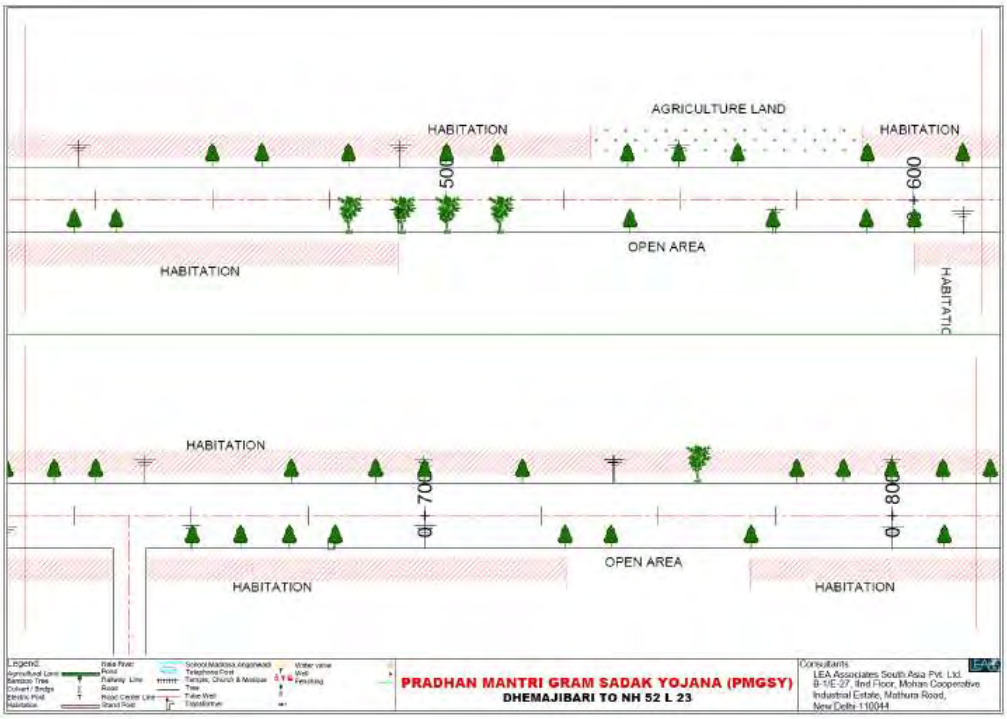
Chainage	Side	Type	Distance from center line (m)
4+145	RHS	Electric Pole	4
4+210	RHS	Electric Pole	4.5
4+290	RHS	Electric Pole	4
4+360	RHS	Electric Pole	4
4+410	RHS	Electric Pole	4
4+470	RHS	Electric Pole	4
4+540	RHS	Electric Pole	4
4+545	RHS	Electric Pole	4
4+600	RHS	Electric Pole	4
4+670	RHS	Electric Pole	4
4+770	RHS	Electric Pole	2
5+180	RHS	Electric Pole	3
5+230	RHS	Electric Pole	3
5+320	RHS	Electric Pole	5
5+380	RHS	Electric Pole	6
5+450	RHS	Electric Pole	5
5+620	RHS	Electric Pole	3.8
5+680	RHS	Electric Pole	3.5
5+730	RHS	Electric Pole	3.5
2+290	LHS	Hand Pump	3.5
5+705	LHS	Hand Pump	7
5+160	RHS	Hand Pump	4
0+680	RHS	Stand Post	3
1+360	RHS	Stand Post	3.5
1+570	RHS	Stand Post	3
0+705	LHS	Telephone Pole	3
0+745	LHS	Telephone Pole	3.2
0+800	LHS	Telephone Pole	2.9
0+075	RHS	Telephone Pole	4.5
0+140	RHS	Telephone Pole	8
0+200	RHS	Telephone Pole	3
0+300	RHS	Telephone Pole	2.8
0+342	RHS	Telephone Pole	3
0+400	RHS	Telephone Pole	3
0+490	RHS	Telephone Pole	3.1
0+570	RHS	Telephone Pole	3
0+650	RHS	Telephone Pole	2.9
0+854	RHS	Telephone Pole	3
0+940	RHS	Telephone Pole	3.1
1+110	LHS	Transformer	3.4
1+960	LHS	Transformer	4.5
2+690	LHS	Transformer	3.7
3+790	RHS	Transformer	4.6
4+870	RHS	Transformer	5
5+510	RHS	Transformer	4

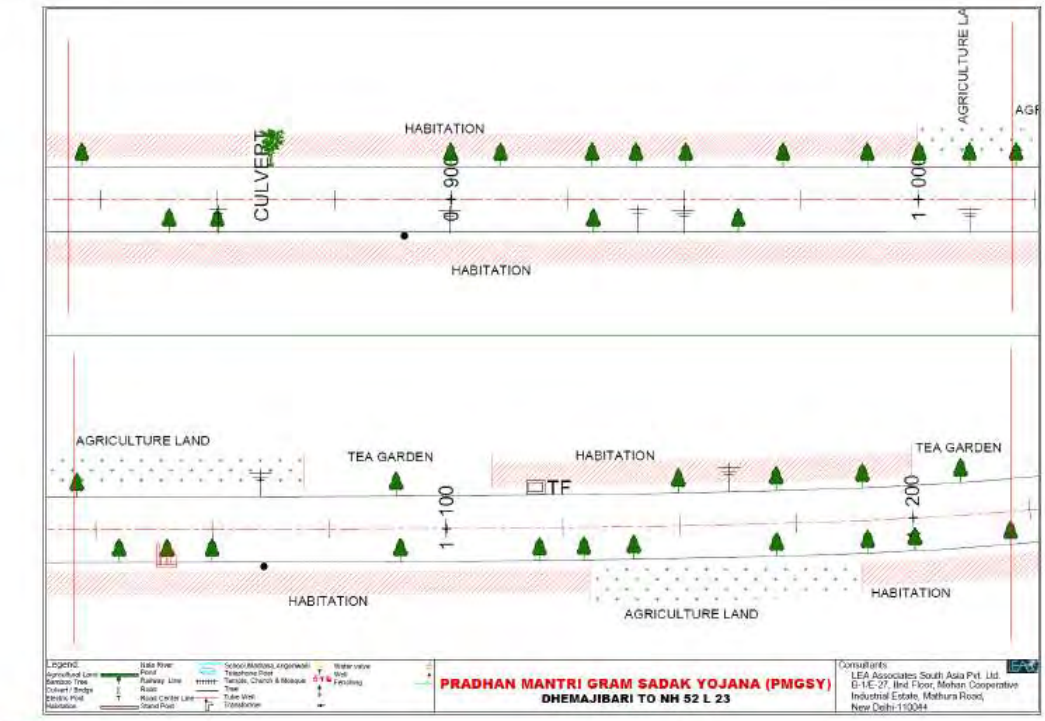
E-3 List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10):

Chainage	Side	Sensitive Structures	Distance from center line (m)
1+040	RHS	Mosque	7
5+190	RHS	Anganwadi Centre	3.5
2+030	LHS	School	4.5
4+400	LHS	School	4.5
5+680	LHS	School	4.5

E-4 Sketch of strip map of the road covering details of atleast 10 m on either side from the center line of the road



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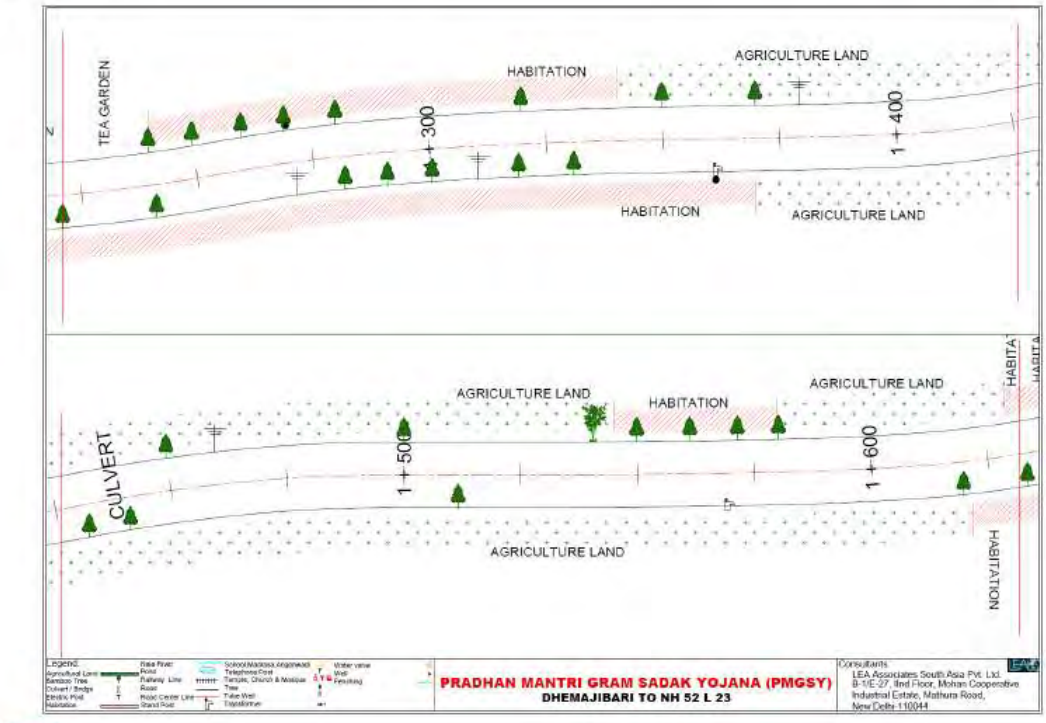
0 + 900
1 + 000
HABITATION
AGRICULTURE LAND
TEA GARDEN
HABITATION
TEA GARDEN
TF
1 + 100
1 + 200
HABITATION
AGRICULTURE LAND
HABITATION
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
DHEMAJIBARI TO NH 52 L 23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HABITATION
AGRICULTURE LAND
0 + 300
1 + 400
HABITATION
AGRICULTURE LAND
CULVERT
AGRICULTURE LAND
HABITATION
AGRICULTURE LAND
1 + 500
1 + 600
AGRICULTURE LAND
HABITATION
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
DHEMAJIBARI TO NH 52 L 23

E-5 Photographs of the project area showing at least 10 m on either side from center line of road alignment. Every 2 km or less of road must have at least 1 photograph.

Start Point of corridor

Corridor at 0+500

Corridor at 1+000

Corridor at 1+500

Corridor at 2+000

Corridor at 2+500

Corridor at 3+000

Corridor at 3+500

Corridor at 4+000

Corridor at 4+500

Corridor at 5+000

Corridor at 5+500

End Point of corridor

E-6 List of Participants (Attendance Sheet)

Transect Walk Attendance Sheet

Road Name: Dhemajithari To NH-52 Date: 28-1-14

Community		PIU/PRI	
Name of the Participants	Signature	Name and designation of the official	Signature
Raju Munda	Raju Munda	Ratul Das, Sec. Asstt. Manakosi Gingia Asst. Chariali Block, Udalguri	[signature]
Santi Sabar		Dilip Upadhyaya (Govt. Gaon Burha)	[signature] [stamp: Sri Dilip Upadhyaya, Govt Gaon Burah, Mouza Baghmara, Vill - Kathalbari, Date]
Munu Rai	[signature]		
Nagi Munda	[signature]		
Birajuna Munda	[signature]		
Mukta Munda			
Budhu Munda	Budhu Munda		
Budu Munda			
Daken Munda	[signature]		
Anil Munda	[signature]		
Shankar Munda	Shankar Munda		
Dipak Munda	[signature]		

IV. RURAL ROADS: ENVIRONMENTAL CHECKLIST

Road Name : Boruaholla to Gandhia Nahorani (Panitola to Nahorani) Road
Block Name : Guijan
District Name : Tinsukia
Total Length of the Road : 8.150 Km

A. Climatic Conditions

Temperature	High: 36°c Low: 0°c
Humidity	High : 95% Low: 40%
Rainfall	1000mm/year
Rainy Season	May to September

B. Location of the Road and Generic description of Environment

No.	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)		✓	Distance from Coastline: km ( ) more than 50% ( ) less than 20%
2.	Type of Terrain(Plain/Hilly/ Mountainous etc.) *(Explain the topography of the area and how many Km of the road are located in the Hilly area)*	✓		Topography of terrain - Plain Altitude: 60.5m (average) The entire section of the alignment fall in the plain terrain
4.	Forest Area *(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest area)?*		✓	Type of Vegetation: Legal Status of the Forest Area: *(Reserved, National Park, Sanctuaries, Unclassified, etc.*
5.	Wildlife *(Explain whether there are any wildlife species in the project area)*		✓	Name of animals: Endangered species (if any):
6.	Inhabited Area	✓		Chainage From: 0+000, To: 0+180, Side: LHS 0+370 0+500 LHS 0+600 1+000 LHS 1+030 1+100 LHS 1+340 1+500 LHS 2+170 3+150 LHS 3+340 3+600 LHS 3+700 3+950 LHS 4+400 4+500 LHS

<table>
<tr><th>No.</th><th>Type of Ecosystem</th><th>Yes</th><th>No</th><th>Explanation</th></tr>
<tr><td></td><td></td><td></td><td></td><td>
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<tr><td>4+900</td><td>5+000</td><td>LHS</td></tr>
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<tr><td>5+200</td><td>5+800</td><td>LHS</td></tr>
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</td></tr>
<tr><td>7.</td><td>Agricultural Land</td><td>✓</td><td></td><td>
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<tr><td>3+950</td><td>4+500</td><td>RHS</td></tr>
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<tr><td>5+350</td><td>5+400</td><td>RHS</td></tr>
<tr><td>5+860</td><td>6+350</td><td>RHS</td></tr>
<tr><td>6+600</td><td>6+900</td><td>RHS</td></tr>
<tr><td>7+010</td><td>7+760</td><td>RHS</td></tr>
</table>
</td></tr>
<tr><td>8.</td><td>Grazing grounds</td><td></td><td>✓</td><td></td></tr>
</table>

No.	Type of Ecosystem	Yes	No	Explanation
9.	Barren Land		✓	

C. Specific description of the Road Environment

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter / Component	Yes	No	Explanation
1.	Are there any areas with landslide or erosion problems along the road? ***(If yes, indicate the location (right or left side) and the chainage)***		✓	( ) No Secondary Information is available and Local Community is not aware of this matter
2.	Are there any lakes/swamps beside the road? ***(If yes, list them indicating the location (right or left side)and the chainage)***		✓	
3.	Are there any nallas/streams/rivers etc Along/crossing the road? ***(If yes, list them indicating the location (right, left or crossing) and the chainage***		✓	
4.	Are there problems of water stagnation and other drainage issues on or near the road? ***(If yes, mention chainage)***		✓	
5.	Is the area along the project road prone to flooding? ***(If yes, mention flood level and frequency)***		✓	( ) No Secondary Information is available and Local Community is not aware of this matter
6.	Are there any trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment? ***(If yes attach list of trees indicating the location (right or left side)and the chainage)***	✓		161 trees are located within 10 m on either side of the CL. [Enclosed list Refer. E.1]
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas?		✓	
	(If yes, specify details of habitat with chainage)			( ) No Secondary Information is available and Local Community is not aware of this matter
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	( ) No Secondary Information Available and Local Community is not aware of this matter

No.	Parameter/ Component	Yes	No	Explanation
9.	Are there any utility structures[1] within 10 m on either side from the center line of the road alignment? *(If yes, attach list with chainage)*	✓		145 electric poles, and 6 transformers are located within 10 m on either side of road.[Refer E.2]
10.	Are there any religious, cultural or community structures/buildings[2] within 10 m on either side from the center line of the road alignment? *(If yes attach list with chainage)*	✓		5 schools, 1 anganwadi centre, 2 nanghar and 1 temple are located within 10 m on either side of the alignment. (Refer E.3).

D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. *(Attach list of people met and dates)*	✓		A community consultation was held with PIU and Community members. About 48 participants were present at time of consultation. The list of participants is attached in Annexure E6.
2.	Any suggestion received in finalizing the alignment	✓		• The existing alignment should be finalised
3.	If suggestions received, were they incorporated into the design?	✓		

E. Annexures

E-1 List of trees indicating location (left or right side of the road) and chainage (as required under C. 6)

Sl. No.	Chainage	Side	Name of Trees
1	0+250	LHS	Moj
2	0+320	LHS	Jackfruit
3	0+325	LHS	Jackfruit
4	0+330	LHS	Jackfruit
5	0+335	LHS	Jackfruit
6	0+340	LHS	Jackfruit
7	0+430	LHS	Bakul
8	0+430	LHS	Simolu
9	0+470	LHS	Mango
10	0+490	LHS	Jackfruit
11	0+650	LHS	Kadam
12	0+950	LHS	Ahal
13	1+680	LHS	Kadam
14	1+780	LHS	Jamu
15	1+850	LHS	Simolu
16	1+852	LHS	Simolu
17	1+854	LHS	Simolu
18	1+856	LHS	Simolu
19	1+970	LHS	Kadam
20	3+570	LHS	Moj

[1] Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures.

[2] Mandir, Masjid, Church, religious/cultural/historical monuments, school, health center, public toilet and other similar structures.

Sl. No.	Chainage	Side	Name of Trees
135	5+575	RHS	Kadam
136	5+575	RHS	Simolu
137	5+580	RHS	Kadam
138	5+610	RHS	Mango
139	5+860	RHS	Kadam
140	5+885	RHS	Kadam
141	5+960	RHS	Sagori
142	6+390	RHS	Kadam
143	6+395	RHS	Kadam
144	6+400	RHS	Kadam
145	6+405	RHS	Kadam
146	6+410	RHS	Kadam
147	6+410	RHS	Kadam
148	6+415	RHS	Kadam
149	6+420	RHS	Kadam
150	6+420	RHS	Moj
151	6+425	RHS	Moj
152	6+430	RHS	Moj
153	6+430	RHS	Simolu
154	6+435	RHS	Simolu
155	6+920	RHS	Kadam
156	6+925	RHS	Kadam
157	7+890	RHS	Kadam
158	7+895	RHS	Kadam
159	7+900	RHS	Kadam
160	7+905	RHS	Kadam
161	8+070	RHS	Jackfruit

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

E-2 List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

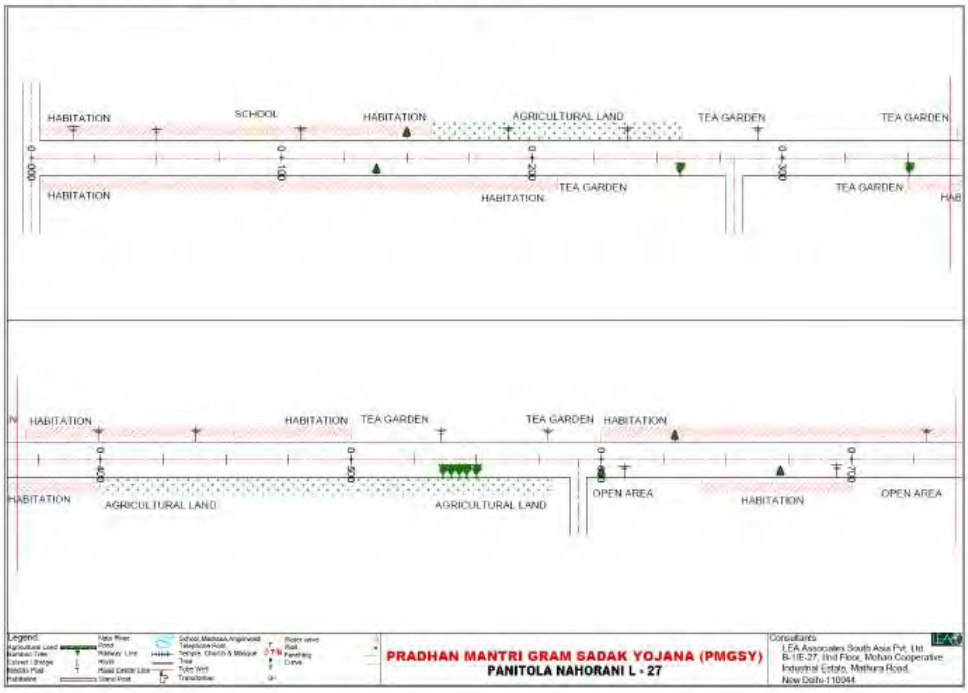
Sl. No.	Chainage	Side	Utility Type
1	0+030	LHS	Electric Pole
2	0+070	LHS	Electric Pole
3	0+160	LHS	Electric Pole
4	0+240	LHS	Electric Pole
5	0+590	LHS	Electric Pole
6	0+990	LHS	Electric Pole
7	1+020	LHS	Electric Pole
8	1+060	LHS	Electric Pole
9	1+110	LHS	Electric Pole
10	1+160	LHS	Electric Pole
11	1+190	LHS	Electric Pole
12	1+240	LHS	Electric Pole
13	1+280	LHS	Electric Pole
14	1+290	LHS	Transformer
15	1+340	LHS	Electric Pole
16	1+390	LHS	Electric Pole
17	1+440	LHS	Electric Pole
18	1+450	LHS	Electric Pole
19	1+520	LHS	Electric Pole
20	1+590	LHS	Electric Pole
21	1+640	LHS	Electric Pole
22	1+690	LHS	Electric Pole

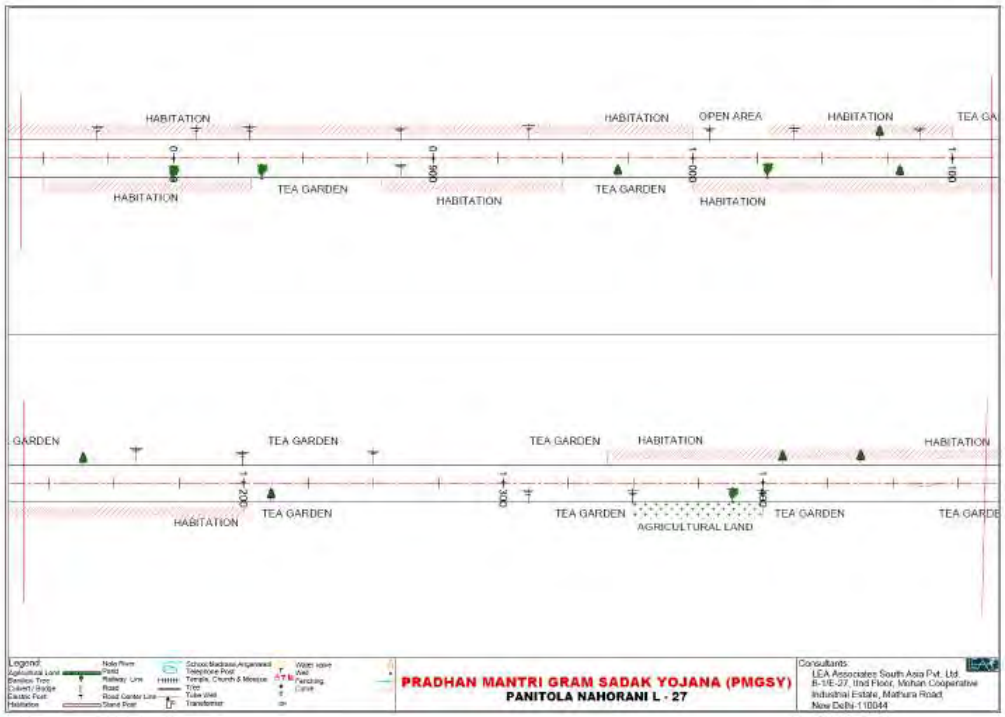
Sl. No.	Chainage	Side	Utility Type
137	3+840	RHS	Electric Pole
138	6+750	RHS	Electric Pole
139	6+910	RHS	Electric Pole
140	6+990	RHS	Electric Pole
141	7+060	RHS	Electric Pole
142	7+430	RHS	Electric Pole
143	7+490	RHS	Electric Pole
144	7+580	RHS	Electric Pole
145	7+640	RHS	Electric Pole
146	7+710	RHS	Electric Pole
147	7+780	RHS	Electric Pole
148	7+870	RHS	Electric Pole
149	8+050	RHS	Electric Pole
150	8+120	RHS	Transformer
151	8+140	RHS	Electric Pole

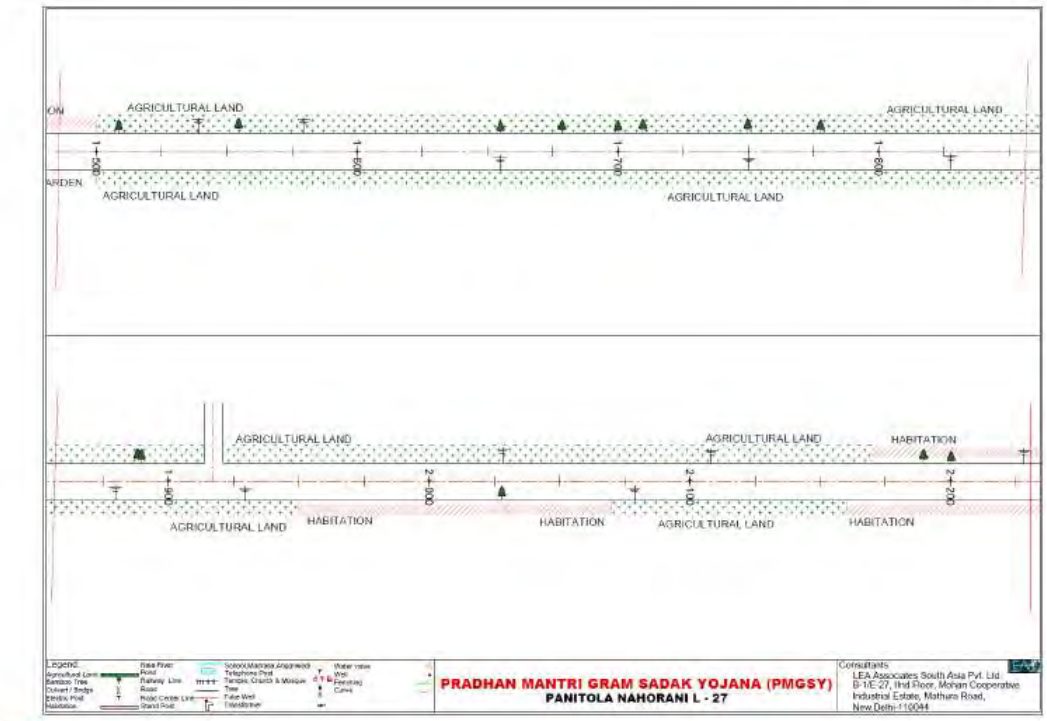
E-3 List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10)

Chainage	Side	Properties	Distance from center line (m)
0+090	LHS	School	10
0+440	LHS	Namghar	10
5+770	LHS	Namghar	4
5+160	LHS	Anganbadi Kendra	4.5
7+990	LHS	School	8
3+020	RHS	School	10
5+740	RHS	School	5
6+900	RHS	Temple	5
7+810	RHS	School	7

E-4 Sketch of strip map of the road covering details of atleast 10 m on either side from the center line of the road



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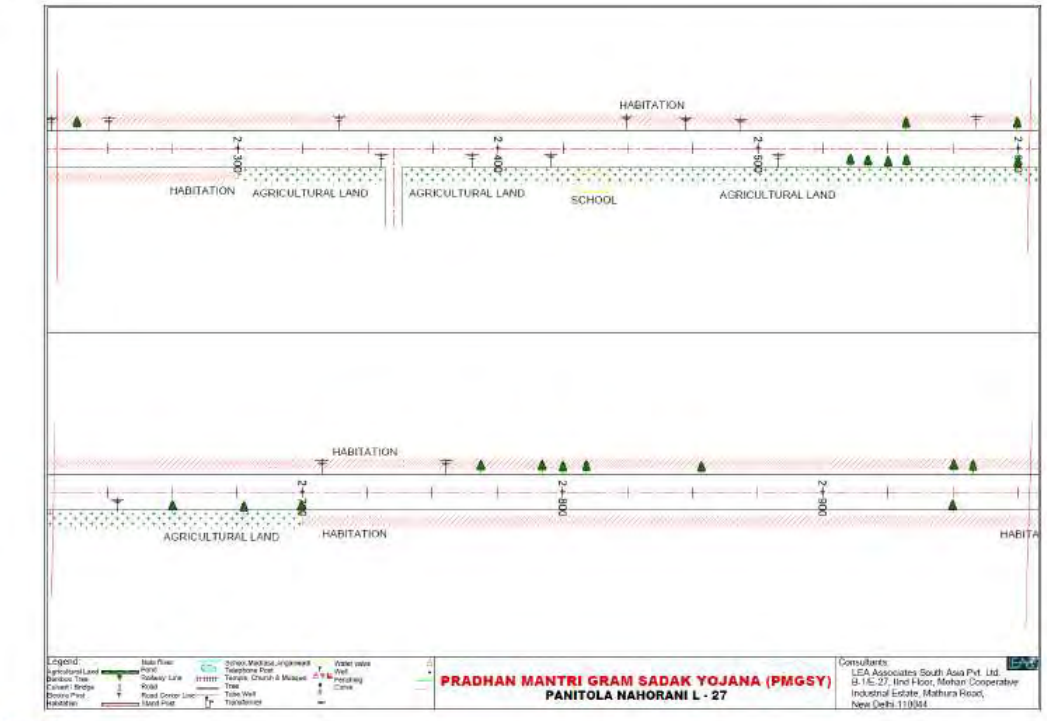
HABITATION
HABITATION
HABITATION
HABITATION
HABITATION
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
PANITOLA NAHORANI L - 27
Consultants:
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044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HABITATION
AGRICULTURAL LAND
AGRICULTURAL LAND
SCHOOL
AGRICULTURAL LAND
HABITATION
AGRICULTURAL LAND
HABITATION
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
PANITOLA NAHORANI L - 27
Consultants:
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, IInd Floor, Mohan Cooperative
Industrial Estate, Mathura Road,
New Delhi-110044

E-5 Photographs of the project area showing at least 10 m on either side from center line of road alignment. Every 2 km or less of road must have at least 1 photograph.


Corridor at 0+100km


Corridor at 1+500km


Corridor at 2+200km


Corridor at 3+300km


Corridor at 4+200km


Corridor at 5+200km


Corridor at 6+200 km


Corridor at 7+250 km


Corridor at 8+000 km


End of Corridor

E-6 List of Participants (Attendance Sheet)

Transect Walk Attendance Sheet

Station: panitola Nalaroni Date: 15/3/13

Community		PIU/PRI	
Name of the Participants	Signature	Name and designation of the official	Signature
Lakhi Dora Das	[illegible] 15/3/2013	[illegible]	[illegible] 15/3/13 GAONBURA Panitola Gaon P.O. Panitola 15/3/13
Debabala Hadra	[illegible] 15/3/13	Pranabjyoti Saikia	[illegible] 15/3/13
Rila Saikia	[illegible] 15/3/13	Bhrat [illegible] A.E.	[illegible] 15/3/13
Shilpi Gogoi [illegible]	[illegible]	Sri Horesh Chetia, SA	Chetia 15/03/13
[illegible] Gogoi	[illegible]	Harish Borah	[illegible]
[illegible]	[illegible]		
Keshab Borah	[illegible]		
Bimal Das	B. Das		
[illegible]	[illegible]		
[illegible] Phukan	[illegible]		
Sri [illegible]	[thumb impression]		
Sri [illegible]	[thumb impression]		

IV. RURAL ROADS: ENVIRONMENTAL CHECKLIST

Road Name		Puthiakhat to Puthimari Road
Block Name		Kalaigaon
District Name	:	Udalguri
Total Length of the Road	:	6.000 km

A. Climatic Conditions

Temperature	High: 38% Low: 2%
Humidity	High: 95% Low: 40%
Rainfall	3000mm/year
Rainy Season	May to September

B. Location o-f the Road and Generic description of Environment

No.	Type of Ecosystem	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside)		✓	Distance from Coastline: km ( ) more than 50% ( ) less than 20%
2.	Type of Terrain-(Plain/Hilly/ Mountainous etc.) *(Explain the topography of the area and how many km of the road are located in the hilly area)*	✓		Topography of terrain – Plain Altitude: 60.6m (average) The entire section of the alignment fall in the plain terrain
4.	Forest Area *(Explain whether the road passes through forest areas or located along the forest areas and distance from shoulder to the forest area)?*		✓	Type of Vegetation: Legal Status of the Forest Area: *(Reserved, National Park, Sanctuaries, Unclassified, etc.*
5.	Wildlife *(Explain whether there are any wildlife species in the project area)*		✓	Name of animals: Endangered species (if any):
6.	Inhabited Area	✓		From: 0+000, To: 0+040, Side: LHS 0+560, 0+570, LHS 0+800, 1+000, LHS 1+120, 1+230, LHS 2+600, 2+870, LHS 3+340, 3+410, LHS 3+530, 3+670, LHS 3+730, 3+800, LHS 4+450, 4+680, LHS

No.	Type of Ecosystem	Yes	No	Explanation		
				4+750	5+270	LHS
				5+330	5+960	LHS
				0+700	1+500	RHS
				1+600	1+730	RHS
				2+600	2+880	RHS
				3+640	3+670	RHS
				3+770	3+800	RHS
				4+000	4+100	RHS
				4+480	4+600	RHS
				4+770	4+820	RHS
				4+860	5+360	RHS
				5+550	5+960	RHS
7.	Agricultural Land	✓		From	To	Side
				0+040	0+560	LHS
				0+570	0+800	LHS
				1+000	1+120	LHS
				1+730	2+600	LHS
				2+870	3+340	LHS
				3+430	3+530	LHS
				3+670	3+730	LHS
				3+800	4+450	LHS
				4+680	4+750	LHS
				5+270	5+330	LHS
				5+960	6+000	LHS
				0+000	0+700	RHS
				1+500	1+600	RHS
				1+730	2+600	RHS
				2+880	3+640	RHS
				3+670	3+770	RHS
				3+800	4+000	RHS
				4+100	4+480	RHS
				4+600	4+770	RHS
				4+820	4+860	RHS
				5+360	5+550	RHS
				5+960	6+000	RHS
8.	Grazing grounds		✓			
9.	Barren Land		✓			

C. Specific description of the Road Environment

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation
1.	Are there any areas with landslide or erosion problems along the road? ***(If yes, indicate the location (right or left side) and the chainage)***		✓	( ) No Secondary Information is available and Local Community is not aware of this matter

No.	Parameter / Component	Yes	No	Explanation
2.	Are there any lakes/swamps beside the road? *(If yes, list them indicating the location (right or left side)and the chainage)*		✓	
3.	Are there any nallas/streams/rivers etc. along/crossing the road? *(If yes, list them indicating the location (right, left or crossing) and the chainage*	✓		Batlamari River (0+390), Chandara River (1+610), stream (2+220) and Kawadanga River (3+290) crossed the corridor
4.	Are there problems of water stagnation and other drainage issues on or near the road? *(If yes, mention chainage)*		✓	
5.	Is the area along the project road prone to flooding? *(If yes, mention flood level and frequency)*		✓	
				( ) No Secondary information is available and Local Community is not aware of this matter
6.	Are there any trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment? *(If yes attach list of trees indicating the location (right or left side)and the chainage)*	✓		301 trees are located within 10 m on either side of the CL and out of these only 2 trees would be affected due to the proposed improvement.Enclosed list Refer: E.1.
7.	Along the road and within 100m of the road shoulder, are there any faunal habitat areas, faunal breeding ground, bird migration area, or other similar areas? *(If yes, specify details of habitat with chainage)*		✓	
				( ) No Secondary information is available and Local Community is not aware of this matter
8.	Along the road and within 100m of the road shoulder is there any evidence of floral and faunal species that are classified as endangered species?		✓	
				( ) No Secondary information Available and Local Community is not aware of this matter
9.	Are there any utility structures* within 10 m on either side from the center line of the road alignment? *(If yes, attach list with chainage)*	✓		67 elecutic poles and 4 transformers are located within 10 m on either side of road. Out of these utilities only 3 electric poles would be affected due to the project.[Refer E.2]
10.	Are there any religious, cultural or community structures/buildings* within 10 m on either side from the center line of the road alignment? *(If yes attach list with chainage)*	✓		5 schools, 1 anganwadi, 3 temple and 2 mosques are located within 10m from CL of the road (Refer E.3. None of these structures will be affected by the project.

* Water tap, hand pump, electric pole, telephone pole, water pipe and other similar structures

* Mandir, Masjid, Church, religious/cultural/historical monuments, school, health center, public toilet and other similar structures

D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment. *(Attach list of people met and dates)*	✓		A community consultation was held with PIU and Community members. About 28 participants were present at time of consultation. The list of participants is attached in **Annexure E6.**
2.	Any suggestion received in finalizing the alignment	✓		Road safety measures at anganwadi, schools, markets, road intersections and curves locations.
3.	If suggestions received, were they incorporated into the design?	✓		

E. Annexures

E-1 List of trees indicating location (left or right side of the road) and chainage (as required under C. 6)

Chainage	Side	Name of Trees	DCL
0+010	LHS	Ahot	4.2
0+035	LHS	Ahot	3.7
0+370	LHS	Bogori	3.3
0+430	LHS	Jiya	3.2
0+440	LHS	Ahot	3.4
0+450	LHS	Gamari	3.5
0+470	LHS	Beli	3.2
0+480	LHS	Jiya	3.5
0+485	LHS	Jiya	3.5
0+490	LHS	Kare	3.2
0+540	LHS	Jiya	3.3
0+550	LHS	Jiya	3.3
0+555	LHS	Jiya	3.3
0+560	LHS	Ahot	3.5
0+560	LHS	Jiya	3.3
0+565	LHS	Ahot	3.5
0+570	LHS	Jiya	3.3
0+960	LHS	Bokul	3.1
1+080	LHS	Simolu	3.5
1+085	LHS	Simolu	3.5
1+140	LHS	Simolu	3.5
1+150	LHS	Ahot	9
1+170	LHS	Ahot	3.5
1+180	LHS	Mango	4.5
1+210	LHS	Coconut	8.7
1+260	LHS	Mango	3
1+310	LHS	Dambaru	3.2
1+315	LHS	Dambaru	3.2
1+340	LHS	Ahot	3.9
1+370	LHS	Ahot	3.7
1+375	LHS	Ahot	3.7
1+390	LHS	Ahot	3.7
1+395	LHS	Ahot	3.7
1+410	LHS	Ahot	3.5
1+415	LHS	Ahot	3.5
1+420	LHS	Mango	4.5
1+490	LHS	Bot	5.8
1+560	LHS	Ahot	4.3

Chainage	Side	Name of Trees	DCL
4+800	RHS	Mango	4.1
4+810	RHS	Mango	3.9
4+820	RHS	Jamu	4.5
4+860	RHS	Jackfruit	3.7
4+880	RHS	Kadam	3.5
4+940	RHS	Mango	3.6
4+950	RHS	Kadam	3.7
4+960	RHS	Jiya	3.5
5+070	RHS	Kadam	3.6
5+075	RHS	Kadam	3.6
5+078	RHS	Kadam	3.6
5+090	RHS	Kadam	3.7
5+095	RHS	Kadam	3.7
5+110	RHS	Kadam	3.5
5+120	RHS	Kadam	3.6
5+125	RHS	Kadam	3.6
5+128	RHS	Kadam	3.6
5+130	RHS	Jiya	3.6
5+140	RHS	Mango	3.7
5+145	RHS	Kadam	3.6
5+148	RHS	Kadam	3.6
5+160	RHS	Mango	3.9
5+190	RHS	Kadam	3.7
5+195	RHS	Kadam	3.7
5+200	RHS	Kadam	3.7
5+205	RHS	Kadam	3.7
5+290	RHS	Jackfruit	3.7
5+310	RHS	Jiya	3.9
5+312	RHS	Coconut	4.5
5+500	RHS	kare	4.3
5+510	RHS	Koras	4.1
5+540	RHS	Ahot	3.5
5+880	RHS	Jackfruit	3.5
5+885	RHS	Jackfruit	3.5
5+920	RHS	Jiya	3.1
Total number of trees		301	

Note: Areca palms and bamboo bushes within 10 m either side from centreline have not been considered in tree enumeration as dbh is less than 30cm (Refer C.6)

E-2 List of utility structures indicating location (left or right side of the road) and chainage (as required under C. 9)

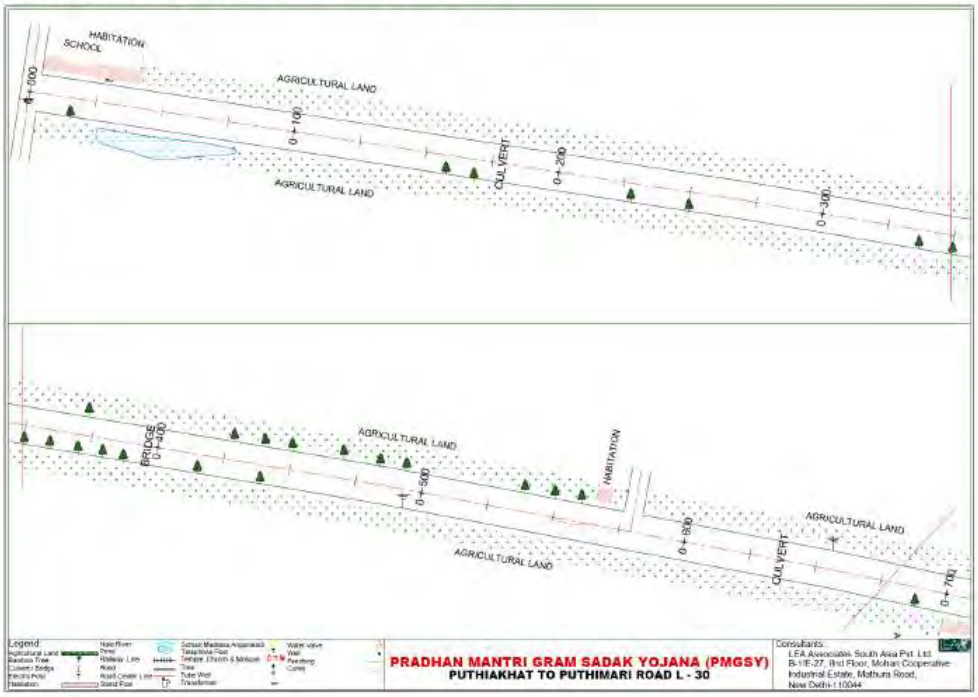
Chainage	Side	Utility Type	DCL
0+030	LHS	Transformer	3.1
0+660	LHS	Electric Pole	3.2
0+770	LHS	Transformer	3.4
0+820	LHS	Electric Pole	3.2
0+870	LHS	Electric Pole	3.1
0+930	LHS	Electric Pole	3.1
0+980	LHS	Electric Pole	3.1
1+430	LHS	Electric Pole	3.2
1+470	LHS	Electric Pole	4.2
1+475	LHS	Electric Pole	4.2
1+690	LHS	Electric Pole	3.3
1+695	LHS	Electric Pole	3.3

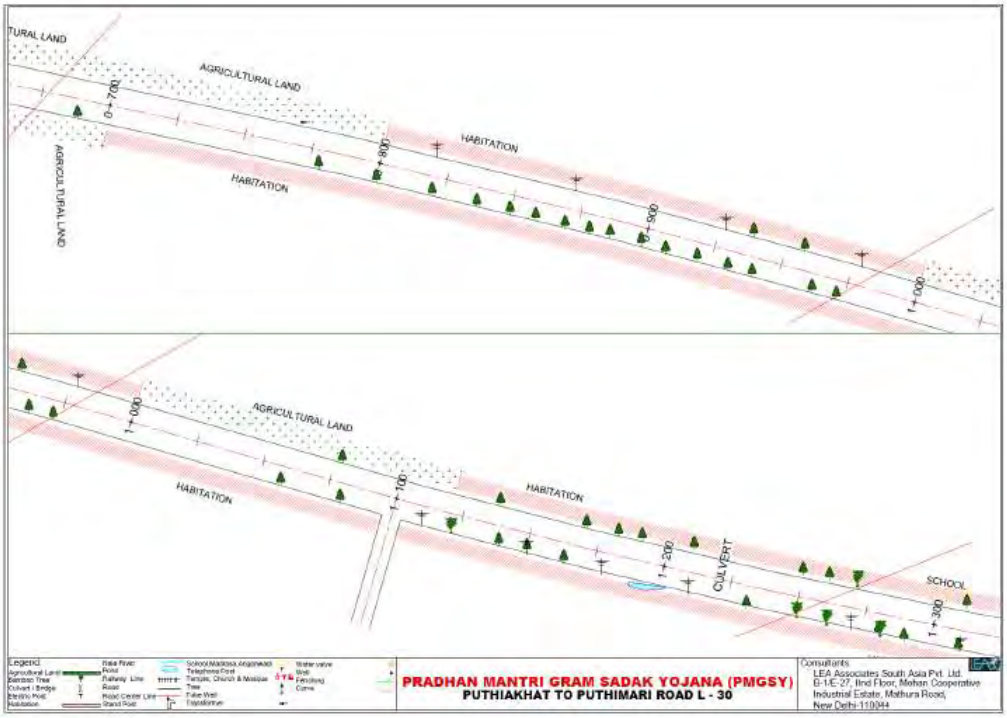
Chainage	Side	Utility Type	DCL
5+385	RHS	Electric Pole	10
5+950	RHS	Electric Pole	5.8
Total number of electric poles		67	
Total number of transformers		04	

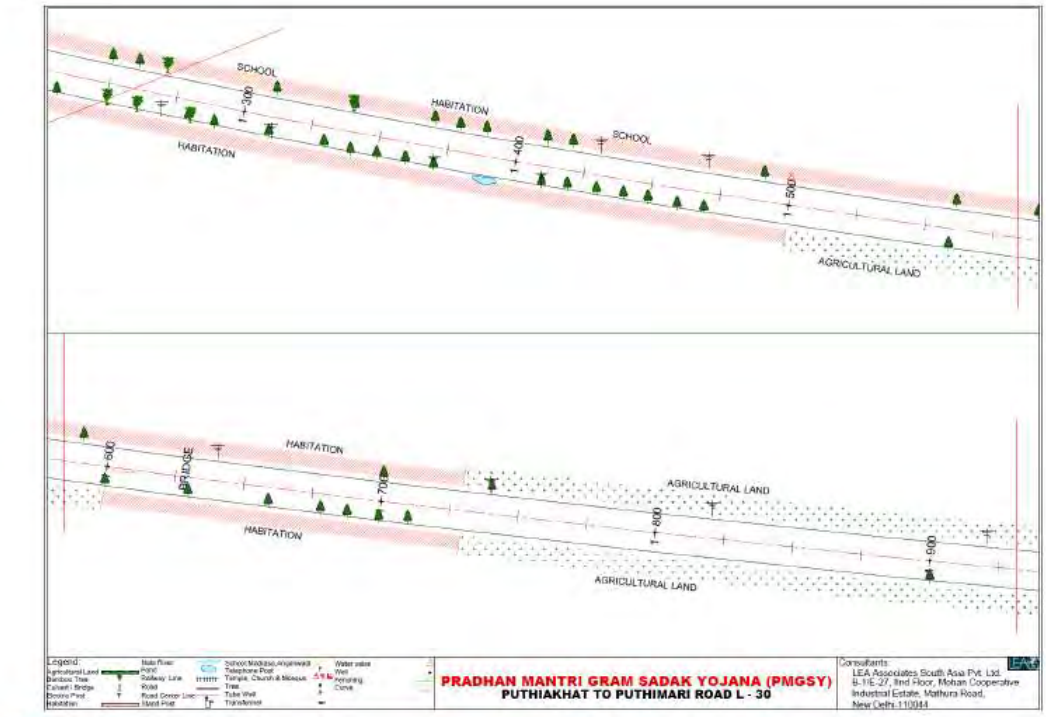
E-3 List of community structures indicating location (left or right side of the road) and chainage (as required under C. 10)

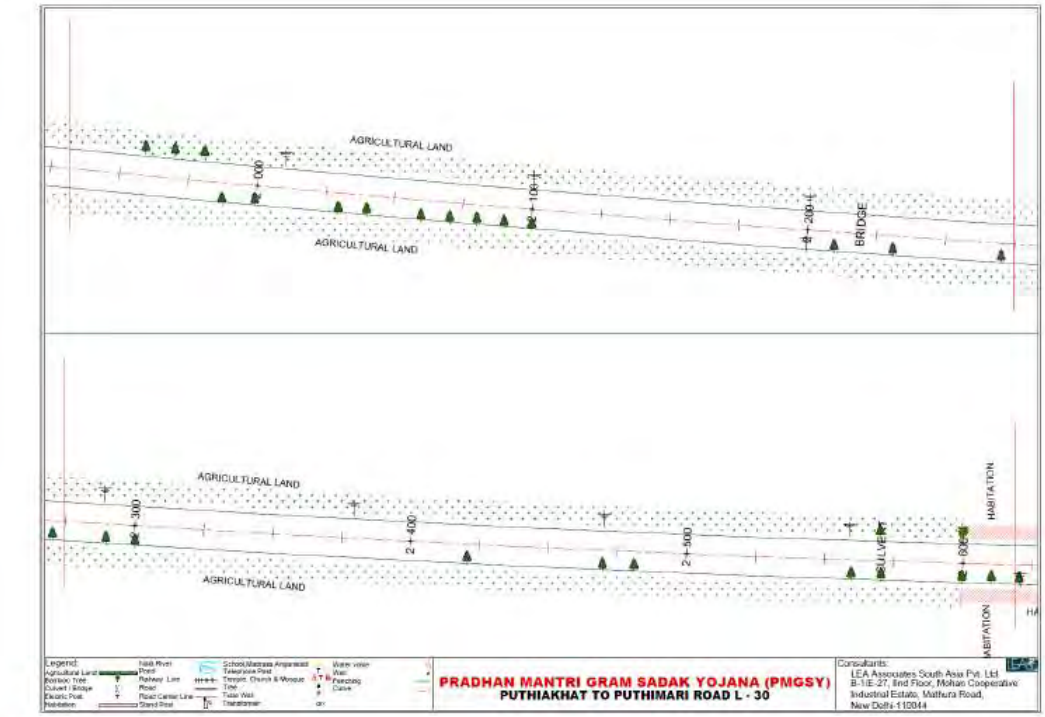
Chainage	Side	Sensitive Structures	Distance from center line (m)
0+020	LHS	School	4
1+300	LHS	School	3.3
1+440	LHS	School	3.6
1+500	LHS	Temple	3.5
4+795	RHS	Anganwadi Centre	4.5
4+805	RHS	School	4.5
5+580	RHS	Mosque	3.1
5+770	RHS	School	3.3
5+870	RHS	Mosque	3.2

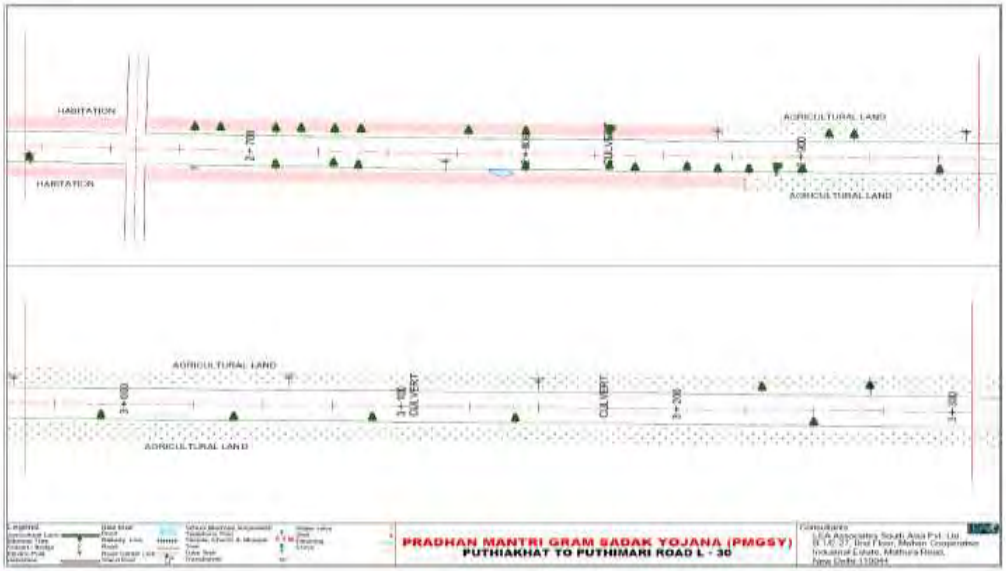
E-4 Sketch of strip map of the road covering details of at least 10 m on either side from the center line of the road






SCHOOL
HABITATION
HABITATION
SCHOOL
AGRICULTURAL LAND
BRIDGE
HABITATION
HABITATION
AGRICULTURAL LAND
AGRICULTURAL LAND
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
PUTHIAKHAT TO PUTHIMARI ROAD L - 30


AGRICULTURAL LAND
AGRICULTURAL LAND
BRIDGE
AGRICULTURAL LAND
AGRICULTURAL LAND
HABITATION
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
PUTHIAKHAT TO PUTHIMARI ROAD L - 30


HABITATION
HABITATION
AGRICULTURAL LAND
AGRICULTURAL LAND
2+700
2+800
2+900
AGRICULTURAL LAND
AGRICULTURAL LAND
3+000
3+100
CULVERT
CULVERT
3+200
3+300
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
PUTHIAKHAT TO PUTHIMARI ROAD L - 30

E-5 Photographs of the project area showing at least 10 m on either side from center line of road alignment. Every 2 km or less of road must have at least 1 photograph.

Starting Point of corridor

Corridor at 0+600

Corridor at 1+700

Corridor at 2+600

Corridor at 3+500

Corridor at 4+100

Corridor at 4+600

Corridor at 5+500

End Point of corridor

E-6 List of Participants (Attendance Sheet)

Transect Walk Attendance Sheet

Road Name Pitkhirhat Pitkhimari Road Date 17/12/13

Community		PIU/PRI	
Name of the Participants	Signature	Name and designation of the official	Signature
Sri Dalabkha Koch		Md Abdus Rahan	
Sri Dhakai Baro		Abdul Matin Ahmed-	APM- Kwari Gaon- AP
Sri Bijendra Bro		Ranjit Kr Sarmah Junior Engineer	
Sri Sanjoy Ram Deka Secy KLL, SS.UP			
Sri Pabon Ch. Boro			
Sri Jitendra Da			
[illegible]			
[illegible]			
Sri Lakshmi Bro			
[illegible]			
Sri Tarun Barman			
[illegible]			

APPENDIX 3: GUIDELINES FOR BORROW AREAS MANAGEMENT

A. SELECTION OF BORROW AREAS

1. Location of borrow areas shall be finalized as per IRC: 10-1961guidlines. The finalization of locations in case of borrows areas identified in private land shall depend upon the formal agreement between landowners and contractor. If, agreement is not reached between the contractor and landowners for the identified borrow areas sites, arrangement for locating the source of supply of material for embankment and sub-grade as well as compliance to environment requirements in respect of excavation and borrow areas as stipulated from time to time by the Ministry of Environment and Forests, Government of India, and local bodies, as applicable shall be the sole responsibility of the contractor.

2. The contractor in addition to the established practices, rules and regulation will also consider following criteria before finalizing the locations.

(a) The borrow area should not be located in agriculture field unless unavoidable i.e. barren land is not available.
(b) The borrow pits preferably should not be located along the roads.
(c) The loss of productive and agriculture soil should be minimum.
(d) The loss of vegetation is almost nil or minimum.
(e) The Contractor will ensure that suitable earth is available.

B. CONTRACTOR'S RESPONSIBILITY

3. The Contractor shall obtain representative samples from each of the identified borrow areas and have these tested at the site laboratory following a testing program approved by the Engineer. It shall be ensured that the sub-grade material when compacted to the density requirements shall yield the design CBR value of the sub-grade. Contractor shall begin operations keeping in mind following;

(a) Haulage of material to embankments or other areas of fill shall proceed only when sufficient spreading and compaction plants is operating at the place of deposition.
(b) No excavated acceptable material other than surplus to requirements of the Contract shall be removed from the site. Contractor should be permitted to remove acceptable material from the site to suit his operational procedure, then shall make consequent deficit of material arising there from.
(c) Where the excavation reveals a combination of acceptable and un-acceptable materials, the Contractor shall, unless otherwise agreed by the Engineer, carry out the excavation in such a manner that the acceptable materials are excavated separately for use in the permanent works without contamination by the un-acceptable materials. The acceptable material shall be stockpiled separately.

C. BORROWING FROM DIFFERENT LAND-FORMS

1. Borrow Areas located in Agricultural Lands

(a) The preservation of topsoil will be carried out in stockpile.
(b) A 15 cm topsoil will be stripped off from the borrow pit and this will be stored in stockpiles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2 (Vertical: Horizontal).

(c) Borrowing of earth will be carried out up to a depth of 1.5m from the existing ground level.
(d) Borrowing of earth will not be done continuously through out the stretch.
(e) Ridges of not less than 8m widths will be left at intervals not exceeding 300m.
(f) Small drains will be cut through the ridges, if necessary, to facilitate drainage.
(g) The slope of the edges will be maintained not steeper than 1:4 (vertical: Horizontal).
(h) The depth of borrow pits will not be more than 30 cm after stripping the 15 cm topsoil aside.

2. Borrow Areas located in Elevated Lands

(a) The preservation of topsoil will be carried out in stockpile.
(b) A 15 cm topsoil will be stripped off from the borrow pit and this will be stored in stockpiles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2 (Vertical: Horizontal).
(c) At location where private owners desire their fields to be levelled, the borrowing shall be done to a depth of not more than 1.5m or up to the level of surrounding fields

3. Borrow Areas near River side

(a) The preservation of topsoil will be carried out in stockpile.
(b) A 15 cm topsoil will be stripped off from the borrow pit and this will be stored in stockpiles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2 (Vertical: Horizontal).
(c) Borrow area near to any surface water body will be at least at a distance of 15m from the toe of the bank or high flood level, whichever is maximum.

4. Borrow Areas near Settlements

(a) The preservation of topsoil will be carried out in stockpile.
(b) A 15 cm topsoil will be stripped off from the borrow pit and this will be stored in stockpiles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2 (Vertical: Horizontal).
(c) Borrow pit location will be located at least 0.75 km from villages and settlements. If un-avoidable, the pit will not be dug for more than 30 cm and drains will be cut to facilitate drainage.
(d) Borrow pits located in such location will be re-developed immediately after borrowing is completed. If spoils are dumped, that will be covered with a layers of stockpiled topsoil in accordance with compliance requirements with respect MOEF/SPCB guidelines.

5. Borrow Pits along the Road

4. Borrow pits along the road shall be discouraged and if deemed necessary and permitted by the Engineer; following precautions are recommended

(a) The preservation of topsoil will be carried out in stockpile.
(b) A 15 cm topsoil will be stripped off from the borrow pit and this will be stored in stockpiles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2 (Vertical: Horizontal).

(c) Ridges of not less than 8m widths should be left at intervals not exceeding 300m.
(d) Small drains shall be cut through the ridges of facilitate drainage.
(e) The depth of the pits shall be so regulated that there bottom does not cut an imaginary line having a slope of 1 vertical to 4 horizontal projected from the edge of the final section of bank, the maximum depth of any case being limited to 1.5m.
(f) Also, no pit shall be dug within the offset width from the toe of the embankment required as per the consideration of stability with a minimum width of 10m.

D. REHABILITATION OF BORROW AREAS

5. The objective of the rehabilitation program is to return the borrow pit sites to a safe and secure area, which the public should be able to safely enter and enjoy. Securing borrow pits in a stable condition is fundamental requirement of the rehabilitation process. This could be achieved by filling the borrow pit floor to approximately the access road level.

6. Re-development plan shall be prepared by the Contractor before the start of work inline with the owners will require and to the satisfaction of owner. The Borrow Areas shall be rehabilitated as per following;

(a) Borrow pits shall be backfilled with rejected construction wastes and will be given a vegetative cover. If this is not possible, then excavation sloped will be smoothed and depression will be filled in such a way that it looks more or less like the original round surface.
(b) Borrow areas might be used for aquaculture in case landowner wants such development. In that case, such borrow area will be photographed after their post use restoration and Environment Expert of Supervision Consultant will certify the post use redevelopment.

7. The Contractor will keep record of photographs of various stages i.e., before using materials from the location (pre-project), for the period borrowing activities (construction Phase) and after rehabilitation (post development), to ascertain the pre and post borrowing status of the area.

APPENDIX 4: ENVIRONMENTAL MANAGEMENT PLAN

SL. No.	Project Action/ Environmental Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
	Measures common to all sample roads						
	Design and Pre Construction Stage						
1.	Climate Change Consideration and Vulnerability screening	○ Compliance to climate change vulnerability check point given under EARF and adoption of necessary mitigative measures as may be required ○ Efforts shall be made to plant additional trees for increasing the carbon sink. The tree may be planted with help of PRI (Panchyati Raj Institution)	All through the alignment of each rural road	Pre Construction Phase	Part of Project Cost	Project Preparation Consultant/ design consultant	PIU/ ASRRDA
2.	Finalization of alignment	○ The road will be part of district core network and will comply with PMGSY guidelines ○ Subproject shall not disturb any cultural heritage designated by the government or by the international agencies, such as UNESCO, and shall avoid any monuments of cultural or historical importance. ○ Subproject will not pass through any designated wild life sanctuaries, national park, notified Eco sensitive areas or area of international significance such as protective wet land designated under Wetland Convention, and reserve forest area.. ○ Subproject to comply with local and National legislative requirements such as forest clearance for diversion of forestland and ADB's Safeguard Policy Statement 2009. ○ Alignment finalization considering	All through the alignment of each rural road	Pre Construction Phase	Part of Project Cost	Project Preparation Consultant/ design consultant	PIU/ ASRRDA

SL. No.	Project Action/ Environmental Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		availability of right of way and in consultation with local people. o ROW may be reduced in built up area or constricted areas to minimize land acquisition as per PMGSY Guidelines. o Adjust alignment to the extent feasible to avoid tree cutting, shifting of utilities or community structure. o The road shall follow natural topography to avoid excessive cut and fill.					
3.	Land acquisition	o Avoid or minimize land acquisition. o Land acquisition, compensation packages, resettlement and rehabilitation, poverty alleviation programs for affected people and all other related issues are addressed through Social Impacts and Resettlement and Rehabilitation report.	o All through the alignment of each rural road	Pre Construction Phase	Land to be made available by the state Government	PIU, Govt. of Madhya Pradesh , and other	Environmental officer under the PIC will also coordinate and ensure implementation
4.	Biological environment - Tree planting	o All efforts shall be taken to avoid tree cutting wherever possible. o Requisite permission from forest department shall be obtained for cutting of roadside trees. o Provision of Compensatory Afforestation shall be made on 1:3.ratio basis. o Permission shall be taken for diversion of any forest land if involved. Provision shall be made for additional compensatory tree plantation.	Throughout the project section of the road. *(Highlight Tree cutting locations and proposed likely plantation location)*				
5.	Planning for land clearing	o The road land width shall be clearly demarcated on the ground.	All through the Rural roads	Pre Constructi	Necessary cost	PIC, PIU, Forest Department NGOs	Environmental officer under

SL. No.	Project Action/ Environmental Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		○ The utility and community structure shifting shall be planned in consultations and concurrence of the community. ○ Tree felling shall be limited to those, which could not be saved even by design measures. The tree shall be cut with a prior permission of Forest department. ○ The vegetable cover shall be removed and disposed in consultation with community. ○ All public utilities shifting shall be planned with prior concurrence of respective agencies/authority and to the adjacent location approved by them	excepting in stretches of habitations *(Attach or Refer to specific sections of DPR for the utilities to be shifted along with chainages for the location of such structures)*	on Phase	provisions have been made. All other costs are included under project cost.	(shifting of utilities shall be carried out by respective governmental bodies at cost to be reimbursed by project, implementing agency). To increase survival rate of new saplings, a core Tree Management Committee is to be created to ensure complete retrieval of vegetative cover and timely replacement of perished plantations. implementation Unit (PIU) of ASRRDA.	the PIC will coordinate and ensure Officials of Forest Department, Contractor and local NGOs and coordinated by Environmental officer of Construction Supervision Consultant for specific package.
6.	Shifting on Common Properties Resources	○ All efforts are made to minimize shifting of common utilities and community structures. ○ The community structures/utilities which can not be saved will be shifted to adjacent area with the concurrence and in consultation with community.	As determined by contractor under approval of PIC /PIU *(Attach or Refer to specific sections of DPR for community structures to*	Constructi on Phase	Borne by Contractor	Contractor is responsible for ensuring provision of facilities under approval by PIC / PIU	Environmental officer and other team members of PIC will monitor and ensure appropriate implementation Environmental officer will regularly

SL. No.	Project Action/ Environmental Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
			be shifted along with chainages for the location of such structures)				interact with the local people who are likely to be affected to ensure that their interests are protected and no social resentment sets in.
7.	Cut and Fill and Embankment Construction design and planning	○ The alignment design shall consider options to minimize excessive cuts and fills. ○ The cut and fill quantities shall be used for embankment to minimize barrow earth requirement. ○ The design shall be as per relevant IRC provisions for cut and fill, slope protection and drainage. ○ Adequate provision shall be made for cross drainage structure for maintaining natural drainage pattern in the subproject area and preventing soil erosion. ○ Side drain for channelizing water to nearby natural drain in water stagnation /logging prone area. ○ The top soil of the cut and fill area shall be used for embankment slope protection ○ Embankment will be designed above High Flood Level (HFL) wherever, area is prone to flood.	All through the alignment of each rural road *(Highlight the high flood level, chainage for action and linkages to DPR section)*	Pre Construction Phase	Part of Project Cost	Project Preparation Consultant/ design consultant	PIU/ ASRRDA
8.	Hydrology and Drainage	○ Provision of adequate cross drainage structure shall be made to ensure smooth passage of water and maintaining natural drainage	Near all drainage crossing , nalas and				

SL. No.	Project Action/ Environmental Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		pattern of the area. The discharge capacity of the CD structure shall be designed accordingly. o Provision of adequate side drainage shall be made in water stagnant/logging areas. o The construction work near water body shall be planned preferably in dry season so that water quality of the water channel is not affected due to siltation and rain water runoff. o Elaborate drainage system shall be provided to drain the storm water from the roadway and embankment to ensure minimum disturbance to natural drainage of surface and subsurface water of the area. o Provision of additional cross drainage structure shall be made in the areas where nearby land is sloping towards road alignment on both the sides. o Provision of concrete road construction in habitat area with drainage of both side of the road shall be made as per the design provision and with adequate slope to prevent any water logging. o Road level shall be fixed above HFL. Embankment slope stabilization measures shall be planned. Stabilization measures may include vegetative treatment, stone pitching, retaining wall where feasible, low cost options such as bamboo / eucalyptus tree pilling .	river crossings etc. *(indicate HFL Level and Highlight the chainage for action and linkages to DPR section)*				

SL. No.	Project Action/ Environmental Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
9.	Establishment of Construction Camp, temporary office and storage area	○ Construction camp sites shall be located away from any local human settlements (minimum 0.5 km away) and preferably located on lands, which are not productive barren/waste lands presently. ○ Similarly temporary office and storage areas shall be located away from human settlement areas (minimum 500 m). ○ The construction camps, office and storage areas shall have provision of adequate water supply, sanitation and all requisite infrastructure facilities. ○ The construction camps shall be located at a minimum 0.5 km from forest land/areas to deter the construction labour in trespassing. Similarly, temporary office and storage areas shall be located at a minimum 0.5 km from forest land/areas. ○ The construction camps, office and storage areas shall have provision of septic tank/soak pit of adequate capacity so that it can function properly for the entire duration of its use. ○ All construction camps shall have provision of rationing facilities particularly for kerosene/LPG so that dependence on firewood for cooking is avoided completely to the extent possible. ○ The construction camps, office and storage areas shall have provision	As determined by contractor under approval of PIC/PIU/ (ref- Labelled: WASTE OIL; and hazardous sign be displayed at oil handling areas and sold off to SPCB/ MoEF authorized re-refiners). *(Contractor to specify the cost provision made for PPE and other environmental sanitation measures required per construction camp / temporary office / storage area)*	Pre-construction and construction stage	To be included in contractor's cost	All facilities are to be planned and implemented by contractor under approval by PIU / PIC	PIU

SL. No.	Project Action/ Environmental Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		of health care facilities for adults, pregnant women and children. o Personal Protective Equipments (PPEs) like helmet, boots, earplugs for workers, first aid and fire fighting equipments shall be available at construction sites before start of construction. An emergency plan shall be prepared to fight with any emergency like fire. o Provision shall be made for domestic solid waste disposal in a control manner. The recyclable waste shall be sold off and non-saleable and biodegradable waste shall be disposed through secured land filling. o Provision of paved area for unloading and storage of fuel oil, lubricant oil, away from storm water drainage.					
10.	Traffic Movement	o The contractor will identify the areas were temporary traffic diversion may be required. He would prepare appropriate traffic movement plan for ensuring continued flow of traffic during construction phase. This may include movement of the traffic from the site of the construction area. This kind of a temporary diversion shall be finalized with the concurrence of respective PIU. o Wherever, cross drainage structure work require longer construction time and road is to be blocked for longer duration, the PIU / DPR	As proposed under DPR and determined by contractor and approved by PIC/PIU/ *(Highlight the chainages which may require traffic diversions)*	Pre-construction and construction stage	To be included in contractor's cost	All facilities are to be planned and implemented by contractor under approval by PIU / PIC	PIU

SL. No.	Project Action/ Environmental Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		Consultant shall define appropriate measures for traffic diversion before the start of the construction. o The diversion plan should ensure smooth flow of traffic, minimize accidents to road users during construction works. o Adequate signboards shall be placed much ahead of diversion site to caution the road users. The road signs should be bold and retro reflective in nature for good visibility in day and night both.					
10.	Occupational Health and Safety	o Speed breakers (Rumble strips) as per IRC: 99-1988 shall be provided at sharp corves design and bends where the curve design speed is less than 40 km per hour in plain and rolling terrain. o Speed breakers shall also be provided at a threshold of habitation (as per NRRDA guidelines) at regular intervals (150-200 m) through habitation and near schools or religious places. o The speed breakers shall be provided and directional sign boards installed at sites where reverse horizontal curves are closely spaced and speed reduction is required. o Provision shall be made for Hazard markers at each end of all box culverts, river crossing causeways and similar CD structures o Shoulder side slopes shall not be steeper than 2h:1V unless stone	Throughout the project section at the location determined by contractor and approved by PIU *(Highlight the location with chainage for such requirements)*				

SL. No.	Project Action/ Environmental Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		pitching of the slopes is provided. o Cement concrete pavement and V-shaped drain shall be constructed to the full width of the available roadway within densely populated habitation and as per feasibility. o Provision shall be made for Directional sight board shall be installed on all sharp curves and bends o At a main road, intersection or crossing "STOP" sign and 'T-intersection' warning sign shall be installed on the village road. o It is proposed to approach railways for adequate safety at unmanned railway crossing where applicable. Adequate clearly visible sign shall be provided on both side of the railway crossing					
	Construction Stage						
11.	Sourcing and transportation of construction material (aggregates, earth)	Borrow Earth: o The borrow earth shall be obtained from identified locations and with prior permission for landowner and clear understanding for its rehabilitation. The Indian Road Congress (IRC):10-1961 guideline should be used for selection of borrow pits and amount that can be borrowed. o Borrowing earth from agricultural land shall be minimized to the extent possible. Further, no earth shall be borrowed from already low-lying areas. o A 15 cm topsoil will be stripped off	As Borrow sites and quarries (if required) location. *(List the probable locations for borrow areas. (Highlight the identified quarries, if already identified. Contractors*	During Design and construction Stage	Engineering cost	The selection of quarries and material selection will be the responsibility of contractor under approval of PIC /PIU/TSC Environmental officer and other team members of PIC will ensure appropriate implementation of mitigation actions.	PIC /PIU/TSC Environmental officer and other team members of PIC will monitor

SL. No.	Project Action/ Environmental Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		from the borrow pit and this will be stored in stockpiles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2 (Vertical: Horizontal). o Borrowing of earth will not be done continuously through out the stretch. o Ridges of not less than 8m widths will be left at intervals not exceeding 300m. o Small drains will be cut through the ridges, if necessary, to facilitate drainage. o The slope of the edges will be maintained not steeper than 1:4 (vertical: Horizontal). o The depth of borrow pits will not be more than 30 cm after stripping the 15 cm topsoil aside. o Fly ash will also be used in road embankment as per IRC guidelines wherever thermal power plant is located within 100 km of the road alignment. o The borrow area shall be rehabilitated as per the understanding arrived with the land-owner. The re-habilitation plan may include the following: ▪ Borrow pits shall be backfilled with rejected construction wastes and will be given a vegetative cover. If this is not possible, then excavation sloped will be smoothed and depression will be filled in such	*should also indicate the quarry they are likely to use if not already identified at DPR stag)*				

SL. No.	Project Action/ Environmental Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		a way that it looks more or less like the original ground surface. ▪ Borrow areas might be used for aquaculture in case landowner wants such development. Aggregate : o The stone aggregate shall be sourced from existing licensed quarries o Copies of consent/ approval / rehabilitation plan for use of existing source will be submitted to PIU. o Topsoil to be stockpiled and protected for use at the rehabilitation stage Transportation of Construction Material o Existing tracks / roads are to be used for hauling of materials to the extent possible. o Prior to construction of roads, topsoil shall be preserved or at least shall be used for any other useful purposes like using in turfing of embankment rather than allowing its loss by construction activities. o The vehicles deployed for material transportation shall be spillage proof to avoid or minimize the spillage of the material during transportation. In any case, the transportation links are to be inspected at least twice daily to clear accidental spillage, if any.					
12.	Loss of Productive	o It shall be ensured that the land	Thought out	During the	Included in	Design Consultant	PIU / ASRRDA

SL. No.	Project Action/ Environmental Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
	Soil, erosion and land use change	taken on lease for access road, construction camp and temporary office of the storage facilities is restored back to its original land use before handing it over back to land owner. o The top soil from the productive land (borrow areas, road widening areas etc.) shall be preserved and reused for plantation purposes. o It shall also be used as top cover of embankment slope for growing vegetation to protect soil erosion. o Cut and fill shall be planned as per IRC provisions and rural road manual. o All steep cuts shall be flattened and benched. o Shrubs shall be planted in loose soil area. o IRC: 56 -1974 recommended practice for treatment of embankment slopes for erosion control shall be taken into consideration. o Soil erosion shall be visually checked on slopes and embankment areas. In case soil erosion is found, suitable measures shall be taken to control the soil erosion	the road section *(The contractor shall include the cost for the measures as part of the construction cost)*	Constructi on stage	project cost	and Contractor	
13.	Compaction and Contamination of Soil	o To prevent soil compaction in the adjoining productive lands beyond the ROW, the movement of construction vehicles, machinery and equipment shall be restricted to the designated haulage route.	Throughout the project section of the road s *(The*	• Design and constru ction stage	• Project preparatio n cost and constructi on cost	• Design consultant and Contractor,	PIU

SL. No.	Project Action/ Environmental Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		○ The productive land shall be reclaimed after construction activity. ○ Septic tank or mobile toilets fitted with anaerobic treatment facility shall be provided at construction camp/temporary office/storage areas. ○ Domestic solid waste at construction camp shall be segregated into biodegradable and non-biodegradable waste. ○ The non-biodegradable and recyclable waste shall be sold off. ○ Fuel and lubricants shall be stored at the predefined storage location. ○ The storage area shall be paved with gentle slope to a corner and connected with a chamber to collect any spills of the oils. ○ All efforts shall be made to minimise the waste generation. Unavoidable waste shall be stored at the designated place prior to disposal. ○ To avoid soil contamination at the wash-down and re-fuelling areas, "oil interceptors" shall be provided. Oil and grease spill and oil soaked materials are to be collected and stored in labelled containers (Labelled: WASTE OIL; and hazardous sign be displayed) and sold off to SPCB/ MoEF authorized re-refiners.	*contractor shall include the cost for the measures as part of the construction cost)*		•		
14.	Construction Debris and waste	○ All excavated materials from roadway, shoulders, verges, drains, cross drainage will be used for	• Throughout the project section of	• Design and constru	• Project preparatio n cost	• Design consultant and Contractor,	PIU

SL. No.	Project Action/ Environmental Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		backfilling embankments, filling pits, and landscaping. o Unusable debris material should be suitably disposed off at pre-designated disposal locations, with approval of the concerned authority. o The bituminous wastes shall be disposed in secure manner at designated landfill sites only in an environmentally accepted manner. o For removal of debris, wastes and its disposal MOSRTH guidelines should be followed. Unproductive/wastelands shall be selected with the consent of villagers and Panchayat for the same. The dumping site should be of adequate capacity. It should be located at least 500 m away from the residential areas. Dumping sites should be away from water bodies to prevent any contamination of these bodies.	the road	ction stage	and constructi on cost		
15.	Air and Noise Quality	o Vehicles delivering loose and fine materials like sand and aggregates shall be covered. o Dust suppression measures like water sprinkling, shall be applied in all dust prone locations such as unpaved haulage roads, earthworks, stockpiles and asphalt mixing areas. o Mixing plants and asphalt (hot mix) plants shall be located at least 0.5 km away and in downwind direction of the human settlements.	• Near all drainage crossing , nalas and river crossings etc. *(The contractor shall include the cost for the measures*	• During Construc tion stage	• Included in engineeri ng cost	Contractor	PIU/ ASRRDA

SL. No.	Project Action/ Environmental Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		○ Material storage areas shall also be located downwind of the habitation area. ○ Hot mix plant shall be fitted with stack of adequate height (30 m) or as may be prescribed by SPCB to ensure enough dispersion of exit gases. Consent to establish and operate shall be obtained from State Pollution Control Board and comply with all consent conditions. ○ Diesel Generating (DG) sets shall also be fitted with stack of adequate height (as per regulation height of the stack of open to air DG set shall be about 0.5 m for 5 KVA and about 0.7 m for 10 KVA DG sets, above top of sound proofing enclosure of the Dg set). . Low sulphur diesel shall be used in DG sets and other construction machineries. Construction vehicles and machineries shall be periodically maintained. ○ The requisite PPE (helmet, mask, boot, hand gloves, earplugs) shall be provided to the construction workers. ○ Workers' exposure to noise will be restricted to less than 8 hours a day. Workers duty shall be regulated accordingly.	*as part of the construction cost)*				
16.	Biological environment - Tree planting	○ Compensatory Afforestation shall be made on 1:3.ratio basis as per the planning. ○ Additional trees shall be planted wherever feasible.	Throughout the project section of the road *(Highlight Tree*	during the design and Constructi on stage	Part of engineering work cost included	ASRRDA	PIU and ASRRDA

SL. No.	Project Action/ Environmental Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
			cutting locations and proposed likely plantation location)				
17.	Ground Water and Surface Water Quality and Availability	○ Requisite permission shall be obtained for abstraction of groundwater from State Ground Water Board/Central Ground Water Authority if applicable. ○ The contractor shall arrange for water required during construction in such a way that the water availability and supply to nearby communities remains unaffected. ○ Water intensive activities shall not be undertaken during summer period to the extent feasible. ○ Provision shall be made to link side drains with the nearby ponds for facilitating water harvesting if feasible ○ Where ponds are not available, the water harvesting pits shall be constructed as per the requirement and rainfall intensity. ○ Preventive measures like slop stabilisation, etc shall be taken for prevention of siltation in water bodies.	Throughout the project section of the road *(The contractor shall include the cost for the measures as part of the construction cost)*	constructi on stage	construction cost	Contractor,	PIC/PIU
18.	Occupational Health and Safety	○ Verification of implementation of provision made at planning stage. ○ Each worker is provided with requisite PPE ○ Directional sight board shall be installed on all sharp curves and					

SL. No.	Project Action/ Environmental Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		bends o At a main road, intersection or crossing “STOP” sign and ‘T-intersection’ warning sign shall be installed on the village road.					
	Operation Stage						
19.	Air and Noise Quality	o Awareness sign board shall be provided for slow driving near the habitat areas to minimize dust generation due vehicle movement.. Speed limitation and honking restrictions may be enforced near sensitive locations.	Throughout the project section at the location determined by contractor and approved by PIU	Operation stage stage	construction cost	Contractor,	PIC/PIU
20	Site restoration	o All construction camp/temporary office/material storage areas are to be restored to its original conditions. o The borrow areas rehabilitation will be ensured as per the agreed plan with the landowner. o Obtained clearance from PIU before handling over the site to SRRDA. o PIC to undertake survivability assessment and report to PIU the status of compensatory tree plantation at a stage of completion of construction with recommendation for improving the survivability of the tree if required	*(The contractor shall include the cost for the measures as part of the construction cost)*				
21.	Hydrology and Drainage	o Regular removal/cleaning of deposited silt shall be done from drainage channels and outlet points before the monsoon season. o Rejuvenation of the drainage system by removing	Throughout the project section at the location determined by contractor and	Operation stage stage	construction cost	Contractor,	PIC/PIU

SL. No.	Project Action/ Environmental Attributes	Mitigation Measures	Location	Time Frame	Cost	Responsible for Implementing	Responsible for Monitoring
		encroachments/ congestions shall be regularly conducted	approved by PIU				
22.	Occupational Health and Safety	○ Directional sight board shall be installed on all sharp curves and bends ○ At a main road, intersection or crossing “STOP” sign and ‘T-intersection’ warning sign shall be installed on the village road.	Throughout the project section at the location determined by contractor and approved by PIU	Operation stage stage	construction cost	Contractor,	PIC/PIU

Note :

1. Road specific measures may vary depending on its location and environmental setting around. The exact extent of activities and related measures requires will depend on final alignment selection. Table 1 provides the list of common utilities, ponds, or community structures falling within 2-4 M of the road and may require shifting. Efforts shall be made to adopt the mitigative measures listed under respective section above including measures of aligning road on one end to save the the structures/trees as much as possible. The PIU will update this EMP before attaching it with the DPR and either list or refer to the section of DPR for highlighting the exact location with chainage of action areas (regarding shifting of common utilities, community structures, location of CD structures, embankment height in the flood prone areas, slope stabilization measures with locations near ponds or water bodies, tree cutting locations)
2. The information to be updated in the standard EMP before attaching it with DPR is highlighted under location column of the standard EMP.

APPENDIX 5: ENVIRONMENTAL MONITORING PLAN

I. ENVIRONMENTAL MONITORING DURING DESIGN AND PRE-CONSTRUCTION STAGE

Monitoring Responsibility: PIU with Support from PIC
Monitoring Frequency: Once prior to start of construction
Road Name with Block and District Name:……..
Road Length: ……
Report No.: …….

SL. No.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
1.	Climate Change Consideration and Vulnerability screening	○ Compliance to climate change vulnerability check point given under EARF and adoption of necessary mitigative measures as may be required ○ Efforts shall be made to plant additional trees for increasing the carbon sink. The tree may be planted with help of PRI (Panchyati Raj Institution)	All through the alignment	No. of Additional Tree plantation Proposed		
2.	Finalization of alignment	○ The road will be part of district core network and will comply with PMGSY guidelines ○ Subproject shall not disturb any cultural heritage designated by the government or by the international agencies, such as UNESCO, and shall avoid any monuments of cultural or historical importance. ○ Subproject will not pass through any designated wild life sanctuaries, national park, notified Eco sensitive areas or area of international significance such as protective wet land designated under Wetland Convention, and reserve forest area.. ○ Subproject to comply with local and National legislative requirements such as forest clearance for diversion of forestland and ADB's Safeguard Policy Statement 2009. ○ Alignment finalization considering availability of right of way and in consultation with local people.	All through the alignment of each rural road	Compliance to Conditions of Forest Clearance if applicable		

SL. No.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
		○ ROW may be reduced in built up area or constricted areas to minimize land acquisition as per PMGSY Guidelines. ○ Adjust alignment to the extent feasible to avoid tree cutting, shifting of utilities or community structure. ○ The road shall follow natural topography to avoid excessive cut and fill.				
3.	Land acquisition	○ Avoid or minimize land acquisition. ○ Land acquisition, compensation packages, resettlement and rehabilitation, poverty alleviation programs for affected people and all other related issues are addressed through Social Impacts and Resettlement and Rehabilitation report.	All through the alignment of each rural road			
4.	Biological environment - Tree planting	○ All efforts shall be taken to avoid tree cutting wherever possible. ○ Requisite permission from forest department shall be obtained for cutting of roadside trees. ○ Provision of Compensatory Afforestation shall be made on 1:3.ratio basis. ○ Permission shall be taken for diversion of any forest land if involved. Provision shall be made for additional compensatory tree plantation.	Throughout the project section of the road			
5.	Planning for land clearing	○ The road land width shall be clearly demarcated on the ground. ○ The utility and community structure shifting shall be planned in consultations and concurrence of the community. ○ Tree felling shall be limited to those, which could not be saved even by design measures. The tree shall be cut with a prior permission of Forest department. ○ The vegetable cover shall be removed and disposed in consultation with community. ○ All public utilities shifting shall be planned with prior concurrence of respective agencies/authority and to the adjacent location approved by them	All through the Rural roads excepting in stretches of habitations	Tree cutting permission from Forests or Revenue department as applicable Permission of concerned utility Authorities No and proposed location of compensatory trees plantation, Concurrence from community for utility, community structure, and vegetation cover removal		

SL. No.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
6.	Shifting on Common Properties Resources	○ All efforts are made to minimize shifting of common utilities and community structures. ○ The community structures/utilities, which can not be saved, will be shifted to adjacent area with the concurrence and in consultation with community.	As determined by contractor under approval of PIC /PIU			
7.	Cut and Fill and Embankment Construction design and planning	○ The alignment design shall consider options to minimize excessive cuts and fills. ○ The cut and fill quantities shall be used for embankment to minimize barrow earth requirement. ○ The design shall be as per relevant IRC provisions for cut and fill, slope protection and drainage. ○ Adequate provision shall be made for cross drainage structure for maintaining natural drainage pattern in the subproject area and preventing soil erosion. ○ Side drain for channelizing water to nearby natural drain in water stagnation /logging prone area. ○ The top soil of the cut and fill area shall be used for embankment slope protection ○ Embankment will be designed above High Flood Level wherever, area is prone to flood.	All through the alignment of each rural road			
8.	Hydrology and Drainage	○ Provision of adequate cross drainage structure shall be made to ensure smooth passage of water and maintaining natural drainage pattern of the area. The discharge capacity of the CD structure shall be designed accordingly. ○ Provision of adequate side drainage shall be made in water stagnant/logging areas. ○ The construction work near water body shall be planned preferably in dry season so that water quality of the water channel is not affected due to siltation and rain water runoff. ○ Elaborate drainage system shall be provided to drain the storm water from the roadway and embankment to ensure minimum disturbance to	Near all drainage crossing , nalas and river crossings etc.			

SL. No.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
		natural drainage of surface and subsurface water of the area. o Provision of additional cross drainage structure shall be made in the areas where nearby land is sloping towards road alignment on both the sides. o Provision of concrete road construction in habitat area with drainage of both side of the road shall be made as per the design provision and with adequate slope to prevent any water logging. o Road level shall be fixed above HFL. Embankment slope stabilization measures shall be planned. Stabilization measures may include vegetative treatment, stone pitching, retaining wall where feasible, low cost options such as bamboo / eucalyptus tree pilling .				
9.	Establishment of Construction Camp, temporary office and storage area	o Construction camp sites shall be located away from any local human settlements (minimum 0.5 km away) and preferably located on lands, which are not productive barren/waste lands presently. o Similarly temporary office and storage areas shall be located away from human settlement areas (minimum 500 m). o The construction camps, office and storage areas shall have provision of adequate water supply, sanitation and all requisite infrastructure facilities. o The construction camps shall be located at a minimum 0.5 km from forest land/areas to deter the construction labour in trespassing. Similarly, temporary office and storage areas shall be located at a minimum 0.5 km from forest land/areas. o The construction camps, office and storage areas shall have provision of septic tank/soak pit of adequate capacity so that it can function properly for the entire duration of its use. o All construction camps shall have provision of rationing facilities particularly for kerosene/LPG so	As determined by contractor under approval of PIC/PIU/ (ref- Labelled: WASTE OIL; and hazardous sign be displayed at oil handling areas and sold off to SPCB/ MoEF authorized re-refiners).	Location of Construction camp with planning of requisite facilities and making provision of such facilities prior to start of construction. Availability of consent to establish from pollution control board for setting up the camp.		

SL. No.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
		that dependence on firewood for cooking is avoided completely to the extent possible. o The construction camps, office and storage areas shall have provision of health care facilities for adults, pregnant women and children. o Personal Protective Equipments (PPEs) like helmet, boots, earplugs for workers, first aid and fire fighting equipments shall be available at construction sites before start of construction. An emergency plan shall be prepared to fight with any emergency like fire. o Provision shall be made for domestic solid waste disposal in a control manner. The recyclable waste shall be sold off and non-saleable and biodegradable waste shall be disposed through secured land filling. o Provision of paved area for unloading and storage of fuel oil, lubricant oil, away from storm water drainage.				
10.	Traffic Movement	o The contractor will prepare appropriate traffic diversion scheme approved by respective PIU. This shall be implemented prior to start of construction to avoid any inconvenience to the present road users. This shall be implemented in other stretches of the road as per the progress of the construction work. o The diversion plan should ensure smooth flow of traffic, minimize accidents to road users during construction works. o Adequate signboards shall be placed much ahead of diversion site to caution the road users. The road signs should be bold and retro reflective in nature for good visibility in day and night both.	As proposed under DPR and determined by contractor and approved by PIC/PIU/			
11.	Occupational Health and Safety	o Speed breakers (Rumble strips) as per IRC: 99-1988 shall be provided at sharp corves design and bends where the curve design speed is less than 40	Throughout the project section at			

SL. No.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
		km per hour in plain and rolling terrain. o Speed breakers shall also be provided at a threshold of habitation (as per NRRDA guidelines) at regular intervals (150-200 m) through habitation. o The speed breakers shall be provided and directional sign boards installed at sites where reverse horizontal curves are closely spaced and speed reduction is required. o Provision shall be made for Hazard markers at each end of all box culverts, river crossing causeways and similar CD structures o Shoulder side slopes shall not be steeper than 2h:1V unless stone pitching of the slopes is provided. o Cement concrete pavement and V-shaped drain shall be constructed to the full width of the available roadway within densely populated habitation and as per feasibility. o Provision shall be made for Directional sight board shall be installed on all sharp curves and bends o At a main road, intersection or crossing “STOP” sign and ‘T-intersection’ warning sign shall be installed on the village road. o It is proposed to approach railways for adequate safety at unmanned railway crossing where applicable. Adequate clearly visible sign shall be provided on both side of the railway crossing	the location determined by contractor and approved by PIU			
12.	Grievance Redress	o Obtaining information from Village level Grievance redress committee, PIU as applicable	Each Sample road once.			

NOTE: Each report must enclose Photograph to the maximum possible action points, even if work is in progress.

II. ENVIRONMENTAL MONITORING DURING CONSTRUCTION STAGE

Monitoring Responsibility : PIU with Support from PIC
Monitoring Frequency : (First Report after third month of start of construction or 25% construction . Second report after ninth month of construction or 75% construction).
Project Details:…….
Road Stretch Name : …….
Monitoring Report Quarter No.: ……..

SL. No.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
1.	Sourcing and transportation of construction material (aggregates, earth)	**Borrow Earth:** o The borrow earth shall be obtained from identified locations and with prior permission for landowner and clear understanding for its rehabilitation. The Indian Road Congress (IRC):10-1961 guideline should be used for selection of borrow pits and amount that can be borrowed. o Borrowing earth from agricultural land shall be minimized to the extent possible. Further, no earth shall be borrowed from already low-lying areas. o A 15 cm topsoil will be stripped off from the borrow pit and this will be stored in stockpiles in a designated area for height not exceeding 2m and side slopes not steeper than 1:2 (Vertical: Horizontal). o Borrowing of earth will not be done continuously through out the stretch. o Ridges of not less than 8m widths will be left at intervals not exceeding 300m. o Small drains will be cut through the ridges, if necessary, to facilitate drainage. o The slope of the edges will be maintained not steeper than 1:4 (vertical: Horizontal). o The depth of borrow pits will not be more than 30 cm after stripping the 15 cm topsoil aside.	At Borrow sites and quarries (if required) location.	Compliance to IRC guidelines and stated criteria, Permission from land owners, Rehabilitation of borrow areas Availability of valid consent of quarries		

SL. No.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
		○ Fly ash will also be used in road embankment as per IRC guidelines wherever thermal power plant is located within 100 km of the road alignment. ○ The borrow area shall be rehabilitated as per the understanding arrived with the land-owner. The re-habilitation plan may include the following: ▪ Borrow pits shall be backfilled with rejected construction wastes and will be given a vegetative cover. If this is not possible, then excavation sloped will be smoothed and depression will be filled in such a way that it looks more or less like the original ground surface. ▪ Borrow areas might be used for aquaculture in case landowner wants such development. **Aggregate :** ○ The stone aggregate shall be sourced from existing licensed quarries ○ Copies of consent/ approval / rehabilitation plan for use of existing source will be submitted to PIU. ○ Topsoil to be stockpiled and protected for use at the rehabilitation stage **Transportation of Construction Material** ○ Existing tracks / roads are to be used for hauling of materials to the extent possible. ○ Prior to construction of roads, topsoil shall be preserved or at least shall be used for any other useful purposes like using in turfing of embankment rather than allowing its loss by construction activities. ○ The vehicles deployed for material transportation shall be spillage proof to avoid or minimize the spillage of the material during transportation. In any case, the transportation links are to be inspected at least twice daily to				

SL. No.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
		clear accidental spillage, if any.				
2.	Loss of Productive Soil, erosion and land use change	○ It shall be ensured that the land taken on lease for access road, construction camp and temporary office of the storage facilities is restored back to its original land use before handing it over back to land owner. ○ The top soil from the productive land (borrow areas, road widening areas etc.) shall be preserved and reused for plantation purposes. ○ It shall also be used as top cover of embankment slope for growing vegetation to protect soil erosion. ○ Cut and fill shall be planned as per IRC provisions and rural road manual. ○ All steep cuts shall be flattened and benched. ○ Shrubs shall be planted in loose soil area. ○ IRC: 56 -1974 recommended practice for treatment of embankment slopes for erosion control shall be taken into consideration. ○ Soil erosion shall be visually checked on slopes and embankment areas. In case soil erosion is found, suitable measures shall be taken to control the soil erosion	Thought out the road section			
3.	Compaction and Contamination of Soil	○ To prevent soil compaction in the adjoining productive lands beyond the ROW, the movement of construction vehicles, machinery and equipment shall be restricted to the designated haulage route. ○ The productive land shall be reclaimed after construction activity. ○ Septic tank or mobile toilets fitted with anaerobic treatment facility shall be provided at construction camp/temporary office/storage areas. ○ Domestic solid waste at construction camp shall be segregated into biodegradable and non-biodegradable waste.	• Throughout the project section of the road s			

SL. No.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
		○ The non-biodegradable and recyclable waste shall be sold off. ○ Fuel and lubricants shall be stored at the predefined storage location. ○ The storage area shall be paved with gentle slope to a corner and connected with a chamber to collect any spills of the oils. ○ All efforts shall be made to minimise the waste generation. Unavoidable waste shall be stored at the designated place prior to disposal. ○ To avoid soil contamination at the wash-down and re-fuelling areas, “oil interceptors” shall be provided. Oil and grease spill and oil soaked materials are to be collected and stored in labelled containers (Labelled: WASTE OIL; and hazardous sign be displayed) and sold off to SPCB/ MoEF authorized re-refiners.				
4.	Construction Debris and waste	○ All excavated materials from roadway, shoulders, verges, drains, cross drainage will be used for backfilling embankments, filling pits, and landscaping. ○ Unusable debris material should be suitably disposed off at pre-designated disposal locations, with approval of the concerned authority. ○ The bituminous wastes shall be disposed in secure manner at designated landfill sites only in an environmentally accepted manner. ○ For removal of debris, wastes and its disposal MOSRTH guidelines should be followed. Unproductive/wastelands shall be selected with the consent of villagers and Panchayat for the same. The dumping site should be of adequate capacity. It should be located at least 500 m away from the residential areas. Dumping sites should be away from water bodies to prevent any contamination of these bodies.	• Throughout the project section of the road			

SL. No.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
5.	Air and Noise Quality	○ Vehicles delivering loose and fine materials like sand and aggregates shall be covered. ○ Dust suppression measures like water sprinkling, shall be applied in all dust prone locations such as unpaved haulage roads, earthworks, stockpiles and asphalt mixing areas. ○ Mixing plants and asphalt (hot mix) plants shall be located at least 0.5 km away and in downwind direction of the human settlements. ○ Material storage areas shall also be located downwind of the habitation area. ○ Hot mix plant shall be fitted with stack of adequate height (30 m) or as may be prescribed by SPCB to ensure enough dispersion of exit gases. Consent to establish and operate shall be obtained from State Pollution Control Board and comply with all consent conditions. ○ Diesel Generating (DG) sets shall also be fitted with stack of adequate height (as per regulation height of the stack of open to air DG set shall be about 0.5 m for 5 KVA and about 0.7 m for 10 KVA DG sets, above top of sound proofing enclosure of the Dg set). . Low sulphur diesel shall be used in DG sets and other construction machineries. Construction vehicles and machineries shall be periodically maintained. ○ The requisite PPE (helmet, mask, boot, hand gloves, earplugs) shall be provided to the construction workers. ○ Workers' exposure to noise will be restricted to less than 8 hours a day. Workers duty shall be regulated accordingly.	• Near all drainage crossing , nalas and river crossings etc.			

SL. No.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
6.	Biological environment - Tree planting	○ Compensatory Afforestation shall be made on 1:3.ratio basis as per the planning. ○ Additional trees shall be planted wherever feasible.	Throughout the project section of the road			
7.	Ground Water and Surface Water Quality and Availability	○ Requisite permission shall be obtained for abstraction of groundwater from State Ground Water Board/Central Ground Water Authority if applicable. ○ The contractor shall arrange for water required during construction in such a way that the water availability and supply to nearby communities remains unaffected. ○ Water intensive activities shall not be undertaken during summer period to the extent feasible. ○ Provision shall be made to link side drains with the nearby ponds for facilitating water harvesting if feasible ○ Where ponds are not available, the water harvesting pits shall be constructed as per the requirement and rainfall intensity. ○ Preventive measures like slop stabilisation, etc shall be taken for prevention of siltation in water bodies.	Throughout the project section of the road			
8.	Occupational Health and Safety	○ Verification of implementation of provision made at planning stage. ○ Each worker is provided with requisite PPE ○ Directional sight board shall be installed on all sharp curves and bends ○ At a main road, intersection or crossing “STOP” sign and ‘T-intersection’ warning sign shall be installed on the village road.	Throughout the project section at the location determined by contractor and approved by PIU			
9.	Grievance Redress	○ Obtaining information from Village level Grievance redress committee, PIU as applicable	Each Sample road once.			

NOTE: Each report must enclose Photograph to the maximum possible action points, even if work is in progress.

III. ENVIRONMENTAL MONITORING DURING OPERATION STAGE

Monitoring Responsibility: PIU with Support from PIC
Monitoring Frequency: (On completion of construction and after one month of first and second year of maintenance period) construction
Project Details :…….
Road Stretch Name: …….
Monitoring Report No.: ……..

SL. No.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
1.	Air and Noise Quality	○ Awareness sign board shall be provided for slow driving near the habitat areas to minimize dust generation due vehicle movement.. Speed limitation and honking restrictions may be enforced near sensitive locations.	Throughout the project section at the location determined by contractor and approved by PIU			
2.	Site restoration	○ All construction camp/temporary office/material storage areas are to be restored to its original conditions. ○ The borrow areas rehabilitation will be ensured as per the agreed plan with the landowner. ○ Obtained clearance from PIU before handling over the site to SRRDA. ○ PIC to undertake survivability assessment and report to PIU the status of compensatory tree plantation at a stage of completion of construction with recommendation for improving the survivability of the tree if required	Throughout the road stretch	Survivability report, land owner concurrence of land reversal		
	Hydrology and Drainage	○ Regular removal/cleaning of deposited silt shall be done from drainage channels and outlet points before the monsoon season. ○ Rejuvenation of the drainage system by removing encroachments/ congestions shall be regularly conducted	Throughout the project section at the location determined by contractor and approved by PIU			

SL. No.	Environmental Attributes	Mitigation Measures	Location	Additional Monitoring Indicator if applicable	Compliance status	Corrective action proposed in case of delay
3.	Road Safety	○ Directional sight board shall be installed on all sharp curves and bends ○ At a main road, intersection or crossing "STOP" sign and 'T-intersection' warning sign shall be installed on the village road.	Throughout the project section at the location determined by contractor and approved by PIU	Monitor road crashes and compile. Estimate no. crashes vs number of vehicles passing section and compare with applicable national standards for blackspots		
4.	Grievance Redress	○ Obtaining information from Village level Grievance redress committee, PIU as applicable	Each Sample road once.			

NOTE: Each report must enclose Photograph to the maximum possible action points, even if work is in progress.

APPENDIX 6: PUBLIC CONSULTATION IN ASSAM

District	Name	Designation
Golaghat	Mr. F Rahman	Executive Engineeer
	Mr. Mahendra Saikia	Assistant Executive Engineer
	Mr. Mridul Kakoti	Assistant Engineer
	Mr. Pradip Konwar	Junior Engineer
	Mr. D. Saikia	VAP
	Mr. Keshab Saikia	VAP
	Mr. Dipendra Saikia	Member, Koliapani GP
Jorhat	Mr. Jayanta Medhi	Executive Engineer
	Mr. Udayan Borthakur	Assistant Executive Engineer
	Mr. Jiten Barua	Junior Engineer
	Mr. Pabitra Dutta	Section Assistant
	Mr. Purnakanta Borgohain	GP Member
	Mr. Uttam Ballunar	VAP
	Mr. Tutu Kachari	VAP
	Ms. Mohada Hazarika	VAP (WHH)
Tinsukia	Mr. B. C. Panging	Assistant Executive Engineer
	Mr. Rajen Bora	Junior Engineer
	Mr. L. Moran	Village Headman
	Mr. B. Moran	President, GRC Committee
	Mr. Bimal Moran	VAP
	Mr. Golap Moran	VAP
Dibrugarh	Mr. V.K. Singh	Assistant Executive Engineer
	Mr. Subhas Phukan	Junior Engineer
	Mr. Krishnakanta Lahon	Section Assistant
	Mr. Rebo Phukon	President, Modarkhat GP
	Mr. Diganta Hazarika	AP
Nagaon	Mr. S Talukdar	Executive Engineer
	Mr. Rajib Dutta	Assistant Executive Engineer
	Mr. Prafulla Saikia	Junior Engineer
	Mr. D Daimari	Village Headman
	Ms. Pushpanjalli Debi	President, Dakshin Nonoi GP
Shibsagar	Mr. Tutu Barua	Member, Hahsora GP
	Mr. Jahnu Moran	VAP
	Mr. Satya Neog	VAP
	Mr. Purneswar Gogoi	VAP
Barpeta	Mr. Ratul Bora	Executive Engineer
	Mr. Kamaleswar Deka	Assistant Executive Engineer
	Mr. Biren Das	VAP
Nalbari	Mr. Bijoy Kalita	Executive Engineer
	Mr. P.C. Kakoti	Assistant Executive Engineer
	Ms. Kanmay Barman	VAP